

A HIGH SCHOOL CURRICULUM

FEED, NEED, GREED.

**Food
Resources
& Population**

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Science for the People is a national organization working to build a science and technology responsive to people's needs. Composed of scientists, health care workers, teachers, students and community activists, the organization presses for progressive social change on such issues as nutrition, nuclear power, genetic engineering, and sociobiology. Science for the People has chapters throughout the U.S. and publishes a bimonthly magazine, *Science for the People*, from its national office at 897 Main Street, Cambridge MA 02139. Tel: 617-547-0470.

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Introduction

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*A special thanks to
Brenda Lansdown, who
provided that kernel
of inspiration when
it counted most.*

The Food and Nutrition Group of the Boston chapter of Science for the People has revised its alternative curriculum for high school students written in 1974 entitled *Feed, Need, Greed — Where Will It Lead?* Our goal is to raise the awareness of students and teachers regarding the nature of the food system and its relationship to nutrition, population and resources. Much of the information we include is not available as part of contemporary curricula.

We feel it is necessary to counter the majority of nutrition texts which are clearly pro-industry and which blame the consumer for poor eating habits and health problems. The common myths on nutrition must be examined. For example, it is a myth that we make free choices about what we eat, that overpopulation and hunger result from ignorance, and that multinationals (such as Nestle) truly serve the nutritional needs of developing countries.

You cannot tell students that food additives may be harmful without exploring why the food industry put additives into their products. Similarly, you cannot tell students about hunger in a nutritionally poor country like Mexico without discussing the exploitation of Mexican labor and land by U.S. corporations. We feel a political analysis of food and population issues is essential to understanding the present world.

It is necessary to extend the liberal, simplistic "health food" approach to nutrition which divides foods into "healthful" and "unhealthful" without discussing the political and economic context. We want to discuss whole foods and world hunger together. We feel it's important to avoid the standard conclusions that world hunger is caused by overpopulation, underdevelopment and ignorance.

Feed, Need, Greed is divided into four units which are composed of sections which can be used independently of each other, or mixed and matched. Many units and sections can enrich the required material of social studies, biology or science and society courses. Built into *Feed, Need, Greed* are opportunities for active learning so students can incorporate their own experiences into a subject. We have included notes on each section for the teacher, along with objectives, cross-references, background notes, and suggestions for additional classroom discussions and political analysis.

We feel *Feed, Need, Greed* is unique because it not only encourages critical thinking but it also explores pathways toward personal, community, national and global change.

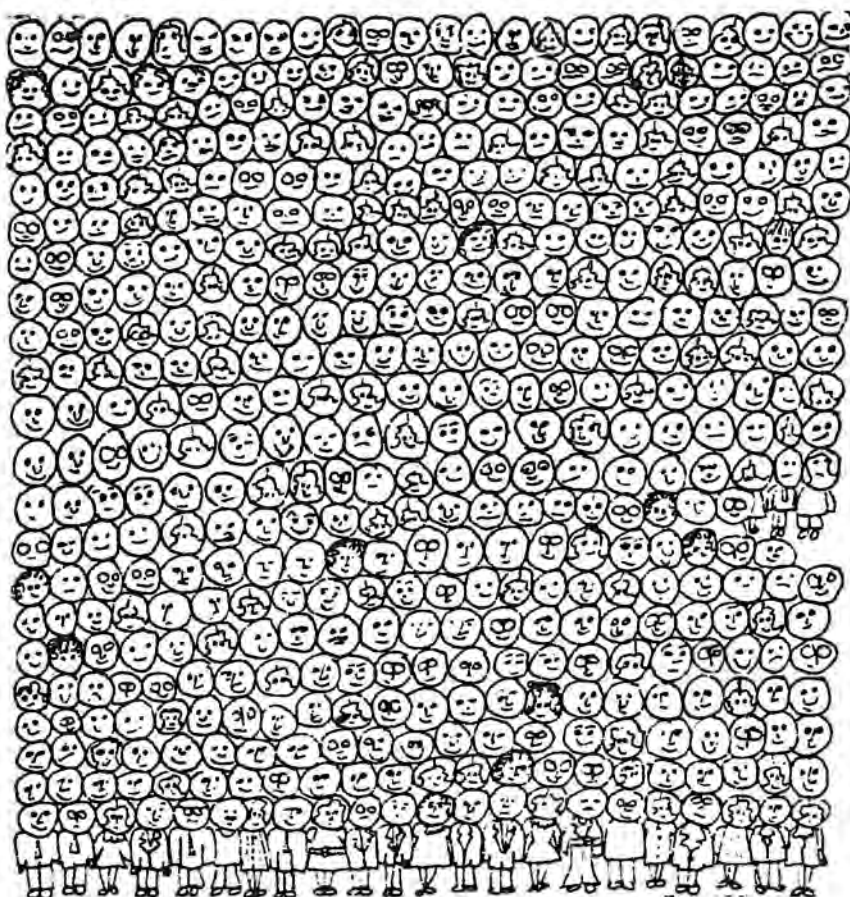
—Sue Tafler and Connie Phillips

Exploding the Population Myth

Millions of people around the world suffer from hunger, malnutrition, disease and poverty. We want to understand why this is so, and what we can do about it.

But before we start, we have to confront the myth that these problems are *due* to "overpopulation." Overpopulation is said to *cause* poverty, malnutrition and death in many parts of the world. If we believe that, then we have to believe that the main "solution" to world poverty, hunger and suffering is population control — whether people like it or not, by force if necessary.

Just what is meant by overpopulation?



Overpopulation and overcrowding

Some people mean "overcrowding" when they talk about overpopulation. Crowding is measured by the *population density*, that is the number of people in a given unit area of land. You can calculate the population density of any country by dividing the total population (in millions of people) by the total land area of that country (in square kilometers). Example: the U.S. has 222.5 million people in 9,171,000 sq. km.

$$9,171,000 \sqrt{222,500,000} = 24.3 \text{ people/sq. km.}$$

Before we look at the actual numbers, think about the countries: Japan, the Netherlands, Brazil and India. What picture comes to mind of each country? Write your image in the chart below.

Rank order the countries from most crowded to least crowded. Number them in the chart below.

Now let's look at the actual figures, from the *United Nations Demographic* (this means population) *Yearbook*:

Country	Image	Your rank order guess	Population (in millions)	Surface area (in sq. km.)	Population density
Japan			111.9	372,000	
Netherlands			13.0	40,800	
India			548.2	3,287,000	
Brazil			92.3	8,512,000	

Now calculate the population density of each country (that is, divide the population by the surface area — watch your decimal points!) and write these into the table.

Now look at which country is the most densely populated. Which was it?

Which is least densely populated?

Did the real numbers give you different answers from your guesses?

Do these numbers change your picture of each country?

Overpopulation and poverty

People often talk about overpopulation being a major problem in India or Brazil, but they never say that Japan or the Netherlands is overpopulated. Why is this so?

Part of the reason is that most of the people in India or Brazil are poor and hungry, while fewer people in Japan or the Netherlands are so poor. Now we can see another meaning of the term "overpopulation": it is used to mean something very different, namely, *widespread extreme poverty*. Some people use the term "overpopulation" when they really mean that most people are poor and have little or no food and housing, regardless of population density. Do you agree?

Overpopulation, poverty, and density

People who think the basic problem is overpopulation often believe that there are more people than can be supported by the available supply of food. The most famous person associated with these ideas is Thomas Malthus (1766-1834). Malthus is known for the idea that the number of people increases **geometrically** while the food supply increases **arithmetically**. A *geometric increase* results from repeatedly *multiplying* by a certain number; an *arithmetic increase* results from repeatedly *adding* that certain number.

In order to better see the difference between geometric and arithmetic growth, let us start with the number one and *multiply* repeatedly by 2 (geometric increase). Now *add* repeatedly by two (arithmetic increase) and compare the results at each stage:

	Geometric increases	Arithmetic increases
Beginning	1	1
After one stage	2	3
After two stages	4	5
After three stages	8	7
After four stages	16	9
After five stages	32	11
After six stages		
After seven stages		
After eight stages		

Notice how the difference between the two is now "taking off." You calculate the sixth, seventh, and eighth stages. What are the differences between the two columns at each stage?

Thomas Malthus thought, as have many others (called neo-Malthusians) since his time, that human populations increase at a geometric rate, while food and shelter increase only at an arithmetic rate. If this were true, the gap between population and food supply would increase very rapidly, and many people would die of starvation and disease. This is what Malthusians predicted. In fact, he was wrong.

Why was Malthus wrong?

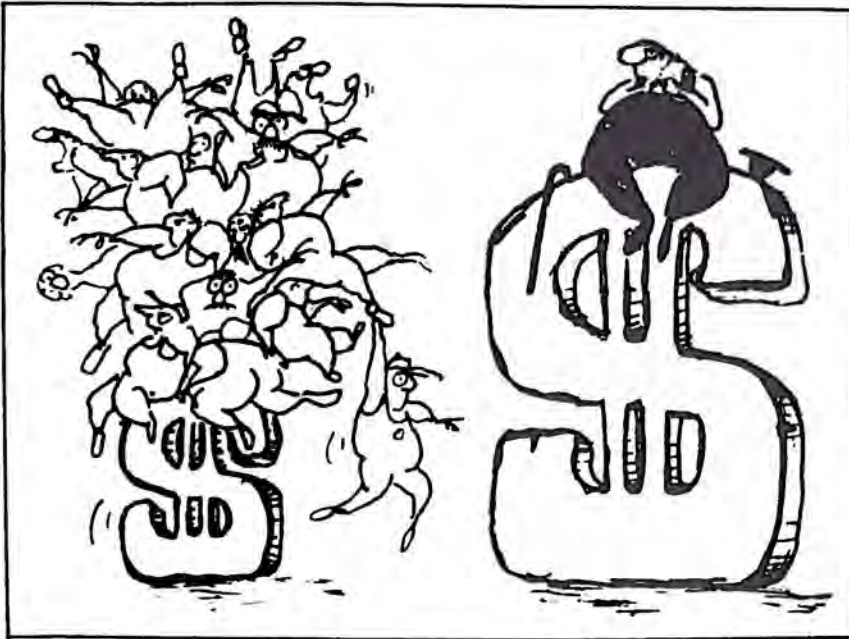
1. The birth of a new person not only increases the need for food (and clothing and shelter) but also means there is one more person available to help in the production of the necessities of life.
2. It is not true that human populations always grow geometrically at all times in history.
3. It is not true that food supply increases arithmetically. Malthus simply made that up. He ignored the explosive effects of science, technology, changes in land ownership and in ways of organizing work. In the last 25 years, food production in less developed countries has increased at about the same rate as population (except for Africa).



Rini Templeton, NACLA

4. Malthus implied that women give birth to as many babies as they can. He did not see that women have practiced birth control for thousands of years. People will *decide* how many children they want, if given the opportunity.

5. Finally, and most importantly, people are not starving today because the food is not there. There is plenty of food in the world today for all people to be well nourished. People starve because they are prevented from owning land on which to grow food for themselves. And people starve because they are not able to make enough money to be able to buy enough food. Food which is produced is not automatically distributed equally to everyone who is alive. Some people get more and many people get less, not because they need more or less but because they have unequal resources, money and power. What this means is that food *production* is not the same as food *consumption*.



Berke Breathed The Progressive

Why is Malthus still popular?

Malthus' ideas were a message to poor working people that said: "You are causing your own poverty by marrying and having children when you can't support them. The problem is yours." This message denied that the rich and powerful had any responsibility for poverty, illness and death of the poor.

Malthus implied that there will always be the poor and miserable and that poverty is *natural*. If you believe poverty is natural, then you would be wasting your time to try to do something about it. Malthus' view, therefore, serves to weaken poor peoples' attempts to end poverty.

By blaming poverty on the poor, Malthus helped the rich and powerful feel justified to keep and expand their wealth and power.

Today the wealthy and powerful people, just as in Malthus' time, want to hold onto their power and privilege. The *majority* of people

want to change things so that they can have better lives and more control. Poor people know by experience and also need to learn that there is nothing "natural" about their poverty. Wealth and excess power creates poverty.

Malthus' mistaken ideas are still popular today because they justify and maintain those who benefit from the *status quo*. The **capitalists** (those who own and control the factories, banks, and big companies) need theories which can convince themselves and the poor that changes are impossible and that inequality must exist. Realizing that Malthusian theories are myths, is part of the process of poor people taking control of their land, resources, wealth and power — of their lives.



Famine, poverty, and overpopulation

In summary, hunger, disease, suffering and death are not caused by overpopulation. Therefore, population control will not solve the problem.

Malthus' views are not accurate descriptions of the ways things really are. They are convenient excuses for the few who benefit from the way things are.

Why Do People Have Children?

UNIT 1
SECTION 2

The question of why people have children is a complicated one. To begin to answer it, read what happened in a village in India where a U.S. family planning team tried to introduce birth control.

For six years a million dollars was spent on extensive birth control education and free birth control in seven "test" villages. It was found that the birth rate decreased in the test villages but no more than it did in seven "control" villages. In other words, the decrease was due to causes other than the birth control project. The expensive project had failed.

Married couples in the test village said that they approved of family planning in principle, but apparently they were only trying to be polite. Many "test" villagers accepted **contraceptives** but did not use them or only said they used them. As one villager said: "Someday you'll understand. It is sometimes better to lie. It stops you from hurting people, does you no harm, and might even help them." Another villager explained how he responded to the education efforts of the professionals from the Harvard School of Public Health and the Rockefeller Foundation by saying: "But they were so nice, you know. And they came from distant lands to be with us. Couldn't we even do this much, just take from them a few tablets? . . . All they wanted was that we accept the tablets. I lost nothing and probably received their prayers . . ." Why didn't the villagers use the contraceptives they accepted?

In the villagers' eyes, people are not poor because they have large families. Instead, they have large families because they are poor. Just what is life like in these Indian villages?

Every family member counts

Most people live by farming. Those villagers who cultivate their own land own small farms averaging only 6-16 acres. When a farmer dies, his land is fragmented — that is, divided into even smaller plots for each son (and since 1956 each daughter). The family planners thought that this inheritance law might motivate a farmer to limit the number of his inheritors. But to the farmer, the major problem is not the fear of fragmentation at his death, but rather, it is how to make a living off the land during his own lifetime.

The small farmers are too poor to hire laborers. To quote one of the villagers, "In farming, there is no money if you don't have sons to help you." The practical way for the farmer to get labor power is by adding to his family. The farmer sees each birth as an investment.

What about the women? A farmer's wife must prepare meals for her husband and children as well as for hired laborers even on a rainy day when the farmer does not work. In landless families the women may have to do field labor in addition to working at home. There is much social pressure from religion, myths, traditions, and rituals on women to have children. A barren (childless) woman or a woman who has only daughters may be made fun of, ignored, or divorced.



Workbook / CPF

Daughters are married in arranged marriages to families of appropriate **caste** and economic position from outside their own village. Thus, the family structure is **patriarchal** and **authoritarian**.

Children, as part of the family, must contribute to it. Each morning before going to school young children help bring grass and water to cattle and they help in the fields after school. Sometimes children of a landless laborer cannot go to school because the money they earn during the busy harvest season is needed to help the family save up for slow seasons. Older children may move away to a city to earn some income to send home to the family. Aged people live with and are supported by their sons' families, since the daughters have been sent away to different villages. Because of a high **infant mortality rate**, an Indian must have lots of children to be sure that a few survive to take care of him in his old age. Also, if there is a natural disaster, such as a flood, having enough children around to help rebuild is considered an advantage.

The professionals running the birth control project tried to use public health education to combat what they saw as ignorance of the villagers. But as we have just seen, the villagers are not ignorant. They have little reason to welcome contraceptives until they can change their difficult economic situation.



Lorraine Shein/LNS

Discussion Questions:

1. The average family size in India is 6 compared to 3.5 in the U.S. Calculate the average family size for your class. To do this, add the number of children and parents in each family of all the students in your class and divide this total by the number of families. Do you think your class is typical of America? Give four reasons why you think there is a difference between India and America.
2. There was a decrease in the birth rate of both the "control" villages (no birth control education nor free birth control) which was the same as the decrease in the "test" villages. This might be explained by a rise in the age of marriage. Why do you think this change might have happened?
3. Would you like to have children? If yes, how many? If no, why not?
4. Do you want to have more children yourself than your parents have had or fewer? Why the difference?
5. What would you decide if the government paid you bonuses to have more children? Bonuses to have fewer children?
6. Do you think your decision as to the number of children you'd like to have would be different if:
 you/your family lived in an area frequently hit by disasters such as floods or hurricanes?
 you/your family owned a farm or did farm labor?
7. Who brings income into your family? Do you?
8. Where do the elderly people in your family live? What money do they live on?
9. Imagine that there was no Social Security, Medicare, insurance policies, and job pensions in the United States (these don't exist in India). Could you expect to have your children take care of you in your old age? What are your options?
10. What are advantages and disadvantages to having children in this country? Find out how much it costs. Compare this to the advantages and costs in India.

Chris Demarest



Agree or disagree

Agree or disagree with the following opinions traditionally expressed about children. Which opinions come from cultural and social traditions? Which opinions are based on economic factors? Discuss these with your classmates and teacher.

1. It is only natural that a man and a woman should want children.
2. A girl becomes a woman only after she becomes a mother.
3. A man has a duty to have children to continue the family name.
4. Having children strengthens the bond between husband and wife.
5. Having children is the most important function of marriage.
6. It is a person's duty to society to have children.
7. A person with children is looked up to by the community.
8. One of the best things about having children is you are never lonely.
9. It isn't right for a couple to interfere with nature by deciding to limit the number of children they will have.
10. Having children is an insurance you will be cared for in old age.
11. You have an opportunity to shape your children as you want.
12. Children are a help in housework, family chores, practical help, earning income.



Paradox:

Americans with lots of resources tend to have fewer children while Indian families are very poor but want many children. Why is this?

Gobbling Up the Earth

UNIT 1
SECTION 3

Activity 1 — Waste not, want not

The physical world includes everything we touch, see, ride around, eat, drink and write with. The world provides us with all the necessary materials to make clothes, homes, food and comforts.

Brainstorm on the board the physical comforts in your home that you consider important.

Resources: renewable and non-renewable

We're going to call everything the earth provides a resource. There are many categories, but the two kinds we need to discuss are **renewable** and **non-renewable**.

Food is a good example of a renewable resource, because year after year we grow new harvests and can replace that which we used. Sometimes, however, there are shortages of renewable resources if a natural disaster like a hurricane occurs. People can pollute and poison the environment so that fewer renewable resources can be replaced. Shortages can also occur if the renewable item is priced out of someone's buying power; this is happening today with gasoline and food. If properly maintained and cared for, renewable resources can be replaced and provide us with basic necessities; think about the American Indians who survived centuries on only what the earth provides.

Clothes made of rayon and nylon are **synthetic** materials, made from coal tar derivatives. Can you explain why these are examples of non-renewable resources?

Look around the room and name other objects that are made from non-renewable resources.

Next to the items in the list below, put an R next to those you think are renewable and an N next to those you think are non-renewable:

- coal _____
- paper _____
- iron _____
- flour _____
- gasoline _____
- leather _____
- oil _____
- tin _____

*"I don't see how
three-quarters
of the world can
be starving—
this restaurant
is always
packed."*



Heath from Punch

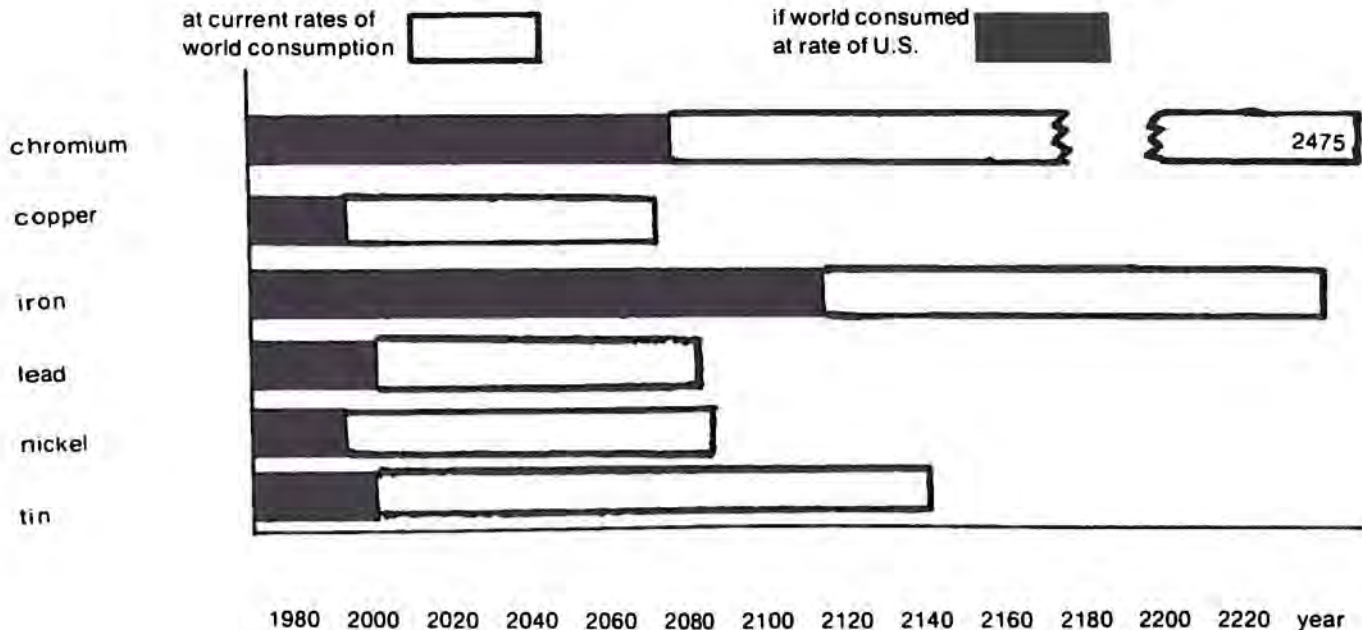


Workbook/CPF

A huge problem in the world today is the **depletion** of non-renewable resources. These we cannot replace by growing more. When they are gone, they are gone.

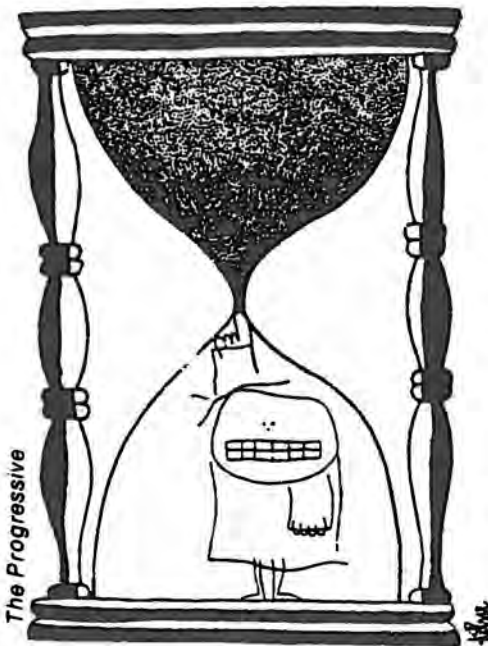
Look at the graph of the lifetimes of non-renewable resources.

Projected Depletion Dates for Mineral Resources



The bars show the predicted depletion dates if each resource continues to be used at the current rate of consumption. If the entire world population had the U.S. standard of living, the depletion dates would be much sooner! This is because the U.S., with only 6% of the world's population, consumes, or uses, non-renewable resources at a much faster rate than any other country. A serious problem is that the developing countries are encouraged to model their lives on the American standard of living. They see this model as one which they hope to achieve one day.

The Western lifestyle is made possible in Canada, Europe and Japan because they manufacture so many machines, radios, and consumer items. They are only able to do this because people from industries in these countries go to other countries where the non-renewable resources are located and run the mines and factories. For example, the British have controlled the mining of tin in Bolivia for centuries. Non-renewable resources are being exported out of less developed, mineral-rich countries and used in developed nations. The less developed countries often have little control over their own resources. A big contradiction is that they are encouraged to live the Western lifestyle which they cannot afford. By looking at the graph again, you can easily see that more and more people will never be able to live the Western lifestyle. The U.S. is *not* a good model for the rest of the world if all people are to have the basic necessities of life.



Americans must be allowed and encouraged to change their lifestyles before the depletion of non-renewable resources forces it upon them. This means we must develop *renewable* energy sources such as solar and wind energy, and wear and use natural fibers. We must work together to try new "alternatives" in technology which are less wasteful and extravagant and also less dangerous. We must free ourselves of the control over our lives by advertising and the "BUY-BUY-BUY" pressures on T.V. and billboards.



Let's examine the list on the board and divide the items into *necessities* and *luxuries*.

Discussion questions

1. Name at least five things which you or your parents own which cost over \$200.00. This happens to be the average annual *per capita* income of the poorest third of the world's population.
2. If they could have anything, what would your little brother or sister want for Christmas? Where do these desires come from?
3. Name five sources from which we derive our ideas of the "good life".
4. Name five ways your own everyday activities either contribute to or produce ugliness, waste, and pollution.
5. Do you expect to have three meals a day always available to you? What are the major considerations in choosing and buying food?
6. Could you get along without food listed as **cash crops** (e.g. coffee, tea, cocoa, pineapple)? If the choice is between a country growing non-essential cash crops for you or essential foods, like wheat or rice, for themselves, which would be best?
7. What goods and services do we use and rely on every day that were not generally available 75 years ago? Use the list you put on the board at the beginning of this section as a starting point.
8. Which of these goods and services could not be produced or operated in the absence of raw materials and components produced in poor countries?



Rini Templeton, NACLA

Thank You Tio Sam*

by Mary Mackey

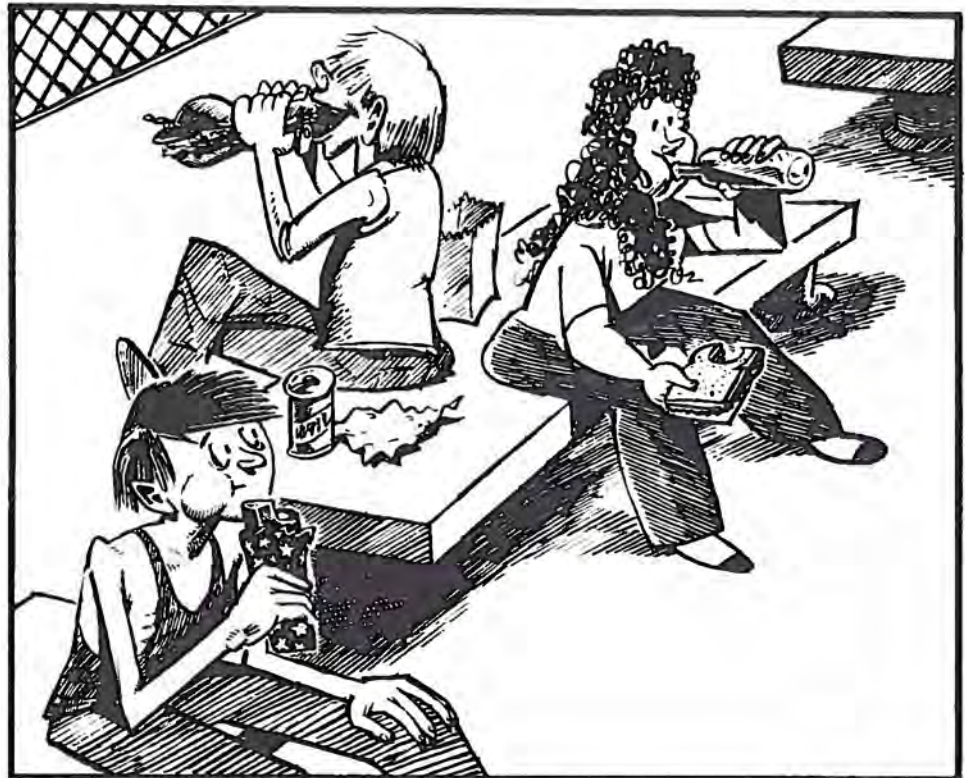
We took their fish
and left them bones
took their copper
and left them stones
took their fruit
took their oil
took their lumber
stripped their soil
made them grow coffee
instead of corn
so their children starved
before they were born
we took their cattle, took their meat
left their people with nothing to eat
built roads and ports
to rob them faster
(Gringo aid
is a national disaster)
and now we all
wonder and brood
at Latin America's ingratitude.

*Tio Sam is Spanish for Uncle Sam

Taken from the **Nicaragua and Central American Report** Vol 1 «2 Feb 1980,
published by the Nicaragua Solidarity Committee, Box 1919 Boston MA 02105

UNIT II

The Lean and The Lumpy



Nick Thorkelson

The Price of Hunger

Activity 1 — Do I feel starved?!

Brainstorm on the board what the words "hunger" and "starvation" each mean to you. Come to an agreement on the meaning of each.

How many of you eat breakfast or lunch less than two or three times a week because you are in a hurry or on a diet? Describe how this makes you feel while you are sitting in class hungry.

Facts and statistics

500 million people in the world today suffer from malnutrition. That's two times the population of the U.S.

12,000 die of hunger each day worldwide

1 billion people more could benefit from improved nutrition because they suffer from blindness due to lack of vitamin A, goiter from lack of iodine, or anemia from lack of iron

Infant mortality rate is an important index of the nutritional status of a population as a whole. Let's look at some more facts:

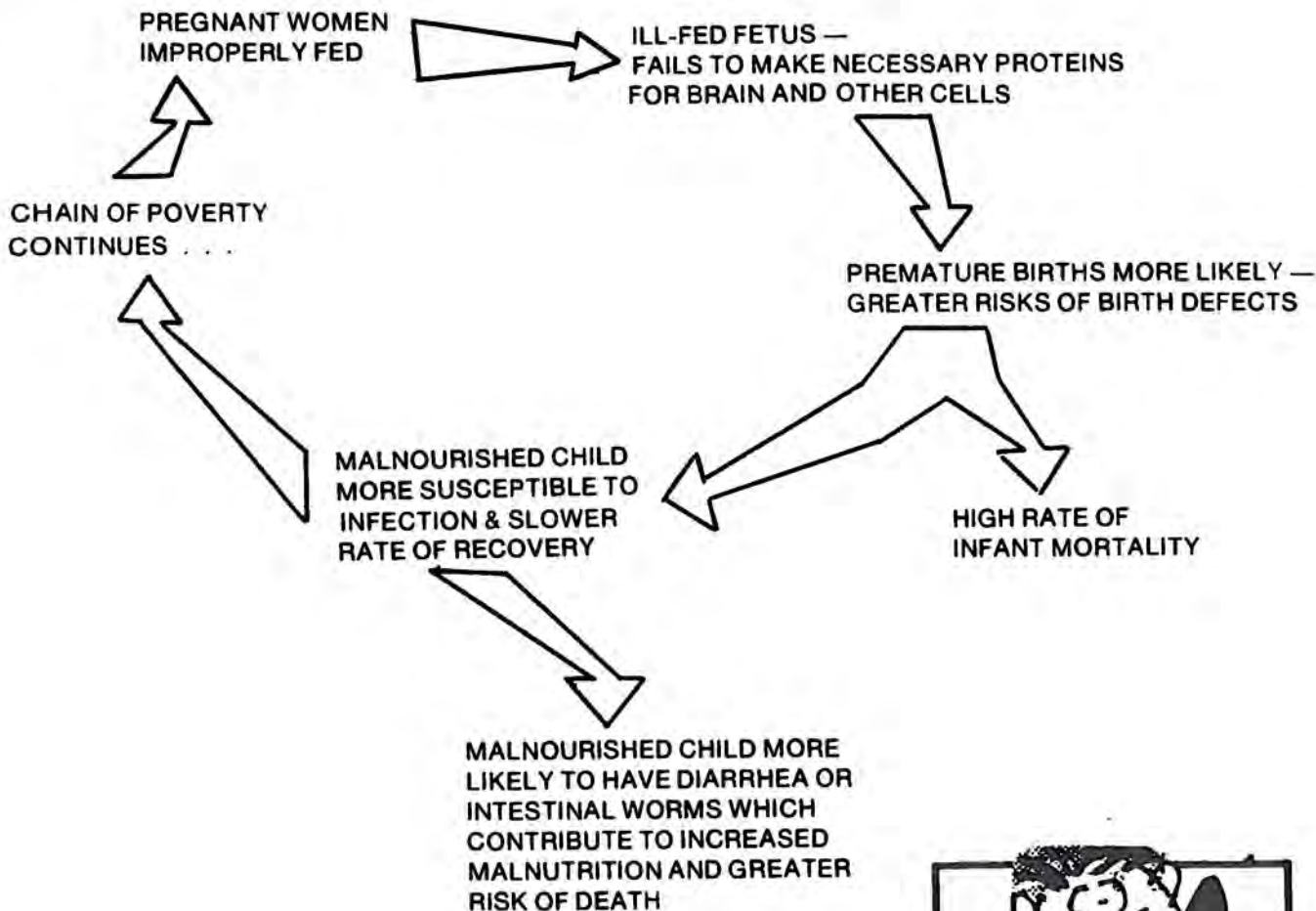


Brazilian Info. Bulletin/cpt

Country	Death Rate For Infants Less Than One Year Old
Zambia, Bolivia	250 per 1000 (or 1 in 4)
India, Pakistan	140 per 1000 (or 1 in 7)
Brazil	95 per 1000 (or 1 in 10)
Sweden	12 per 1000 (or 1 in 100)
U.S.	19 per 1000 (average); 25 per 1000 in poor, rural areas & urban ghettos; 60 per 1000 for migrant workers

Morbid chain of poverty

The following chart diagrams the way malnutrition continues from generation to generation



Hunger in America

Undernutrition is not only something which is a problem "over there". It has been reported that at least 10 million Americans suffer from hunger and undernutrition. Cases of **kwashiorkor** and **marasmus** have been discovered among children of Mississippi sharecroppers, Navajo Indians on reservations, and migrant farmworkers. The poor do not lack food due to their own ignorance or laziness. It is a problem of poverty and powerlessness.

Kwashiorkor (known as the starvation disease) is a severe *protein* deficiency. It is visible as a distended belly, bulging eyes, loss of hair, and if untreated, can lead to death.

Marasmus is a severe calorie deprivation leading to death.



Table Scraps

More commonly the diet of poor Americans is lacking in calcium, vitamin A and vitamin C. Foods containing these nutrients, dairy products, vegetables and fruits, are the higher priced items in the store.

1. Name five reasons why you think infant mortality is greater in populations with poorer nutrition.
2. Name five deficiency diseases and tell what causes them.
3. Your teacher will tell you the population of the U.S.; figure approximately how many Americans are malnourished in the three different categories mentioned.
4. What are four reasons for world hunger.



The Boston Globe/cpl

Activity 2 — I Couldn't get by on that little money!

What do poor Americans do when they go to a supermarket to try to feed their families properly? How do rich or poor Americans spend their money?

You are going to have the experience of trying to feed a family of four for a week on one of three budgets. You will do your "shopping" on paper in the supermarket. Don't actually buy anything. Write down the prices of all food you would buy, how many packages, jars or pounds, and be sure you have kept within your budget. Remember that you want to try to keep you family as healthy as possible.

The class will be divided into three teams. Each team will be responsible for one of the three families and can "shop" together as a team. Be sure to be quiet and polite when you go into a supermarket.

Family One: you are a family of four migrant farm workers so your income is seasonal. After one year your total income from all family members adds up to \$4,000.00. You cannot spend more than \$25 a week on food or you won't have enough to meet your fixed expenses of rent etc.

Family Two: you are a four-member working class family living in a lower middle class neighborhood in a large city. Your annual income is \$10,000. If you are thrifty and keep within your weekly food budget of \$50, you should be able to eat fairly well.

Family Three: you are a middle class family of four living in a suburb. Your annual income is \$20,000 and you spend \$85 a week on food. You find you can afford to spend \$20 of your \$85.00 budget on eating out.

Notes to all teams! Write down any problems you have or questions you may want to have answered. Write a conclusion to your report which should include: how hard it is to stay within the budget assigned; a list of the healthiest foods affordable and the foods which are too expensive to buy that you think you should.

Discuss the ways the family can save money for food if you feel that's necessary.

Every team should make a written report and give a brief summary to the class.

Yesterday and Today

UNIT II
SECTION 2

Everyone admits that the food we eat today is different from the food eaten 50 or 75 years ago. The food industry likes to tell us that we are eating better food with a greater variety. Certainly any large supermarket seems to have an infinite variety of colorful packages. People concerned with good nutrition and health warn us that we are eating less fresh fruits and vegetables and more processed, sweetened, salted, fatty, and refined foods. The result is we are now suffering from certain physical problems (obesity, cavities, heart disease).

Some of the changes in what we eat may be due to more of us living in urban centers far away from farmlands where food is grown. Processing is used to preserve food in transport from rural to urban areas. Many of us now *buy* food products which used to be grown or *made* at home. Those families who once ate traditional old-country or ethnic foods now eat the "typical American" foods.

Food is becoming an industrial commodity manufactured by a few companies which are becoming larger by buying up most of the small processing companies. In effect we eat what is chosen for us by a powerful food industry anxious to make the highest profits possible. We eat what they decide to advertise and sell, based on profits made.



Interview

To learn more about changing eating patterns, interview a grandparent or great aunt or an elderly neighbor. Report back to the class what you have learned. If possible one or two grandparents can be invited to school as the class' guest. The following are ideas of what to ask in your interview:

1. What foods did you eat as a girl/boy?
2. What did you take to school for lunch?
3. What did you eat for breakfast when you were young?
4. What were the sources of your food?
 - a. Did you eat home grown fruits and vegetables?
 - b. Were foods grown by local farmers?
 - c. What foods were made at home which we now buy at the store?
 - d. Were there any supermarkets? What were the stores like?
5. What foods do you remember which you can no longer find at the store?
6. Do you think foods used to taste different?
7. How far did you walk to school?
8. Did your family have an automobile?
9. How often did you eat "out" (at restaurants, etc.)?
10. Do you think there were fewer or as many overweight people when you were a younger person?
11. In your own opinion, is the food we eat today better or worse than the food people used to eat? Why?
12. What do you think is most different (biggest change) about our eating habits or food supply?

You may think of other questions to ask your older person. Include them in your report. Share your report with your class.



Activity 1 — I bet you can't eat just one!

1. Name some salty foods you like.
2. Can you list 10 salty foods?
3. Besides foods like pretzels with *visible* salt, many foods have *hidden* salt. See table. What foods do you like which are high in hidden salt?
4. Canned vegetables are many times saltier than frozen or fresh. Check out the source of vegetables in your school cafeteria.
5. Common table salt is the mineral sodium chloride. We also get sodium from several different food additives: sodium bicarbonate (baking soda), sodium nitrate, sodium benzoate, sodium propionate, sodium ascorbate, monosodium glutamate.

Look at the labels of food products (and also laxatives and antacids) for "salt", "sodium", or "Na". What foods you eat already have sodium added to them before they came out of the package?

Table: The Salt We Can't See	
Item (with serving size)	amount salt (mgs.)
	1000 mg = 1 gram
Processed Foods	
Bacon cooked (Oscar Mayer) 2 sl	712.5
Beans, baked red kidney (B & M) 1 cup	2025
Bologna (Oscar Mayer) 2 sl	1125
Bread, white (Wonder) 2 sl	742
Bread, whole wheat (Pepperidge Farm) 2 sl	535
Cheese, natural cheddar (Kraft) 2 oz	950
Cheese, pasteurized processed American (Kraft) 2 oz	2225
Cheeseburger, Quarter Pounder (McDonald's)	3022
Green beans, canned (Del Monte) 1 cup	2312
Peanut butter (Jif) 2 tbsp	445
Pickle, dill 1 large	4820
Potato chips (Wonder) 10	775
Pudding, instant chocolate (Jell-o) ½ cup (prepared)	1215
Soup, Chicken Noodle (Campbell's) 10 oz (prepared)	2625
Soy sauce 1 tbsp	3300
Unprocessed Foods	
Beans, red kidney, cooked 1 cup	15
Green beans, fresh 1 cup	12
Peanuts, unsalted 10	5
Potato, baked 1	12

from Nutrition Action March 1978 pp. 6-7 (selected items only)

You and your salt shaker

Do we need salt in our food? Sodium is an element used by our bodies in balance with potassium (another element) to keep the proper flow of fluids among and through our cells. Too much sodium and your cells retain excess fluids. The average person probably needs only about one fourth of a gram (0.25 g) of salt a day. This equals about 1/10 of a teaspoon. You normally would eat this amount in foods *without adding any salt*.

Most Americans eat more than 10 grams of salt a day and many who like salty food consume 18 grams or more a day. There is no physiological reason for a desire for salt. Rather, it seems that salt is an acquired taste. We have learned early to like salty (and sugary) foods. Our salt addiction may begin with commercial baby foods. It has been recommended that we should try to limit our salt intake to less than 5 grams a day — that is, well under two teaspoons.

Even though you may rarely use a salt shaker at the table you may still be eating lots of sodium in processed and prepared foods (as you learned from the table above). Food processors add salt to the foods they make as a flavoring agent, sometimes to mask other less appealing tastes. It helps them use fewer natural ingredients. Only rarely is salt used nowadays as a **preservative** (in bacon and ham).



Also, salty food makes you thirsty. This is because your body needs more fluids to correct the sodium imbalance in your cells. You have probably had this thirsty experience when you ate ham or potato chips. The food manufacturers know about salt and thirst too. The Frito-Lay Company, makers of Fritos, Lays potato chips, and taco-flavored chips, is owned, not coincidentally, by Pepsico, makers of Pepsi Cola. Join the Pepsi generation! The tradition of free salted peanuts at a bar or some restaurants is also considered a good investment by the bar owner because thirsty patrons will buy more beer or soda and other drinks. Have another one?

Activity 2 — Sphygmomanometer (whew)? I can't even say it!

Make a chart on the board and have all students write in their own names where they think they belong:



Now take the **blood pressure** of each student in the class and write it next to his or her name on the chart on the board.

Once your teacher or school nurse demonstrates how to work the **sphygmomanometer** and the **stethoscope** you should be able to take turns taking each other's blood pressure. The sphygmomanometer is an inflatable rubber cuff connected to a pressure gauge. The cuff is wrapped around the upper arm and then enough air is pumped into the cuff to cut off circulation. As the air is gradually released another person with the stethoscope listens for the first sound of blood rushing through the artery while noting the pressure on the gauge at that moment.

Salt table

salt food automatically
before tasting

usually salt food
after tasting

rarely
add salt to food



The pressure measured at this point is called **systolic**, indicating the pressure exerted when the heart contracts. After the systolic pressure is noted air is continued to be released from the cuff. At the point when the sounds become muffled or disappear, the listener checks the pressure registered on the gauge. This is the **diastolic** pressure, which is the lowest level that occurs between beats, when the heart is at rest.

Blood pressure is written as two numbers, with the systolic pressure written over the diastolic pressure. *High* blood pressure is usually considered to be *greater than* 130 over 90 for adults or greater than 120 over 80 for children. Do you have high blood pressure?

Are you tense with hypertension?

Another name for high blood pressure is **hypertension**. With hypertension your heart must work harder. People with hypertension (estimated 25 million Americans) are more likely to have **heart attacks**, **strokes** or **kidney failure**. Hypertension is more common among blacks (26%) than whites (15%). Some families (white and black) seem to have more of a tendency for hypertension than other families. *Ask your parents if high blood pressure runs in your family.*

Put away the salt shaker

Look at the chart on the board: is there a pattern of one column of students having generally higher blood pressure than another column of students?

What might hypertension have to do with salting food? People with high blood pressure have long been told by their doctors to avoid salting their food. Salt has been found to cause an increase in blood pressure (by constricting blood vessels and/or increasing the blood volume) especially among those people who are more genetically susceptible. Some patterns have been seen in research studies in which people who like salty food are also the same people who tend to have high blood pressure. Cutting down on salt intake will probably decrease your chances of damage to your circulatory system by hypertension. Hypertension used to be thought of as a problem for older people but it is becoming more common among young people.

Just because salt is "natural" doesn't mean that it isn't dangerous. Watch your friends at lunch and your family at home. Do they salt their food automatically before they taste it? Is salt routinely added to food while cooking at home? Do they think salt is harmless?

Eating salty food brings with it the cost of higher health risks. You might want to try to kick the salt habit for a week to see if you can do it and how you feel.

For additional discussion - Should labels appear on certain foods similar to the warnings on cigarettes? "Caution - Doctors have determined that salt is dangerous to your health." Or should high sodium foods have a salt shaker symbol on the package?

Note: If your blood pressure reads high during the classroom determination, you should have it re-checked by a doctor or nurse to be sure.

The Big Killers UNIT II SECTION 4

How sweet it is!

How much sugar do you eat? List on the board all the foods you ate yesterday that contain sugar or you think may have contained sugar.

How many sweetened foods do you think you ate last week?

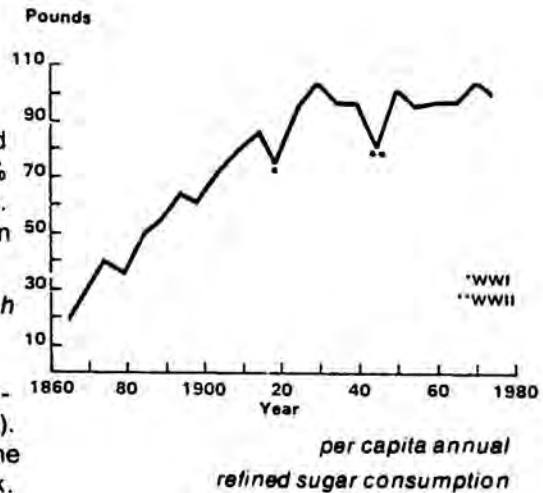
What percentage of your diet do you think contains sugar?

Do you know that unsuspecting foods like peanut butter, canned corn, and spaghetti sauce contain sugar? Tomato ketchup is 29% sugar, Russian dressing is 30% sugar, and Coffee-Mate is 65% sugar. Compare these to a Hershey bar which has 51% sugar or ice cream which is 21% sugar.

So guess again. How much sugar do you *really* eat each day? *Each year?*

Let us look at some interesting facts. The average American consumes about 128 pounds of sugar a year (or 316 tons in a lifetime!). This comes out to about two pounds per week or 3/4 cups a day. Some teenagers are estimated to eat as much as five pounds of sugar a week. That's as much as the average American ate in one year back in 1900.

Sugar creeps into our diet in a multitude of ways, only some through the sugar bowl on our table or through baking of desserts. Let's find out how by going on a "scavenger hunt" in the supermarket.



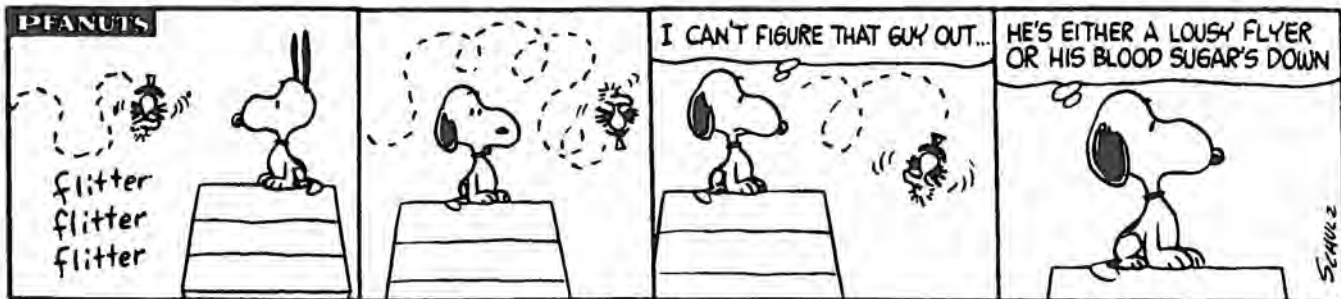
Activity 1 — Scavenger hunt

Look for the following foods on your supermarket shelves and find the sugar listed on the label. Then rank order the products according to the amount of sugar it contains. You can estimate this by the place of sugar in the list of ingredients. For example, if sugar is listed first, then the ingredient in the greatest quantity is sugar. Look also for words like sucrose, dextrose, corn sweeteners, corn syrup, maltose, fructose, lactose: they are all sugars.

salt	Jell-o
Gaines-burgers	Apple Jacks
Ritz crackers	Shredded Wheat
Shake 'n' Bake Bar-B-Q	Post Raisin Bran
Hamburger Helper	



Workbook/CPF



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Why is sugar added to so many foods?

Sugar is definitely a profit-making **commodity**. The food industry processes most of the foods we find in the supermarkets and uses sugar as a cheap additive or filler (only 10 cents a pound wholesale). Yet they will charge \$1.69 for Sugar-frosted flakes when Corn flakes cost only \$1.19. They take advantage of our sweet tooth. Whether we are born with a craving for sugar or we acquire an addiction (starting with sweetened baby foods, sugared snacks and infant formulas), we eagerly buy sweetened products. Nabisco recently even doubled the amount of sugar filling in an Oreo!

Some sugar in processed foods serves functions other than adding sweetness. Sugar absorbs and retains moisture and keeps foods from drying out rapidly. Sugar makes ice cream and other frozen desserts smoother and keeps them from melting too quickly. It can act as a **preservative**. Food corporations can use it to replace more expensive and nutritious ingredients.

Empty calories

But isn't sugar a natural food and one of the carbohydrates which we need? Sugars are natural products of various plants (fruits and vegetables). Sucrose (table sugar) comes from sugar cane or sugar beets. Even unsweetened apple juice still contains sugars, but there are two important differences: fruit juice gives you other **nutrients** besides **calories**, and the main fruit sugar, fructose, is somewhat easier on tooth surfaces than sucrose. Table sugar is **empty calories**. Many widely advertised "natural" or "old-fashioned" food products are still laden with added sweeteners. Raw sugar, brown sugar, turbinado sugar, or molasses offer no health advantages over the undisguised white stuff; it's all sucrose sugar. The only advantage of honey (mostly fructose sugar) over table sugar is that since it is so sweet you tend to use less of it.

Sugar is a carbohydrate and we do need carbohydrates in general as a large part of diets, but there are good carbohydrates and bad carbohydrates. It is important to eat lots of **complex carbohydrates** — starch and fiber — while cutting down on **simple carbohydrates** — sugars, especially those found in refined and processed foods.

Fat is fattening!

Activity 2 — High in Calories

Check off the foods you think are fattening. Why did you check them?

- | | | |
|-----------------------|-----------------------|----------------------|
| 1. Apples _____ | 5. Spaghetti _____ | 9. Celery _____ |
| 2. Hot dogs _____ | 6. Pork chops _____ | 10. Roast beef _____ |
| 3. Bread _____ | 7. Baked potato _____ | 11. Rice _____ |
| 4. Cream cheese _____ | 8. Bologna _____ | 12. Ice cream _____ |

Place an X next to the foods your teacher tells you are more than 50% fat.

Do the X's differ from your checks?

What is similar about the high-fat foods?

Were you surprised to find that potatoes do not contain much fat? This is not always true. When do you think potatoes are fattening?

Let's compare the "fat calories" in a baked potato and in French fries. To do this you must know that fats have 9 Calories per gram, carbohydrates have 4 Calories per gram and proteins have 4 Calories per gram.

A baked potato weighs 99 grams.

It has:

3 grams protein
21 grams carbohydrates
0 grams fat

How many Calories does it have?

A serving of 17 French fries weighs 97 grams

1.7 grams protein
34 grams carbohydrates
12 grams fat

How many Calories does it have?



Activity 3 — Peanut butter sticks to the roof of your mouth

Not all fats are the same. Look at two jars of peanut butter: one, a conventional jar bought in the supermarket, the other, the unprocessed "natural" kind. What differences can you taste? Compare the tastes.

Labels: Skippy — peanuts, dextrose, hardened (hydrogenated) vegetable oil, salt, sugar.

"Natural" peanut butter — peanuts, (salted or no salt added)

1. Why doesn't Skippy separate out?
2. What are the differences in the label?
3. What does hardened or hydrogenated mean? What is its effect on the peanut butter?
4. Why is there sugar and/or dextrose in peanut butter?
5. Fifty years ago you would never have found peanut butter to buy like Skippy. Now unprocessed or "natural" is harder to find. Why?

Activity 4 — Who is Mr. Cholesterol?

You have probably heard the word cholesterol but do you know what it is? Which of the following statements are true?

1. Cholesterol is found only in foods that come from animals.
2. The amount of exercise affects the amount of cholesterol in our blood.
3. Cholesterol is found in our body and is necessary for life.
4. Everyone is equally affected by the amount of cholesterol they eat.
5. Everybody with high amounts of cholesterol in their blood will have a heart attack at some point in their lives.

Check the foods which you think are high in cholesterol:

eggs
cornchips
butter
cheese
bread
beef
corn oil
ice cream
spaghetti
milk
margarine
watermelon



Even if it doesn't kill you, you'll need false teeth

Your sweet tooth

Refined and processed sugars compose almost 20% of our diet. Sugar helps to rot your teeth. Tooth decay is considered the most widespread nutritional disease. 98% of the American population have **dental caries**. The sugar you eat is food for the bacteria normally present in your mouth. Bacterial activity on sugar produces **glucan** which sticks to the tooth surface and hastens the build-up of **plaque**. Other bacterial byproducts are acids: lactic, formic, and acetic. These acids are held by the plaque against the tooth surface and attack the tooth enamel. Sticky candy can do more damage to your teeth than a soft drink because it sticks around longer. Sugary snacks are worse than sweet desserts or foods eaten at meal time.



BROOM HILDA

By R. Myers

I can't believe I ate the whole thing!

America as a nation is growing fatter. About 20-30% of Americans are overweight — more than 10% above the normal weight for height. Sugary foods have replaced more nutritious foods. The sugar itself doesn't make you fat; it's the excess calories and the fact that it dulls the appetite for more nutritious foods.

Another problem is that we eat too much fat. Fat is an essential part of our diet; it helps us absorb vitamins and keeps us from getting hungry. But we are eating 30% more fat now than in 1919 and we are not as physically active. More and more people are **obese** and **obesity** is bad for a person's health. It increases the probability of such disorders as heart disease, high blood pressure, diabetes, gallstones, varicose veins and arthritis.

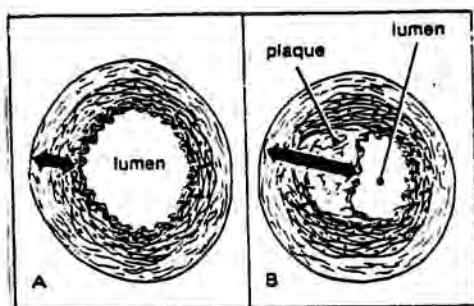
Sugar and fat kill

As American consumption of sugar and fat has increased since the turn of the century, so has the incidence of heart disease and cancer, the two most common causes of death in the U.S. Too much sugar, fat, and cholesterol are linked in complex ways to many common health problems. Reduction of sugar, fat, and cholesterol may help us avoid "modern day" diseases. Prevention requires personal health changes now to avoid the pain of disease and the expense of cures later.

Activity 5 — Family history survey

Did or do your grandparents, aunts, uncles, mother or father suffer from heart disease? What have been the causes of death in your family? What diseases do your relatives currently have? What illnesses run in your family?

Take the following list home and put a check beside the diseases which affect or have affected your family.



Diagrams show cross-sectional views of (A) a normal coronary artery of a person who died, and (B) a severely diseased coronary artery of a middle-aged man who died of a heart attack. The arrows indicate the thickness of the artery wall. Note the large opening or lumen through which blood was able to flow freely in the normal artery, and the markedly reduced lumen, which has been largely replaced by an atherosclerotic plaque, in the diseased artery.

American Heart Association

- | | |
|-----------------------------------------|-------------------------------------------------------------|
| <input type="checkbox"/> heart attacks | <input type="checkbox"/> hypertension (high blood pressure) |
| <input type="checkbox"/> stroke | <input type="checkbox"/> diabetes |
| <input type="checkbox"/> cancer | <input type="checkbox"/> varicose veins |
| <input type="checkbox"/> accidents | <input type="checkbox"/> arthritis |
| <input type="checkbox"/> gall stones | <input type="checkbox"/> obesity |
| <input type="checkbox"/> kidney failure | |

If you tally up the results for the whole class, you might find that heart attacks, strokes, and hypertension are very common.

Heart disease or cardiovascular disease is the leading cause of death in the U.S. There are many types of heart disease but they generally fall into three categories:

heart attack — blood cannot get to the heart muscle and without enough oxygen heart cells die

stroke — blood cannot get to the brain and without enough oxygen, brain cells die

high blood pressure (hypertension) — the heart has to pump very hard to get blood through the body

Heart attacks and strokes occur when the blood vessels get "clogged up". Think of this as a process similar to when a pipe which is old has crust built up.

insert graphic

The wider the opening, the easier blood can pass through. The smaller the opening the harder the heart has to push to get blood through. When a person's heart has to pump very hard, she/he has high blood pressure.

How can you tell if someone has strangled blood vessels? You can't. But we know that some people are more likely to have clogged vessels than others. If a person has high blood pressure, smokes cigarettes, is obese, or has high amounts of cholesterol in their blood, that person is more likely to have a heart attack or stroke than people who do not have any of these **risk factors**.

Food From a Factory

UNIT II
SECTION 5

Activity 1 — Which would you rather eat?

Read the following two lists of ingredients taken from the labels of two food products sold in the supermarket. Which would you rather eat? Why?

Whole dressed turkey, water, bacon, seasoning (salt and onion powder), and vitamins and minerals (potassium chloride, iron oxide, vitamin E supplement, vitamin A supplement, thiamine, niacin, manganese sulfate, copper oxide, cobalt carbonate, potassium iodide, riboflavin, vitamin D supplement)

Water, hydrogenated coconut and palm kernel oils, sugar, vanilla, sodium caseinate, dextrose, polysorbate 60, sorbitan monostearate, carrageenan, guar gum, artificial color and flavor.



After everyone in the class has made their choice, your teacher will tell you what products A and B are. Are you surprised?

Food from a factory and not from a farm

More and more foods we buy today are processed and fewer and fewer are raw, fresh and not tampered with. What is processing?

Processing is doing anything to the food to change it from its natural form.

Foods lose something during processing. Processed foods may also slowly lose nutrient value as they sit on the shelf for a long time.



Examples of food processing

PROCESS	FOOD TYPE	HOW	REASON	RESULTS
canning	vegetables, fruit	boil at high pressure and high temp.	preservation	long shelf life: also nutrients lost, fiber breakdown, often higher salt or sugar
dehydration	powdered eggs, instant soup	water removed turned into powder or flakes	preservation	long-shelf life year-round production convenience in preparation taste impaired laced with additives
frying	potato chips	oils or fats	innovation appeal	saturated fat added more expensive per pound higher calories vitamin C destroyed
refined grain products	white flour	milling to remove wheat germ and bran, sometimes bleached	preservation appeal	long shelf life smooth texture fiber lost B vitamins, vitamin E, and trace minerals lost
enrichment	grain products - bread and pasta	add back a few of nutrients lost in refining	keep food from being entirely worthless very cheap to do	prevent gross vitamin B deficiencies advertising ploy
fortification	iron in bread vitamin D in milk iodine in table salt	additives	government guidelines because deficiencies historically common low cost	less anemia, rickets, or goiter causes reliance on "artificial" sources sales gimmick



PROCESS	FOOD TYPE	HOW	REASON	RESULTS
dough conditioners	bread	chemicals ensure easier kneading and rising	uniform texture appeal	bread bubble-free and squeezably soft
caramel color	whole grain and egg breads	additive	suggest that more whole grain or egg used than actually was	deceptive avoids use of expensive ingredients
skimming	milk and cheese	cream removed	consumer demand	lower calories lower saturated fats and cholesterol vitamin A lost cream used elsewhere
emulsifiers	salad dressings ice cream	additives (similar to soap) added to keep oils from separating from mixture - mono and diglycerides, polysorbate	appearance	no need to shake salad dressing aids in freezing ice cream
thickeners	sauces MacDonald shakes	starch and cellulose derivatives agars and gums	stabilize mixture imitate home-made appearance cost effective	good mouth feel substitute for natural ingredients
flavor additives	Bar-B-Q flavored chips soda pops and drinks	natural and artificial	improve taste mask flavor of synthetic food or flavor lost in processing	many foods salty or sweet consumer unused to natural taste additives not listed individually on label
color additives	mint jelly - green butterscotch pudding - orange marashino cherries - red ham - pink	natural sources and coal tar derivatives	improved appearance mimic natural food	consumer expects colorful food danger of carcinogens and mutagens



You yourself may process food after you bring it home to your kitchen. If you chop an onion you are processing it. If you boil fresh vegetables for a long time and throw away the cooking water, you have discarded many of the important vitamins just as the food industry might have in their processing plant. You can learn to be careful in how you prepare your food. You can buy fresh, wholesome foods or you can buy highly processed foods. The food industry would like to be able to sell more and more of your food in a processed form. Here are some of their reasons for processing food:

Preservatives (such as sodium propionate in bread) are added to processed foods or to the packaging to make foods last longer. Spoiled and rotten food can be a serious loss of money to the food industry. Processing allows them to ship foods long distances from one main growing area (such as California) or from one large centralized processing plant to any other part of the country or the world. Processed foods have long shelf lives of months or years instead of only days; this is an advantage both in warehouses and supermarkets as well as on the kitchen shelves of the purchaser. Processing permits the economic and efficient practice of large-scale food industries selling a food year-round instead of only at harvest season.

Many so-called **convenience foods** have been processed so as to require less effort and time in the kitchen preparation or so as to be sold at fast-food restaurants. Convenience foods are always more expensive than their unprocessed counterparts but the food industry says that the additional price is fair because they are supplying "maid service". The question really is: do people *want* and *need* convenience foods for the fast pace of modern life or has the availability of convenience foods itself helped to change our cooking and living habits?

A part of the high cost of convenience foods comes from the advertising on the brightly colored food packages — do we need this?



Activity 2 — What happened to the potato?

Let us look at one food which has become subject to more and more processing: the common potato. The following table of different potato products gives their price and their package size.

Calculate for each one the *price per pound* (remember that there are 16 ounces in one pound.)

potato product	package price and size	price per pound
fresh potatoes	\$1.29 for 10 pounds	
fresh potatoes (Idaho baking)	\$1.19 for 5 pounds	
sliced canned potatoes	71¢ for 39 ounces	
frozen French fries	31¢ for 9 ounces	
frozen potato puffs	\$1.09 for 32 ounces	
(Orelda Tater Tots)		
Instant mashed potatoes	\$1.29 for 26.7 ounces	
potato sticks	87¢ for 7 ounces	
potato chips	89¢ for 7.5 ounces	
potato chips in snack packs	85¢ for 4 ounces	
au gratin potatoes (dried)	81¢ for 5.5 ounces	
hamburger helper	87¢ for 7 ounces	
(for potato stroganoff)		
Munchos	79¢ for 5 ounces	
Pringles	\$1.19 for 9 ounces	

Increased Processing

What happened to the price of potatoes per pound as they have become more processed.

Why do you think that Proctor and Gamble invented Pringles and spent \$15,000,000 the first year to advertise its introduction? P & G says that the consumer was unhappy with crumbled potato chips and bulky packages and they just recognized a consumer need. Were you one of the American consumers who worried about broken potato chips?

The Pringles chip is made by reconstituting dehydrated potato mash into a precisely stacked mold. The chips are stacked neatly into a tennis ball can and then shipped across country. This has allowed P & G to compete against local chip makers, and P & G can use its enormous finances for national advertising (\$7.8 million spent in 1977 alone to advertise Pringles). It also has allowed a shelf life of at least a year without tasting stale. The product is highly profitable.

Eat a Pringles chip bottom down. Next eat another Pringles chip top down. Do you taste a difference? You should. (See below.)

"Taste" has been reinjected on only one side during the processing.

What Are They Putting in my Food?

Activity 1 — It takes longer to read than to eat!

Bring in food labels from home.

1. What foods have the longest ingredient lists?
2. For each food, what is the main ingredient (listed first)?
3. What are the additives?
4. Find out what each additive does and if it is safe by doing some quick research in *Eater's Digest* by Michael Jacobson.

Chemical additives

Additives may not only be *intentional* — put there on purpose by a food company — but some are *incidental* — they got into the food by "accident". Examples of incidental additives are:

- DES (diethylstilbesterol) — a **synthetic** sex hormone to make cattle and chickens grow fatter faster
- PCBs (polychlorinated biphenyls) — cooling agents from electrical transformers
- aflatoxins (natural poisons from molds on peanuts, etc)
- insecticide residues such as DDT
- insect fragments and other filth

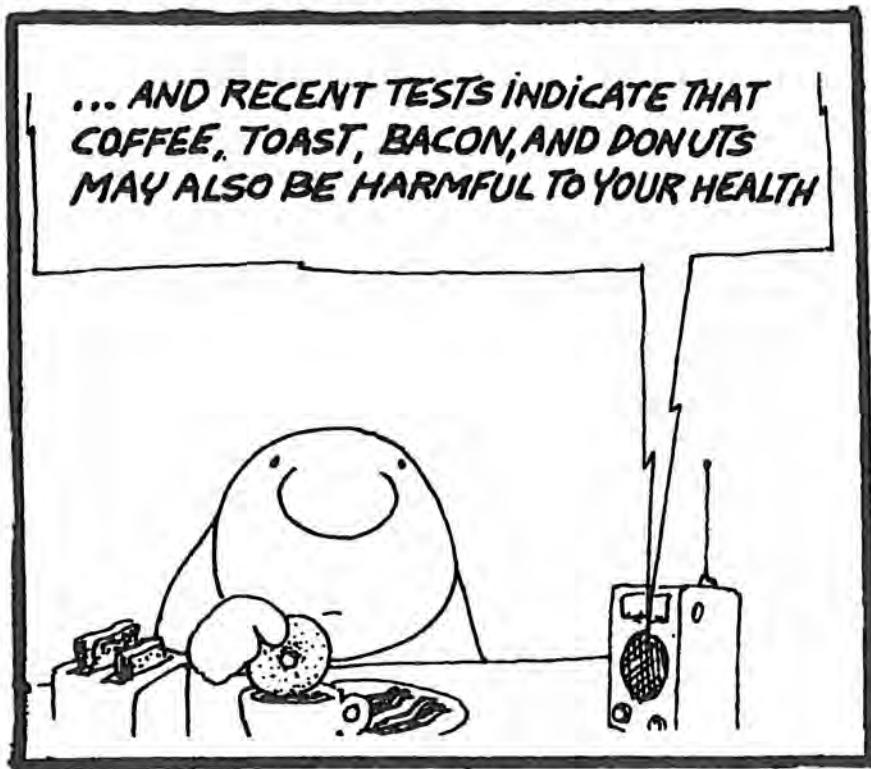
The U.S. Food and Drug Administration (FDA) is responsible for regulating all food additives and ensuring the safety of our food. Some additives are now banned, especially some of the *artificial colors* derived from *coal tars*, such as Red Dye # 2. If you've ever eaten maraschino cherries, then you also ate Red Dye # 2. Others are listed as **GRAS** — Generally Recognized as Safe.

Often the food industry and consumer advocates may disagree as to what should be GRAS. Does the food industry have the same interest as the consumer in supporting the ban of additives? Industry helps pay for tests which are expensive and time-consuming. But remember: tests done on healthy animals one additive at a time show nothing about the interactions of several additives or the effects on especially susceptible individuals.

Some chemicals can be added to foods only *below* a certain **tolerance** level because they are **toxic** (poisonous) at high levels. Other additives cannot be in the food at *any* level because they are **carcinogens**. Carcinogens cause cancer and only a small amount may be necessary to start the growth of a few cancerous cells in your body. Carcinogens do not make you sick right away; they are a "slow poison". It may take up to 20-30 years after exposure for cancer to show up in a human being.



In 1958 Congressman Delaney (whose wife died of cancer) pushed for the approval of an amendment to the Food, Drug, and Cosmetics Act which bans the use of any chemical in food in any amount if it has been shown to be carcinogenic in people or in animals. The food industry has made frequent energetic efforts to get the Delaney Clause repealed and especially lobbied Congress after the FDA tried to remove saccharin from all foods in 1977. The food industry argues that the Delaney clause is too strict and would even exclude natural toxins. Should we be prohibited from eating peanuts?



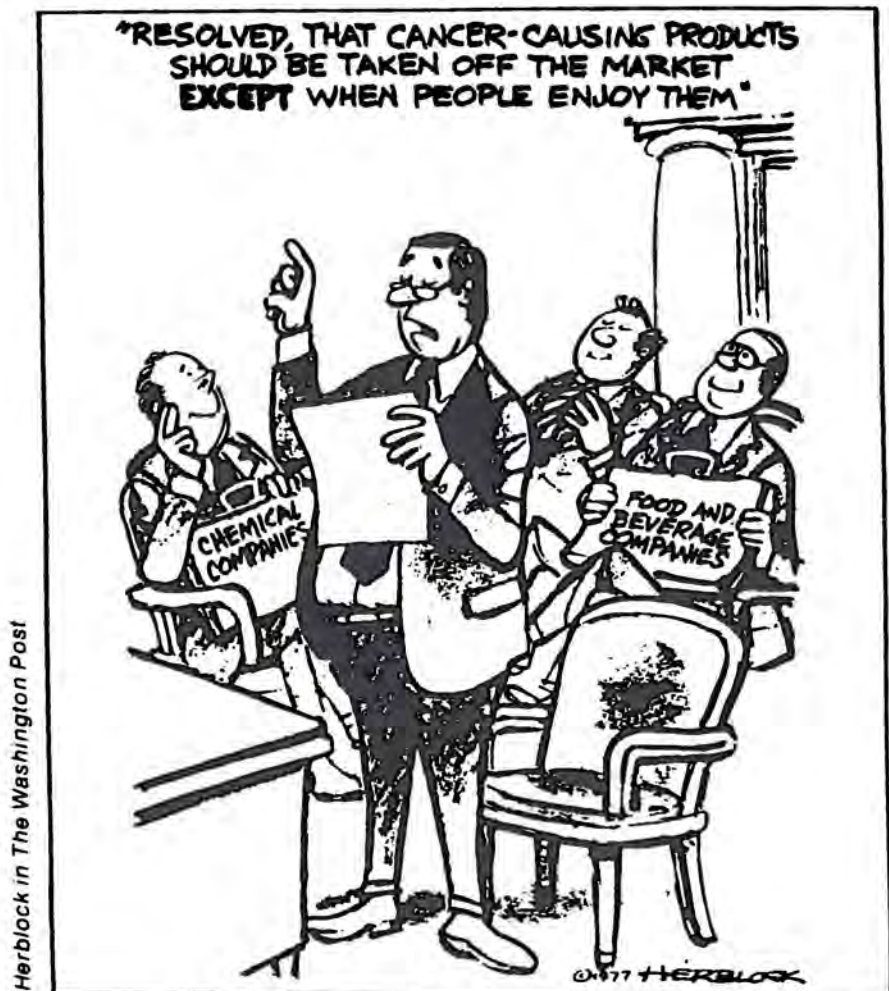
The history of regulation of food additives by the FDA and other governmental agencies has not been encouraging. Foot dragging by the FDA has delayed for years the banning of additives once thought of as GRAS. For example, it took more than 15 years to ban Red Dye # 2 after it was blamed for birth damages in animals. This was a case of heavy industry pressure to retain one of their most widely used "U.S. Certified Colorings" almost winning out over public pressure.

It took great consumer uproar to override the FDA inaction to get the baby food industry to finally remove in 1969 the flavor enhancer MSG (monosodium glutamate) from their baby foods. MSG was in baby foods mainly to satisfy the parents' taste buds but research showed that it may be hazardous to the baby's brain development. The FDA has yet to act on MSG and it still remains on the GRAS list.

The fight over the artificial sweetener **saccharin** is still raging today and articles about this issue appear frequently in newspapers and magazines. The debate over saccharin centers on the possible *risk* of cancer of the bladder vs. the supposed *benefits* to diabetics and obese people who want sugar-free sweeteners.

Also in the news today is the chemical **sodium nitrate** which is added to cured meats: hot dogs, ham, bologna. Since meat is under the jurisdiction of the U.S. Department of Agriculture, it is the U.S.D.A. who must decide if the cancer *risk* of nitrates outweighs the *benefits*. Nitrates prevent food poisoning from **botulism**. Weighing risks against benefits is often a part of the debate over whether to ban an additive, additive.

The banning of nitrates by the U.S.D.A. has been delayed again and again by postponements and **stays of execution**. Why don't federal agencies like the FDA and USDA act quickly to protect us from food additives shown by research to give risks of cancer, or birth defects? Part of the answer for the footdragging comes from the close ties of the government's regulatory agencies with the industries they are supposed to regulate. Many of the people who run the FDA and USDA were once employees of the food, cosmetics and chemicals industries and many of the people who leave the government find desirable jobs waiting for them in these industries. This has been called the "revolving door" policy. Officials of the FDA and USDA who have hesitated, postponed and delayed regulatory decisions have often been assured of a good job in a few years — sort of a "deferred bribe".



Activity 2 — Synthetic foods

More of the foods products sold in the stores are entirely synthetic, products of a food chemist's imagination, rather than of a chicken or a tree. Some foods are being developed from **petrochemicals** or from **torula yeast** which can be grown on petrochemicals. There is now fake chocolate and fake tomato flavor — both cheaper for the manufacturer and more profitable to use than the real thing.

Can you guess what each of the following food products is?

Do you agree with other people in your class? Give it a try!

A. water, syrup, shortening, sugar, whey solids, food starch modified, dextrose, sodium caseinate, flavoring gelatin, whole milk solids, monosodium and diglycerides, salt, vinegar, polysorbate No. 60, vanilla, monosodium phosphate, guar gum, lecithin, artificial color in a crust of wheat flour, sugar, shortening, water, dextrose, graham flour, sorghum grain flour, salt, sodium bicarbonate, ammonium bicarbonate, artificial flavoring and coloring.



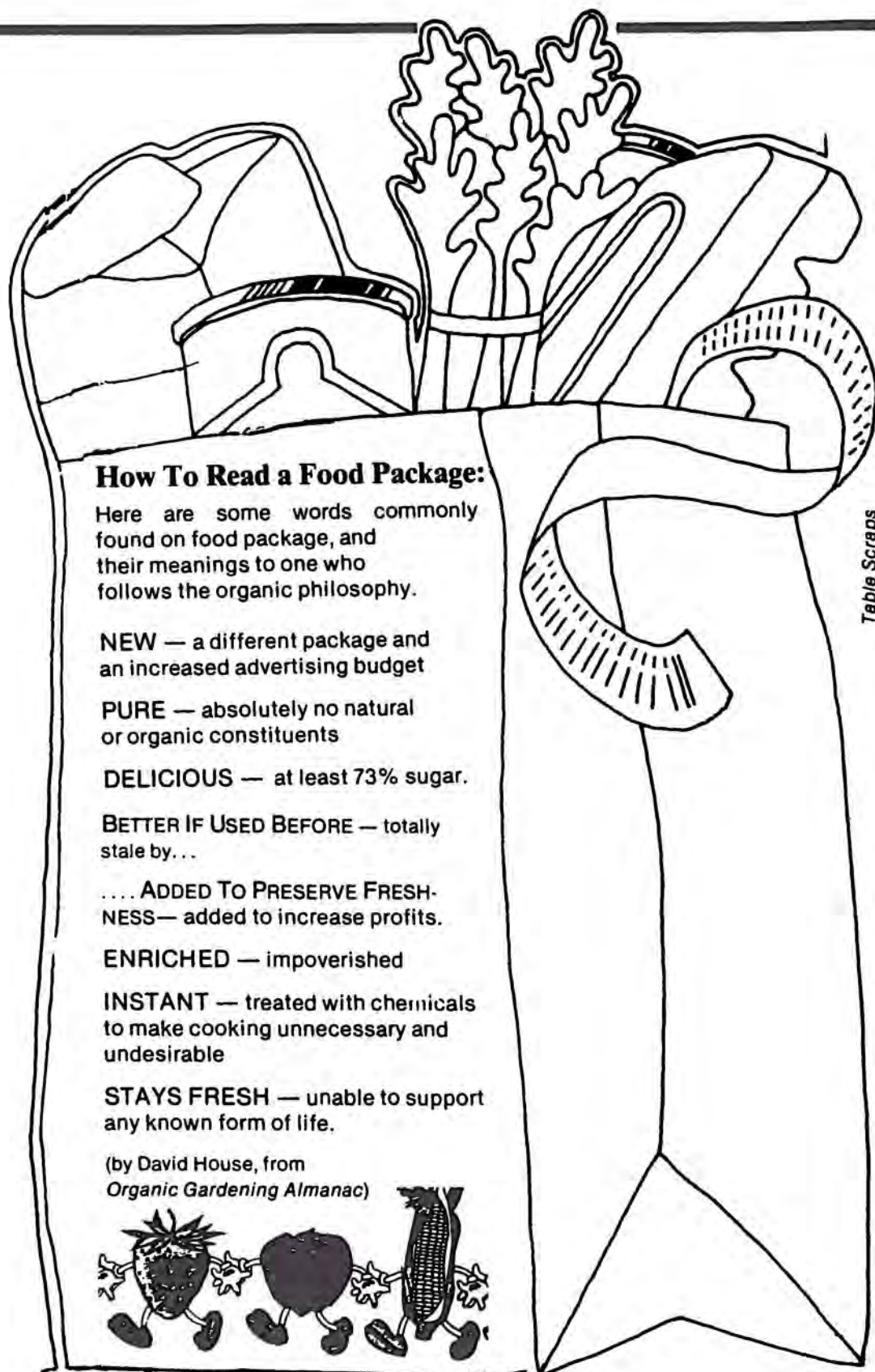
Tom Chalkley Nutrition Action

B. water, sugar, nonfat dry milk, whey solids with calcium hydroxide and disodium phosphate, modified tapioca starch, hydrogenated vegetable oil, cocoa processed with alkali, emulsifiers (sodium stearoyl-2-lactylate, polysorbate 60, and sorbitan monostearate), artificial color and flavor, sodium caseinate, salt, dextrose, carraggenan, guar gum.

C. sugar, citric acid, malto-dextrin, calcium phosphate, potassium citrate, natural orange flavors, ascorbic acid (vitamin C), artificial flavor, cellulose and xanthum gums, artificial colors, vitamin A, and BHA and alpha-d-tocopherol.

You may want to look up some of the ingredients in Michael Jacobsen's *Eater's Digest* to see what their purpose is.

Your teacher will give you the real name of the food when you are done. What is your reaction?



How To Read a Food Package:

Here are some words commonly found on food package, and their meanings to one who follows the organic philosophy.

NEW — a different package and an increased advertising budget

PURE — absolutely no natural or organic constituents

DELICIOUS — at least 73% sugar.

BETTER IF USED BEFORE — totally stale by...

.... **ADDED TO PRESERVE FRESHNESS**— added to increase profits.

ENRICHED — impoverished

INSTANT — treated with chemicals to make cooking unnecessary and undesirable

STAYS FRESH — unable to support any known form of life.

(by David House, from
Organic Gardening Almanac)

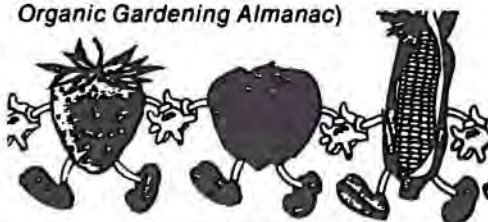
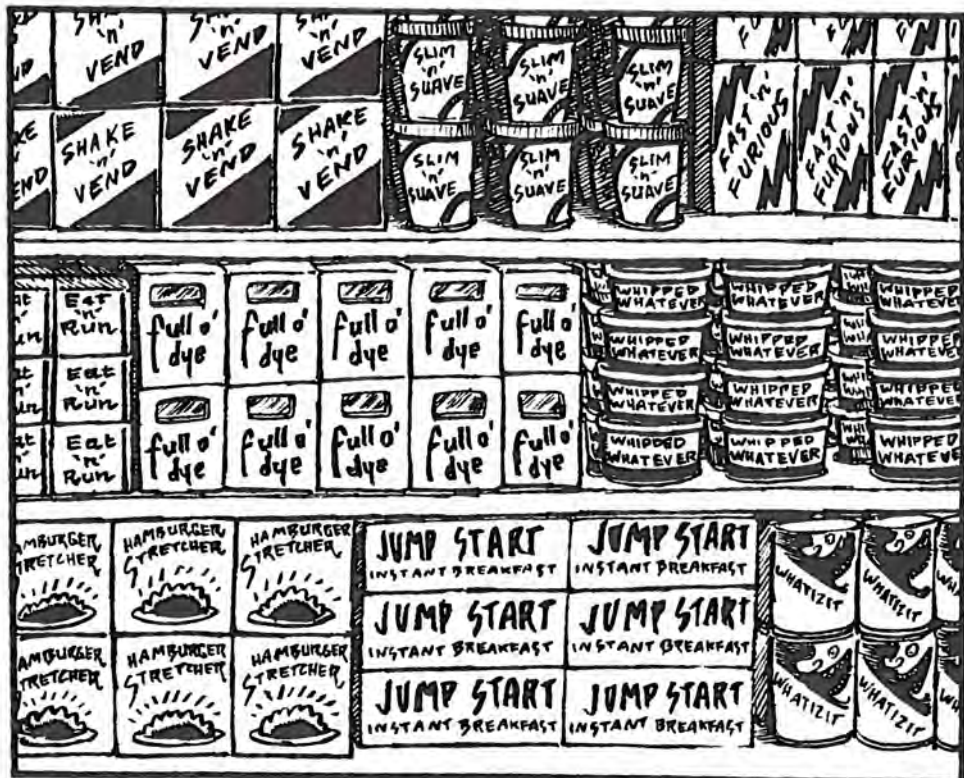


Table Scraps

UNIT III

Nutritional-Industrial Complex



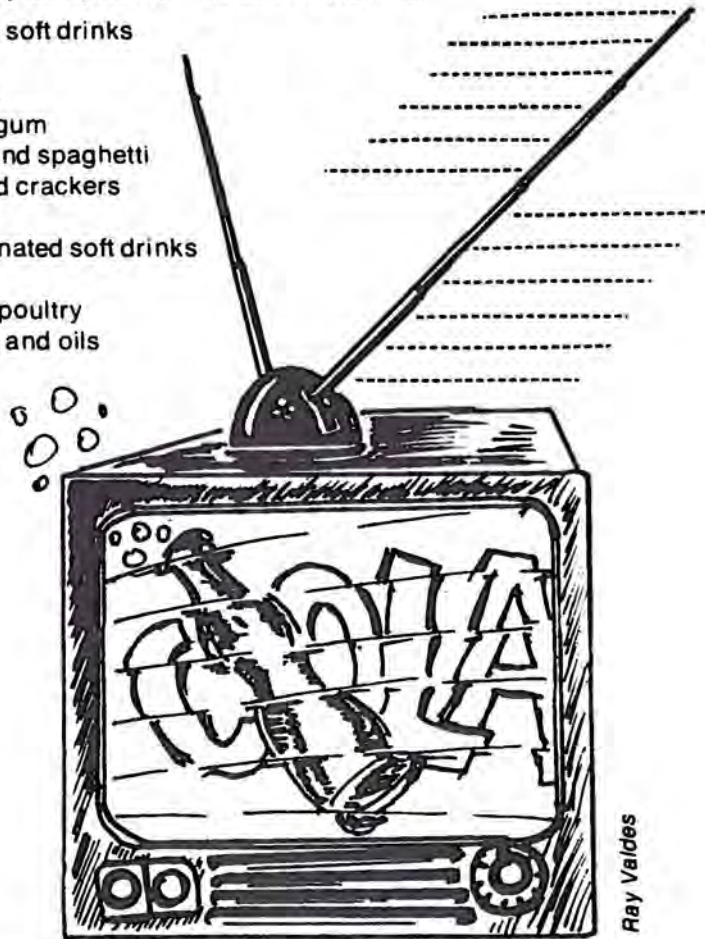
Nick Thorkelson

Tastes Like Love

Activity 1 — Junk food derby

Below are listed twelve (12) foods. On the television antenna rank the foods from the one you think is *most* advertised at the top, to the one you think is *least* advertised at the bottom. Discuss your guesses and how they compare with the actual answers.

carbonated soft drinks
desserts
citrus fruits
candy and gum
macaroni and spaghetti
cookies and crackers
vegetables
non-carbonated soft drinks
cheese
meats and poultry
shortening and oils
cereals



ANSWERS

most advertised
1. cereals
2. candy & gum
3. shortening & oils
4. cookies & crackers
5. desserts
6. non-carbonated soft drinks
7. carbonated soft drinks
8. meats & poultry
9. macaroni & spaghetti
10. vegetables
11. citrus fruits
12. cheese
least advertised

Is the order of foods advertised from most to least often similar to your own food preferences (yes/no)?

Today, the average diet contains an excess of both sugar and fat, two nutrients in the greatest quantity of those foods most often advertised. Sugar and fat also contribute to modern health problems such as dental caries (cavities), obesity and heart disease. If your food preferences are similar to the majority of American adolescents, you eat over 100 pounds of sugar a year and 30% more fat than a teenager ate in 1910. Both these nutrients are important parts of a healthy diet but are only necessary in much smaller quantity. What else besides advertising do you think influences people's preferences for less than healthy diets?

Below, list four other influences that affect your food choices besides TV advertising:

Rank order them in the order that they influence your food choices. Discuss your list with the group and together decide on the most influential pressure on your diet.

Food Influences

- 1.
- 2.
- 3.
- 4.

Activity 2 —

For the 12 advertised foods listed in the activity, decide on the order in terms of the *most healthy* to the *least healthy*. Are healthy foods advertised more or less than less healthy foods?

Activity 3 —

Watch two hours of "kid-vid" TV on Saturday morning and record all commercials. Sort the food commercials into the 12 categories listed above.

1. What image are you sold associated with the product?
2. What nutritional quality information are you given?

Watch two hours of prime-time TV, and repeat the observation of the commercials.

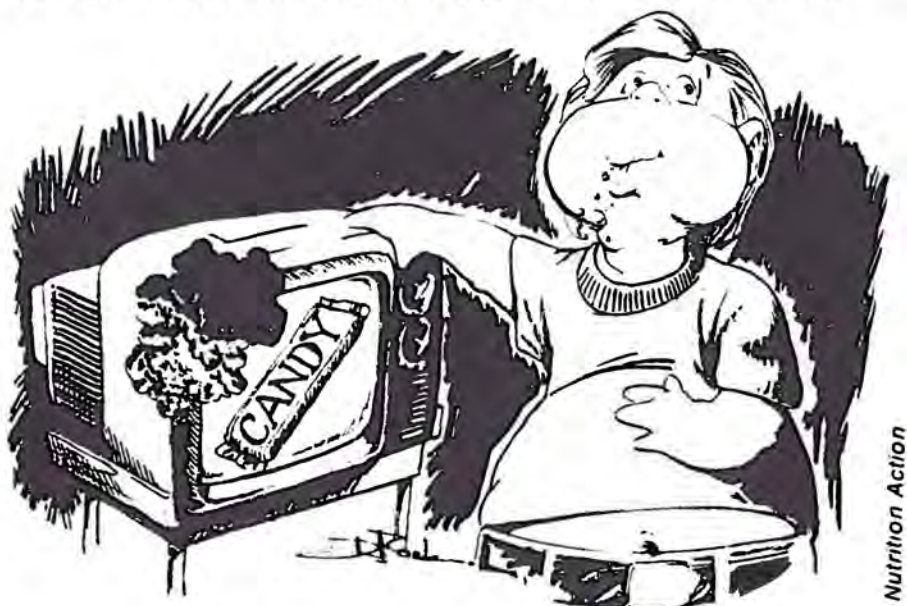
Discuss the audience reached in each time slot and compare the techniques used. Are more food products advertised to children or to adults?

Activity 4 —

Write alternative ads for foods that are good for you. Decide what appeals to the consumer and what qualities of the food product you want to sell. Try them out on your class.

Activity 5 —

Rewrite common TV ads to reflect what is really being sold. Sugary cereals do not make you stronger or better liked; tell it like it is



Nutrition Action

Survival of the Fattest

Bigger and bigger and bigger

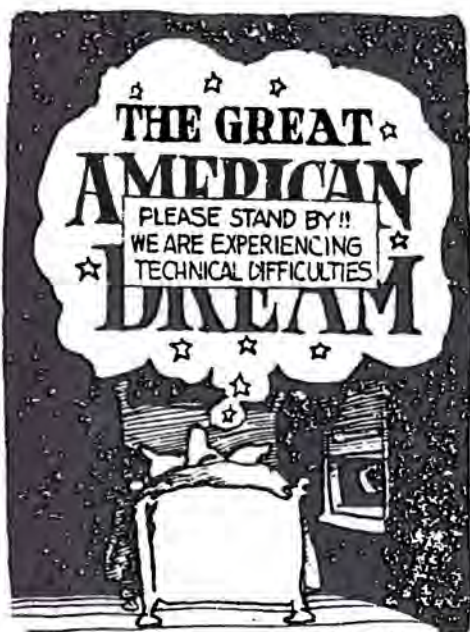
You have heard many times that sugar is bad for your teeth and that too much sugar can make you fat which is a stress on your heart. There are also some important lessons to be learned from how the sugar arrives in the sugar bowl on your kitchen table. It is likely that the sugar comes from the Dominican Republic (an island in the Caribbean). Gulf and Western brings it to you under the Domino-Amstar label. Gulf and Western is called a **multinational conglomerate**. In the Dominican Republic (D.R.), Gulf and Western is called *El Pulpo* or The Octopus.

When Gulf and Western was first founded they did not grow or refine sugar. Twenty years ago Gulf and Western was a one-line automotive parts business — Michigan Bumper. Then it started to invest its profits and to grow. Now it offers more than 850 types of products and services, most of which have nothing to do with autos. This **diversification** doesn't mean that Gulf and Western created new products. It became a diversified conglomerate by buying up pre-existing smaller companies which made different unrelated products. There is security in diversity; losses in one **subsidiary** can be made up by profits from another.

Gulf and Western operates in all 50 states and in 50 foreign countries including the D.R. Because of this it is called **multinational**. Many conglomerates nowadays are multinational. They mine, harvest, manufacture and sell in several different countries. Multinationals usually locate their manufacturing and harvesting operations in countries where people will work for the lowest wages. Because they do not belong to any one country, multinationals are a law unto themselves and they do not pay taxes.

Besides sugar, what else does Gulf and Western own? Gulf and Western is truly a conglomerate. It owns:

- Paramount Pictures (*Godfather I and II*; *Airplane*, *Urban Cowboy*; TV series *Happy Days*)
- Consolidated Cigars (*El Producto*, *Muriel*, *Dutch Masters*)
- Schrafft's candies
- Simon and Schuster (book publisher)
- Madison Square Garden (with New York Rangers and Knicks)
- New Jersey Zinc
- Kayser-Roth (Catalina swim suits, Supp-Hose, Mojud stockings, and the Miss Universe pageant)
- finance and insurance services
- cement and building products



A Working Economy for Americans/cpl

El Pulpo

Twenty-five per cent of Gulf and Western's income now comes from raw sugar. They came into the Dominican Republic in 1966 by buying out the South Puerto Rico Sugar Company. This was shortly after the U.S. Marines helped set up a government in the Dominican Republic friendly to the U.S. The Dominican Republic government

welcomes Gulf and Western as an important source of foreign earning but these foreign earnings have not meant food for the people there. Over half of the children of the poor farmers die of malnutrition before they are five. Cane cutters are paid about \$1.50 a day to cut a ton of sugar cane. Gulf and Western has destroyed the labor unions and despite high unemployment in the Dominican Republic brings in laborers from Haiti willing to work for low wages.

Even though the economy of the Dominican Republic is crippled by Gulf and Western's influence they seem locked into the sugar crop. Gulf and Western owns or controls much of the Dominican Republic's best farmable land. This land is used to grow sugar and beef for export instead of the nutritional food the people lack. Gulf and Western has reinvested money in the Dominican Republic, largely in tourist hotels, cattle ranches and sports arenas. Gulf and Western owns a tax-free industrial zone near their large sugar mill at La Romana, D.R. to which they attract foreign investors by advertisements of unlimited cheap labor.

Of course Gulf and Western is not responsible for all the problems of the Dominican Republic. They even boast in their annual report of their social responsibility through job training, a drinking water aqueduct and an agricultural school they have paid for in the Dominican Republic. But their charitable image aside, Gulf and Western contributes to human suffering as they try to maximize the profits of their sugar enterprises. The profits of multinational conglomerates do not take into account the human costs. The fact that Gulf and Western has much greater power than the government of the Dominican Republic means that a quick and easy solution is unlikely.

The power and size of multinational conglomerates is hard to understand but the following supermarket-visiting activities may help.

Activity 1 — Whose grandmother made this jar of pickles?

Look for each of the food-products in the following list in the supermarket (a few of them may not be available in all parts of the country). Find out what conglomerate owns which food. HINT: Look for words on packages and labels like "subsidiary of", "division of" or "product of".

Dannon Yogurt	Canada Dry
Tropicana orange juice	Orville Redenbacher Gourmet Popcorn
Clark candy bars	Hostess Twinkies
Sunbeam bread	Morton Frozen pies
La Choy Chinese food	Wonder Bread
Swiss Miss cocoa mix	Fresh Horizons Bread
Schweppes	Sara Lee frozen cakes
Royal Crown cola	Franco-American canned spaghetti



V-8

Swanson Frozen Foods

Star-Kist tuna

Ore-Ida frozen potatoes (F.F.)

Dromedary dates

Campfire marshmallows

ReaLemon reconstituted lemon juice

Sacramento tomato juice

Wise potato chips

Drake's cakes and snacks

Cracker Jacks

Wyler drink mixes

Reeses peanut butter candy cups

Snow's seafood products

Kava Instant coffee

Sanka, Maxwell House, Postum

Minute rice and Minute tapioca

Post grape-nuts

Tang

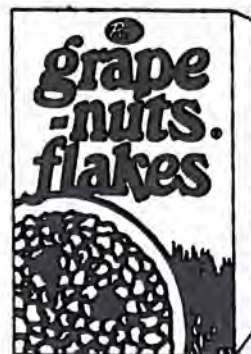
Jell-O

Shake 'n Bake

Gaines Pet Foods

Good Seasons Salad Dressing

Log Cabin Syrup



Country Time lemonade

Kool-Aid



Bird's Eye

Minute Maid orange juice

Hi-C



Pringles reconstituted chips

Folger coffee

Crisco oil

Duncan Hines cake mixes

Jif peanut butter

Crest toothpaste

Cheer, Duz, Tide, Ivory Snow, Dash,
Bold, and Downy

Luv and Pampers

Planters peanuts

Royal instant pudding

Sun Maid raisins

Fleischmann's margarine



Tender Leaf tea

Baby Ruth candy

Aunt Jemima pancake mix and frozen
waffles

Durkee spices and seasonings

Coffee-mate non-dairy creamer

Mazola Oil

Betty Crocker

Skippy peanut butter

Peter Pan

Chun King Chinese foods

Hawaiian Punch

Del Monte

Discussion questions:

1. Which brand names are deceptive in suggesting that the product is made by a small company? What is the appeal of certain homey names like "Grandma's" or "Italian style"? What about **ethnic** names? Is this **deceptive** advertising?

2. What are some of the names of conglomerates which are very common?

3. Some conglomerates do not tell you on package labels that they own smaller producers. For example, Pepsi-Co owns Frito-Lay but this is not mentioned on packages of Doritos or Ruffles. Or Nestle owns Libby canned foods and Stouffer frozen dinners but the name Nestle does not appear on the package. Discuss whether this is information you want as a consumer and why.

4. Some food companies are owned by non-food conglomerates (Armour meats is owned by Greyhound, Durkee by Smith Corona, Chun King by Reynolds). Some food conglomerates are investing in non-food companies. For example, Pepsi-Co owns North American Van Lines and Wilson tennis and golf equipment; Beatrice Foods owns Samsonite luggage and Morgan Yacht. What advantages are there for a conglomerate to have **diversity**?

What disadvantages are there for you as a consumer?

5. What do your findings in this activity suggest about **free enterprise** and **competition**?





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Activity 2 — Good to the last drop

One way agribusiness conglomerates make more money is by **product differentiation**. This means that their advertising campaign convinces you that their brand name product is different from (and better than) essentially equivalent products. The actual difference may only be in the color of their package.

1. Find each of the following brand name products in the supermarket and compare its price per ounce with that of the comparable store brand and with whatever other brands are on the shelf near it. Write down the contents of the food as listed on the packages.

Wesson oil

Del Monte canned peaches

Campbell's chicken noodle soup

Heinz catsup

Heinz mayonnaise

Canada Dry ginger ale

Minute Maid orange juice

Maxwell House coffee

Starkist Tuna

Duncan Hines

cake mix

Sara Lee frozen cakes

2. Pick one product like canned peaches or cereals or vegetable oil. Go to that section of the supermarket. Note which brand name of that product is at eye level. Which are displayed near the floor or on the top shelf? What products are at the level of a child in a pushcart? Which are given the widest area on the shelf? You may draw a diagram of a shelf display if you find that easier to illustrate your answer.

3. In class do a taste comparison of foods which are similar or identical. Do the more expensive nationally-advertised brands taste different or better than their less famous equivalents?



Discussion questions:

Why are some brand names more expensive?

Why might people buy the more expensive brand name products?

Are you paying more for less because of the difference in product size? (Be sure to check how many ounces of product weight each price is for.)

...and they forgot the land.

"And it came about that owners no longer worked on their farms. They farmed on paper: and they forgot the land, the smell, the feel of it, and remembered only that they owned it, remembered only what they gained and lost by it. And some of the farms grew so large that one man could not even conceive of them any more, so large that it took batteries of bookkeepers to keep track of interest and gain and loss; chemists to test the soil, to replenish; straw bosses to see that the stooping men were moving along the rows as swiftly as the material of their bodies could stand. Then such a farmer really became a storekeeper, and kept a store. He paid the men, and sold them food, and took the money back. And after a while he did not pay the men at all, and saved bookkeeping. These farms gave food on credit. A man might work and feed himself and when the work was done, might find that he owed money to the company. And the owners not only did not work the farms any more, many of them had never seen the farms they owned."

Source: John Steinbeck, *Grapes of Wrath*

UNIT III SECTION 3 Harvest of Shame

Cutting cane in Florida

Roberto left his family in Jamaica to come to Florida to harvest sugar cane on a small farm. Like 25% of Jamaicans he was jobless. Lacking access to welfare or social security programs, he had little choice but to become a migrant worker. Every morning at 6:00 Roberto climbs into the truck to go to the field. The truck is overcrowded with standing men and the cane cutting knives are out in the open. Roberto tries to stay away from those knives since he knows sometimes that the heavy truck goes off the side of the road and workers get hurt. Roberto arrives in the field to wait for the crew leader to assign him a quarter of a mile long row of cane that is his average daily "task". Roberto hurries up knowing that if he doesn't harvest at least a ton each hour he will be sent home to Jamaica. It is 6:45 in the morning, the crew leader finishes assigning rows, opens his notebook and puts in front of Roberto's name: "starting time, 6:45." The cane is 12 to 14 feet high and very thick. Roberto uses a sharp knife to cut stalks. To protect himself he wears awkward metal guards for his feet, shins and hands like medieval armor, and long sleeves and a hat to protect himself from sticky cane fibers. He sees a dangerous snake and wants to strike at it with his knife; fortunately he stops, remembering that the grower prohibits killing snakes because they eat rats.

Roberto has problems breathing. Ashes are surrounding him because the field is first burned to remove leaves before the workers harvest it. It is 12:00, lunch time. To be able to earn more Roberto eats in a hurry. The crew leader marks half an hour lunch in front of Roberto's name. The sun is high now and Roberto is hotter and hotter in his heavy clothes. He tries to work fast but carefully. He knows that he won't get hospitalized if he cuts off one of his toes or fingers even though 3% of his wages are given to a "medical insurance." His hourly wage is \$3.23. An American worker would demand \$5 an hour for this kind of job.

It is almost 8:30 at night and it is becoming dark as Roberto finishes his row. He is dead tired. He goes back to his quarters, a tiny room for ten workers. They lie down in bed and talk. They are deciding whether to go on strike for better working conditions. Some of the men are scared to be sent home.



LNS/cpt

This is the **contract** under which they are working:

- the contract is signed between the Jamaican government and Florida sugar growers. There is no contract between worker and grower.
- any act of misconduct or disobedience and the worker is deported to Jamaica at his own expense
- Federal minimum wage laws cover only the largest farms (and these laws usually are not enforced)
- workers should not be forced to work more than 8 hours a day, six days a week
- housing should be free
- the price of meals is deducted from the worker's wages
- the grower should supply the same medical care and compensation for work-related injuries and diseases that are required for American workers by state law.

Role play: Some students will play the part of Jamaican migrant workers and some students will play the part of the Florida growers as they confront each other the next morning. One student will play the part of the local judge who is a brother-in-law of the main sugar grower.



Rini Templeton, NACLA

Canned imperialism

The Bajio Valley is one of Mexico's richest agricultural valleys. Del Monte became interested in the region because the labor is so much cheaper than in the United States. When Del Monte first sent its technicians to Bajio in 1959, they found a fertile land with corn and bean production predominating and serving as the basis for the local diet. Some of the land was owned by Mexican **campesinos** each caring for 10 to 20 acres. Some of the land was held in **ejidos** (large State-owned farms) subdivided into small plots, worked by **ejidatarios** (tenant farmers). Mexican law prohibited the sale of these lands and restricted its ownership by foreign corporations.

Nevertheless, Del Monte found a way to change the valley's agriculture. Because agricultural **credit** is very limited in Mexico, Del Monte introduced **contract** farming. Contract farming means that in order to have credit the farmer agrees to plant a set number of acres of a particular crop. The company provides seeds, machines and fertilizer. The costs of these are deducted from the farmer's income when he delivers the crop to the company's cannery.

In the early 1960's Del Monte came to dominate the valley. Del Monte preferred to deal with large owners while the ejidatarios were increasingly **marginalized** and often forced out of production. Many have been forced to leave their villages in search of work and many migrate illegally to the United States. The large grower who already had money or land could enter new areas of production by using contract farming to increase his wealth. However they were *all* dependent on Del Monte. If a machine arrived late and the farmer lost his crop, he would n't receive any money and would even go into debt.



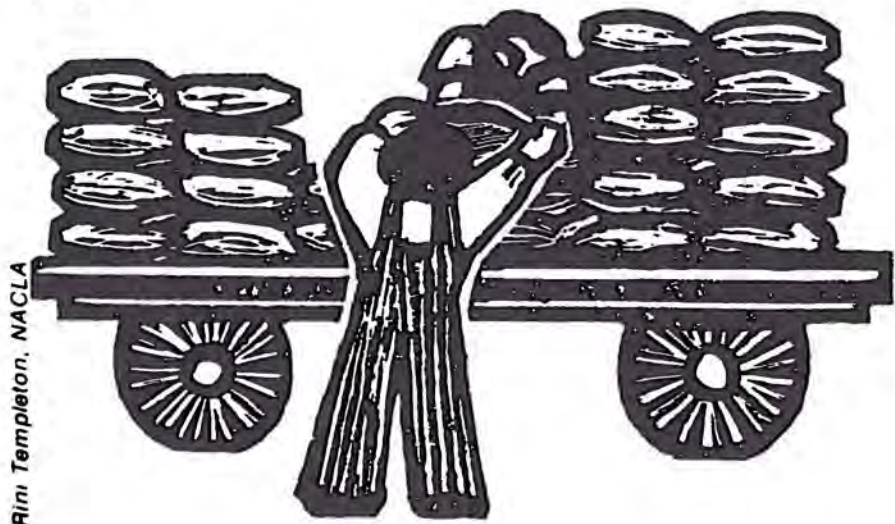
Instead of the traditional corn and beans, now peas and asparagus are extensively grown and canned in Bajio Valley for **export**. These are not part of the diet of the Mexican people. Canned peas are purchased only by middle and **upper class** Mexicans. 90% of the asparagus is shipped to industrialized countries. No longer do the people grow food for their own consumption. Their wages are too low to buy enough food. Without the **complementary protein** provided by meals like tortilla and frijoles (beans), malnutrition is increasing in Mexico. The Mexicans are becoming even poorer.



Rini Templeton

Discussion questions:

1. Del Monte was able to get what they wanted produced in Mexico because they could provide credit. Why do farmers need credit? When do farmers need credit most? For what?
2. Investment by American firms is usually seen as beneficial because money is provided to buy new technology which helps increase production. Let's look at this case of investment by examining the following:
 - (a) what kind of food production was *increased* by Del Monte's investment?
 - (b) what kind of food production was *decreased* by their investment?
 - (c) name the technologies that were made available because of Del Monte's investment.
 - (d) what happened to the *large* land owners as a result of the investment?
 - (e) what happened to the *small* land owners as a result of the investment?
 - (f) what happened to the *workers* as a result?
 - (g) summarize the effects of this investment on production and on people.



Rini Templeton, NACLA

Plane Wreck Over Los Gatos Canyon (Deportee)

The crops are all in; the peaches are rotting,
The oranges are stacked in their creosote dumps.
They're flying them back to that Mexico border,
To pay all their wages, to wade back again.

Chorus: Good-bye to you Juan, good-bye Rosalita,
Adios mi amigo, Jesus San Maria.
You won't have a name when you ride the big airplane,
And all they will call you will be — deportee.

My father's own father, he waded that river.
They took all the money he made in his life.
My brothers and sisters come working the fruit trees,
And they rode on the trucks 'til they took down and died.
(Chorus)

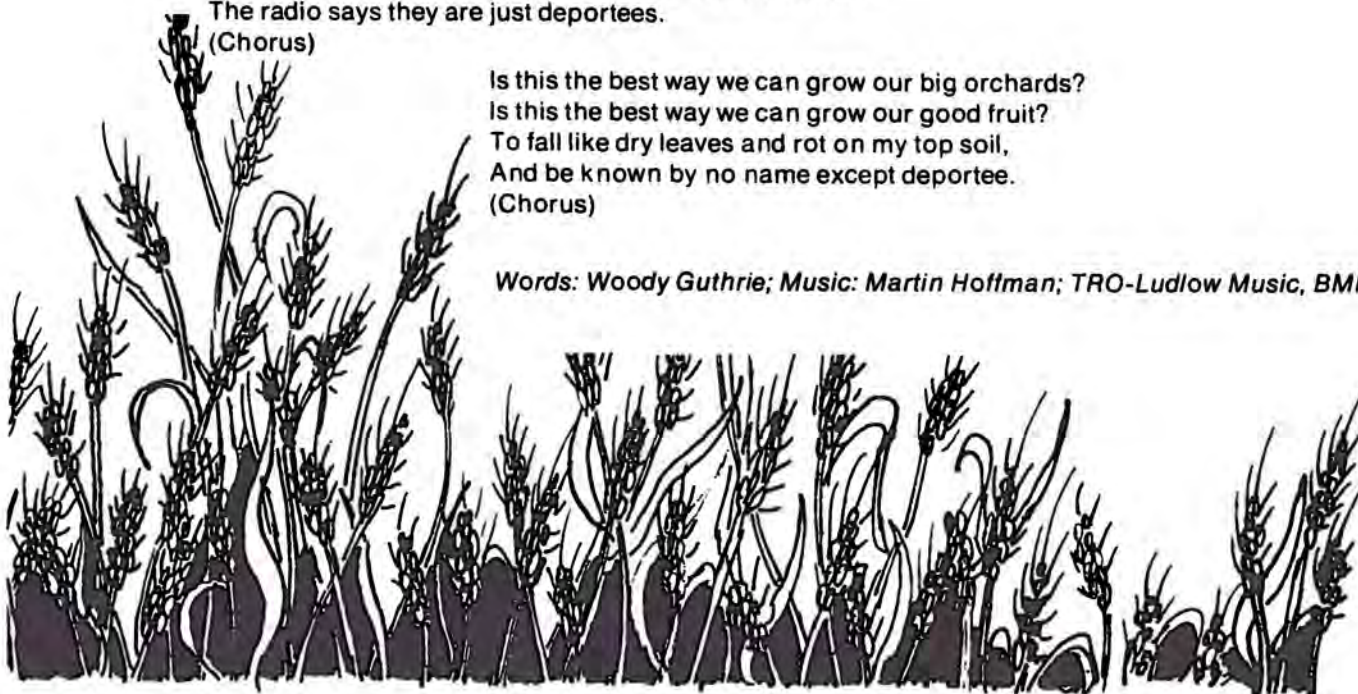
Well, some are illegal and others not wanted.
Our work contract's out and we've got to move on.
Six hundred miles to the Mexico border,
They chase us like outlaws, like rustlers and thieves.
(Chorus)

We died in your hills and we died on your deserts.
We died in your valleys; we died on your plains.
We died 'neath your trees and we've died in your bushes.
Both sides of that river, we've died just the same.
(Chorus)

The skyplane caught fire over Los Gatos canyon,
Like a fireball of lightning and shook all our hills.
Who are all these friends, all scattered like dried leaves?
The radio says they are just deportees.
(Chorus)

Is this the best way we can grow our big orchards?
Is this the best way we can grow our good fruit?
To fall like dry leaves and rot on my top soil,
And be known by no name except deportee.
(Chorus)

Words: Woody Guthrie; Music: Martin Hoffman; TRO-Ludlow Music, BMI



Bottle or Breast?

Bottle babies in the U.S.

Drinking milk is something that all of us did when we were babies and little children. Feeding the next generation milk is also something that most of us shall do. We are mammals just like cats, cows, mice, porcupines or whales. Being a mammal means that right after giving birth a mother produces milk to feed her newborn offspring. Nonmammals — animals like birds, fish, or snakes — cannot do this. Some people have also had available, especially during the past fifty years or so, a product manufactured as a substitute for breast milk. This product — infant formula — can be fed to a baby from a bottle. Here is the choice: bottle or breast?

The following are some facts about bottle and breast feeding:

- Breast milk is unprocessed and fresh and **aseptic**.
- Formula is made of cow's milk that has been heated, diluted with water to cut the excessive protein content and sweetened. Both heat and storage are known to destroy many nutrients. We know enough about a few of the **vitamins** to add them to formulas but there are other substances about which we know too little.
- Breastfed babies seem to be protected from serious digestive disorders and have less eczema (skin rash) and respiratory infections. This may be because **colostrum** as well as mature human milk are rich sources of antibodies, enzymes, and other anti-infective factors.
- Bottled babies often develop serious allergies to cow's milk.
- Breast milk is inexpensive. All the lactating (milk-producing) mother needs is an extra 500 **calories** and 20 grams added **protein** a day. Bottle feeding is two-three times as expensive.
- Formula needs careful preparation and mixing, clean bottles and a good water supply.
- Anyone (mother, father or day care person) can give a bottle.
- Less than five percent of mothers are unable physically to breast-feed, yet 70%-80% of babies leaving American hospitals are bottle fed.

Most American women do not breastfeed. Why?



To use formula is the modern thing to do; it is the norm in the United States. Profits for sale of formula go to commercial interests so there is a lot of advertising and free samples of formula are given to all new mothers as they leave the hospital. Poor U.S. women who receive aid through the WIC program (Women, Infants, and Children) are encouraged to use free infant formula. There is little encouragement for breastfeeding by medical personnel or experienced friends and relatives and a growing number of nursing women feel they have little choice — few employers make arrangements for nursing mothers.

Discussion questions:

1. List the *advantages* and *disadvantages* of both bottle feeding and breast feeding. When you have a child, which would you consider?
2. An international conference on "Lactating, fertility and working women" held in Italy in July 1977 addressed this proposal: "It is recommended that working women in all countries be afforded a minimum of 3 months maternity leave mainly after the delivery." In China new mothers bring their babies to their workplace and are allowed time to feed. If these were the laws in the United States, do you think that the number of nursing mothers would increase? Why or why not?
3. Ask your mother (or your aunt) how you and your brothers and sisters (or cousins) were fed as infants. Why did they choose the method they did?
4. Do some research in your community and find what is recommended by pediatricians, clinics and maternity hospitals.

Bottle babies in other countries

The story is not over yet. How to feed a baby in a Third World or developing nation is a serious question for those families living in poverty. The companies which manufacture infant formulas are marketing their product all around the world, not just in American stores. Such companies are **multinationals**, using sophisticated advertising and promotional techniques to stimulate an artificial demand.

- Formula sales in the Third World are booming.

- Besides give-aways, radio jingles, and billboards which sell the message: "the modern, caring mother bottle feeds her baby", mothercraft personnel (nurses in white uniforms) are hired to increase the sales of infant formula at the same time they provide simple health care.

- Free samples and other generous gifts such as hospital equipment are given to doctors and health workers. The distribution of free infant formula to mothers in hospitals and clinics is all the more effective because of the implied medical endorsement.

- Often the modern hospital-style training of these doctors makes them ill-suited to understand the conditions in which their patients live.

- An epidemic of millions of babies with severe malnutrition and infections is the result of this push by the multinationals to expand their markets.

- Using formulas is a luxury many Third World families cannot afford. For an average Third World worker, purchasing formula for one baby



cpt/LNS

would consume 40-60% of the family's budget. Commonly, formula is overdiluted to ensure that the powder lasts until more can be obtained.

— Contamination of the formula is also common. Without refrigeration, prepared formula is a breeding ground for bacteria. Water sources are often unsanitary, and without sufficient fuel, sterilization of water or bottles is impossible.

— When a new mother uses formula even as a supplement to breast milk, this reduces her milk flow and makes her more and more dependent on purchased products. Using formula shortens the time a woman lactates.

— Instructions for use of formula may be unclear, complicated or in a foreign language. Many mothers cannot read even their native language. And yet Third World mothers want to do the best for their babies and they also want to be modern.

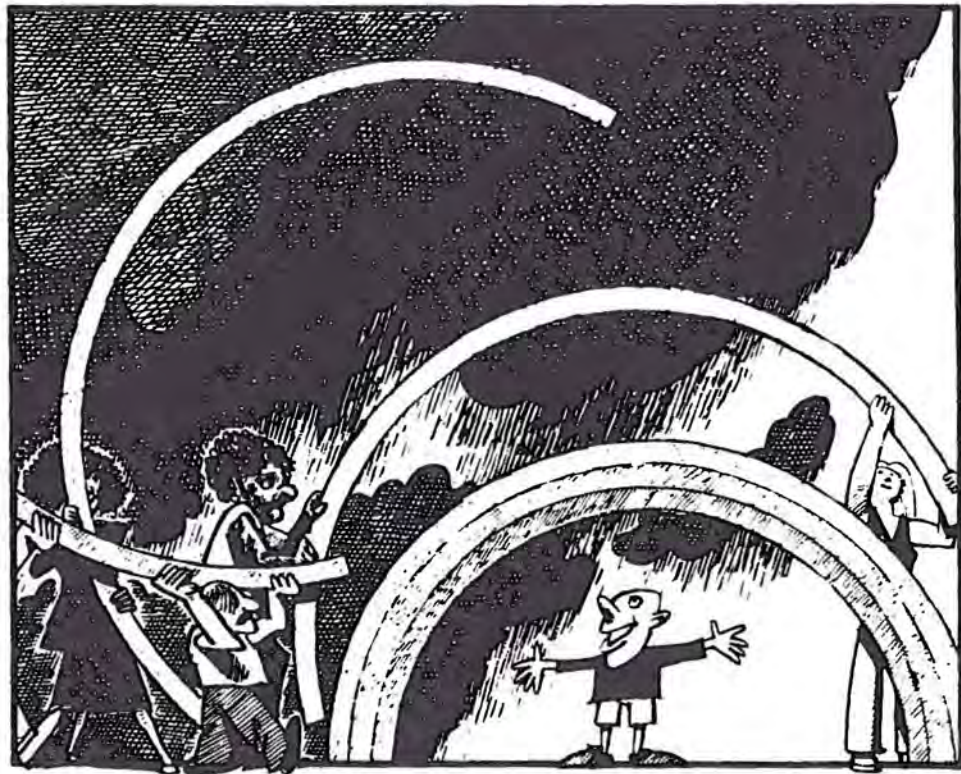
Discussion questions:

1. Why are bottle-fed babies in Third World countries sick and dying?
2. Why do you think Third World mothers choose bottles and formula for their babies?
3. How do these mothers learn about bottle feeding?
4. What are the disadvantages of bottle feeding? Name three.
5. Why do large (multinational) corporations sell infant formula in Third World and developing countries?
6. Is the problem simply that mothers are unable to read and follow directions? Explain.
7. You are a health professional working in a maternity hospital in Africa or Latin America. Large corporations offer you free samples of infant formula to distribute to the new mothers under your care. You are also offered bonuses to help the corporations. What would you do?
8. How can Americans help stop multinationals from exporting bottle feeding to Third World nations or at least help stop marketing to poor families? If the industry does change their marketing techniques, will this solve the problem?



UNIT IV

Building a New World



Nick Thorkelson

Introduction to Change

Recall the last time you saw something wrong or something you did not like but you felt unable to change it. You have probably heard many times: "If you cannot make constructive criticisms, keep quiet." In order to avoid feeling discouraged some people will say "I don't care." or "It's not my problem, I can't do anything anyway." Other people feel helpless and say "Better leave decisions to the experts" (or "the government" or "them").

In order to see that changes are quite possible and how you yourselves can make change happen, start right where you are — in school. Discuss in small groups any changes you would like to see happen in school, and report back to the class. Make a chart to help you:

Complaints (3)

Reasons

Changes (9)

Obstacles (6)

Plan of action

Activity 1 — Changing school

1. Make a list of three complaints you have with school and would like to see changed (e.g., I hate having to take history class).
2. Next to each of your three complaints explain why you hate it (e.g., I hate having to take history because it's so boring.)
3. For each of your three complaints make a list of 3 ways you might change the situation. Don't be afraid to suggest the seemingly impossible. Believe that you and your fellow students have the power to change the situation. Even if you think of a solution which has never been tried before, don't be afraid to include it. (e.g., I will get my parents to write a letter; I will tell my teacher how boring the class is; I will run for student president.)
4. For each proposed change, make a list of at least two obstacles to its success. (e.g., I don't know if all students feel like me; The principal won't allow it; These are school rules.)
5. Now that you have a list of proposed changes and a list of obstacles to those changes, decide as a group whether you can *really* make this change. Choose the one change you think is most possible. Circle it on your chart.
6. For the change you feel is most possible, design a step-by-step plan in which you can realistically reach your goal.

Is change possible? Maybe you have decided that some changes are possible and some are not. Perhaps you will want to get a large



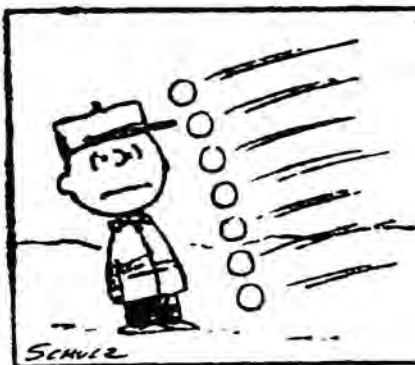
group of students together to start working on some changes. You may feel that some changes in your school require students to unite with other people outside of the school. Whatever you have learned and whatever you decide to do about change in your school, you can apply your experiences in the previous activity to a discussion of changes which should and could be made in the food you eat.

Most of the lessons and activities you have done in this book so far have shown you what is wrong, unjust, or hurtful about food or the production of food. It can be pretty discouraging to look at hunger, food additives, and powerful profitable corporations if the possibility of change did not exist. There may be changes that you yourself can help make happen.

Again, with the class divided up into smaller groups, do the following activity.

Activity 2 — Changing food

1. From what you have learned about food and nutrition, make a list of three complaints you have about the food you eat (e.g., the macaroni is soggy, the peas are mush and the chicken tastes like wood.)
2. Next to each of your three complaints explain what seems to be wrong (e.g., The supermarket doesn't seem to carry any other kind.)
3. For each of your three complaints make a list of three ways you think the situation could be changed (e.g., I'll grow my own tomatoes, I'll complain to the supermarket manager.)
4. For each proposed change, make a list of at least two obstacles to its success (e.g., I don't have my own garden land; The supermarket is one of a nationwide chain and the manager doesn't make any decisions; Most tomatoes get shipped a long way from California.)
5. Discuss within your group which changes are the most possible. Which changes can be made by you acting as an individual alone? Which changes require changes which are larger than your own personal habits? Come to a group decision as to which change you can *really* make. Don't be afraid of undertaking a "larger" change such as fighting a multinational corporation by participating in a boycott.
6. For the food change you would most like to make your group should now design a step-by-step plan in which you can realistically reach your goal.
7. Share your problem and the solutions with the rest of the class.



Community Forum/cpl

Choosing What You Chew



Rock Creek Monitor/cpl

You have been learning about problems with the food system and you might be thinking "I'm getting ripped off, but there's nothing I can do about it." Actually there is. In this lesson and in the others in this unit on change we are going to give you some examples of actions other people have taken to change things. We will also make some suggestions of changes that you yourself can make. The purpose of your doing these activities is to learn what changes are possible. It is up to you to decide what you feel is best for yourself.

One way that you can change things is on a personal level. This is a good place to start because only you need to be involved. You can decide to grow a garden. You may want to read more about world hunger and share what you have read with your friends. Other people may feel that their diet is too high in fats, sugar and processed foods, so changes in their diet would be to eat less meat, sugar and salt.

Remember, these are all personal responses to lousy situations. You can decide to make personal changes. It's a start toward larger changes.

Isn't it un-American not to eat hamburgers?

Do you know anyone who is a **vegetarian**? Do you know why they decided not to eat meat? Vegetarianism is on the upswing in the U.S. today and vegetarians have many very different reasons for this form of personal change.

In a time when, to quote Dick Gregory, "Food is getting so expensive, it's cheaper to eat money", a meatless diet offers a financial alternative to higher and higher meat prices. Prices of beans and grains have remained far below that of meat products. Availability and the economics of a limited budget have traditionally been the reasons for much of the vegetarianism around the world.

There are also **ethical** reasons for becoming a vegetarian. Many people feel a kinship with animals and refuse to eat the meat of animals. Some do not include fish as an "animal" but others go as far as excluding from their diets any animal products at all: milk, dairy products, or eggs. There are different degrees of vegetarianism.

Many vegetarians feel that a meatless diet is healthier and there several points to support this. First, grain-fed beef and pork are among the foods highest in saturated fat. Cholesterol is an animal product and can only enter your diet in the form of meat, whole milk products, or eggs. Second, residues of pesticides such as DDT (now banned in the U.S.) have often been found to be higher in foods of animal origin (higher on the food chain) than in foods of plant origin (see Chart 1). This is because such chemicals tend to accumulate in animal fat. Third, poultry and cattle raised in assembly-line chicken coops and centralized feed lots have had their feed dosed with antibiotics and sometimes with the synthetic hormone **DES**. People are worried about unnecessary intake of antibiotics and it has been shown that DES is **carcinogenic**.

Making a political statement is offered as the reason for choosing

vegetarianism by people who are concerned about doing something to end world hunger. Many of them were inspired by the now classic book *Diet for a Small Planet* (1972) by Frances Moore Lappe. Ms. Lappe shows how meat is a relatively inefficient source of protein (see Chart 2). More than ten pounds of grain or other vegetable protein must be fed to a cow to produce one pound of beef protein. Much of that vegetable protein could better feed the hungry people in the world than going into fattening up animals. To make matters worse, some American multinational corporations send their half-grown cattle down to their ranches in Central American countries to fatten up for U.S. tables. Valuable land space in hungry Third World countries (e.g., Haiti) is used by the wealthy while the people there remain undernourished.

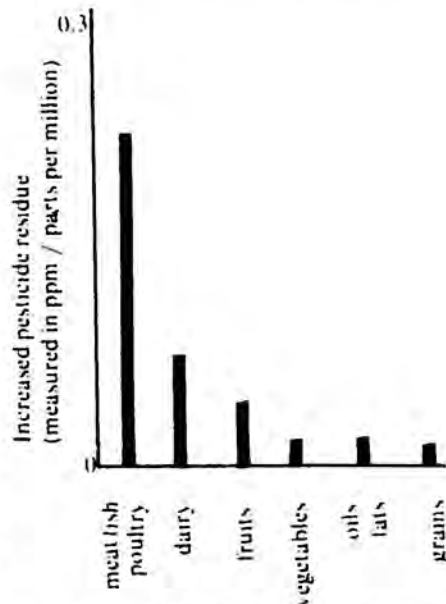
Some people have confused the message of *Diet for a Small Planet* to mean "if each of us only ate one less hamburger a week, the hungry could be fed". This is not what is meant. Your personal decision to skip a hamburger will not be easily translated into freeing the grains and other vegetable proteins in cattle feed for feeding people. World food distribution is much too complex and tightly controlled. Nonetheless the choice of a meatless diet can help call attention to the unsound use of world food resources. It can also be a start to breaking away from a meat-centered high-fat and often unhealthy diet. There are many important points for a vegetarian to discuss with family and friends who have questions.



Do vegetables have nutritious protein?

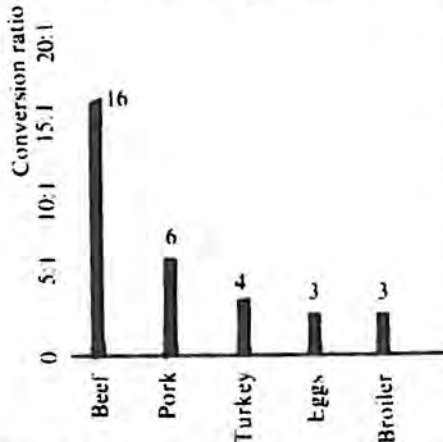
The traditional diet of most people has been vegetarian combinations: beans and corn in Latin America, lentils and rice in India, soybeans and rice in China and Japan. Many Americans tend to look at these as starchy and lacking nutrients, but this is not so. These combinations work together to give *more* biologically useful **protein** than if each were eaten separately. The traditional combinations have evolved without the cooks knowing about the chemical nature of protein. Chalk one up for traditional wisdom.

CHART 1
Studies of pesticide residues in the U.S. diet



Adapted from *Diet for a Small Planet*, 1975 (revised edition), p. 34

CHART II
Livestock protein conversion efficiency
 A protein factory in reverse

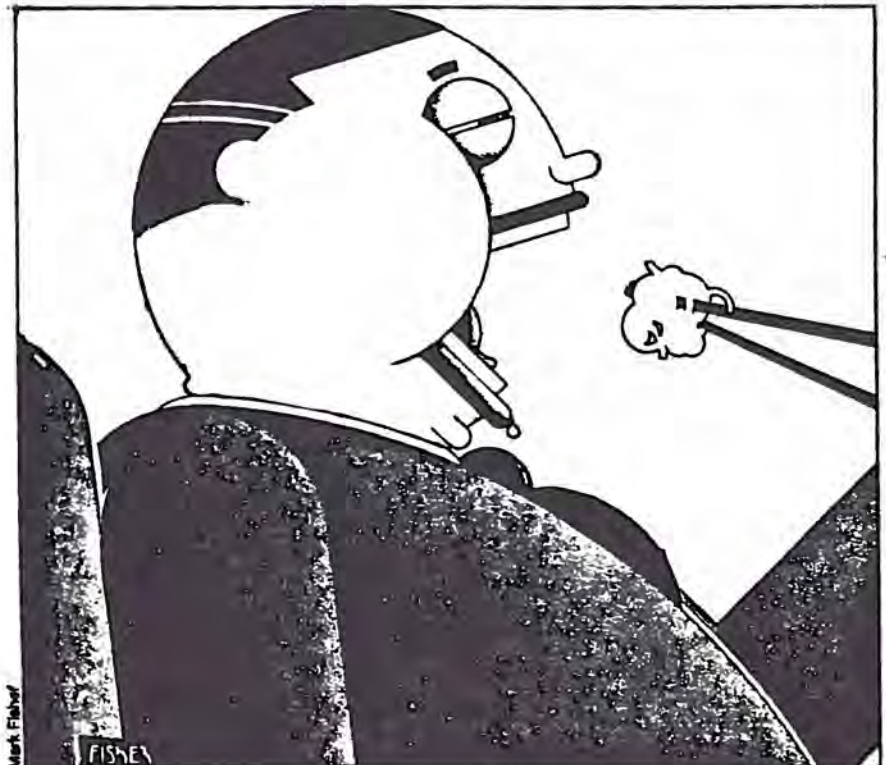


Source: USDA, Economic Research Service, Beltsville, MD

With modern knowledge of proteins we can explain why the traditional combinations work. The protein our bodies need is built into long chains of various combinations (like combining different letters of the alphabet to make different words). The units of these long chains are twenty **amino acids**. Eight of these amino acids cannot be made in our bodies and must be obtained from food. These eight "essential amino acids" must be eaten together if our body is to use them most efficiently. By themselves, grains, beans, seeds and nuts lack one or more essential amino acids and are called **incomplete protein**. But different plant foods lack different essential amino acids, so eaten together in the traditional combinations they give **complete protein**. When one protein food makes up for what the other lacks, it is called **complementary protein**. Meat is a complete protein, having all eight essential amino acids, but in eating meat a lot of fat and salt can also be obtained at a much higher price. Some good combinations for protein are the following:

- * dairy products and grain (macaroni and cheese)
- * grains and **legumes** (a bean burrito)
- * seeds and legumes (roasted sunflower seeds and soybeans)

Eating vegetarian allows greater variety, less money spent, less fat and hormones and fewer calories. The pluses are many. Eliminating meat from your diet isn't necessary, but eating more vegetables and grains can be more healthful and enable you to help others see the wastefulness of meat-centered diets.



Activity 1 — I've never eaten that

The best way to learn about foods which are new is to taste them. The following recipes can be made in the classroom using electrical appliances. (The cookies can be brought in after being made at home). Most ingredients are available in the supermarket or you may want to explore a local food co-op or health-food store.



Cereal crunch

- 2 1/2 cups regular oats
- 1/2 cup chopped peanuts or nuts
- 1/2 cup sesame seeds
- 1/2 cup sunflower seeds
- 1/2 cup nonfat dry milk
- 1/2 cup wheat germ
- 1/4 cup brown sugar, packed
- 1/4 cup corn oil
- 2 tablespoons cinnamon
- 2 teaspoons vanilla

Mix together oats, nuts, seeds, milk and wheat germ.

Mix brown sugar, cinnamon & oil until smooth. Combine the two mixtures and spread on a cookie sheet.

Bake at 300° for 1/2 hour, stirring every 10 minutes.

Cool.

Add raisins last 10 minutes.

This recipe can be prepared as well in an electric skillet.

Banana Shake

- 2 cups skim milk
- 1/2 cup yogurt
- 1 egg
- 1 tablespoon vanilla extract
- 2 teaspoons ground nutmeg
- 1 cup instant non-fat dry milk
- 1 medium sized banana, peeled and cut in chunks
- 1 6 oz. frozen orange juice concentrate, undiluted

Pour all ingredients into electric blender.

Blend at high speed for 10 seconds, until ingredients are slightly frothy.

Makes four, 1-cup servings.



Workbook/cpl

Carrot-raisin cookie

A tasty cookie high in minerals and vitamins

- 1/3 cup shortening
- 1/3 cup brown sugar
- 1/2 cup molasses
- 1 egg
- 1/4 cup dry milk
- 1 cup flour
- 1/4 teaspoon nutmeg
- 1/4 teaspoon cinnamon
- 1/2 teaspoon salt
- 1/4 teaspoon soda
- 1 teaspoon baking powder
- 1 1/4 cups quick rolled oats, uncooked
- 1 cup grated raw carrots or
- 1 cup grated raw sweet potato
- 1 teaspoon grated lemon rind (optional)
- 1/2 cup whole or ground raisins

Cream shortening, sugar, molasses, and egg together.

Combine dry ingredients, including rolled oats, and blend thoroughly.

Stir into creamed mixture.

Add grated carrots or sweet potato, lemon rind, and raisins. Stir until well mixed. (Dough should be stiff enough to hold shape on baking sheet. Grated sweet potatoes are drier than grated carrots. If dough is too stiff, add milk in small quantities.)

Drop by teaspoonfuls onto lightly greased cooky sheet.

Bake in hot oven (400°F) 15 minutes or until brown.

Yield: 5 dozen 2-inch cookies.

Carrot-raisin salad

- 2 medium carrots
- 1/3 cup raisins
- 1 tablespoon mayonnaise
- 1 teaspoon lemon juice

Chop or grate fine carrots.

Mix in raisins.

Add lemon juice and mayonnaise.

Mix all together well.

Gather Together UNIT IV SECTION 3

Changing the food system sounds like an impossibly big task if you think about the international size of the system and the power of the **multinational corporations**. But it is possible to begin changing the system in your own community. People on the block or in neighborhoods and towns have already begun to create alternatives on the local level and you can learn about what they are doing. You yourself may be able to work together with others to raise or prepare your own food. Even a campaign to change the lunch program at your school is a step in changing the system.

Food cooperatives

Food cooperatives or coops are local organizations of consumers who buy their food collectively. Thousands of coops exist around the U.S. in nearly every medium sized city. There are basically two kinds of consumer food co-ops: a *buying club* where food is bought in bulk and distributed collectively by all members, and another which operates with paid employees who manage a *storefront* for a much larger membership (from 100-2000) of which each member donates from 2-5 hours per month in return for the benefits of co-op membership. Storefronts are more likely to be found in larger cities.

In both types of co-ops, food is bought in bulk from a distributor or is bought directly from a farmer or market. This allows the membership to buy their food with a minimum of "middle-men". Because of this more *direct* connection between producer and consumer co-op members pay less for their food.

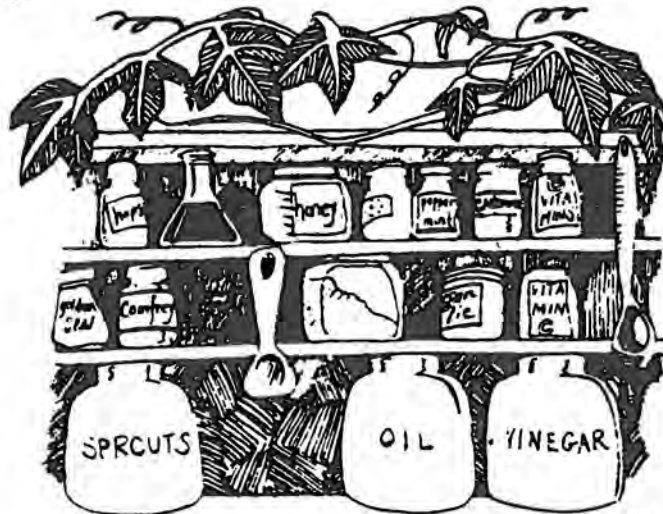


Cheaper food is a good reason for joining a food co-op. Co-ops are often centers for community activities. Most urban co-ops are

interested in nutrition education and other community events. People join co-ops to meet their neighbors and so, co-ops tend to be much friendlier places than supermarkets.

Often people join co-ops for political reasons. They don't want to see corporations making money from one of the necessities for their life. They would like to get their food as directly from the source as possible. Supermarkets are rarely owned by community members, whereas co-ops are run by the people that live in the neighborhood. Decisions in co-ops are usually made as democratically as possible. Either elected co-op officials or the full membership determine what foods will be bought, how much foods will cost, what community activities to sponsor, etc.

Being a co-op member often means doing without the unnecessary packaging that most supermarket foods have. Members are asked to scoop their own peanut butter from a 50 pound tub or to weigh their own tomatoes. It means that you (the consumer) must do without some of the "convenience" of pre-packaged foods. It also means that co-ops must be strict about members fulfilling their work requirement. If members do not work, they usually cannot get the discount. Co-ops usually do not carry all products found in a supermarket. This depends on the size of the co-op. However members who are flexible as to their diets often don't need to shop in other stores to buy their food.



Workbook/CPF

Activity 1 — Visit a co-op

Make a list of questions you might ask while interviewing members of a food co-op or a manager of a storefront co-op.

For example: What are some of the reasons for joining a food co-op?

What are the disadvantages of a co-op compared with a supermarket? What are the advantages?

Why do you think people *don't* join co-ops?

Is working in the co-op convenient for you?

(To the manager) How does your job differ from a supermarket manager's?

Go to a local food co-op and use your questions to interview at least five members and at least one manager.

Discussion questions

In groups of four-six, compare your answers to interview questions with the answers other group members have obtained.

How did most members & managers feel about the co-op?

How did you expect the co-op to be different than it was? Were you surprised?

Would you join a co-op?

Why or why not?



Voice/cpf

Community gardens

In the last ten-twenty years more people have begun to grow their own food. In some cases, residents of highly built up urban areas grow their own food on roof-tops, terraces and window-sills. Other individuals have taken a *community* approach in which they have found a common plot of vacant land, often donated by the city or town, to grow their own food. In a community garden a group of people, anywhere from 2-100, share their tools, knowledge and labor in an effort to grow their own food. There are a number of important reasons why people choose to work in a community garden. First, it can be a very worthwhile experience to work alongside others who possess skills you might like to learn. Second, since you are growing the food yourself, you can be relatively sure of what is going into it. For example, you might not be sure how much pesticide residue is in the food you buy in the supermarket, but you are sure that none is in your garden. Third, community gardens can offer substantial savings over buying the food from stores or growing individual gardens since you can share tools and buy materials in bulk. Finally, participation in a community garden can be a lot of fun. It's a great way to get to know your neighbors or your classmates. And we always need some good exercise out-of-doors.

Activity 2 — Growing cheap but delicious tomatoes

In the following problem you are going to develop a plan for a community garden that is large enough for five-eight people. The size is 25 feet x 25 feet. For this lesson, the plan is theoretical, but you may decide to put your plan into effect when you have completed it.

The first step in developing a community garden is research. Before you can plant anything you must make sure you have access to a plot of land which has a.) good planting soil, b.) plenty of sun and c.) a nearby water supply. Hopefully, this 25 feet x 25 feet plot will not cost you any money to rent. There are many places in your city which might lend some of its property to members of the community for purposes of growing a garden.

As a group you should seek to answer the following questions:

Are there community gardens which already exist in the community? If so, how did those gardens get started? It would be worth your while to send at least two representatives to speak with members of that garden. If you are lucky you might be able to use an adjacent plot for your garden.

In the event that a pre-existing plot does not exist consider the following: Are there vacant plots of land in your city available for starting a new community garden? Often the best places to check might be a.) school land, b.) city or state department of parks, c.) vacant lots in your neighborhood — you should find out who owns them or d.) the grounds of churches or hospitals. You might even find people willing to make a trade of the land (and perhaps seeds, tools, etc.) for a few vegetables.

At this point you and 4-7 friends should have located an adequate plot for your garden. We will now examine whether you can save money over what you would buy in the supermarket.

1. Take a look at the following chart of vegetables which may be grown on a 25 feet x 25 feet plot. As a group make decisions as to whether you would like to substitute one vegetable. Decide whether you would like to grow more of one of the suggested crops in place of another (e.g., 4 rows of tomatoes and no green beans).

2. Draw a map of a garden plot that will contain the vegetables you've chosen. Remember the distance apart you must space the vegetables and that it should all fit within your area of 25 feet x 25 feet.

3. What tools (e.g., spading fork, trowel, hose, watering can, hoe, rake) and materials (e.g., seeds, started plants, fertilizer, lime) would you need to run this garden? Ask friends, parents, and neighbors if you do not know. There are also lots of gardening books in public libraries.

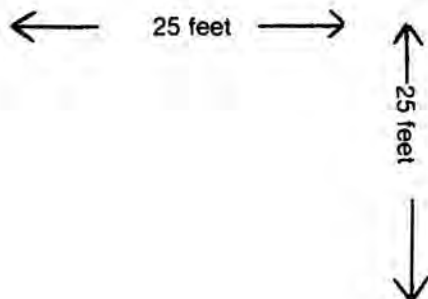
a. How many of these tools and materials are available among the families of the students in your group? How many are available from other sources? Could any be donated by the school or town? Who could you ask to borrow from?

b. How much money would you need to spend on tools and materials you could not borrow from other sources? Be careful *not* to underestimate.

4. From your chart, determine how much the vegetables you will grow would cost in the supermarket. Use summertime prices for greatest



A sample 25' x 25' garden plot



accuracy because that is when vegetables are cheapest.

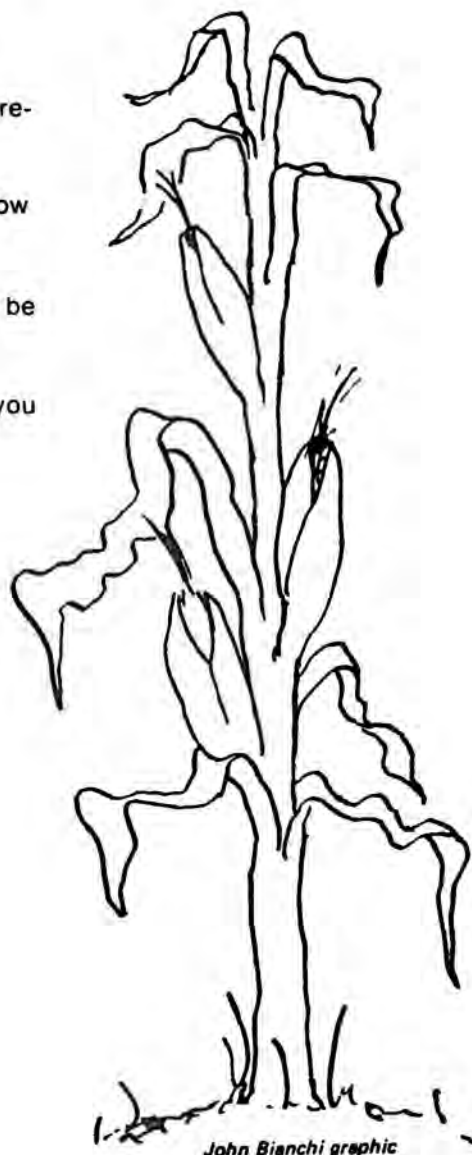
5. Compare the amount you would need to pay out for tools and materials to the amount the vegetables would cost in the supermarket. How much would be saved?

Remember: these savings do not take into account the work that you and your friends would be putting into the garden. Don't kid yourself. It's a lot of work and there is no getting out of it. From April to September there will always need to be someone on hand every few days to till the ground, plant the seeds, water the plants, weed the garden, and pick the vegetables. There is nothing worse than a garden that dies from neglect. So think about it before you decide to join a community garden. We believe that if you do, you'll find it to be a satisfying experience. There's *nothing* like eating a tomato you've helped grow with your own hands!

Discussion questions

With your classmates and teacher, discuss the results of your research into community gardens.

1. Do community gardens exist already in your neighborhood? How did they get started? How are they working?
2. Would you save money by growing food in a garden? Would it be too expensive an effort? Did you discover any hidden costs?
3. What obstacles to your gardening are in your way? Where can you find help?
4. Would you like to try to put your plan into effect?



John Bianchi graphic

Food Monitor

A sample 25' x 25' garden plot

Crop	number of rows	feet of row	spacing between rows	final number of plants	average yield
corn	several short rows	50	every 2 feet	50	75 ears
tomatoes	2	50	every 4 feet	20	100-150 pounds
carrots	2	50	1 1/2 feet	250 or more	25 pounds
green beans	2	50	every 2 feet	100-200	25 pounds
broccoli	1	25	every 2 feet	12	15 pounds
onions	2	50	1-1 1/2 feet	100	40 pounds
scallions	1	25	1 foot	-	25 bunches
cabbage	1	25	every 2 feet	10	30 pounds
peppers	1	25	every 2-3 feet	12	15 pounds

Note: Some substitutions may be made for personal preference, such as:

- parsnips for carrots
- eggplants for peppers (40-60 fruit per 25 feet)
- cucumbers for tomatoes (plant in hills of 2-3 plants per hill, yield 100 pounds from 50 feet)
- squash for corn (plant in hills 4-6 feet apart of 2-3 plants per hill, yield 8 pounds per hill)
- lettuce for cabbage (yield 25-30 heads per 25 feet)

Calculation chart for the cost of your garden

Costs of garden			Costs in market	
crop	cost of seed packets	cost of started plantings	per pound or per unit	total market cost for equivalent yield
	+ _____	+ _____		
subtotal				+ _____
plot rental cost				
tool purchase or rental				
fertilizer				
other costs				
	+ _____			
Total			Total	

Future Shock UNIT IV SECTION 4

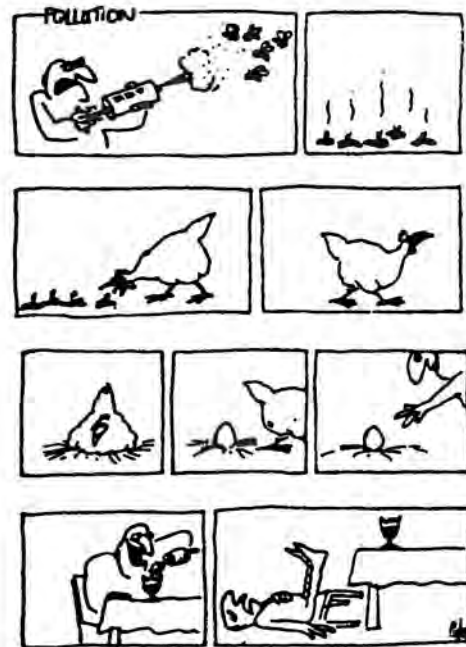
Activity 1 — Congress votes

The following are actual laws among the many passed by the U.S. Congress which affect the present and future of agriculture and marketing. If you had been a Senator or a Representative at the time the bills were being debated, would you have argued for or against?

How would you have voted? Why?

Do you want these laws carried on into the future?

1. The government is authorized to help put the tobacco industry on a sound financial and economic basis.
2. The government is authorized to make money available to certain large producers in Hawaii and Puerto Rico to grow sugar cane.
3. Food additives which have not been adequately tested to establish their safety are prohibited.
4. The government is authorized to recruit and to transport farm workers from Puerto Rico and Jamaica to farms in the U.S. and to transport them back to their countries after the harvest.
5. The use of "Citrus Red Number 2" for coloring mature oranges is permitted.



cpt

Just as these laws above and others have laid the cornerstone of our current national food policy, laws will be passed now and in the next few years which will determine our future. Important decisions which affect the entire country or even the world are not made only in Congress. Our future will depend on decisions made in the boardrooms of **multinational conglomerates**. Consumer groups and citizen activist groups are working to affect the future directions of national policy.

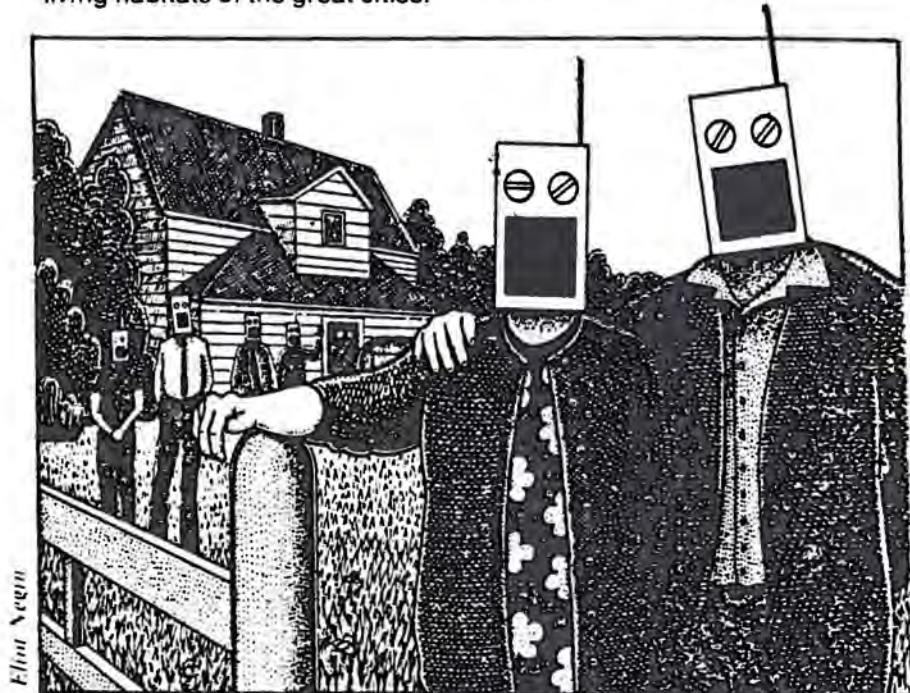
The crystal ball

What will the future be like? One can imagine all sorts of possibilities and science fiction stories have helped our imagination. Can we predict the future based on what exists today? Can we deliberately pick the future we want by sensible planning or is the direction we are going in out of our control?

The following two stories will take you to the year 2030. "Future I" is a very different picture of fifty years from now than is "Future II". After reading the two stories, decide if you would rather live in Future I or Future II. Which is the most likely one for 2030?

Future I: Beta and Yori

Beta and Yori were both fifteen years old when the final National Food Directive was issued in the year 2030. The Directive was handed down by the National Ministry of Food Production as the final step in what had been termed the "Foodstuffs of the Future Program." The central feature of this Program was a total commitment to ProTen Wafers. As of the year 2030, an appropriate kilogram allotment of the synthetic ProTen Wafers, with ten flavor formulas, was to be distributed as the primary food source to every family in the walled-in ultra-living habitats of the great cities.



Beta's family had accepted the final tenets of the Foodstuffs of the Future Program without any question. After all, as Beta recalled her father saying: "What else can habitat dwellers like us do? When the Program first began a few people tried unsuccessfully to complain about the new food technology. But by now it seems as if we never ate anything besides ProTen Wafers."

To Beta the ProTen Wafers really were the only food she had known. She enjoyed using the formula-injector attachment of their home computer to apply the new flavors. These new flavors were more exciting, coated the wafers better and offered more selection than the older ones.

Beta had often complained to her Mom about how bad those old ice cream flavored wafers had tasted. That was when her parents would tell her again of real ice cream. It had been a favorite food of her parents, but the National Ministry had decided to do away with all such nonsynthetic foods and to centralize food production in mechanized complexes. Cows became extinct. The synthetic ProTen Wafers were developed to provide the appropriate amount of vitamins and nutrients as determined by scientific standardization. Food distribution

and production was placed totally under the regulation of the centralized Ministry. Beta's mother said that getting their monthly license for ProTen Wafers renewed reminded her of how her grandmother had needed a prescription to get medicines when she was younger.

To Yorl the new National Food Directives meant something different. His parents were descendants of the Old Order called farmers, who had planted seeds in dirt. The former farmers now worked in the new Centralized Production Complexes. These complexes were mechanized centers located at oil shale fields where oil was harvested for ProTen Pulp. Yorl's parents had worked for such a complex since the last farms for "natural foods" were ordered closed by the Ministry.

Yorl's parents still remember how during the period of Transition young people were told that they were no longer to work on the food farms. The Foodstuffs of the Future Program administrators directed the young people to work instead in the modern Centralized Production Complexes. The few who refused to do so were sent to re-education clinics.

Whenever Yorl would ask his parents about these changes he got the same old explanation. They would tell him about the Period of Transition which began to replace what were called "natural foods" with fortified foods, food supplements and the new synthetic dietary foods stuffs. Gradually, the National Ministers of Food Production did away entirely with produce. Soon people who asked for natural foods or produced them were considered dangerous to society and called health-food crazies. Now the Centralized Production Complexes were responsible for ensuring an adequate supply of ProTen Wafers.

Yorl could only wonder about what further developments lay ahead.



Future II: Ai-Ling and Stepan

Ai-Ling and Stepan were eager to begin their senior year of high school. This year they would participate in an exciting program, *Food and Natural Resources*. Although from an early age, Ai-Ling and Stepan had been taught the importance of the wise use of food and natural resources, this year they would experience first hand how their food was produced and distributed.

The first stop for the class was the local cooperative farm. The farm was located only ten miles from the small city in which Ai-Ling and Stepan lived and so was in easy walking distance from the end of the monorail line. As their teacher explained, it was planetary policy in the year 2030 that food was to be produced as near the population centers as possible. This policy ensured that people could participate in decisions over their own local resources.

The cooperative farm was owned and farmed by a group of people who lived in the neighboring community. Decisions about how the farm was run were made collectively at meetings in which everyone participated. Stepan knew that his mother attended similar meetings at the worker-managed factory where she worked in the city.

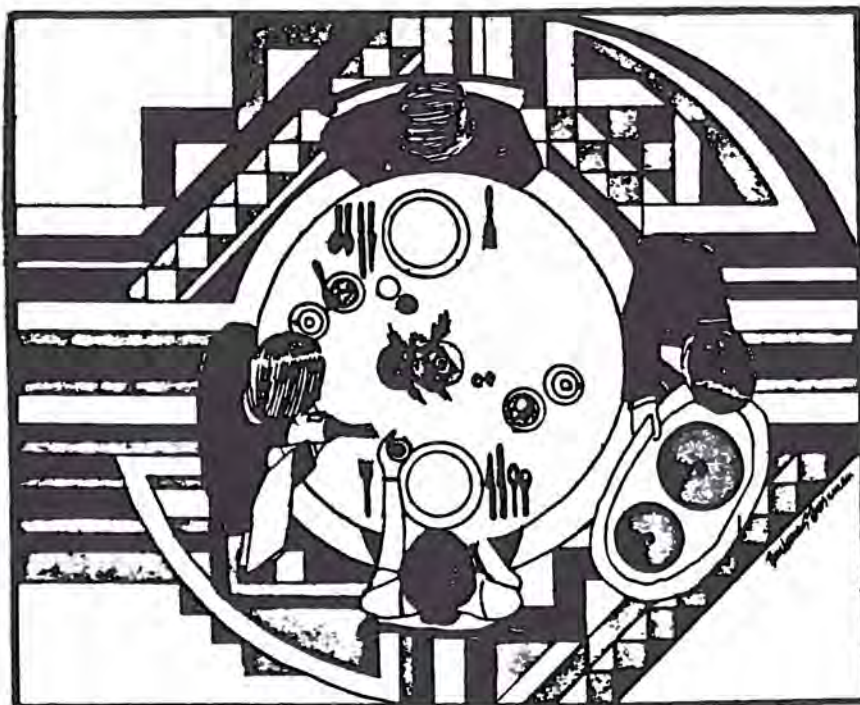
Members of the farm gave workshops for the students in which they demonstrated some of the problems of producing food efficiently as well as safely. They explained, for instance, that at one time farmers used to spray crops with large amounts of pesticides in order to control insects. This practice was destructive, however, since the pesticides not only poisoned the earth but also were linked to diseases in farmworkers and in many of the people who ate the sprayed food. These problems had gotten worse as stronger and stronger pesticides were needed to combat new varieties of insects that had become resistant to the chemicals.

The problem had been solved by a cooperative effort among the farm council, the soil management research council, and the distribution committee. Through collective meetings, it was decided to reduce the dependence on chemical pesticides by converting many of the farms to a polyculture system (row of several different kinds of crops were alternated one next to the other). This system made it more difficult for the insects to attack the crops. Second, the soil management research council argued for **biological control** methods appropriate for the problem pests. With the guidance of the distribution committee, people became accustomed before long to having some blemished fruits and vegetables. They saw this as a small price to pay for food free from poisons.

Breaktime

At the end of the morning's workshop, Ai-Ling and Stepan joined the farmworkers for lunch. The meal began with a fresh-picked lettuce and spinach salad topped with alfalfa sprouts and sunflower seeds. Stepan boasted a bit to Ai-Ling about the delicious lettuce he grew himself in his garden at home. The main course for lunch was a thick vegetable soup made with rich yellow squash, bright green beans and carrots, flavored with fresh herbs. Everyone shared their gardening tips on the meal's ingredients.





For dessert the class had their choice of fresh persimmons or one of the many varieties of apples grown on the farm. The farmworkers explained to the students that back in the twentieth century most of these delicious varieties of fruit were actually unavailable because the markets emphasized only foods which could be mass produced and mass distributed. People ate square-shaped tasteless tomatoes and the potatoes had actually been stamped into flat chips. "Yechh," said Ai-Ling.

Back to the farm

After lunch, the class learned how the food grown on the farms was distributed in the city. The city people who participated in the distribution committee developed a cooperative system which distributed food in the most-wholesome least-processed fashion while at the same time using as little energy and unnecessary packaging materials as possible. Since the food went directly from the farms to the co-op centers, there were no middlemen involved and therefore high-quality food could be sold for very nearly the cost of producing it.

A problem being discussed on the day of the students' visit was how to get people actively involved in choosing healthy diets for themselves. Stepan and Ai-Ling sat in on this meeting and ferociously took notes for their first report. It was not enough, the farmworkers knew, to simply make wholesome food available to the public at a minimum cost and with minimal damage to the environment. Ai-Ling spoke up and suggested that her family and neighbors would be willing to participate in a local diet council. The diet council would encourage people to try to adopt well-rounded diets and would give people information on food and health.

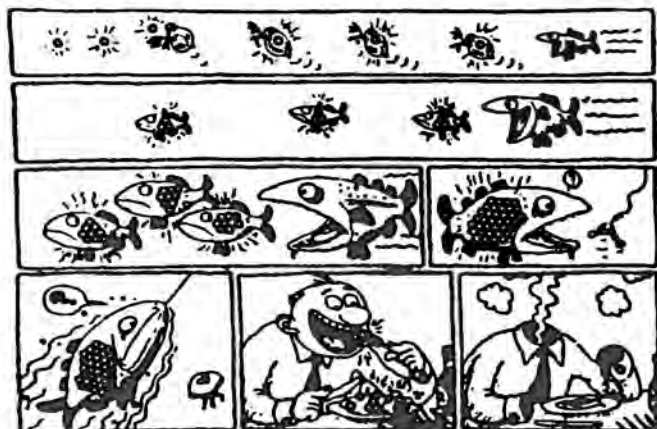
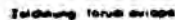
As the students returned home, they chattered about the list of favorite foods they were to bring to the next class.

Each of the following is a headline which might very well appear in your newspaper within the next few years. Some of the events reported point in the direction of Future I and others point to Future II? For each headline, you decide to which future scenario the headline might lead, and why. Mark your choice with a check in the table below.

Which headlines would be most likely to actually occur, considering current events?

1. MegaChemco files patent: producing edible protein from petroleum oil
2. Department of Energy Promises Full Scale Development of Nuclear Power
3. Artificial Fruit and Vegetable Flavors: Government Subsidizes Research
4. Department of Energy States New Priorities for Decade: Solar and Wind Power
5. No Workers: FoodChem's Industrial Complex Entirely Computerized
6. Ultra-Vend: All Food Shopping by Vending Machine
7. Aging Process Halted: Birth-to-Death Slowed
8. Health Goals Reached: Planning of New Policy to Begin for Future
9. Southern Dairy Announces Computer Cow: Synthetic Milk
10. Last Fish Gulps Oil: Increased Oil Spills from Offshore Drilling Wipes Out Last Fish in Ocean
11. Computerized Distribution Centers Announced for Synthetic Foods
12. Meltdown of L.A. Nuclear Power Plant: Prime California Farm Land Destroyed
13. Hidden Roof-top Garden Found: Military Police Thought They Had Wiped Out Last Backyard Garden Two Years Ago

Future		Desirable	Likely to Occur
I	II	yes no	yes no



West German /cp/

Headlines

14. Consumers Boycott Local Supermarket: Demand End to Sugar-Coated Hot Dogs
15. New Synthetic Flavor Introduced for Grain-less Bread
16. Local Community Garden Wins Award for Highest Yield of Sweet Corn Per Acre Ever Grown
17. Factory Workers Have Two Hours for Lunch to Cultivate Vegetable Plots
18. Free Health Benefits to All Who Grow Own Food and Participate in Community Physical Fitness Program
19. New Fall Color for Your Kitchen Fruit Basket: Blue Oranges
20. Lowest Cancer Mortality Rate in 50 Years Reached: Attributed to Increased Number of Physically Fit People
21. Farm Work Experience Incorporated into Student-Designed Curriculum at Urban Schools
22. Earthworm Population Rises After Near Extinction
23. Georges Bank Reports Largest Fish Catch Since 1890
24. MacDonalds Perfects the 5-Second Meal
25. Shellfish and Clams Reborn
26. International Panel Acts to Preserve World's Last Remaining Rice Plants
27. Eating Better: New Agricultural Crops Result in Better Use of Farmland to Feed More People Nutritiously
28. Polar Research: Team Finds New Source of Carbon for Tomorrow's Food
29. New Genetic Disease Linked to Chemical Fertilizer in Food

Future		Desirable		Likely to Occur	
I	II	yes	no	yes	no

Mark Fisher



Discussion questions

1. Given present day situations, which future events that you marked as desirable are also likely to occur? (yes/yes)
2. How many of the events that you consider to be undesirable are likely to occur? (no/yes)
3. Pick five headlines you would like to see and give for each one your idea of just what happenings would make that future event happen soon.

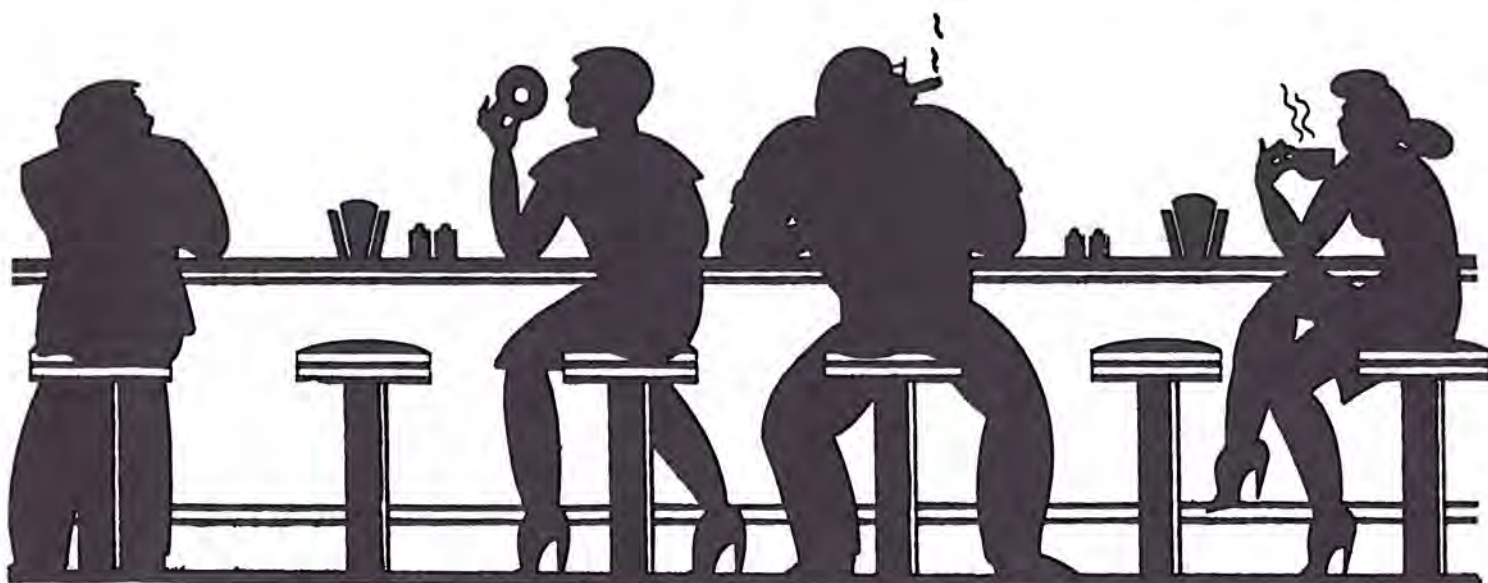
UNIT IV SECTION 5 Global Visions

Personal is political

To bring about change which will correct the large problems of our food system, we must begin with smaller but equally important personal changes. It feels good to be more aware and healthier with whole grains, less fat, and less processed foods. A lot of satisfaction is gained from increasing awareness of what it is we eat, especially if steps are taken to make more decisions yourself. But personal change is not enough. It does not directly change what food products are available to us on supermarket shelves. It does not solve the food problems of poor people whose food choices are restricted by lack of money and unfair control. Even if we eat less meat, the **vegetable protein** cows would have eaten does not automatically become food for starving people. We must make personal changes but we must also move on to the next step. We must join together in groups on a neighborhood or community level and build on our personal changes.

Discussion questions

1. How do you help decide what food is bought by your family or how the food is prepared?
2. What changes could you make in your own daily diet? Why?
3. What changes would you like to make in your family's diet if you could?
4. Have you ever tasted brown rice, whole wheat bread, yogurt, sunflower seeds or other such foods? How do these compare with white rice, white bread, ice cream, and potato chips?
5. Do you feel good or bad after physical exercise? In what way?



We're in it together

Food cooperatives and community gardens, changes on the local level, are a necessary next step. We can feel strength from mutual support. It will be easier to obtain fresh unprocessed and whole foods cheaply if our co-op purchases directly from local farmers or if we grow our own. We can learn by sharing our ideas in food education projects and we can save money by sharing our labor. Local changes are well and good, but they do not go far enough.

As long as co-ops and community gardens stay small they can be ignored by nearby supermarkets. But if they grow enough to be competitive, expect the supermarkets to respond by cut-throat price slashing. A supermarket is usually part of a national chain and can afford to sell products at a loss in one store and make it up elsewhere in the chain. Even if the local co-ops establish a friendly regional network of cooperation, this will not match in any significant way the power of the large **agribusiness corporations** who often operate on a **multinational** scale. These corporations own monstrous farms and feedlots, have **monopolistic** control of many crops, can manipulate the consumer with costly advertising campaigns, and can dispose of surplus products in international markets. While we must join together in communal groups as a step toward bigger change, local changes are not enough.

Discussion questions

1. What organized groups do you belong to?
2. What can a group do that one person cannot do alone?
3. What kinds of stores sell food in your neighborhood and in your city? In what ways do they differ?
4. Why would a supermarket chain or agribusiness corporation discourage you from joining a food co-op or community garden?

Let's get the fat out

We can look to Norway for some exciting changes on a national scale. This **socialist** democracy has looked at its alarming increase in cardiovascular disease and has decided to act by deliberately changing its national food policy. Besides encouraging increased exercise for physical fitness, Norway is selectively applying both price supports and taxes to change which foods are available in the markets. To get away from the traditional emphasis of fatty foods, Norwegian dairies are paid to skim the cream off of milk. But even national changes are not good enough for feeding people in the less developed nations. **Hunger** is world-wide and its causes are not limited by national boundaries.

Discussion questions

1. Since the 1930s the U.S. government has at times paid farmers not to plant their land and has bought up surplus grain crops. Why?
2. What is the Food and Drug Administration supposed to do to protect our health?

The Wizard of Id
By Parker & Hart



World hunger

There are many obstacles to solving the hunger problems of, for example, the people who work on the **cash-cropping** sugar and banana plantations of Central America. Sending a few dollars to CARE or to Foster Parents may be our usual response to the starving children we are shown on TV or magazine ads, but charity does not change the fact that **malnutrition** is due to poverty, and poverty is a question of lack of control of **resources**. Obviously the large land-owners do not welcome any attempts of farmworkers to gain control of land to grow food for themselves, though this might reduce hunger. This threatens their ownership of land.

If we blame the backwardness of farming techniques and poor uneducated farmers for world hunger, we may look to modern technology for a "quick fix" to hunger and be no closer to a solution than from sporadic charity. Simply developing miracle varieties of rice or corn has not alone ended hunger, particularly when high yields per acre may depend on the use of high-pesticide, high-fertilizer, mechanized farming. First, only the richest farmers in Third World countries can afford such expensive inputs. Second, it would be insane for the U.S. to export its own extravagant style of agricultural technology dependent on petroleum, big machines and complex irrigation systems. These are expensive and generally destructive to the environment. New crop varieties must be introduced with a technology *appropriate* to the people who will use it and consistent with their local traditions of agriculture. Poor and hungry farmers must be involved in developing any improvements in their food-growing potential and in making sure they can understand and afford them.

Do not expect the government of many less developed countries

to push for land reform or for a halt in exporting cash crops. Many Third World governments have been propped up by the developed countries whose corporations exploit the cheap labor and abundant natural resources. Even in the poorest of countries, high government officials drive around in big limousines.

Discussion questions

1. In what different ways do Americans respond to world hunger? (ex.: Cambodia - 1979) Do any of these efforts work? Why or why not?
2. Does the U.S. federal government have a policy on hunger aid to poor countries? How does the U.S. government decide which countries to give aid to?
3. In what ways are we encouraged to give to international charities?
4. What does "private ownership of land" mean to migrant farm-workers?
5. What do poor people of a less developed country have to do to gain control of their governments so that it acts in the interest of the people?
6. Can you think of important problems in the world today where we expect scientists to come up with magical solutions?

The Wizard of Id
By Parker & Hart



Imperialism still lives

The reality of the modern-day world is that two **imperialist** super-powers — the U.S. and the U.S.S.R. (Soviet Union) — both control the Bomb and nuclear weapons capable of destroying world civilization. They are continuously vying for spheres of influence around the world (with the older colonial nations of Western Europe still sharing some of that power). There is every reason to believe that the superpowers will resist any change — economic, political, or social — which challenges their power. Not only does their great military power serve as a major obstacle to the realization of independence and self-sufficiency of less developed nations, but the U.S. and U.S.S.R. can threaten with the possibility of nuclear war when one challenges a sphere of influence of the other. This is seen currently as the U.S.S.R. and U.S. compete for energy resources of the Persian Gulf on which the U.S. depends.

Discussion questions

1. How real is the possibility of a nuclear World War III?
2. Find examples in the news of the U.S. and the U.S.S.R. competing for dominance or influence over any less developed countries.



We have met the enemy and it is us

The very enormity of these obstacles is overwhelming. The idea that people can run their own lives is shocking to many people. We tend to find it hard to believe that there could be a world with no bosses nor **bureaucracies**. How could we possibly feed ourselves without any directives coming down from the top of some **hierarchy**, whether from the boardroom of a multinational corporation or from a government bureaucracy of a centralized planned economy? We must not just sit back and wait for change to come, to be handed down by the "wisdom of experts". Even truly inspirational leaders must have participatory support for their programs to succeed. We must not let a feeling of helplessness be an obstacle within ourselves.

Discussion questions

1. What bureaucracies or hierarchies have you ever come up against?
2. Why is it that many Americans do not exercise their right to vote?

How does this compare with other countries? Why do most of us participate very little in running the government?

3. Do you believe that "you can't fight city hall"? Why?

4. What is a true democracy?

Making changes happen

Try to envision a future for the whole world in which the food production and distribution system would be under the control of the people who grow and eat the food. It would provide wholesome, nutritious, enjoyable and affordable food. This future system would protect and replenish natural resources so as to feed generation after generation. Those who labor to feed others than themselves could no longer be oppressed. There would no longer be exploitation of the resources of poor countries by countries richer and more powerful. You can complete the details of this vision yourself.

We should not feel defeated by the enormity of the obstacles which face us nor by the feeling that hunger will always be with us. As an example of the historical fact that it is possible to end hunger, we can look to the changes that have happened in China in less than 40 years. Pre-revolutionary China (before 1949) was characterized by hopeless backwardness, recurring famines, high infant mortality and a long history of being exploited by outside powers. In sharp contrast, a look at post-Revolution China finds a nationwide end to hunger, improved health, increasing literacy, and increasing involvement of the people in making decisions. China has not become, by any stretch of the imagination, a paradise, nor would we suggest that the Chinese experience should just be transplanted to America as a model for us. China's successes have been almost unbelievable but we can point to China and say: change can and has happened! The U.S. is *very* different and changes here would be like nowhere else.

Big changes do not happen suddenly. There are major obstacles to be recognized as inherent parts of our political economic system. But big changes can be built from smaller changes. We must join together and struggle. You can choose to be an activist and a change-maker. Will you help to make the future exciting and hopeful?

Discussion questions

1. What is your vision for the future (presuming anything is possible)?
2. What is your idea of a better system of food production and distribution?
3. Some people call a major change "revolution". What does "revolution" mean to you?
4. How is the background of the U.S. different from or similar to China?
5. Do you find the idea of becoming an active change-maker appealing? scary? an exercise in futility? too demanding? uninteresting? Explain why you feel this way.



Glossary

agribusiness large-scale high-technology corporations producing and distributing food, e.g. Tenneco

alternative technology small-scale decentralized ways of producing energy and manufacturing products — usually protective of the ecology, e.g. solar energy.

amino acids building block of protein. There are 22 amino acids which combine in an infinite number of sequences to make animal and vegetable protein.

anemia disorder caused by low number of red blood cells or low level of hemoglobin — person is easily tired and feels run-down.

arithmetic increase increase by repeated additions of a constant amount, e.g. 1,2,3,4,5.

aseptic free from disease-producing microbes.

authoritarian characterized by unquestioning obedience to authority — lack of individual freedom.

biological control controlling crop pests without the use of chemical pesticides; may involve introducing predators or parasite species; or *pheromones* used = biological attractants which disrupt mating of specific insects.

blood pressure pressure exerted by blood against walls of arteries; has two parts: **systolic** — blood pressure when heart muscle pushing out blood. **diastolic** — blood pressure when heart muscle relaxing — alternates with systolic blood pressure.

bureaucracies administration or government authority through departments of officials with many subdivisions; implies inflexible routine.

Calories unit used to measure the energy content of food

campesinos peasants or farm workers in Spanish-speaking countries.

capitalist class owners of wealth and the means of production in a capitalist society.

carbohydrate organic compound of carbon, hydrogen, oxygen **complex** — starches, cellulose. **simple** — sugars.

carcinogens, carcinogenicity carcinogenic,

- 1 substances causing cancer — certain chemicals, radiation, etc. which make cells grow wildly as tumors
- 2 ability to cause cancer
3. being able to cause cancer

cash crops crops grown to be sold in markets, not for home-use of people doing farming, e.g. cocoa, coffee.

caste class or social level according to family born into part of rigid Hindu system (used in India)

coal tars thick liquid made by distilling coal used to make many synthetic compounds e.g. food dyes, plastics.

colostrum mother's milk produced in first few days right after childbirth — especially rich in nutrients, hormones, and antibodies.

commodity anything bought or sold commercially.

competition (business) rivalry for limited markets or same customers.

complementary protein two proteins which eaten together give the complete set of essential amino acids needed for growth and repair, e.g. soy and wheat.

complete protein a protein food with all eight essential amino acids serving the body best, e.g. meat, dairy products

conglomerate several industries and companies working together as one big corporation.

contract legal agreement, usually written formally.

contraceptives any birth control devices including chemicals and mechanical means.

control (in experiments) a basis of comparison for interpreting experimental results.

convenience (foods) making food preparation less difficult and less complicated.

credit amount of money, available for loans depending on bank's decision about your ability to repay.

deceptive intended to deceive or fool by fraud or by creating an illusion.

deferred bribe bribe — anything (especially money) given or promised to a person so he/she will do something illegal or wrong; **deferred** — postponed.

deficiency disease a disease caused by lack of vitamin, etc. in diet e.g. rickets caused by lack of vitamin D.

dental caries tooth decay.

depleted, depletion emptied or exhausted.

DES - diethylstilbesterol synthetic hormone chemically similar to estrogen (human female sex hormone); used to fatten cattle and also given to women to both maintain and prevent pregnancy; known to be carcinogenic.

diversification,

diversify variety — in business, investment in entirely different types of industries, etc. e.g. Pepsico owning Wilson tennis equipment

ejidos,

ejidatarios

1. government-owned farms (often taking over from large landowners);
2. farmers who share ejido land communally, their own shares being inherited by their children.

ethical according to moral standards of "right-and-wrong".

ethnic names names which traditionally characterize groups of people with their own customs and languages.

export, import

1. export - to send goods to other countries for sale
2. import - to bring into country from outside.

free enterprise economic system ostensibly permitting private industries to operate with minimum control by government.

GRAS list (Generally Recognized As Safe) list of food additives allowed by F.D.A., started in 1958 with additives then common in food products.

geometric increase a sequence of numbers gotten by repeated multiplication by a constant quantity e.g. 2, 4, 8, 16, 32, etc.

glucan sticky polysaccharide (large carbohydrate, like starch or glue) made on the teeth by mouth bacteria from sugar.

grains "staple" or basic food for most people. e.g. wheat, corn, rye, barley, rice, millet.

heart attack stoppage of normal heart pumping, usually due to lack of oxygen to part of heart muscle.

hemoglobin red pigment (coloring) of red blood cells which carries oxygen from lungs to tissues of body.

hierarchies groups of persons arranged in order of rank, grade or class.

hunger state of needing or desiring food.

hypertension = high blood pressure blood pressure higher than is normal for age, weight and sex.

Imperialist refers to the dominance or control over less developed countries for the purpose of extracting raw materials or ensuring world markets and wealth; the use and abuse, and the ignoring of other people for one's own welfare and convenience.

Incomplete protein refers to a food with some but not all the eight essential amino acids e.g. corn and beans separately are incomplete protein; eaten together they are complete protein.

Iron metallic element, symbol Fe, required by body for making hemoglobin of blood; iron deficiency causes anemia.

kidney failure stoppage of waste-filtering from blood by kidney organs.

kwashiorkor severe deficiency of protein, starvation disease.

legumes foods such as soybeans, lima beans, black beans, lentils, peas and peanuts which provide high quality protein when mixed and eaten with grains.

malnutrition too much or too little of a nutrient leading to ill-health e.g. obesity, anemia.

marasmus deficiency of proteins and Calories; starvation disease.

marginalized made economically unprofitable, often by farming the worst land with oldest poorest techniques; pushed to the outside.

modern hospital-style training education of medical doctors in large centralized university hospitals with sophisticated diagnostic tools and high-technology equipment.

monopolistic refers to a monopoly with exclusive control of the market for a certain product or service, so as to fix prices and eliminate competition.

mortality, mortality rate, infant mortality rate

1. death
2. deaths per 1000 per year
3. deaths per 1000 per year of babies less than one year old.

multinational corporation doing business in many nations; also called **transnational** e.g. Nestle.

obesity state of being very fat (usually 30% above average weight for height, age, and sex); a form of malnutrition.

patriarchal ruled by father or men.

pellagra disease caused by lack of nicotinic acid (a B vitamin), affecting intestines, skin, and nerves.

petrochemicals synthetic compounds made from petroleum oil e.g. plastics, food dyes, fertilizer, dyes, fertilizer.

plaque thin layer accumulating on teeth from bacterial deposits; also refers to hardened fatty deposits lining blood vessels.

preservative any substance added to food to keep it from spoiling; refers to any method of keeping food fresh.

proteins complex nitrogen-containing compounds made up of long chains of **amino acids**.

vegetable protein contained in fruits, grains, and all plant cells.

animal protein in meat, fish, milk, egg white.

R.D.A. (Recommended Daily Allowance) 100% RDA = amount of a nutrient suggested for prevention of deficiency disease and for average health.

renewable resource, nonrenewable resource

resource - natural wealth taken from the earth.

renewable - able to be replaced by a new supply e.g. trees.

nonrenewable - limited amount available in earth, not to be restored e.g. fossil fuels (oil, coal).

rickets disease due to lack of vitamin D (or calcium) or lack of sunlight; bones become soft and bent.

risk-benefit

risk - hazard, chance of damage;

benefit - any favorable or giving advantage taken together, used to assess the impact of a procedure.

risk factors characteristics associated with a higher than average incidence of a health problem. e.g. high blood

pressure and smoking contribute to a person's chance of developing heart disease and are therefore risk factors.

scurvy disease due to lack of vitamin C - bleeding gums, bruising easily and weakness or anemia are symptoms.

socialist refers to ownership and operation of the means of production and distribution shared by all members of the community.

standard of living level of subsistence; refers to how adequate the necessities and comforts in daily life are.

starvation long-term lack of food; diseased state.

status quo the existing state of affairs.

stays of execution delays or postponements of legal actions (such as death sentences).

stroke stoppage of oxygen supply to part of brain, usually paralyzing parts of the body.

subsidiary a company owned by another company e.g. Frito-Lay is a subsidiary of Pepsico.

subsidize, subsidy

subsidize - to provide support

subsidy - usually a government grant of money to a private enterprise considered "of benefit to the people".

synthetic produced by artificial chemical combinations, not of natural origin. e.g. rayon, deodorant.

tolerance (levels) refers to the amount of variation allowed, levels above which are not permitted.

torula yeast microbe which can feed on petroleum by-products as a source of protein for constructing synthetic foods such as soups, meat products, barbecue chips.

toxic, toxicity

1. poisonous, capable of being lethal (deadly)
2. state or degree of being toxic

undernutrition lack of or insufficient amounts of nutrients essential for good health.

vegetarian a person who eats no meat; **lacto-ovo vegetarian** - will eat milk, dairy products, and eggs; **vegan** - will eat no animal products.

vertical integration refers to a business or corporation which controls all phases of production and sale. e.g. a seed company also makes the tractors, final product packaging, materials etc.

vitamins complex organic substances in foods essential for normal body functions; contain no Calories and are necessary for life.

vulnerable easily wounded, open to attack.

"Western" life style manner of living, including customary dress, behavior and customs characterized especially by the U.S., Canada, Europe and Japan; consumer-oriented way of living.

working class those people who earn a living by selling labor (traditional Marxist definition - industrial proletariat).