

# New World—New Thinking—New Education

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## A PERIOD OF TRANSITION

The authors of this book have worked together during the worldwide changes around 1990, which present both threats and new possibilities. During our three years of cooperation, the idea of cold war between two superpowers has vanished; instead of the USSR, we have the various CIS countries, which are in extreme difficulties socially and economically. Through the “movements” in the international stock market during these years of instability, everyday life has been changed dramatically worldwide, with a marked widening of the gap between rich and poor. In many industrialized countries, such as the Nordic countries, the general nature of the welfare state has changed. Ethnic conflicts in Eastern and Western Europe have flared up; the former Yugoslavia is torn by civil war; thousands of families are fleeing from their homes without knowing where to go. Developing countries, like Sudan and Somalia, suffer from war and ecological crises; whole families are starving to death. The world of the nineties is crying out for alternatives.

We are at the same time witnessing the birth of a new era—a historic transition that requires new modes of thinking, acting, and institution building. We suggest throughout the chapters of this book ideas and initiatives, in our various fields of work, based on experiences in our different countries: Russia, Ukraine, the United States, Canada, and Norway.

*The Global Context that brought about Our Project*

We started our work with a view of today's world as interconnected and interdependent. As educators we focused on the increasing number of

people who are without security or influence in their everyday lives, people in whom passivity and the habit of being “onlookers” are being bred.

The widening gap between poor and rich is an extremely dangerous sign of the ill health of our global society. Long-standing resentment in many poor countries against the Western powers leads to continuous preparations for war.

People in the rich countries have acquired a life-style characterized by buying, using, throwing away. Money and property have become the symbols of rank, marking off as misfits those who do not “make it.” Increasing numbers of children and young people all over the world expect to grow up as “second-class” citizens; they lose hope in the future, lose the sense of value in their lives. People of all ages in such situations tend to seek distraction and oblivion, to get away from themselves.

### *The Global Village*

Ecology and economy are increasingly interwoven—locally, nationally, and globally—into a seamless net of causes and effects. When the local resource base is impoverished, wider areas are affected. Deforestation of highlands causes flooding of lowlands. Factory pollution depletes the local fishing catch. Acid rain and nuclear fallout spread and pollute across national borders. Threats are emerging on a global scale: global warming is changing the climate, gases are depleting the ozone layer. Hazardous chemicals enter foods that are traded across continents, causing illness among exporters as well as importers.

In international trade, powerful forces are in a position to decide who is going to produce what and how, and how much is going to be paid on either side. The current approach requires the poor to remain in poverty while they provide increasing amounts of scarce resources for export. A Tanzanian producer must work 150 hours or more to pay for goods that cost a Scandinavian producer 15 hours’ work—as is the case when Tanzania trades its cotton for Scandinavian bicycles. Senegal produces carnations instead of wheat, because international decision makers have the power to regulate what the country produces. Senegal gets foreign currency in the exchange, but the food that must be imported to compensate for not growing wheat is so expensive that the population is left poorer than ever. The soil is abused and in twenty years may be exhausted; erosion sets in.

Hundreds of millions of people are denied basic human rights. Growing distrust and injustice are becoming a time bomb of resentment and hate. In Peru, 80 percent of the population do not have enough food. Crime is all-pervasive; three thousand abandoned “street children” roam the streets of the capital, Lima, getting what they need for the day by attacking unprotected people in the back streets. A fifteen-year-old leader of a gang, asked by a journalist what his future as an adult will be, replies: “I hope to be a terrorist, a thief, or a kidnapper, and so do most of my comrades.”

The deterioration of the Earth’s life-support system is threatening, as is the potential human toll from failing to act. With increasing awareness of the scarcity of resources, people in power will increasingly monopolize those resources to benefit their own circles, firms, families. If we fail to act to protect our resources for the benefit of all, we will lose confidence in ourselves, in the establishment, and in the future—hence breeding a general sense that our ability to direct our destiny is slipping away.

### *Ecology and Economy are Interlocked*

Inequality between human beings is the planet’s main “developmental problem.” Economic inequality is the planet’s main “environmental problem.” The debt of the Third World, now at one trillion dollars and increasing by some hundred billion dollars a year, has grown beyond all reasonable hope of repayment, in a sort of irresponsible international pyramid game.

Interest payments of a hundred billion dollars per year have reversed the traditional situation, leading annually to a net capital transfer from poor to rich countries. In many heavily indebted Third World nations, the economic and social progress that normally lowers birth rates has been replaced by falling incomes. Hence, populations continue to grow rapidly, destroying the environmental support systems on which future economic progress depends.

A characteristic of the production system is the use of large-scale technology and enormous amounts of chemicals. On huge *monocultures*, owners grow one commodity such as coffee, cocoa, or cotton; they earn as much as possible and abandon the land when the soil is impoverished. The capital, earned over a short period, can then buy new land for a new round of short-term use.

The natural resources of clean soil and water are thus rapidly depleted.

The resulting environmental pressures cause the millions who are most severely hit to seek new places to live. Increasing numbers move to the cities, hoping for new opportunities. If today's trends continue unchanged, Mexico City, with sixteen million people in 1982, will have twenty-six million by the year 2000, and Bombay will increase from eight to sixteen million over a twenty-year period (UN projections).

Globally, military expenditures total about one trillion dollars a year and may continue to grow. Even in many developing countries, military spending adversely affects the struggle for development. At the UN World Summit in Rio in June 1992, detailed information about the issue was distributed to the world's NGOs (nongovernmental organizations). Various global programs for solving major human needs and environmental problems were presented, together with the annual costs for each program. Their combined total costs were shown to be approximately 25 percent of the world's total annual military expenditures (World Game Institute 1991).

It has become evident that the notion of "security" must be expanded to include the growing impacts of environmental stress. In all parts of the world, the arms race preempts resources that might be used more productively to diminish the security threats and resentments that are fueled by widespread poverty.

Over some decades a lawless interdependent market has generated dangerous global forces that are devastating local development and perpetuating injustice. These forces are rapidly becoming stronger, threatening the world with economic collapse and destroying the environment.

In a short period of time our human world of five billion must make room for five billion more. Ninety percent of the increase will occur in poor countries; 90 percent of that growth will be in already bursting cities. Industrial production has grown more than fiftyfold over the past century, and four-fifths of this growth has occurred since 1950.

Such figures presage profound impacts upon the biosphere, as the world invests in buildings, transportation, farms, and industries. Much of the economic growth draws raw material from forests, soils, seas, and waterways.

We are forced to concern ourselves with the impacts of economic growth on the environment. We can see before our eyes the degradation of soils, water, the atmosphere, and forests. There is a growing realization that it is impossible to separate economic developmental issues from

environmental issues. Many forms of development erode the environmental resources upon which they must be based.

Environmental degradation, in turn, undermines economic development. Poverty is a major cause and effect of global environmental problems. It is futile to deal with environmental problems without addressing the factors underlying world poverty and international inequality.

#### A SHIFT IN PARADIGM

##### *Our Beautiful and Fragile Planet*

When in 1982 the Scandinavian peace movement organized a peace march from Stockholm to Moscow, we focused on the idea of the unity of our world. Valentina Tereshkova, the first woman cosmonaut, told us how she had been awakened to the feeling of caring for the planet when she was circling around it. “I marveled,” she said, “at the beauty of our Earth, looking at it from space. I realized how tiny and fragile it is, suspended in the darkness of space; suddenly I knew that all of us belonged to *one* independent life-support system. The boundaries I knew when drawn on the map were just artificial; however we have hurt each other—the differences between us are insignificant—*compared to what we share.*”

Today an increasing number of people share this idea. More and more of us know that we are one human species belonging together on a fragile planet. We, as humans, must find a way of life that satisfies our basic needs *and* gives our life meaning and purpose. We have to learn to *care for* the integrated system that we belong to.

For tens of thousands of years, human beings were few on the planet. We were able to produce and transport what we needed without doing much damage to our environment. We had modest tools; we could burn, deforest, deplete, pollute, and even go to war over the best pieces of land. Families and cultures might become insecure, but the system as a whole was not threatened (Capra 1982, 1988).

Near the year 2000 now, we number five billion. Some of us have an enormous ability to destroy; many more of us do damage to our environment through our life-styles. At this moment in the history of Earth, humans can no longer choose whatever life-style they please. To violate others, or to violate nature, is to violate the system and therefore our-

selves. Gradually we have started to acknowledge the idea that the value of education must be judged in relation to health and well-being for all humankind and for the planet as a whole. So, in the nineties we start to call for a new type of education.

### The Old Way of Thinking

At this point in our history we have to learn new ways of understanding the present and future world. We have started to see that we are threatening our common future, and that something is fatally wrong with the values we cherish, and with our thinking and acting as well. Historically, the breakthroughs of natural science in the seventeenth century may explain the development of the Western educational system. Galileo, Descartes, and Francis Bacon established a way of thinking that made us separate intellect and understanding from emotion, creativity, humor, and wholeness, and separate a person from his or her surroundings.

Bacon established the alliance between *knowledge* and *power* that today, three hundred years later, has become an alliance between knowledge, government, and business. Natural science from the 1700s till now has laid the foundations for the way we cultivate the analytical human being and reward those who work in their various sectors in a “thought” world.

The worldview that emerged with Newton, Bacon, and Descartes includes these ideas:

- The universe is a mechanical system composed of elementary building blocks
- The human body functions like a machine and can be treated without understanding the human being as a whole
- Society is in a constant competitive struggle for existence
- The different human cultures are natural enemies; even more so are the different species
- Material progress is unlimited and may be achieved through technological and economic growth
- Human beings have a right to be in control of nature

In the seventeenth century the basis was established for what Paulo Freire prefers to call “modern education.” Modern education is connected with

an abstract and value-neutral tradition of knowledge that promotes the cultivation of certain habits of thought. Thinking sharply and clearly came to mean

- understanding problems and issues by dividing them into fragments,
- specializing in sectors of knowledge, and
- seeking for chains of cause and effect. (Freire 1970)

The British-American philosopher Gregory Bateson (1972) has characterized this worldview—which he calls the “old way of thinking”—by depicting a vicious circle, the dynamics of the ecological crisis: famine, population growth, war, high technology, pollution; all interconnected. He shows us that an important driving force in this vicious circle is the hubris, or arrogance, of the concept that human beings can and should be in control of nature (Bateson 1972, figure 1).

### The Turning Point

Fritjof Capra writes in his book *The Turning Point* about a necessary “shift of paradigm” from an old way to a new way of thinking. The word *paradigm* means a shift in understanding; it concerns much more than “new thinking”—it concerns our whole world outlook and way of life. “A paradigm for me,” he says, “would mean the totality of thoughts, perceptions and values that forms a particular vision of reality, a vision that is the basis of the way a society organizes itself” (Capra 1988). To Capra it is vital at this point in the history of human beings that we should have a new model of understanding when analyzing our problems. This model is characterized by *unity* and *interconnectedness* (Capra 1982).

### New Thinking

In *Steps to an Ecology of Mind* (1972) and *Mind and Nature—A Necessary Unity* (1979), Bateson goes into the concept of “new thinking,” basic alterations in all we think and do. This concept involves assuming a feeling of personal and historic responsibility for everything that lives on planet Earth. We can no longer do anything we choose. We must reject life-styles not compatible with the sustainability of nature. We need to cultivate our



abilities to see the interconnected world, generated by our love of fellow human beings and of nature. *Ability to love* must be the core of education.

Gregory Bateson is among those who have laid the basis for a new tradition in thought better suited for the tasks of our time. The crises that threaten humans and the planet with collapse are better understood and dealt with by using as our tool *system thinking* and *ecological thinking* (Bateson 1972). This means to study phenomena

- as wholes instead of as fragments,
- as belonging together instead of as parts, and
- as circular instead of as chains of linear cause and effect.

From the start of our project we also studied the ideas of Mikhail Gorbachev, which at the time were expressed in his UN speeches and published in his book *Perestroika: New Thinking for Our Country and the World* (1987). Gorbachev outlines his views on new thinking in politics in terms of global systemic thinking, the emergence of thinking that perceives an interrelated and integral world. Efforts to solve global problems require “cooperation, co-creation and co-development.” “The use or threat of force can no longer be an instrument of foreign policy” (Gorbachev, UN speech, 1989).

In the early seventies, Arne Naess made a distinction between “shallow” and “deep” ecology. *Shallow ecology* thinks of humans as above nature and the source of all value. Nature is something to be used by human beings, respectfully, but still for their own purposes. Deep ecology sees the world as a network of phenomena that are basically interconnected; all living beings have intrinsic value, and human beings are just one particular species in the web of life. The human spirit is understood as a consciousness in which the individual feels connected to the world as a whole (Naess 1988; see chapter 2, this volume).

Also in the seventies, Gregory Bateson wrote that the core of personality is the habits, attitudes, and expectations that have unconsciously been established through the ways we have been learning. These habits of thought continue to function as long as we do not make an effort to change them. Such habits may be transmitted down through the generations, just as we are “cultivated” in the way our parents and grandparents thought. When we as a later generation thought about the importance of competition and specialization, we might never have questioned



these concepts, which then became the very ideas with which we thought. It is said that we as individuals are “cultivated” when we have “forgotten what we have learnt” (Bateson 1972).

According to Bateson, some of our “illusions,” as he calls them, are unconscious parts of our culture. David Orr (1991) claims that the foundations for modern education laid down by Bacon, Galileo, and Descartes are “enshrined in myths that we have come to accept without question.” Fritz Schumacher (1974) lists “leading ideas” in our present culture, all stemming from the nineteenth century, that still “dominate the minds of educated people today” (Schumacher 1974).

#### EDUCATION FOR A NEW WORLD

Throughout history the main idea behind education has been to introduce the existing culture to children and young people and stimulate them to take over and advance along the same lines. Education was to encourage work with concepts, knowledge, and values that were basic for the society of the time as well as find methods to help the new generation carry this on for future generations and make further progress.

Today we have abundant reason to view the dominant culture with skepticism. Do we dare to ask the young generation to go on developing our knowledge and life-style? It becomes more and more clear that the health of Earth is in danger; she may even collapse altogether. Our way of living threatens the stability of our climate, the vitality of the biosystems, and the health and beauty of nature. When we study the tragic effects of our civilization and our way of life, it is important to remember that the problems cannot be explained by lack of information, knowledge, schools, and education. The people who have been the leaders in the various fields of society—the academicians, the top politicians, the directors of production and trade, the leaders of our military systems—have had the best education available to them in their respective countries.

In 1990 Elie Wiesel made this point in a speech to the Global Forum in Moscow when he talked about how the designers and perpetrators of Auschwitz, Dachau, and Buchenwald—the designers of the Holocaust—were the heirs of Kant and Goethe. In most respects, he said, the Germans were the best-educated people on earth, but their education did not serve as an adequate barrier to barbarity.

What was wrong with their education, according to Wiesel? “It emphasized theories instead of values, concepts rather than human beings, instruction rather than consciousness, answers instead of questions, ideology and efficiency rather than conscience” (Wiesel 1990). Wiesel challenges modern education on the same basis as other contemporary critics, such as E. F. Schumacher, Paulo Freire, Wendell Berry, and David W. Orr. One recurring theme is that something must be wrong with an education that substitutes knowledge of technology for the understanding of human beings; substitutes inquiry into fragments for the study of nature in its complexity; substitutes efficiency in producing things for caring about living beings; and stresses the importance of competition instead of encouraging cooperation between human beings.

We can see these priorities when we are looking for the type of knowledge that is rewarded in the industrialized world. Most often our pride concerns education as the basis for amazing progress in science and technology; it has opened up new opportunities in the material field that we could not even imagine a hundred years ago. Today we also see that some of the results are far beyond what we might call “progress.” We have technology that gives individuals and groups tremendous power of destruction. We can observe how individuals as well as firms rank efficiency in their own sector above what serves society and nature as a whole. For instance, consider the production of colossal machines to reshape landscapes that were developed over thousands of years; they use enormous amounts of harmful chemicals in vast areas, destroying land, rivers, and seas for future generations.

Gradually we are starting to look for a new mode of education that may benefit the health of human beings and the health of the planet as a whole. We have started to understand that human beings, with their needs and desires, must be recognized as an integral part of all life on Earth. In the 1990s we may see more clearly than before that it will be of vital importance to focus on such questions throughout the decade and into the next century.

We have started to suspect that education cannot save us and our planet merely by being extended. We have started to think that the only way to save the future for our children and grandchildren, and save the planet, is to restructure our system of education. We are beginning to look for *better* education.

## HABITS OF THOUGHT

All through childhood and youth, before our conscious minds are developed, ideas seep into our minds, multitudes of them, in what Schumacher calls “the dark ages,” during which we are only inheritors of ideas. When we begin to think, we can do so only because our mind is already filled with ideas with which to think (Schumacher 1974, 80).

We often notice that other people have more-or-less fixed ideas—ideas they think with without being aware of doing so. We call these “prejudices,” which may be correct because these ideas have merely seeped into the mind and are in no way the result of judgment. They may be dangerous ideas, such as *Human beings are the superior species*; or *If this is my property, I can do with it whatever I like*; or *I used to be the best student, so I have the right to a higher salary*.

If ideas like *I ought to be superior* or *I ought to control others* seep into our minds in early childhood, we may go on believing in them, especially if we are never encouraged to reflect on our habits of thought or to discuss differences in basic ideas. Some nineteenth-century ideas are firmly lodged in the minds of most everybody who has had what Paulo Freire calls “modern education”—specific ideas about property, competition, power, efficiency. People who have not had much education receive such ideas all the same, if they do not have their own basis of understanding through everyday experience. We might talk about *the knowledge of experience*: the farmers’ wisdom, fishermen’s wisdom, women’s wisdom, the wisdom of those who have reflected on their everyday lives. For anyone who is uneducated and also lacks the knowledge of experience, the “big ideas” of yesterday will not make the world intelligible. Such people long for an education that will help them find meaning and understanding; but modern education provides them with no guidance. It may be important to take a look at some of the habits of thought that are cultivated in traditional education.

*Knowledge is Power*

We tend to believe that knowledge is important because it gives us power. We tend to believe that when we get knowledge it should be used to get *power over* other people and over nature. This way of thinking directly

intensifies the crises of our time. People who are trained in this habit of thought seek to maximize profit and exploit nature, just as we see being done in our superindustrialized world. In Bacon and Descartes's tradition we have accepted the belief that human beings can and ought to dominate other species and nature; that they can—and ought to—be able to control other humans.

The major part of higher education is constructed on this habit of thought. We have come to think that theoretical knowledge can eradicate ignorance and make it possible for us to have full knowledge of nature. With our huge machines, we are today in full swing of destroying living conditions for plants, animals, and humans on the planet, and of ruining the future by trying to dominate nature.

Gradually we are being forced to admit that theoretical knowledge will always lag behind when it comes to understanding reality in development. Living nature is always changing; we have to struggle to understand what has been and what is today, and we *never fully understand what is to come*. The insight we gradually get about the connectedness, the wholeness, that we are part of, helps us to discover our lack of knowledge, again and again. This continuous discovery makes it possible to become not only knowledgeable, but also *wise*.

We can never control the planet, in its ever-transforming complexity. If, like Goethe's wizard's apprentice, we live in the illusion of having such power, we may start processes that we cannot stop when they have gotten into their stride.

Instead of trying in vain to get control over nature, our main objective as human beings should be to learn how to control ourselves, our own wishes, our life together with others, our local community, our society. We may then, as time passes, learn to live together and learn to live in peace with nature. We cannot risk the future of the planet by trusting in a game, however well we think we know the rules of the bargain.

### *Technology as Problem Solver Number One*

A dangerous habit of thought is the belief that technology can solve our problems. We have seen how technology can do what we tend to call "miracles." Today a powerful trend seems to support the idea that we can pollute rivers, seas, and oceans, cut down enormous rain forests, transform huge landscapes—and rely on future technology to repair the damage done to the planet.

Today we tend to believe that we can restore, even reconstruct, a living system, such as a destroyed rain forest, with the help of technology. We tend to believe that if we understand the different parts, the whole may be taken to pieces and put together again at will. We cannot know what future technology will be able to achieve; but to act as if we know is stupendous irresponsibility.

Young people today can go through modern education and reach their twenties without ever gaining an understanding of the connection between the various disciplines of knowledge. We train economists who do not, in their evaluation of welfare, take into account elementary ecology. They are not aware of the costs that are handed over to the next generation when resources are exploited, the soil destroyed, air and water polluted. They do not take into account that the use of resources may damage an ecoregion. This is not because they do not know the facts, but because they work inside an artificially limited sector.

Gregory Bateson is among those who take a stand against these habits of thought arising from life in a sectorized society. He writes about an obsolete way of thinking that is characterized by these basic beliefs:

- it is us against the environment, it is us against other human beings;
- it is the individual (individual firm, nation) that counts;
- we can control nature and always achieve new ways of controlling;
- we live within limits that can always be extended;
- it is primarily economic laws that decide developments;
- technology can solve our present and future problems;
- book knowledge surpasses knowledge developed from experience.

(Bateson 1972)

### *The Illusion that Book Knowledge is Superior*

A third habit of thought—or illusion—is the idea that knowledge arrived at through books is more important than knowledge arrived at through personal experience. This way of thinking is cultivated in our educational system even though it has met with skepticism throughout the centuries (for instance, in Molière's comedies about people who understand everything "in heaven" but nothing in everyday life).

It is a deeply rooted perception that book education is the number one bearer of culture. Specialists are expected to have a decisive word when decisions are made, for instance, with regard to child care, illness,

and death, as well as national politics. We forget that a specialist is one who knows more and more about less and less. We have come to believe that less formal education means greater ignorance.

This perception of education has lost sight of the basic knowledge that every person has—knowledge we get through our own experience throughout life. Through experiences in our families, at play, at work, in nature, through perceiving ourselves being together, working together, talking together, we learn basic skills, learn what responsibility is, what happiness is, what creativity is, what it means to manage to give and receive help and to solve problems together with others. We learn that we ourselves are part of the wonderful nature around us, and that animals and flowers, like human beings, have their own specific value and beauty. All this human knowledge can be lost if nothing but formal education is given throughout childhood and youth. “For what shall it profit a man, if he shall gain the whole world, and lose his own soul?”

#### *Competition Is the Main Motivation*

A fourth habit of thought basic to our educational system is that a person learns more and better through competition. Our world does not need more people competing with each other. Reaching the top in riches and success is definitely not needed as an aim of education.

What the planet needs is an increasing number of people working for a healthy natural environment, healthy values, healthy political systems, a healthy economy, and healthy living conditions for everybody. But the system of education as it has developed throughout the last few hundred years does not contribute to justice, care, cooperation, or sound living conditions. Instead the educational system focuses on grades, notes, marks, competition, a ranking system.

#### *Our Culture Leads to Progress*

Another dangerous habit of thought, or illusion, is that our civilization represents the pinnacle of human achievement. Such a view shows a frightening lack of insight into the history of humankind and makes us close our eyes to dangerous fallacies in our civilization. It is the fashion nowadays to talk about the West as having won the cold war between East and West, and to claim that capitalism has shown its superiority to communism.

It is clear enough that the authoritarian communism of the former Soviet Union and in many countries throughout the world has collapsed because neither human beings nor nature can exist under an autocratic control system for long periods.

But the capitalist system has failed as well. It has also destroyed nature; it stands for injustice and exploitation of resources. The capitalist system is also trading with our future. The system fails also because it destroys our values and sets the demand for “economic freedom” as its highest value. The capitalist system has built a world of profit for the few and a world of poverty for hundreds of millions of people. Capitalism today is a culture in disintegration; it does not cultivate ethical values, beauty, or compassion, nor does it encourage responsibility and cooperation (Orr 1991).

It does not bode well for our collective insight into nature that people over large parts of the planet are being driven from the countryside into the big cities, driven from responsibility for soil, forest, and water into the slum areas of the metropolis and skyscrapers. Those who take over the deserted areas of the countryside and manage soil, forest, and water today are increasingly the far-off firms and directors who do not themselves experience the effects of their operations (Orr 1991).

It is possible to go on listing habits of thought like those mentioned above, key concepts in our educational system; in the current context the five ideas mentioned may suffice to show that we take ideas for granted just because they are *habits of thought*. They were leading ideas of the nineteenth century that claimed to do away with metaphysics, but were themselves a life-destroying type of metaphysics. We are suffering from them as from a fatal disease, one that may bring unlimited sorrow in the third and fourth generations. The errors are not in science, but in philosophy (Schumacher 1974, 88ff.).

#### THE MAIN ISSUES

As we approach the twenty-first century, we realize that an “economic” worldview is dominating our world. The human species is divided into a small minority participating in managing society and an ever-increasing majority who are onlookers. Too few people are participants outside their close family groups. The result is that, unintentionally, we humans are poisoning and destroying our world. Too few have authority and



training when it comes to protecting living systems. Life on the planet, plants and animals, children and adults, get too little care and too little love. The question presents itself with increasing force: How can the educational system prepare the young for the most important of all tasks—responsibility and caring? What are we looking for in an educational system of today? Let us mention just four urgent tasks.

### *Better, Not More, Knowledge*

Up to the present time we have believed that if the amount of knowledge increases, human beings will be better equipped to solve problems. But most of the knowledge “exploding” around us does not at all increase our insight into important issues. Most of the flood of knowledge concerns more and more limited sectors that do not improve our insight and understanding. We get too little of the knowledge that can help us to understand our lives and the connection between ourselves and nature.

There are more and more people in authority who know a lot about specialties, who “are famous all over the world among those three that understand what they are talking about.” What we need is more people who know a lot about human beings and about society as a whole, the local society, the country, nature.

### *Learning for Life*

Education is not first and foremost to master academic disciplines. Every subject ought to be a tool for mastering oneself as a person in the society one belongs to. A knife is a dangerous tool for those who cannot master themselves; a knife is indispensable for those who can. We stop a two- or three-year-old who wants to handle a sharp knife. Slowly, through information and training, the small child gets to know how to use the knife. The training begins with a knife that is not dangerous and continues with sharper and more pointed ones, as the child’s ability to be responsible increases.

The learning of knowledge and skills, learning to use tools, must be combined with the possibility to learn how the tools are to be used in the environment one belongs to. This principle is valid for all types of knowledge and training. The person who is learning has to practice and get training in responsibility: *how to use one’s knowledge and skills*. Education

must therefore be organized as *a combination of theory and practice*. A learning program is not finished until the content of it is put into use.

We have dangerous examples of how technology is used in irresponsible ways, as in the case of radioactive materials and harmful chemicals that poison the soil and destroy the ozone layer. The Chernobyl accident, the desertification of Africa, and the destruction of the rain forests in the Amazon are disasters caused by people who have power to use the tools without having learned to take responsibility. The accidents will continue and increase in size until we get a new mode of education that combines knowledge and skills with training in responsibility and consciousness of values.

### *Ecological Responsibility*

Education must further ecological responsibility. All students must learn to see themselves as part of nature. In earlier times, each generation had to learn that drinking water should be protected against pollution and the resources of the local society should be protected against exploitation. Today we must learn that nature as a whole must be protected. We must learn that we are not allowed to use tools for our own benefit if that use of tools destroys part of nature today or in the future. During the decades ahead we will not avoid these ecological demands. They concern curricula at all levels. Students must learn ecology in theory as well as in practice. To learn a discipline—economics, for instance—without studying the ecological implications of the production of goods can never be useful training; on the contrary, such training is dangerous.

### *Learning through Examples*

Education for our time means education for a new life-style, *experiencing* the connection between theory and practice. The South American educationist Paulo Freire liberated new cultural forces by encouraging habits of learning through personal experience and change of life-style.

In the education that Paulo Freire organized, the adult students worked in their jobs and at the same time chose their own themes for study connected with their everyday lives. They were learning theory that was useful in connection with their own praxis. To practice on the basis of theory that concerns one's own problems means to acquire knowledge that develops independence and self-respect.

The opposite happens when, in the system of education, lessons about threats against nature and about human responsibility do not lead to the use of the knowledge in practice. Protection of nature may be taught at the same time as the school itself contributes to wasting resources and polluting the surroundings. Through this procedure the educational system demonstrates hypocrisy and apathy. The students then learn first and foremost that society and they themselves are helpless with regard to the future. It is vital that education combine information with ways of *using* that information. Education must organize action in accordance with the message, combine words and deeds—the first and second orders of communication. This is not done in today's schools, the most visible lesson of which is to acquiesce and be resigned.

The setting of the learning program becomes decisive; methods and ways of learning are just as important as content; the process is just as important as the product. A text or a theme that is handed over to the students to learn by heart or to study at their desks becomes training in passivity—or even apathy. When classrooms are not connected with possibilities for practice, the whole school design announces that the content and material of knowledge are isolated from reality.

Such students study maps about deforestation and statistics about chlorofluorocarbon emissions, get information about the depletion of the ozone layer, and see pictures of starving children in Somalia, but the students themselves are left standing outside the picture. They are not invited to join in any action to improve the situation or to take a step to contribute to an alternative development.

The architecture of buildings for this type of formal education announces that the students are onlookers and are expected to stay with their books. The buildings would look different if they were organized for cooperation, initiative, participation, responsibility, and ecological projects.

## CONCLUSION

Today humanity has arrived at a turning point in its history; the educational system must, as must all facets of society, redefine its task. Taking into account the knowledge we have about the health of the planet, the task is nothing less than to bring about—during the coming two or three

decades—manifest changes in our cultures and life-styles. The basic need is for the new generations to learn how to combine crucial knowledge with the power to act vigorously on the basis of common values, universal human rights, cooperation, and harmony with nature.

Together the generations must redefine their collective work for the health and welfare of nature and human beings. Students need to develop ways of thinking based on insight into connectedness and the fact that their actions have impacts like rings in the water. To eradicate destitution all over the world is our common cause. To prevent global warming, erosion of the topsoil, and the thinning out of the ozone layer are concrete and practical tasks here and now. Through education, students should be able to see what they can do to protect nature and take care of their fellow human beings. In work with practical tasks they should be able to learn stewardship and develop the courage to make changes.

A new type of education will organize for participation in protecting the environment. Through education, students will learn to see that they are part of the living network of society and nature itself. Gradually, as a majority gets this type of education, a transformation of life-style and culture will establish a safer basis for life on Earth and a future for humankind.

An ecological and cooperative education encourages human beings to learn the *habits* of interaction and cooperation, the *attitudes* of searching for knowledge and taking initiative, and the *expectations* of choosing action on the basis of sustainable values. At this point in our history it is vital to remind ourselves that we have enough knowledge and better means than ever before to change our system of education into global cooperation for a better future.

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