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The Alternative to Welfare: Creating Jobs in the Third Sector

Adapted from The End of Work: The Decline of the Global Labor Force and the Dawn of the Post Market Era

By Jeremy Rifkin

After years of wishful forecasts and false starts, the new computer and communications technologies are finally making their long anticipated impact on the workplace and the economy, throwing the world community into the grip of a third great Industrial Revolution. Already millions of workers have been permanently eliminated from the economic process, and whole job categories have shrunk, been restructured, or disappeared.

The Information Age has arrived. In the years ahead, new, more sophisticated software technologies are going to bring civilization ever closer to a near workerless world. In the agricultural, manufacturing, and service sectors, machines are quickly replacing human labor and promise an economy of near automated production by the mid decades of the twenty first century. The wholesale substitution of machines for workers is going to force every nation to rethink the role of human beings in the social process. Redefining opportunities and responsibilities for millions of people in a society of declining mass employment is likely to be the single most pressing social issue of the coming century.

Social Wages

Up to now, the marketplace and government have been looked to, almost exclusively, for solutions to the growing economic crisis facing the country. In the current debate over corporate downsizing, mass layoffs, and the emerging two tier society, few pundits have considered the potential role of the Third Sector in restoring the work life of the country. In recent years, we have become so preoccupied with the market and public sectors that we tend to forget that the nonprofit or volunteer sector has played an equally important role in the making of the nation. Today, with the formal economy less able to provide permanent jobs for the millions of Americans in search of employment and with the government retreating from its traditional role of employer of last resort, the Third Sector becomes our last best hope for absorbing the millions of displaced workers cast off by corporate and government re engineering.

The Third Sector cuts a wide swath through society. Nonprofit activities run the gamut from social services to health care, education and research, the arts, religion, and advocacy. There are currently more than 1,400,000 nonprofit organizations in the United States with total combined assets of more than $500 billion.

The assets of the Third Sector now equal nearly half the assets of the federal government. A study conducted by Yale economist Gabriel Rudney in the 1980s estimated that the expenditures of America's voluntary organizations exceeded the gross national product of all but seven nations in the world. Although the Third Sector is half the size of government in total employment and half its size in total earnings, it has been growing twice as fast as both the government and private sector in recent years. The independent sector already contributes more than 6 percent of the GNP and is responsible for 10.5 percent of the total national employment. More people are employed in Third Sector organizations than work in the construction, electronics, transportation, or textile and apparel industries. The American people ought to consider making a direct investment in expanded job

creation in the Third Sector or social economy as a means of providing meaningful employment for the increasing number of jo themselves locked out of the new high tech global marketplace. The state and federal governments could provide a "social wage" as an alternative to welfare payments and benefits for those permanently unemployed Americans willing to be retrained and placed in community jobs in the Third Sector. The government could also award grants to nonprofit organizations to help them recruit and train the poor for jobs in their organizations.

An adequate social wage would allow millions of unemployed Americans, working through thousands of neighborhood organizations, the opportunity to help themselves. Providing a social wage in return for community service work would also benefit both business and government. Reduced unemployment means more people could afford to buy goods and services, which would spur more businesses to open up in poor neighborhoods, creating additional jobs. Greater employment would also generate more taxes for the local, state and federal governments. What's more, a rise in employment would cut the crime rate and lower the cost of maintaining law and order.

It is often argued that simply providing income or job training is of little help if not accompanied by concrete programs to help educate the young, restore family life, and build a sense of shared confidence in the future. Extending a social wage to millions of needy Americans and providing funds for neighborhood based organizations to recruit, train, and place people in critical community building tasks that advance these broader social goals, would help create the framework for real change. Public works projects and menial work in the formal economy, even if they were available, would do little in the way of restoring local communities.

In addition to providing a social wage for the nation's poorest citizens, serious consideration should be given to an expanded concept of social income that would include social wages for skilled workers and even management and professional workers whose labor is no longer valued or needed in the marketplace. A viable Third Sector requires a full range of skills, from minimum entry level competence to sophisticated managerial experience. By providing a job classification scheme, grading system, and salary scale similar to the ones used in the public sector, Third Sector organizations could recruit from the broad ranks of the unemployed, staffing their organizations with the proper mix of unskilled, skilled, and professional labor that would insure success in the communities they serve.

Financing a Social Income

Paying for a social income and for re education and training programs to prepare men and women for a career of community service would require significant government funds. Some of the money could come from savings brought about by gradually replacing many of the current welfare programs with direct payments to persons performing community service work. Government funds could also be freed up by discontinuing costly subsidies to corporations that have outgrown their domestic commitments and now operate in countries around the world. The federal government provided transnational corporations with more than $104 billion in subsidies in 1993 in the form of direct payments and tax breaks.

Additional moneys could be raised by cutting unnecessary defense programs. Even though the Cold War is over, the federal government continues to maintain a bloated defense budget. While Congress has scaled down defense appropriations in recent years, military expenditures are expected to run at about 89 percent of Cold War spending between 1994 and 1998. In a 1992 report, the Congressional Budget Office concluded that defense spending could be cut by a rate of 7 percent a year over a five

year period without compromising the nation's military preparedness or undermining national security.
Perhaps the most equitable and far reaching approach to raising the needed funds would be to enact a value added tax (VAT) on all nonessential goods and services. While the VAT is a new and untried idea in the United States, it has been adopted by more than fifty nine countries, including virtually every major European nation.

The main disadvantage of a value added tax is its regressive nature. A sales tax falls disproportionately on lower income groups, especially if it is imposed on basic necessities like food, clothing, housing, and medical care. A VAT also places a greater burden on small businesses, which are less able to absorb and pass on the costs. Many countries have greatly reduced and even eliminated the regressive nature of value added taxes by exempting basic necessities and small businesses.

By enacting a value added tax of between five and seven percent on all non essential goods and services, the federal government could generate billions of dollars of additional revenue more than what would be required to finance a social wage and community service program for those willing to work in the Third Sector.

Powerful vested interests are likely to resist the idea of providing a social wage in return for community service. Yet, the alternative of leaving the problem of long term technological unemployment unattended is even more onerous. A growing underclass of permanently unemployable Americans could lead to widespread social unrest, increased violence, and the further disintegration of American society.

A Different Kind of Work

In the past, the government has often been accused of throwing large sums of money at the social economy with little of it getting to the people and communities in need. Much of the expense involved in government programs has been eaten up in the delivery of social services, with little left over to assist the impacted communities. Still, there have been notable exceptions. Volunteers in Service to America (VISTA), the Student Community Service Program, the National Senior Service Corps, the Peace Corps, the National Health Service Corps, and, more recently, AmeriCorps, are federal work programs established to promote individual service and support volunteer efforts in local communities in the United States and abroad.

Although the costs of these government-sponsored programs in community service are small, the economic returns to the community are enormous and often exceed the expenditures by many times. Dollar for dollar, government investment in work programs designed to complement and support the volunteer sector have proven to be among the most cost effective means of providing social services in local communities. Yet, despite scores of successful experiments and programs in recent years, the money given over to such programs is small compared with other governmental expenditures in the social economy.

Many Democrats have looked to government-sponsored programs to hire the unemployed and those who have slipped under the social safety net and into the permanent underclass. More recently, both Democrats and Republicans have championed the establishment of empowerment zones in the nation's inner city ghettos. These designated areas would receive special tax credits and other government benefits to help attract new business. Businesses that employ a resident of the Empowerment Zone would save up to $3,000 a year in payroll taxes. Despite the political fanfare

surrounding the notion of empowering poor inner city communities, few politicians are sanguine that many new businesses are going to relocate in the urban ghettos of America, or that many new private sector jobs will be generated from the creation of empowerment zones.

The country might do better to redirect its efforts away from expensive government sponsored projects to aid the poor and quixotic attempts to stimulate economic development in inner cities and, instead, support the expansion of existing non profit service programs in impoverished communities. Recruiting, training, and placing millions of unemployed and poverty stricken Americans in jobs in nonprofit organizations in their own neighborhoods and communities is likely to have a far greater impact, per dollar spent, than more traditional public works-oriented programs and market directed initiatives.

In the debate over how best to divide up the benefits of productivity advances brought on by the new high tech global economy, each country must ultimately grapple with an elementary question of economic justice. Put simply, does every member of society, even the poorest among us, have a right to participate in and benefit from the productivity gains of the information and communication technology revolutions? If the answer is yes, then some form of compensation will have to be made to the increasing number of unemployed whose labor will no longer be needed in the new high tech automated world of the twenty first century. Since the advances in technology are going to mean fewer and fewer jobs in the market economy, the only effective way to ensure those permanently displaced by machinery the benefits of increased productivity is to provide some kind of social income. Tying the income to service in the community would aid the growth and development of the social economy and help strengthen it across the country.

Restoring hope and rebuilding the social economy ought to become the central theme of a new partnership between the government and volunteer organizations in local communities. Feeding the poor, providing basic health care services, educating the nation's youth, building affordable housing, and preserving the environment top the list of priorities in the years ahead. Providing a social wage to millions of Americans, in return for performing meaningful work in the social economy, will benefit both the market and public sectors by increasing purchasing power and taxable income as well as reducing the crime rate and the cost of maintaining law and order. Preparing for the decline of mass formal work in the market economy will require bold new public policy initiatives. By empowering the Third Sector, we can begin to address some of the many structural issues facing a society in transition to a high tech, automated future.

Getting Beyond Scarcity: Strategy and Vision in the Information Age

By Carl Davidson / cy.Rev Managing Editor

The organizers of this conference have challenged us to present a strategic vision of how we might engage the crisis around jobs and technology and to put it before you in about 15 minutes! I'll give it my best shot. To me, thinking strategically is looking at the situation as a whole and examining all sides of the question. So I'd like to start off by just reviewing a few facts and projections about the situation as a whole regarding our topic today. We all know that the new technology in this country is doing away with jobs faster than that same technology is able to create new jobs. We are faced with a growing deficit of jobs. In addition, the third wave, the third industrial revolution, or whatever term you want to use for it, is also something that is happening globally. Of course there is a lot of second wave industrialization of the old type going on in the third world. But even a portion of that industrialization is experiencing advanced technology and downsizing. It's often being s factories that are smaller but far more efficient and productive than the factories typical of our industrialization.

So how many jobs are going to be needed? In 1992 the size of the world labor force was something like 1.76 billion people; by 2025, if current trends stay more or less what they are, the world labor force is going to be 3.1 billion people. That means every year for the next thirty years the world economy needs to create 38 to 40 million new jobs. And it's got to do that at a time when the main technological trend is going in the opposite direction of net job liquidation.

This means we have a very explosive situation in the global economy. We've already seen what it means in terms of the tremendous dislocation and disruption in many third world urban centers. There you find huge concentrations of population places like Mexico City with its thirty million inhabitants, expanded by massive numbers of uprooted peasants, a "surplus population" that's had their jobs and their work eliminated by the global market, especially by American agribusiness. Most of you have probably been in New York City, and you probably think it's somewhat crowded. Actually, New York City's population density is 11,400 per square mile. If you go to Lagos in Nigeria or Djakarta in Indonesia, the population density is 143,000 or 130,000 per square mile more than 10 times as much.

Within the next twenty-five years, we are going to have twenty megacities with populations over twenty million caused by this massive change and its accompanying disruption and dislocation. It's not just a question of urban size, growth and a lack of jobs. There are also drastic inequalities in terms of the possession, distribution and use of the earth's resources. One way to look at this inequality was recently put forth by some environmentalists. They projected the figures of what an average American baby will consume from the time it's born to the time it dies, and compared the result with what the average new baby in other societies would consume. The average American baby over its life span will consume 3 times as much as the average Italian baby, 13 times as much as the average Brazilian, 35 times as much as an Indian, and 280 times as much as a child from Chad or Haiti.

Most of us here probably believe in the idea that all nations should be equal. It's a basic principal of our political creed. The problem is that if every nation became equa1 in consumption to where we are right now, we would probably cause the biosphere to collapse. That's because the kinds of wasteful consumption and wasteful use of energy resources in the advanced countries of the North individual automobiles, traffic jams, unnecessary packaging, bloated military budgets, all those sorts of things

would make it impossible for the biosphere to sustain a world where everybody was equal by today's standards.

If we're going to have equality, it also means people in this country in particular are going to have to change their ways. I'm not saying that everybody has to deteriorate their living conditions, but we will have to change our ways. I think we can do things better and be less wasteful, but it will require tremendous changes if we're going to be able to build a future that's sustainable and equitable.

So these are the questions that arise when we're talking about thinking strategically. The main conflict becomes one between the power and growth of technology on the one hand, and the power and growth of the population on the other. In his book The End of Work and in his speech last night, Jeremy Rifkin laid out a revolutionary analysis of the kind of hard and explosive contradictions that this country faces. What kind of future will we have when we do away with the traditional means by which people have been able to survive? Rifkin clearly describes how the economic trends are going one way, while the people in power in this country are telling us the opposite.

What message are we getting from the people in charge today? They are telling us that we have a persistent and growing underclass because the poor are too comfortable to seek work. That's why we have to have all of these changes in "welfare as we know it." Now, I'm no big fan of "welfare as we know it," but the underlying assumption that the poor are too comfortable is morally degenerate. I read a similar thesis in a recent issue of Business Week. A well known, Nobel Prize-winning economist from the University of Chicago wrote a column against raising the minimum wage. He made a number of good points against the minimum wage, some of which I agree with, some of which I don't. But his main point was that we don't have enough jobs, we don't have enough of all sorts of necessary resources, because the workers in this country have it too good. We need lower wages for workers. We need fewer unions. We need poorer working conditions. That's what these elites are saying is wrong with the country today.

Unfortunately these are the people with power and influence today. How do they come to these kinds of conclusions? They get tangled up in absurdities because their economic reasoning is based on scarcity. Up until now, all economic theories classical liberal, Keynesian or whatever have been based on the underlying assumption of scarcity. That means there are always "haves" and "have-nots," and that it's normal to die early, and it's abnormal to be successful. That's the underlying assumption of the economic theories we've had until now.

How do we deal with these theories? What I think is truly revolutionary about the information revolution is that it is undermining the material basis of the economics of scarcity for the first time in human history. The information revolution is setting the conditions for an economy based on abundance. To get right to the core issue, I think it's because of the unique nature of the commodity we call information. Not only is the information component of almost all commodities increased, information itself has become a crucial commodity. In many ways information behaves like a traditional commodity, but there is one important difference. Information is the only commodity I know of that you can sell and keep at the same time. You can sell a copy of WordPerfect and keep it at the same time. This makes for an explosion of value, an explosion in the value that we call knowledge.

One of my favorite thinkers on this topic is Buckminster Fuller the man who invented the geodesic dome and a host of other futuristic devices. He took a non-traditional look at wealth. He said that wealth has two aspects. On the one hand, it contains energy. By that he meant energy broadly, including both matter and radiation. On the other hand, it contains human know-how. Wealth is a

combination of energy and know-how. By the law of the conservation of energy, the energy component of wealth doesn't go away. It can be transformed, but it doesn't disappear. As for the know-how component, it only increases. Knowledge is interesting in that the more you use it, the more it grows.

In Fuller's eyes, the world's energy wealth isn't just a matter of how many proven oil reserves there are out there, since wealth is a combination of energy plus know-how, in the broadest sense. In our time frame, the sun's radiant energy and the moon's tidal energy are inexhaustible sources. When combined with know-how, namely the know-how to put that energy to work to satisfy human needs, that wealth is constantly growing. The more it's used, the more knowledge grows. For particular resources such as petroleum, we will want to observe limits, but in the basic sense of wealth as energy from the solar system and human knowledge, there are no limits.

So there's not a scarcity of wealth, but a tremendous explosion of wealth in the world today. If we wanted to divide up the existing resources of wealth in this sense of both energy and know-how, every person in the world would be a millionaire several times over. I'm not just talking about Americans; I mean everybody.

Don't let them tell you that there are not enough resources to solve our problems. They can say we have a government deficit or the resources are scarce. But these conceptions, we must realize, are based on the outdated notions of an economics of scarcity. The problem is not a lack of resources. We don't lack day care centers because of a lack of resources, when at the same time we can build Trident nuclear submarines. The problem is a failure of imagination and a failure of moral values, especially on the part of those politicians and economists who could think that the problem in this country is that the poor are too comfortable or that the workers are too well off. Finally, and this applies to us as well, it's also a failure of political will. Primarily this is the result of the collapse of the traditional liberalism that has brought us to this point. But it's also due partly to the global crisis in socialism and the loss of vision in our own ranks.

So, the information revolution means that we need a new way of looking at value, a new way of looking at generating wealth, and also a new way of beginning to divide it up so as to enable us to generate new wealth. What would this mean in terms of actual policies and programs? Let me give as an example one of the most important things this country ever did in terms of getting itself out of a bind. Right after World War II, we had a large number of G.I.'s who had been demobilized, and even with the postwar boom there weren't enough jobs to go around. What the country did was to offer every one of these returning soldiers a university fellowship under the G.I. Bill and said to them, go off and learn something. The veterans didn't even have to enter a certain field, take a certain job, or pay it back directly.

Now, some people would say that's just government throwing money at the problem. Actually it was one of the smartest things this country ever did. It simply created the conditions for the soldiers to make themselves more valuable. By creating that whole new generation of educated workers, they created the basis for a whole new explosion in creativity and productivity in science and industry. It was a social investment in human capital that was later recouped many times over.

What does this suggest for us today? It means it's not enough just to increase welfare benefits within a system that's dehumanizing and degrading. It is even not enough to raise the minimum wage, because the problem with the minimum wage is that you have to have a job to get it. We need to think of creating means of income, means for us to educate ourselves, means of training people to create value. We need to think of these things as fundamental, things that the society provides simply

as your right as a human being. It's in that direction that we can find some sustainable solutions to the current crisis.

Strategy also has to do with the questions of new alliances. There has been talk at this conference so far about the importance of the "new class" of the unemployed. I don't know if I agree with that definition, but we all know who we are talking about: the people who have been mainly victimized by the information revolution, who have been pushed out and excluded from production. I agree that they are the starting points for a building a base for progressive change. We have to begin to organize in those communities, but I don't think we can leave it there.

Thinking in terms of the whole means we also have to keep in mind those millions of workers and displaced peasants in other countries who are also victims of this global economy. We have a lot to learn from them and alliances to form with them. Since the battles over NAFTA and the GATT, we've also learned that there are both creative and backward ways to go about this.

I think there's another new sector that's been created by the information revolution that I also think has an important role to play. I'm talking about people like myself and many of the people in this room. You are the people who are university-trained, who have been educated and know the value of the new technology from within so to speak. This sector of the population is like every other class or strata in society. It has a left wing, a right wing and a center, various subdivisions and trends. I'm not suggesting that this whole sector is going to be an ally of the poor, but I think it does have a left wing that has a conscience, that understands the value and the problems of the new technology, and the importance of forming alliances to bring about progressive change. I can see it in the different organizations that I belong to like the New Party. I look at the class composition and where these different people are coming from and that's how it breaks down.

By stressing these two sectors the "underclass" and the "high tech" I don't mean to exclude any other sector, like the traditional trade unions, people from industries like steel and auto. But I do think these two sectors are where some of the most creative thinking and interesting kinds of activism are going on, and where there's some enthusiasm for challenging the existing system in new ways. There's lots more to be said, but these are the ideas I would put at the center our discussion on strategy. I don't expect us to find all the answers this weekend, but I hope we make a good beginning. Thanks for your attention.

The Electronic Revolution and the New Class of the Structurally Unemployed

By Nelson Peery / National Organizing Committee

Speaking at this conference on high technology is no small accomplishment for a person who, in his youth, worked with a horse and a plow. But perhaps only a person who has done such work has seen enough changes in the economy to visualize what the current ongoing historic changes in this economy mean for our social future.

Along with that horse and plow of my youth, I had a grandfather who was full of pat country phrases. One of his favorites that I've learned to appreciate was, "A heap see and few know." As I watch the political sycophants of big business carrying out the charade that they call grappling with the social destruction around us, I often think of Grandpa. Why does a city decline? "The obvious reason is the growing lack of community pride." Teenage pregnancy? "The youth have lost their morality." Narcotics? "The criminal element is out of control." This pandering to the most backward section of society could work while people were stunned by the socioeconomic catastrophe around us and while they were believing the malarkey coming from those they thought were friends and protectors.

Perhaps history will record that Newt Gingrich was the best thing that ever happened to the poor of this country. When they get more of the same advice from those they know who are their enemy, then perhaps awakening is possible. In this sense, I would like to skip a description of the millions of homeless, the tens of millions of jobless, the acres of burned out neighborhoods, the slaughter of our youth, the in-your-face looting of the public treasury, the decline of education, and the threatening complete elimination of social services. The important thing is to understand why this is happening and what the political results are bound to be.

When and why did government grow big with their alphabet programs, and when and why did it suddenly need to shed itself of these programs? The major tasks of government is to create the social programs and policies that allow the economy to function. For example, when the government was the instrument of the farmers, that government did the things necessary to protect and expand the farm. The Indians were cleared from the fertile lands, slavery was protected and extended, shipping lanes for export were cleared and frontiers expanded.

As the farm gave way to industry, the government transformed itself into a committee to take care of the new needs of industry. At that point government began to grow. Industry needed literate workers, so the school system expanded under a Secretary of Education. The army needed healthy young men to fight wars brought on by industrial expansion, so a school lunch program was initiated. As industry got big, a Department of Housing and Urban Development provided order to the chaotic, burgeoning cities it created. As industry and the workers moved outward, a Department of Transportation brought order to the transportation chaos. In other words, government became big government in order to serve the needs of industry as it became big industry. The workers were kept relatively healthy and the unemployed were warehoused in such a manner as to keep them available for work with each industrial expansion.

Now the rub. New means of production changed the game. Not only are expanding sections of the working class superfluous to production, but the new mode of high-tech production no longer needs a reserve army of unemployed. Nor does it need healthy young men for an infantry war. As industry

gave way to the new electronic means of production, it downsized. The government necessarily had to follow suit.

If we knew the consequences of our actions, we probably wouldn't get out of bed in the morning. The scientists pursuing their craft could hardly visualize what the engineers would do with the marvels they had created. The engineers as they applied the marvels of science to the workplace probably never understood the effects it would have on the capitalist system. Nor did the capitalists, in their scramble for the market and its profits, realize the effects they were having on history.

The Structurally Unemployed as a New Economic Category

As the applications of these new scientific marvels to the workplace expanded, a new economic category, the structurally unemployed, was created. Some 150 years ago, Marx and Engels coined the term "the reserve army of the unemployed." This was the industrial reserve to be thrown into the battle for production as the need arose. The structurally unemployed were something different. They were a new, growing, permanently unemployed sector created by the new emerging economic foundations.

Robotics entered industry at the lowest and simplest level. Its first victims were the unskilled and semi-skilled workers. For historic as well as racist reasons, the black workers were concentrated there. The widespread liquidation of the blacks in the industrial workforce was looked upon as another brutal act of American racism. It was difficult to see the effects of robotics on the white unskilled and semi-skilled workers. They were scattered throughout the general white population and especially in the suburbs. The African-Americans were concentrated in a relatively small urban area, and the percentage of black laborers to the total African-American population was higher than that of white laborers to the white population.

The consequent creation of the ghetto the black, permanently destitute, rotting inner core of the formerly central working class area of the city was accepted as simply the result of racist economic policies of capitalist industry. The economists, their inquiry tainted with racist ideology, unable to understand the difference between a reserve army of the unemployed created by industrial capitalism and the structural, permanent, joblessness created by robotics, came up with the term "underclass." This term actually was a derivative or perhaps a takeoff from the Marxist term "lumpen proletariat" or beneath the working class.

What are the origins of that term? Within the political shell but outside the economic relations of feudalism, new economic classes, the bourgeoisie and the modern working class, were created from the serfs. Some of these ex-serfs did not make it into either of the new classes. They formed what Marx referred to as a lumpen proletariat. This social flotsam, created at the beginnings of an industrial capitalism, existed as best it could on the periphery of society until the system finally absorbed them.

Those who coined the term "underclass" perhaps thought this was a group unable to keep up, and once falling behind and supported by welfare, consciously accepting an existence outside the capitalist relations of employer and employee. Perhaps they saw them as something akin to the lumpen proletariat of the beginnings of industrial capitalism.

Racism allowed for this term to be quickly and widely accepted. From the battlements once provided by the Bureau of Labor Statistics, from the oak paneled sanctuaries of the universities, it must have seemed that a sub-class of blacks reliant on welfare had lost the work ethic. Worse, they were

creating a subculture of immorality and criminality in the midst of a great expansion of wealth and productivity.

A more concrete look will show different things. First, that the new productive equipment was polarizing wealth and poverty as never before. Absolute wealth in the form of 120 billionaires and absolute poverty in the form of homelessness are new to our country. The second polarization was the increase in production accompanied by an increase of unemployment and joblessness.

The Underclass' as a New Class

More important, a concrete look will show that the so-called underclass is, in fact, a new class. History shows us that each qualitatively new means of production creates a new class. Previously, each new class has been the owners or operators of the new equipment. This new class, created by robotics, is not simply driven out of industry, it is driven out of bourgeois society. There is a historic parallel.

It might be noted here that Marx made a little historical or perhaps semantic error naming the industrial working class the "proletariat." The Roman proletariat, once a working class, was driven from the workplace by the introduction of slavery. They ended up absolutely destitute and outside of Roman society. They were fed by the state and in exchange produced babies who would grow up to be soldiers. The proletariat did not and could not work because they could not compete with the labor of slaves. The comparison is clear. We are witnessing the creation of a real, if modern, proletariat.

Further, and perhaps more importantly, it should be noted that in history, no system has ever been overthrown by an internal class. The feudal system was overthrown by the classes outside the system, not by the serfs. The concept of class struggle has been convoluted to express the struggle for reform which is the only possible social struggle between two classes internal to society. Class struggle begins when qualitatively new means of production bring about an economic revolution and the economic revolution forces a social revolution. The struggle of the old, reactionary classes inside society against the new class outside society over who is going to create the new social order is the class struggle.

The social system is under attack as the electronic revolution destroys its economic underpinning. This underpinning is value created by the expenditure of human labor. In proportion to the use of robotics, the new system becomes more productive and more unable to distribute that production. The modern proletariat has no choice but to join with the robot in the final assault against the existing social and economic order. We are not facing a recurrence of the Egyptian or ancient Chinese collapse of civilization. On the contrary, we stand at the end of pre-history. Wageless production cannot be distributed with money. The contradiction between the modes of production and exchange has reached its limits. Production without wages inevitably results in distribution without money. This objective economic demand will sweep aside any subjective or political system that cannot conform to it.

Communism moves from this subjective arena of the political and ideological into the realm of the objective.

The Decisive Role of Consciousness

Since there are no concrete economic connections between today and tomorrow, consciousness plays the decisive role in this coming revolution. We must consciously fight for the future. Blind rage

against the ongoing destruction of life will not change it. This future will not evolve automatically as did the rosy dawn of capitalism.

How will the movement acquire this decisive consciousness? As with all changes of quality, it must be introduced from the outside. An organization must be built for the specific purpose of bringing this consciousness to this new class and not only to the new class. Since we are entering a social revolution, this message must be taken out to all of society. Filling our future with a content made possible by the marvelous new means of production depends entirely on the leadership of an organization of visionaries capable of arousing and enthusing the masses.

Philosophers of ancient Greece declared that their slave system was necessary in order to allow another class of people leisure time to create the culture and education necessary to uplift society. Economic and social contradictions within their system brought human slavery to an end. Today, in the robot, we have an efficient and willing producer capable of freeing up the totality of humanity so that they may fully commit themselves to the age-old struggle for a cultured, orderly and peaceful life.

Does it take much genius to see that the social and moral ills of our time are the results of controlled scarcity? Does it take genius to understand that abundance, which today is the cause of starvation and misery, will be the foundation for tomorrow's leap into a new and orderly society? Does it take genius to see that privilege and all its hateful ideologies can only be and will be overcome by unfettered abundance?

Visionaries, unlike dreamers, proceed from the real world. Any person who has been forced onto the streets by the private use of robotics cannot help but visualize the possible world wherein robotics is used for the benefit of society rather than by individuals whose only interest is profit. Yesteryear's dreamers were the destitute, the exploited, the downtrodden. The visionaries were the owners of the new mechanical means of production. Today the world stands on its feet. The visionaries are those who have been driven from the factory and from society by those who own the more efficient electronic means of production. They visualize their social liberation, the happy prosperous future if only they could collectively own and direct the instruments of production that are destroying them. The dreamers are those wallowing in increasingly valueless wealth, still believing that wageless production can be circulated with money.

Humanity stands at its historic juncture. Can we, who understand today, visualize tomorrow with enough clarity to accept the historic responsibilities of visionaries and revolutionaries? I think so. Humanity has never failed to make reality from possibilities created by each great advance in the means of production. This time there is no alternative to stepping across that nodal line and seizing tomorrow.

I don't think anybody here can doubt that we are in the midst of an economic revolution, and I don't think any of us an doubt that every economic revolution has compelled a social revolution to take place. We have a different view of the process of history than we had 10 or 15 years ago.

What's going to happen as this society is being torn down? The ills of our society are the results of social destruction. They are not causing social destruction. A new society is going to have to be built that conforms to the new economic realities.

A society is a unity of production and distribution. There is no other reason to have a society. The point that we've got to grapple with, the thing that we've got to come to grips with, is what kind of society is going to be built on the basis of this new technology?

Newt Gingrich is on the loose. He represents a certain outlook. At the end of that outlook is an electronic fascism to control the mass of people. The other side of it is that we have got to do something to take back our country, and the only way we can do it is to create a communal or, if you choose, a communist, society based upon these new means of production which produce without wages and so therefore they cannot distribute with money. The money is going to have to go out of existence.

Lastly, I just want to say this. These people are not playing. They intend to clamp a fascist dictatorship on this country because the poor are beginning to come together, little by little. There is a new ideology arising in America, an ideology that is very primitive, but an ideology nonetheless. It's the ideology of them and us, of rich and poor. And Los Angeles 1992 was only a wake up call in this respect. We have got to get our act together and take care of ourselves and take care of America. I think enough of this country to believe it should be saved and I know it cannot be saved except by revolution.

Nelson Peery has been an active revolutionary since the 1930s and helped to found the League of Revolutionaries for a New America. His most recent book is the memoir Black Fire: The Making of an American Revolutionary (The New Press: New York, 1994).

From Das Capital to DOS Capital: A Look at Recent Theories of Value

By Jerry Harris Chicago / Third Wave Study Group

A number of schools of thought have recently developed which place society in a new age. One common thread is the current mania for "post" isms, i.e., post-industrialist, post-modernist, post-structuralist, post-Fordist, even Peter Drucker's post-capitalist. But these only say what the emerging society isn't, not what it is. It's as if the last two hundred years had been labeled post-feudalism, rather than industrial capitalism.

But what the new schools all recognize is that a revolutionary transformation has taken place. What has yet to be determined is whether society is still in a capitalist stage of development, or whether it has entered an era for which we have no proper descriptive name.

What is crucial in naming a society? For Marx, identifying the economic base was key to understanding the stage of development. Central to his theory of history was his analysis which uncovered capitalism's laws of motion, and how they were qualitatively different from feudal and ancient society. This analysis hinged on his theory of value and accumulation.

Alvin and Heidi Toffler's historic perspective is very similar to Marx's. Their three waves theory also keys in on the economic base as the most fundamental way to identify human development and different historic eras. For the Tofflers, agrarian society, industrial society, and today's information society are the three waves of civilization.

For both Marx and the Tofflers, when the economic base changes, so does the rest of society. The key to this transformation is how wealth is created. If today is a historic period of revolutionary change then a new theory of value, labor and accumulation is needed. This article will review how Marx treated this question, and then discuss fundamental shifts in the third wave economy.

Marx's Theory of Value

For Marx, a key difference between feudal-agrarian and industrial production was the commodification of labor and products. Agrarian labor mainly consumed what it produced, and bartered for what it needed. Markets, usually in the form of the medieval fair, were a secondary adjunct to the local economy. They were not driven by competition, but a simpler mode of exchange which sought to buy low and sell high. Marx summed-up agrarian commercial exchange as Money for Commodities in exchange for greater Money, or M -> C -> M1. Small merchant production was explained as Commodities in exchange for Money, for which you could purchase greater amounts of Commodities, or C -> M -> C1.

But these formulas changed qualitatively with industrial capitalism. Marx explained it as the following:

$$M \rightarrow C \rightarrow \begin{matrix}(mp)\\(lp)\end{matrix} \rightarrow P \rightarrow C1 \rightarrow M1.$$

That is, Money in exchange for a Commodity to which is added the means of production and labor power transforms the Commodity through Production into a New Commodity with greater value than the first, which then is sold for greater Money.

Therefore, capitalism places money as both the initiator and goal of production. The commodity and its use are no longer the purpose of production. As Marx explained this transformation:

> "The development of commerce and commercial capital brings about everywhere an orientation of production towards exchange values, increases its volume, multiplies and universalizes it, develops money into world money. Commerce therefore has everywhere a dissolving influence on the existing organization of production which, in all its different forms, is primarily oriented towards use value." (Capital III, VA III/pp. 362 4)

The Tofflers also pay close attention to this difference between agrarian and industrial society. They explain it as a split between producer and consumer. In agrarian society the producer mainly consumed his or her own product, so production was based on use value. But industrial society splits this relationship, making everyone dependent on the market to fill their needs. A fundamental shift occurs whereby society becomes organized around exchange value. Everything is for sale, including labor itself.

Capitalism's focus on profit takes place within a competitive market. Competition for greater and greater market share drives the system to accumulate and expand. But unrestricted expansion also leads to destruction. Here lay its core contradiction, and the duality of the system.

The competitive drive causes capitalism to seek new markets, develop new products, and create new technologies, which lower costs and speed production. Technology plays a key role in creating surplus value. Greater profits are not generated simply by lowering wages, but more importantly through the higher productivity of advanced technology. This is the basis for the tremendous creative impulse inherent in the system.

But Marx maintained that value is created only through human labor. The addition of labor, whether intellectual or physical, applied to the original commodity in the process of production, is what makes it possible for the capitalist to sell the new product for more money. Therefore the capitalist must always strive to lower the cost of labor through economic, social and technological means to increase his profits. The greater his accumulation of capital the better he is able to compete. Therefore labor can never possess everything it produces because that undermines profit maximization. What follows is the crisis of overproduction, factory closures, unemployment, and all the social ills that are familiar. In effect, this is the destructive side of capitalism.

This contradiction forms specific social property relations and a mode of exploitation in which workers are reduced to commodities, bought and sold on the labor market. The labor power bought by the capitalist has no value unless applied to the means of production, which is also the property of the capitalist. This social form of production trapped inside private property ownership is the basis for the alienation and exploitation of labor. Therefore the true potential of the productive system can only be liberated when labor is freed from the domination of capital, and the full creative force of production is no longer hindered by capital's need for accumulation. If labor received the value of what it creates, poverty would be eliminated.

Work Without Workers

But what if the worker is eliminated from production? The capitalists, who are always at the cutting edge of economic change, have begun to consider this question. The cover of Fortune magazine in October 1994 declared: "Your company's most valuable asset, Intellectual Capital, new ways to build it and measure it."

Fortune's main focus is on the relationship between labor and capital. Leif Edvinsson, director of intellectual capital at Skandia AFS has theorized about two basic types of intellectual capital: human and structural. The task of the corporation is to capture and transform a dynamic human intellect into a stable, usable and reusable structural form, to make "individual know-how into the property of the group." Preferably, this knowledge is stable and orderly enough to be on call in your hard drive. As Edvinson argues, structural capital is the most important: "It doesn't go home at night or quit and hire on with a rival; it puts new ideas to work; and it can be used again and again to create value, just as a die can stamp out part after part."

Of course once a worker's knowledge is captured as structural capital, you can then do away with the worker. In industrial capitalism the worker's surplus labor was expropriated, but you had to retain the worker as long as you wanted to make use of his labor. The worker still owned his labor power, and sold it for his wages. But in the new economy, knowledge is both labor and the means of production, both of which are expropriated and turned into structural capital for the exclusive use of the corporation. Thus, intellectual capital can be totally alienated from the worker. Not only is the value of the labor stolen, but the labor itself.

This process is the basis for growing unemployment and the increase in temporary and part-time work. A hard drive can hold the knowledge of thousands of workers, and be accessible to one worker whenever the company needs it. Turning knowledge into the key productive component impacts all industries, and all levels of employment, not only white collar work. Business Week's cover story, "Rethinking Work," (Oct. 17, 1994), gives the example of Cummins Engine Company, a producer of heavy-duty engines. The old plant is run by union labor with wages at $17.60 an hour. "Those at the new plant average $8.75. They're trained in statistical process control and engine technology and maintenance, and tested for math ability and communication skills. Pay increases are predicated on completing course work." Says chairman Henry Schact; "We have fewer people doing much more work, much of which is knowledge based and we're paying people less."

The productive power of intellectual capital, made possible by the new tools of cybernetic production, is thus changing both blue and white collar jobs. All work has become increasingly knowledge based, and this is revolutionizing the relations of production. Both of two recently published books, The End of Work by Jeremy Rifkin, and The Jobless Future by Stanley Aronowitz and William DiFazio, focus on this important process. As Rifkin notes; "We are entering a new phase in world history one in which fewer and fewer workers will be needed to produce the goods and services for the global population."

But entering this new era with old capitalist values will spell disaster. Viewing knowledge as a capital asset in a competitive market drives corporations to try to own and control information as they did with other commodities. In the industrial period, owning your assets meant machinery and physical commodities. Today it means surrounding your intellectual capital in secrecy and hiring lawyers to protect intellectual property rights. This overriding tendency of capitalism undermines the tremendous productive potential of intellectual capital. Knowledge expands most rapidly, and therefore in value, only with its greatest use. Unlike physical commodities which are consumed with

use, knowledge is generative it expands with use. Therefore the best way to create wealth is to fully liberate the productive potential of information by sharing knowledge through universal democratic access.

Control, ownership, and secrecy drastically limit this growth, and destroy the possibility of a broad economy. Entering the new economy with the rules of the old capitalist market will only deepen the social crisis rapidly developing around us. In a knowledge-based economy, education becomes the key factor for growth and employment. Yet today only 10 percent of U.S. corporations pay for worker retraining. Fortune argues for a retreat even from this limited involvement. Citing Canadian Imperial Bank of Commerce, Fortune explains that instead of spending $30 million a year on training; "Now the bank puts the monkey on employees' backs: Armed with their lists of competencies, employees are responsible for learning. ...Department heads track how fast their crew is learning, or whether it is weak in any particular area data that provides a far better picture of human capital development than the amount of time or money spent in training."

This "monkey on the employees' back" is another form of social control of the labor force. What is even more cynical is the further observation offered by Fortune that "Growth in human capital . . . through training and education . . . is bootless if it cannot be exploited. That requires structural intellectual assets." With this strategy corporations can externalize the cost of education onto the worker, capture the knowledge using information technologies, and then cut their labor force resulting in cost savings while increasing productivity and profits.

Making education into an individualized market fits nicely into the Third Wave Republicanism of Newt Gingrich. Broadside attacks on school funding and student aid will build the new economy into a society increasingly divided between "info-rich" and "info-poor." Free or low cost, lifelong learning opportunities are needed to generate the type of labor force necessary in an information economy.

Education should not only be a right, but a social responsibility underwritten by government taxation on corporations. If corporations plan to expropriate intellectual capital, let them at least pay for its development.

No Cost Production

Another fundamental shift in the information economy is that digital and fiber technology is lowering the cost of production to almost zero. Business Week (March 6, 1995) calls this the "technology paradox." As it reports; "The new rules . . . are redefining value in an economy where the cost of raw technology is plummeting toward zero. Sooner or later, this plunge will obliterate the worth of almost any specific piece of hardware or software." The same article observes that this "cheap technology has crossed an invisible threshold to assume a central role in economies around the world."

Cheaper, faster and smaller has become the mantra of silicon engineering. When power goes up, prices come down. Chip making technology is able to double its performance with no increase in prices every eighteen months. These chips are being inserted into everything from cars, to lathes and home computers. This is also true with software, an essential tool of production. The actual price of producing an additional diskette amounts to pennies, while its productive worth can be enormous.

The same pattern has developed in fiber optics. The ability to increase pulse rates and split light beams has made the carrying cost of one more phone call practically zero. How then do you price a call, and what does this all mean for the commodity market? As Eastman Kodak CEO George Fisher worries; "How will I be competitive in a world [in which] technology will be virtually free?"

End of Commodity Production?

Virtually free technology produced with virtually no human labor it's certainly not on our doorstep today, but just as certainly, it's within view over the next century. The implications are the end of commodity production and the capitalist market, as we know it.

This is the conclusion reached by Marxist economist Vojin Dakovic in his book, Anti-Capital. Dakovic sees cybernetics and automation as the final stage of industrial capitalism. He argues that; "technology in the process of production also takes part as labor-power," creating a surplus or free form of labor which he terms "use-labor." Use-labor is cheaper, faster, and more efficient than human labor, and thereby replaces the worker.

In effect, this is what Business Week recognized when it discussed "near zero production." Marx viewed the amount of "socially necessary labor" as determining price, or the exchange value, of a commodity. But how do you price a commodity produced with essentially free use-labor? Dakovic takes this to argue that commodity pricing is at an end and use value should become dominant. "As use labor replaced living labor in commodities, its form of use value became dominant as the form of value of the product. The point of no return has been reached. Machines are well on the way to replacing human labor once and for all as a determinant of value, and by doing so they are making the system of commodity production obsolete."

Davokic thus differs with Marx in two key areas. He argues that technology contains a form of labor independent of the worker, and that this labor adds a greater amount of surplus value than the worker. This not only undermines the commodity market, but also the labor market. Use-labor being superior to human labor means countries are facing permanent employment stagnation. Dakovic maintains that technology has become the driving force in the global economy. As he explains: "Bringing unlimited quantities of cheaper labor . . . technology has set the stage for the final battle for capital on the world market . . . [Not only] permanent stagnation in employment in the most competitive economies, but also each national market . . . has been superseded for all times as a framework in which economic growth is possibly based on a growth of employment." This onset of global stagnation and the elimination of human labor is the "coupe de grace to capital and the capitalist mode of production."

Knowledge as Value

Capitalism's answer to the crisis of global stagnation is to move into speculative financial manipulation. Today the development of commercial capital has so increased as to totally overshadow productive capital. Capital has fled to global speculation because investment in manufacturing is limited by global wage structures, which constrain consumption, and the growing unemployment produced by the technological revolution.

Although speculation has existed from the beginning of capitalism, today its use and size has reached an historic leap. The international money market by itself is forty times greater than the exchange of physical commodities, and this is just one of the dozens of speculative markets. The revolution in telecommunications and computer technologies is what makes this possible, creating a geosynchronized world market.

Because speculative markets operate on information and not production, they are part of the new knowledge economy, rather than the industrial economy of Marx. After all in Marx's formula, value was added to a commodity through the application of labor and the tools of production. Yet here we

have wealth created with no use value there is no new commodity at the end of the process. Only increased wealth. Therefore capital has moved into totally unproductive and socially useless activity.

In speculation, money buys a very specific form of commodity, information, which is then turned into greater money. Since the information is enhanced by the new tools of production in telecommunications and computer technologies, the formula may be expressed as:

$$M \rightarrow I \rightarrow (il) \rightarrow I1 \rightarrow M1.$$
$$(mp)$$

That is Money buys Information to which is added the means of production and intellectual labor to produce enhanced Information which is used to make more Money. It seems clear we are looking at a different form of value than that produced in industrial capitalism. This applies not only to the speculative markets, but to the dynamic and growing sector of the economy where the exchange of information, knowledge and design is dominant. But when information is use to enhance a physical commodity or social service, then use value, rather than speculative value, is produced.

World financier and ex-chairman of Citicorp Walt Wriston argues that currency is no longer tied to physical commodities but to information on the global electronic infrastructure. Based on the reading of a nation's diplomatic, and monetary polices, international traders place a value on a country's currency. Therefore information, not the sale of assembly line products, actually determines speculative markets. These new markets are at the center of global capitalism. Wriston therefore argues that a new calculation of wealth is needed, one based on intellectual capital rather than on the production of things. Assets are no longer a drill press and lathe, but information. The power of this new economy was demonstrated by the recent crisis in Mexico, which overnight was driven into depression by the electronic removal of money based on an analysis of information by global financiers.

Globalization

Globalization of the world economy is one of the main results of the technological revolution. Some Marxists have begun to look at this as; "a new contradiction . . . insurmountable under capitalism." So argues Samir Amin in Monthly Review (April 1995). Amin approaches the question along similar lines as the Tofflers did in their 1980 book, The Third Wave. Both writers see an eroding of the national state as a result of the growth in a single world economy and culture. Amin observes that capitalism; "is inconceivable without a social and political dimension, which implies a state . . . Now, however, have we entered a new era characterized by a separation between the globalized space of capitalism's economic management and the national spaces of its political and social management?" Amin sees the current anti-government movement as part of imperialism's drive to dominant the world economy. There will be no borders or independent states, only vast areas of accumulation. Ca undermining itself in the mad pursuit of profits.

The Tofflers see the anti-state discourse as part of the Third Wave revolution. Economies, cultures, and borders cease to function as part of nation states as regions connect to each other through telecommunications. Cultural and economic networks create a global exchange no longer dependent on any centralized government.

For Dakovic the world economy is moving to a new stage based on the historic flowering of technological labor, destroying commodity production, profit rates, and wage slavery. He argues this sets the stage for communism, and a world economy based on use value.

Wriston also sees a single global market where "money is asserting its control over government, disciplining irresponsible policies, and taking away free lunches everywhere." This type of "disciplining" of the Mexican government has produced a disaster for people throughout the nation. But Wriston maintains that an economy run by global financiers is the best of all possible worlds because; "the ability to move capital is fundamental to the continuous efforts of mankind to live a better life." Of course guerrillas in Chiapas maintain a different point of view.

Outmoded Capitalist Market What is being recognized across the board is that fundamental changes are rapidly developing all around us. From capitalists like Wriston, to Marxists like Dakovic, and futurists like the Tofflers all agree something new is being born. These revolutionary shifts are occurring in five essential ways:

- Knowledge has become the most important element in the production of value, rather than physical inputs.
- Technological labor is dominant over human labor, and will continue to replace workers on a massive scale.
- Speculative finance dominates productive capital as the largest sector of the global economy.
- Globalization will undermine nation states as the basis of economic markets, ending the era of national capitalist development with the rise of a global bourgeoisie.
- Economic shifts are creating social tensions which result in anti-government movements seeking to deconstruct the centralized state.

As we can see, fundamental changes are occurring in the mode of accumulation, the production of value, labor, markets and the political superstructure. But if Third Wave society is designed with the same values as capitalism, the above changes will reproduce existing inequalities. In fact, the dominant trends reveal growing dangers. Ethnic wars instead of local empowerment, the destruction of social programs rather than grassroots democracy, unemployment instead of shorter workweeks, and speculation instead of social wealth. The new society can only develop its positive potential within a new paradigm. The outmoded capitalist market will act as a straitjacket on the new forces of production. The ownership and monopoly control of information will be destructive to the growth of knowledge. The socialization of information, (in effect the new means of production), through free and democratic access is the only way to expand the new economic base in the most dynamic manner.

Only this can insure source of knowledge, and the productive use of information technology. Business Week is already seeking to define what the new market may look like. In a society overloaded with information they suggest an "attention economy" where competition centers on a consumer focus. Roger Nagel, deputy director of Lehigh University's Iacocca Institute argues that since cost will be incidental to price, companies need to sell service. Says Nagel; "Tomorrow's factories will sell customer gratification, not things."

We can let the new era be structured by speculative greed, or we can struggle to define it from a cyber-socialist perspective. Visions of an ever-expanding consumer market where human gratification is defined by an array of products and services, crashes on the crisis of unemployment and poverty. Near zero production is only possible with near zero labor. You can't disconnect the two. The "attention economy" for the majority may be where to find food and shelter, while 20 percent of the population looks for new software. Only if technology is used to enrich us all can the crisis be avoided. A new historic era is being born, but class struggle will still determine its shape. The Third Wave market must be based on equity, social wealth, and valuing the worker who

produces intellectual capital. If we approach the new society with the values and methods of industrial capitalism, a fundamental contradiction will be produced between the economic base and civil society. The results will poverty and political crisis. The future can and should be better.

RAND Warns US Against CyberWar from the Left

By Jason Wehling / PNEWS

Since the last U.S. election, the political left has been sent reeling. We have been told that this victory spells a new revolution, a revolution for the right. Interestingly, a Rand Corporation researcher, David Ronfeldt, argues that, contrary to the impotence felt by many social activists, they have become an important and powerful force fuelled by the advent of the information revolution. Through computer and communication networks, especially via the worldwide Internet, grassroots campaigns have flourished, and government elites have taken notice.

Ronfeldt specializes in issues of national security, especially in the areas of Latin America and the impact of new information technologies. Ronfeldt and another colleague coined the term "netwar" a couple years ago in a Rand document entitled "Cyberwar is Coming!." "Netwars" are actions by autonomous groups in the context of this article, especially advocacy groups and social movements that use information networks to coordinate action to influence, change or fight government policy.

Ronfeldt's work became a flurry of discussion on the Internet in mid-March when Pacific News Service correspondent Joel Simon wrote an article about Ronfeldt's opinions on the influence of netwars on the political situation in Mexico.

According to Simon, Ronfeldt holds that the work of social activists on the Internet has had a large influence helping to coordinate the large demonstrations in Mexico City in support of the Zapatistas and the proliferation of EZLN communiques across the world. These actions, Ronfeldt argues, have allowed a network of groups that oppose the Mexican government to muster an international response, often within hours. This has forced the government to maintain the facade of negotiations with the EZLN and actually stopped the army from just going into Chiapas and brutally massacring the Zapatistas.

Ronfeldt is an employee of the notorious Rand Corporation. Rand is, and has been since its creation in 1948, a private appendage of the military industrial complex. Paul Dickson, author of the book Think Tanks, described Rand as the "first military think tank ... undoubtedly the most powerful research organization associated with the American military."

Ronfeldt has also written papers directly for the U.S. military on military communication and, more interestingly, for the Central Intelligence Agency on leadership analysis. It is obvious that the U.S. government and its military and intelligence wings are very interested in what the left is doing on the Internet.

Too much' democracy

Ronfeldt argues that "the information revolution ... disrupts and erodes the hierarchies around which institutions are normally designed. It diffuses and redistributes power, often to the benefit of what may be considered weaker, smaller actors." Continuing, "multi-organizational networks ... mak[e] it possible for diverse, dispersed actors to communicate, consult, coordinate, and operate together across greater distances, and on the basis of more and better information than ever."

Ronfeldt emphasises that "some of the heaviest users of the new communications networks and technologies are progressive, center-left, and social activists ... [who work on] human rights, peace,

environmental, consumer, labor, immigration, racial and gender-based issues." Social activists are on the cutting edge of the new and powerful "network" system of organizing.

All governments have been extremely antagonistic to this effective use of information, especially from the political left. This position is best stated by Samuel Huntington, Harvard political science professor and author of the U.S. section of the Trilateral Commission's book-length study, The Crisis of Democracy. Huntington argued in 1975, "Some of the problems of governance in the United States today stem from an excess of democracy ... Needed, instead, is a greater degree of moderation of democracy." Huntington maintained that "the effective operation of a democratic political system usually requires some measure of apathy and non-involvement on the part of some individuals and groups ... this marginality on the part of some groups is inherently undemocratic but it is also one of the factors which has enabled democracy to function effectively." In other words, major U.S. policy makers feel democracies are acceptable if they are limited and not very democratic. To stop "excess of democracy," Huntington argued that limits should exist on the media. "There is also the need to assure government the right to withhold information at the source ... Journalists should develop their own standards of professionalism and create mechanisms, such as press councils, for enforcing these standards on themselves. The alternative could well be regulation by government."

If institutions like the major media need regulation, the idea of a free, uncontrolled flow of information on the Internet must mean that a new "crisis of democracy" has emerged in the eyes of the government elites.

Ronfeldt maintains that the lesson is clear: "Institutions can be defeated by networks, and it may take networks to counter networks." He argues that the U.S. government must completely reorganize itself, scrapping hierarchical organization for a more autonomous and decentralised system: a network. In this way, "We expect that ... netwar may be uniquely suited to fighting non-state actors."

Ronfeldt is basically arguing that the efforts of activists on computers have been very effective or at least have the potential. More importantly, he argues that the only way to counter this work is to follow the lead of social activists. Ronfeldt emphasised in a personal correspondence that the "information revolution is also strengthening civil-society actors in many positive ways, and moreover that netwar is not necessarily a bad' thing that necessarily is a threat' to U.S. or other interests. It depends."

At the same time, the left should understand the important implications of Ronfeldt's work: government elites are not only watching these actions, but are also attempting to work against them.

Watch Out for Attacks

Because of the very nature of the Internet and these growing communication networks, the issues are inherently international. It is important to watch for attacks on these networks wherever they occur. And occur they have. Since the beginning of this year, a number of computer networks, so far confined to Europe, have been attacked or completely shut down.

In Italy on February 28, members of the Carabinieri Anti-Crime Special Operations Group raided the homes of a number of activists many active in the anarchist movement. They confiscated journals, magazines, pamphlets, diaries, and video tapes. They also took their personal computers, one of which hosted "BITS Against the Empire," a node of Cybernet and Fidonet networks. The warrant ridiculously charged them for "association with intent to subvert the democratic order," carrying a penalty of seven to fifteen years imprisonment for a conviction.

In the United Kingdom, a number of computer networks have been attacked. The Terminal Boredom bulletin board system (BBS) in Scotland was shut down by police after the arrest of a hacker who was affiliated with the BBS. Spunk Press, the largest anarchist archive of published material catalogued on computer networks, also of the UK, has faced a media barrage which has falsely accused it of working with terrorists like the Red Army Faction of Germany, of providing recipes for making bombs and of coordinating the "disruption of schools, looting of shops and attacks on multinational firms."

It is not coincidence that this attack has started first against anarchists and libertarian socialists. They are currently one of the most organised political grouping on the Internet. According to Ronfeldt's thesis, this makes perfect sense. Who best can exploit a system that "erodes hierarchy" and requires the co-ordination of decentralized, autonomous groups in co-operative actions other than anarchists and libertarian socialists?

In the U.S., a number of bills are before Congress that would affect a large number of political views. One aims to change the FBI charter so that it can investigate political groups. It has bipartisan support.
Even more sinister as far as computer networks are concerned is S314. This bill would prohibit not only individual speech that is "obscene, lewd, lascivious, filthy, or indecent," but would prohibit any provider of telecommunications service (such as an Internet provider) from carrying such traffic, under threat of stiff penalties: $100,000 or two years in prison.

According to the Center for Democracy and Technology, "The bill would compel service providers to choose between severely restricting the activities of their subscribers or completely shutting down their Email, Internet access and conferencing services under the threat of criminal liability." The government is not the only institution to notice the power of the Internet in the hands of activists. The Washington Post ("Mexican Rebels Using a High-Tech Weapon; Internet Helps Rally Support"), Newsweek ("When Words are the Best Weapon: How the Rebels Use the Internet and Satellite TV") and even CNN (Sunday, February 26) have done stories about the importance of the Internet and network communication organization with respect to the Zapatistas.

The mainstream media aren't interested in the information that circulates across the Internet. No, they are interested in sensationalizing the activity, even demonizing it. They correctly see that the "rebels" possess an incredibly powerful tool.

A good example of this powerful tool is the incredible speed and range at which information travels the Internet about events concerning Mexico and the Zapatistas. When Alexander Cockburn wrote an article exposing a Chase Manhattan Bank memo about Chiapas and the Zapatistas in Counterpunch, only a small number of people read it because it is only a newsletter with a limited readership.

The memo was very important because it argued that "the [Mexican] government will need to eliminate the Zapatistas to demonstrate their effective control of the national territory and of security policy." This information was relatively ineffective when just confined to print. But when it was uploaded to the Internet, it suddenly reached a very large number of people. These people in turn co-ordinated a protest against the U.S. and Mexican governments and especially Chase Manhattan. Currently there are a myriad of social activist campaigns on the Internet. The network system of activism is not only working and working well, as Ronfeldt admits but growing. It is growing rapidly in numbers of people involved and in political and social effectiveness.

Options

According to Ronfeldt's thesis, extreme measures such as S314 will not be the answer to the problems of elites. Actually destroying the Internet is not likely for a number of reasons. The opposition to such an undertaking would be too great.

A glimpse at the problem emerged when the U.S. government attempted last year to introduce the now infamous "clipper chip." This chip was to become the standard encryption for the U.S. The interesting part of the plan was that, while individuals, groups and corporations could send information across networks without fear of unwanted eyes peering into their documents, the government "clipper chip" would have a "backdoor" for intelligence agencies like the FBI. In other words, it was safe to all except the government, which would be able to read any message it wanted to.

The Clinton administration had little support, aside from the FBI, CIA, National Security Agency (NSA) and AT&T, which was contracted to manufacture the chip.

According to Ronfeldt's thesis, dismantling the Internet is not even an option. The Internet and "netwars" are here to stay. The trick is to be better at it than groups the U.S. government opposes. That means creating government networks that can be more effective than those networks that have been created and maintained by social activists.

Of course, this has inherent problems of its own. How will U.S. military leaders react when they hear that the military must "erode" its system of hierarchy to evolve into a decentralized and autonomous network of smaller parts? Certainly there is a paradox in Ronfeldt's arguments.

Much more likely, at least for the time being, is Huntington's notion of regulation of information. Currently, how laws should be applied to the Internet and other computer networks is vague and undefined.

One scenario is that the Internet would be subjected to U.S. Federal Communications Commission (FCC) regulation. This might solve the problem voiced by Huntington where the government could create barriers and/or limit the free flow of information to better suit its wishes. Obviously for social activists, a much better scenario is that the Internet, as well as all other computer networks, would be placed in the category of "common carriers," where universal access is assured.

The battle lines are already being drawn. Under the guise of saving children from pedophiles, there is now a media campaign that pushes for regulation against pornography and other "obscenity" on the Internet. Last year, Carnegie-Mellon University attempted to restrict campus users from access to X-rated photographs on the Internet. Of course, if this comes to pass, it would be just the beginning the placement into the category of FCC regulation would be complete. On the other side are a large number of civil rights organizations like the ACLU and the Electronic Frontier Foundation who argue for the "common carrier" approach.

Another scenario is control, not via the government, but from private industry. Many people use the "highway" or "superhighway" analogy when describing the Internet. But a new analogy has emerged: the railroad or "super-railroad." Each has very important connotations: the highway is public, the railroad is private.

The problem springs from the growing pains that the Internet is experiencing. It is growing at a very rapid pace, so rapid that the "backbone" of the Net, the high-speed data transmission line over which information travels, is becoming outdated.

One proposal from ANS, a joint venture between IBM and MCI, is to privatize the Internet "backbone," thus creating "toll roads" for the Internet: they lay the new cables, they own them, and users will have to "pay as they go." The cost of communication would rise and would limit the ability of social activists and many other groups to participate in these "netwars."

This may be the long-term solution, paralleling the fate of last century's new form of popular communication, the newspaper. Faced with the same problem, a cheap and accessible medium for expressing ideas available to the general population, the initial response was to enforce laws limiting its use (e.g. censorship laws). However, coercion was soon abandoned in the face of better forces implicit in capitalism, namely the concentration of capital required to produce a commodity for a profit.

Market forces ensured that only those with access to vast amounts of money could start even a weekly newspaper. In addition, the need for advertising to run a paper ensured big business control over its content. Hence, for example, we could see mainstream journals having free access web sites on the Internet (funded entirely by advertising) while dissident publications will have to charge in order for their web sites to exist. This, however, is still some way into the future.

What might we do?

It is clear that Rand, and possibly other wings of the establishment, are not only interested in what activists are doing on the Internet, but they think it is working. They are studying our behaviour and actions; we should study theirs. We should analyze their movements and attempt to anticipate attacks as much as possible.

As Ronfeldt argues repeatedly, the potential is there for us to be more effective. But we can do better than just a coordination of raw information, which has been the majority of the "networking" so far on the Internet. To improve on the work that is being done, we should attempt to provide more especially in the area of in-depth analysis.

We should attempt to co-ordinate the dissemination of solid analysis of important events. In this way members of the activist network will not only have the advantage of up-to-date information, but also a good background analysis of what each event means, politically, socially and/or economically.

In a communiqu, from the Zapatistas, written on March 17, Subcommandante Marcos reiterated the importance of this network coordination. It is obvious from his words that these networks are making a real difference. He said, "And we learned that ... No to war!' was said in Spain and in France and in Italy and in Germany and in Russia and in England and in Japan and in Korea and in Canada and in the United States and in Argentina and in Uruguay and in Chile and in Venezuela and in Brazil and in other parts where it wasn't said but it was thought. And so we saw that there are good people in many parts of the world ..."

Marcos obviously was touched by the fact that people have laboured all over the world for the Zapatista cause. So he closed the communiqu, with a personal thank you: "And we want to say to you, to everyone, thank you. And that if we had a flower we would give it to you ... and when they are old, then they can talk with the children and young people of their country that, I struggled for

Mexico at the end of the Twentieth Century, and from over here I was there with them and I only know that they wanted what all human beings want, for it is not to be forgotten that they are human beings and for it to be remembered what democracy, liberty and justice are, and I did not know their faces but I did know their hearts and it was the same as ours.'"

[Abridged from an article originally distributed on the Internet.]

New Circuit Designs for Motherboard Earth

By Kirby Urner / Wholesys-l

I propose we look at Starship Earth (Buckminster Fuller's metaphor for our planet) using another metaphor as well: that of Motherboard Earth.'

I tip my hat to the criticism that this is another off-base nerdy engineering lens through which to misperceive a living planet and that, although the mother' part is apt, linking to circuit boards is just more Newtonian mechanism, more of which we simply don't need. But I don't see it that way myself. I think of the powerful film images I've seen linking urban-scapes from high altitudes with microchips. Good native American-sounding titles like Powasqaatsi and Koyanisqaatsi come to mind (both interesting films). And the energy bathing our motherboard is more than metaphorically electrical.

In sum, I don't see motherboard' as necessarily whiteman talk at all, but a clear-eyed snapshot of what, in fact, our eco-economy is: a set of spherical circuits, layer upon layer, some phased in with humans just a split second ago, on the geologic timescale.

Banking: The Fear of Leakage

Moving on, I look at the psychology of banking, which seems to view this pool of liquid capital, called gold or currency or whatever it is that's convertible to just about anything of value, as the one thing we cannot afford to leak' away. The whole investment banking circuitry is about wiring up projects and programs and powering them with juice' (liquid capital) only if it appears the return will exceed the investment. The only electronics on the motherboard that interests bankers is the kind that nets a return' meaning it has to return all the juice received, and then some.

If I think of my computer as the motherboard, and the wire plugged into the wall as my umbilical link to the sun, then I start to wonder about the intelligence of microcode, which plans to starve motherboard assets, which are not designed to amplify and return juice. I mean, the way a computer is designed is like a water wheel: current flows downhill to the ground, in the meantime turning wheels which turn other wheels and so on. Yes, the liquid electricity all drains out the bottom, but serious work got done in the meantime. Capacitors and storage batteries pool current for a time, before allowing it to surge onward (the banking idea of savings). But nowhere is the motherboard (the computer I'm using) designed to return juice to the wall let alone with interest.'

I look at TV images of human skeletons, either getting a little charity, or dying in droves, or both, with economists off to the side shaking their heads: no way to organize these humans into projects which will net a return to the bankers, and we can't allow our precious juice' to just leak away.' So we let our human families starve to death.

That's just the way it is ... but is nature our model here, or banking? The sun is broadcasting terawatts of energy in our direction, second by second. What we do is insert our programmable circuitry, our gizmos, our wheels turning wheels, and reap the benefits. Within this game, we have liquid asset accounts, and transactions, and trade. But the overall big picture is of a motherboard plugged into the sun and human circuitry that is designed to starve large portions of the motherboard based on some dogma about needing to retain precious liquid, currency, without regard for the true state of affairs, which is that the great global ecosystem is not about returning juice to the sun, anymore than my

computer is about returning juice to the wall socket. Doing useful work, yes. Keeping energy from flowing downhill, no way.

So that's why I propose General Systems Theory, which has a clear view of the sun-powered motherboard, the humanly programmable circuitry which interlayers with nonhuman circuitry, and the pain and suffering of numerous humans who are left out because they don't have magic juice returning powers' why I propose that GST build itself as antithetical to the juice-worshipping tribes who use their primitive economics' to justify the status quo media programming.

GST takes inventory of human inventions, artifacts, and storyboards multi-media deployment scenarios, casting humans in new, interesting, intelligent roles, and sees that we have the props, and the actors necessary, to make the real-world scenario entitled: Humans Make a Success of Themselves (lots of subplots). But instead, the old curriculum directors continue to produce episode after episode of The Great Tragedy, claiming that they are the sophisticated ones, whereas we, the success-oriented directors, are naive, because they don't properly understand their Theory of Juice.

GST has a different view of juice, it's true. I say we can afford to drive programming, using solar inputs, that will not only prevent starvation, but enroll the starving in new distance education programs that nets them lots of other relevant assets besides food: medical care, shelter, information, entertainment, vehicles for self-expression, opportunities to see more of the planet before they die. I say we don't have to expect our global university students to pay back their scholarships in any silly literal kind of way, but that the work of learning a living, of demonstrating competence, of being a star in world game scenarios worthy of high caliber acting, is repayment enough.

Do the work of Making Humans a Success, and forget about netting a return' in the traditional bankers' sense. Create wealth (life support), not just more money, and find out how much better off we will all find ourselves in short order. Lets co-invent General Systems Theory to light the way forward. And lets leave Economics behind, in the current Dark Age, where it belongs. Kirby Urner & Dawn Wicca

"All realities are virtual" can be reached via
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Survey Finds Most Students With Little Access to Internet

By Carla Schutte

Almost two-thirds of the nation's public schools report that they do not have access to the Internet and for those that do the information superhighway is rarely available for daily learning in the classroom.
About half of the 35 percent of schools with Internet access have at least one classroom, lab or media center where administrators, teachers or students can log on. Nationally, that translates to just 3 percent of rooms where teaching actually takes place that are linked up to the Internet.

"Only a small fraction of our classrooms have real access to new technologies that are becoming so central to the rest of our lives," said Education Secretary Richard W. Riley. "As a result, the abundant learning resources available on the information superhighway are still out of reach for most of our teachers, students and parents."

In a challenge to the telecommunications industry, Vice President Al Gore urged telephone and cable companies to work with states and local communities to connect classrooms to the information superhighway by the year 2000. To measure progress thus far, Riley called for a nationwide survey to determine the current availability, use, obstacles and future plans for advanced telecommunications in public schools.

The findings are contained in a new report, Advanced Telecommunications in U.S. Public Schools, K 12, commissioned in 1994 by the Department of Education's National Center for Education Statistics in co-operation with the Federal Communications Commission and the U.S. Department of Commerce. The survey was sent to 1,500 school principals, who were asked to have the school's technology coordinator respond.

Of the 35 percent of public schools with Internet access:

1) E-mail is the most widely available service, followed by use of news groups and resource location services (Gopher, Archie, Veronica, etc.);
2) While more than two-thirds of schools with the Internet offer access to teachers and administrators, only about half of schools offer it to students;
3) Of the schools with Internet access, 30 percent are elementary schools and 49 percent are secondary schools.

Among the survey's other findings:

Schools cite limited funding, lack of or poor equipment, and too few access points in the school building as the main reasons why they don't have or use advanced telecommunications;

Some 75 percent of schools have computers with some type of telecommunications capabilities, 74 percent have cable TV, 70 percent have broadcast TV;

Some 67 percent of schools plan to implement or upgrade a wide area computer network. Of these, 81 percent report their telecommunications plans are part of a district-level plan, 48 percent are part of a school-based plan, 27 percent are part of a state plan, and 19 percent are part of a regional plan;

Only 30 percent of smaller schools (fewer than 300 students) report Internet access, while 58 percent of larger schools (1,000 students or more) report Internet access;

Of the schools that are connected to a wide-area network, 48 percent report that district and regional administrators play a large role in developing the school's telecommunications program and 33 percent report that it is teachers and other staff that take the lead. According to 89 percent of schools, decisions about spending are made by the school district.

Copies of the report are available via INTERNET in the U.S. Department of Education's "Online Library" at gopher.ed.gov, Port: 10,000. Follow this path to access it: > 4. NCES Publications and Reports/ > 2. Elementary/Secondary Education Publications and Reports/ > 4. Fast Response Survey System (FRSS)/ > 1. Advanced Telecommunications in U.S. Public Schools, K 12.

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A Cybernetic Paradigm for a Cyberspace Economy

By Richard Wise / University of Luton, UK

Introduction

We can begin to see the elements of the global digital communications future not only in technological advances, but also in the rhetoric of government and media tycoons and in the investment decisions of global multimedia conglomerates.

A planetary network comprised of broad band intelligent digital networks, fiber-optic cable systems, and satellite and terrestrial broadcasting systems is coming into being before our eyes. Together with the large flat screens, smart phones, wearables and personal digital assistants, which will link individuals and households to limitless quantities of data, all the ingredients of virtual reality are on the horizon.

So what are the values, which should inform our formulation of policies towards these new domestic communications technologies?

Information Policy and Economics

The first stumbling block is that we are trying to solve today's problems with yesterday's tools. Everywhere government's policies toward new media technologies are being guided by neoclassical economic theory a set of ideas which have their origins in pamphlets written and published by 17th and 18th Century philosopher-merchants or bankers. The project of these first economists was to use Newton's atomistic principles in order to explain and predict changes in prices and trade (1).

The moral basis of the theory is the belief that individual self-interest, mediated through the working of the invisible hand of the market, results in the good of all. The market, in this view, consists of buyers and sellers, equivalent to atoms, constantly attracted by the gravity of pleasure and repelled by the force of pain. Buyers seek to maximize their pleasures by buying the best value for their money, while sellers buy cheap and sell dear seeking to maximize profits.

Optimum distribution of satisfactions in this model is achieved when all markets are allowed to operate unfettered by inflexible restrictions imposed by monopolies, organised labour or state bureaucracy.

In this view the dynamic of the market system is provided firstly by entrepreneurial enterprise the desire of individual businessmen for new opportunities to make profits and, secondly, free competition which gives the consumer a wide choice of products to buy.

The power of this simple idea can be seen particularly in government policies toward the new media technologies in the UK and USA.

These have sought to maximize their potential with policies which deregulate and privatzse telecomms and media in order to free markets and encourage enterprise. At the same time many government information services have been transferred to the more competitive and therefore more efficient, private sector.

Thus commercial information suppliers are both subjected to the rigours of competition and freed from onerous state regulation. The aim is to provide consumers with a plethora of choice: hundreds of channels of information delivered into the home by either cable, satellite or terrestrial broadcasting.

The overall tendency of these laissez faire policies has been to change the public perception of information from the civic to the commercial.(2)

Inadequacy of Orthodox Responses

Criticisms of the neoclassical economic model are nothing new (3).

My argument here is that, whatever the merits or demerits of economic theory as a model for describing the reality of its domain, it is singularly unsuited to be a basis for policy toward new media technologies in the home. What is needed for this age of cyberspace is a philosophy based on the insights of systems theory, cybernetics and molecular biology.

I wish to base my position on the ecological critique of economic theory and values. In more general terms my perspective is that of what Wilden has described as context theory. Context theory evolved from a cluster of advances from the 1940s to the 1960s in information theory, systems theory, semiotics cybernetics, ecology, and molecular biology.

The element that all these fields had in common was a concern with information processing systems with mind in its most general sense.

The Newtonian world view, on one hand, is dominated by matter-energy, one to one linear causality, forces, atoms, singularity, closure, one dimensionality, determinism, symmetry, sameness, simplicity, competition, short-range survival, and the past. Context theory,on the other hand, is oriented to information, goal seeking, relationships, reciprocity, levels of reality, levels of responsibility, levels of communication and control, requisite diversity, innovation, openness, co-operation, the capacity to utilize unexpected novelty and thus toward long-range survival and the future. (4)

Gregory Bateson in Pathologies of Epistemology sees the problems of social and ecological degradation as deriving from the tendency of the prevailing world view to exclude mind from the universe. When you separate mind from structure in which it is immanent, such as human relationships, the human society, or the ecosystem, you thereby embark, I believe, on fundamental error, which in the end will surely hurt you (5). From a systems perspective, information is part of the feedback process by which societies adapt to changes within themselves and in the environment. In treating information merely as a commodity we run the risk of distorting that process.

The Paradoxes of Information as a Commodity

Because of these epistemological deficiencies, the economic paradigm has great difficulty in accommodating the phenomenon of commoditized information even on its own terms.

Because the full value of information depends on its future use, the value of an information good cannot therefore be determined before it is used. Thus since the traditional economic model is deterministic it is not capable of easily incorporating information goods.
There are other differences between information and other commodities. The value of information good for the consumer lies in its content, the cost for the supplier lies in its physical form. Thus,

although the physical form of the information may involve costs, the marginal cost of broadcast or networked information is zero.

Information is nonmaterial requiring the use of no other resources in its replication. Thus information is infinitely reproducible a piece of information may be used many times and be possessed by many people.

As Bates (6) points out, information goods generate social benefits which are not reflected in price; in economists' jargon, they are "externalities." But because it does not pay the private sector to produce them, the benefits for society may not be reaped. There is thus a case for public intervention in order to ensure that information necessary to the exercise of effective citizenship is equally available to all.

Policy Implications

The aim of free market economic policy has been to maximize the value of monetary transactions involving information. This puts no value on the quality of information in terms of the recipient's improvement in knowledge, insight or consciousness its value lies in the fact that someone is willing to pay to consume it.

If we cannot rely on a private, profit-maximizing information industry to provide the information services to which all citizens of a democracy are entitled, then there should be public intervention to ensure that this takes place.

This is not so much to do with the dangers of creating a divided society of information haves and have-nots although this is a real danger. Such a policy objective arises from a view which sees the free flow information as a source of new ideas crucial to informed debate and so to the adaptive processes of society.

Legislation Needed

Legislation should ensure that certain types of social, economic and commercial statistics are published and made available on publicly accessible digital networks free of charge. This might be done by subsidizing commercial information providers, imposing legal obligations on licensees or by setting up separate public service providers.

Public authorities should also try to nurture the unrestricted interactivity which has evolved on the Internet to enable a wider section of the population to both participate in convivial communities of interests and have access to a wide variety of on-line information sources.

Conclusion

The problem with the bastardized form of economics which inspires politicians is that it has conflated the technical question of monetary value as a means of economic measurement with value in the sense of a desirable end.

In the first sense, money is seen to represent a quality of a good or a factor of production. This is a necessary social arrangement in a culture based on commodity exchange.

Value in the second sense does not correspond to particular material qualities within things but to a relationship between human actions and the social contexts in which they take place.

Neoclassical economics has tried to eliminate value by reducing it to monetary terms what is good is what people will buy. But as Lewis Mumford has said: value comes into existence through man's primordial need to distinguish between life-maintaining and life-destroying processes and to distribute his interests and his energies accordingly (7)

Where economic theory puts value on the private consumption, context theory stresses the social and adaptive qualities of information. It is my contention that we are unlikely to realize the full democratic and liberatory potential of information technologies until policy is based on a cybernetic paradigm for a cybernetic age.

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Politics and The Tools of Artificial Intelligence

By Denny Rock

In 1776, Thomas Paine sold a half-million copies of Common Sense to a nation only three times that size. His goal was to awaken that "human mass of sense lying in a dormant state" to fight for political change. Today, tremendous changes in advanced computing technologies are giving rise to a similar challenge of democratic empowerment. A number of major political figures and trends are already employing these resources:

- Reinventing Government: The report by Vice President Al Gore's National Performance Review Commission paints a picture of an electronic government. The thrust of the Gore report is that a change in the government employee culture through business process re-engineering techniques and new computer technologies will result in better delivery of services. While cutting red tape, making more federal data available, and decentralizing decision power are worthy goals, participatory democracy involves more than using CD-ROMs as customers of government.
- War Room: The documentary about Bill Clinton's 1992 presidential campaign shows James Carville and George Stephanopoulos in their glory, making rapid political marketing decisions and generating sound bites. The film portrays computers only as number-crunchers for statistics, but computers are actually playing an active role in electoral decisions by analyzing the chances of winning and allocating resources.
- Democracy for Hire: An industry has grown up in Washington around sponsored scholars devoted to creation of facts, opinions, and expert analysis. "That is the principal function of all the enterprises along Washington's K Street," comments author William Greider. "The public-relations agencies, the direct-mail companies, and opinion-polling firms work in concert with the infrastructure of think tanks, tax-exempt foundations, and other centers to churn out reams of policy ideas for the political debate." þMedia Politics: This label describes the rising influence of the press and television industry as the principle gatekeepers of political debate. The symptoms include: Other channels of political information are almost nonexistent for many Americans; business economics remain central in many decisions affecting journalism; and media news is reactive, event-driven, and fragmented. S. Hess, a senior fellow at the Brookings Institution, based in Washington, D.C., claims that on-line computer services will contribute further to the fragmentation of news reporting, as consumers will limit their exposure only to the affairs that match their interests.
- Electronic Democracy: This term is associated with the tremendous growth in networks, which are oriented toward spontaneous communication among citizens. However, this term sometimes carries simplistic connotations, such as a populist appeal "to regain control by the people over the communications technologies." There were numerous battles this year over Congressional bills for the design of the National Information Infrastructure (NII). While NII may increase public access to communications, NII does not guarantee democracy any more than building a new union hall guarantees a strong trade union.

How will computer technology affect future politics? This short survey is not meant to be a soapbox for any particular political viewpoint. Instead, it stumps for the application of Artificial Intelligence (AI) technology to expand public involvement with information-driven politics, the politics of knowledge, not necessarily the politics of winning elections. I will point to some potential AI

contributions: political models, tools to search for and assess political facts, tools to frame political concepts, and also tools to expand electronic discussion.

All Models Are Local

Computer models and simulation are needed to track even the roughest outlines of the increasingly complex political landscapes and to understand the dynamics of the underlying power realities. Political models achieve two goals: They locate candidates in what R. Joslyn calls "issue space" by analyzing the content of candidate appeals and making informed guesses about candidates' programmatic behavior once in office. They also attempt to understand the role of partisanship for example, the primary win by former Illinois Representative Dan Rostenkowski, even though he later lost his seat, was not influenced by issues as much as by perceived steadfastness and party loyalty.

One approach to modeling the behavior of political parties uses the artificial adaptive agent structures developed by John Holland and John Miller in the Echo class of models for complex adaptive systems. Echo models let researchers explore the relationship between optimization and adaptation and test hypotheses about the underlying environment. Echo's ability to represent the "unconscious internal models" might be useful for modeling the political thought processes of citizens. Likewise, Echo's ability to represent "aggregate behavior" might be useful for modeling the organizational evolution of a political party itself. Echo is available via anonymous ftp to ftp.santafe.edu for the file /pub/Users/terry/echo/Echo-1.0.tar.Z).

Smart Whistles and Watchdogs

AI tools for knowledge discovery are used to detect patterns of fraud in credit card and business applications. Can similar approaches be used in the political and governmental domains?
Taxpayers Against Fraud (TAF), a Washington, D.C.-based nonprofit organization, has recovered more than $588 million for the U.S. government since 1986. TAF uses the whistleblower' law to uncover fraud. This law originated when Abraham Lincoln cracked down on war profiteers who filled musket crates with sawdust and sold the same horses to the cavalry time after time.

Lisa Hovelson, executive director of TAF, says that computers have been used only to calculate damages after fraud details are known, not at the front end for data discovery or analysis, for which TAF essentially has relied on inside persons. "We have discussed and support the need for such AI capability, but it is still in the future for us," says Hovelson. An example of U.S. government interagency exchange of information, where data correlation is required, suggests Hovelson, is the IRS and the Department of Education for defaulted student loans. Another example is the Department of Customs and the duties paid on products coming into the United States, compared to the prices charged to the government.

Yet another potential application involves watchdogs for vote fraud. A recent case involving a close election loss for the Pennsylvania State Senate by Republican Bruce Marks kept the Philadelphia news media humming for months. The election had slipped by the watch of the nonpartisan group, which manually inspects ballots and allegations of election impropriety. A pattern of ballot fraud and forgery was detected after citizens protested that their names were on erroneous absentee ballots. A Philadelphia Inquirer editorial called for "modernizing voter registration information by computerization including digitizing signatures."
Forensic Linguistics Reliable information is essential for a free-thinking public to arrive at opinions. New computer applications can assist in the related functions of news understanding, text retrieval,

and the acknowledgment of bias or intentional ambiguity. Such applications could assist journalists, as well as citizens.

The Arlington,Va. based Advanced Research Projects Agency (ARPA) has sponsored a series of Message Understanding Conference (MUC) competitions. The goal in MUC 3 concerned the extraction of information from news articles about the topic of terrorism. MUC solutions have ranged from in-depth natural-language understanding capabilities to skimming techniques that aim to avoid the knowledge-engineering bottleneck associated with many text-processing systems.

Mainstream journalism in the wire services the primary source for most of the 1,800 daily newspaper, 11,000 radio, and 2,000 TV stations in North America is characterized generally by neutrality and balance. Exceptions exist, and the detection of linguistic bias in the news media is very important. A few of the news services that focus on the exceptions include FAIR (Fairness & Accuracy In Reporting), LOOT (Lies Of Our Times, Institute of Media Analysis), and Critical Intelligence (Boardroom Inc.), all based in New York.

Fuzzy Detective Tools

L. Bennett suggests that implicit handling of policy information by the news media would not be a problem for democracy if members of the public approached the news as detectives, looking for hidden clues upon which to build their understanding about a situation. Libraries already use electronic-search capabilities for information filtering, document location, and fact extraction. Software tools that achieve these tasks include Gopher, Wide Area Information Servers, Archie, and AppleSearch. While these first-generation tools have been limited by keyword requirements, the commercial development of fuzzy search' capabilities in a few expensive tools is a harbinger.

One fuzzy search' tool vendor is Excalibur Technologies Inc. (San Diego, Calif.). Excalibur's document-retrieval products have migrated to client/server architectures and will be offered by late 1994 as an unbundled set of advanced programming tools for embedded applications. Metrics given by Excalibur include search 200,000 pages of text in ten seconds, learn new input data at a rate of five megabytes in 160 seconds, and create index memories a third of the size of the original text.While Excalibur's pattern-recognition tools have been applied to text and picture images, multimedia applications with digital data of voice or video are yet to be explored in this domain.

Unlike many traditional search-and-retrieval systems that discard certain words such as "the," Excalibur's approach can search on concepts or every single word. For example, "The" is a common Vietnamese name and is featured prominently in many Defense documents of the Vietnam War era. The Library of Congress uses Excalibur's tool to scan in Spanish-language law journals from around the world. The Defense Intelligence Agency's Counter-Drug Directorate uses this tool to scan in articles from Spanish newspapers and search for words and images. The U.S. Department of Defense's Decision Systems Management Agency uses this tool to process records from the former Soviet Union, searching for clues related to U.S. prisoners of war.

Minsky to Mills

Marvin Minsky proposed frames as data structures for representing knowledge and expectations, which would let a computer system impose coherence on incoming information. Minsky's paper, "A Framework for Representing Knowledge," was influential among AI researchers and inspired the development of many high-level knowledge-representation languages. Representation tools such as inheritance, demons, default values, and perspectives led to procedures that make assumptions, tell

what is relevant, and look for information. P. Winston used the example of news to describe frames, observing that news is an easy domain for frame finding and instantiation.

Meanwhile, political scientists have used the term "frame" for many years in reference to political function and content, void of computer representations. The idea of a political frame dates back to P. Converse's 1964 theory of "mass belief systems," H. Lasswell's 1941 study of "attention frames" in propaganda, W. Lippman's 1922 work on "public opinion," and J. S. Mill's 1861 theories on "minds of higher grade" and "democracy as government by discussion" to serve the discovery of truth and to cultivate intelligent individuals."

J. Farr defined a political frame as "a central organizing idea or story line that provides meaning to an unfolding strip of events, weaving a connection among them. The frame suggests what the controversy is about, the essence of the issue. Frames consist of metaphors, exemplars, catchphrases, depictions, and visual images; they often include a rudimentary causal analysis and appeals to honored principles. We believe that frames lead a double life, that they are structures of the mind that impose order and meaning on the problems of society and that they are interpretative structures embedded in political discourse."

Consider the following three examples of frames used in reference to the attitudes expressed in court decisions, speeches by prominent public officials, and opinions in news sources and political journals. The first example concerns civil rights. Supporters of affirmative action typically have referred to the need for "remedial action," while opponents have argued that affirmative action constitutes "unfair advantage" or "reverse discrimination." One debate now before the Supreme Court over the shapes of congressional districts of "majority minority" constituency has frames of "tyranny of the majority" and "racial gerrymandering."

A second example concerns the events surrounding the 1991 Persian Gulf conflict. The U.S. public was ignorant of general knowledge about the Persian Gulf region and many specific details. Proper framing could have alerted the public to the increasing dangers before 1991, but fragmented stories were left to stand on their own. If the public had been informed properly, the armed conflict still might have been the same. The result, according to Bennett, was unchallenged manipulation of news before the conflict and a state of political impasse afterwards. MIT linguistics professor Noam Chomsky calls this manipulation "the manufacturing of consent."

A third example concerns the debate over President Clinton's 1994 State of the Union address frame of "three strikes and you're out" for lifetime imprisonment of repeat criminals. While the rhetoric is wildly popular, it almost certainly will not do what people want reduce their risk of being victims of random violence, according to Jerome Skolnick, president of the Society of Criminology (University of California at Berkeley). The fact is that violent crimes are committed disproportionately by young men aged 13 23; their criminal activity diminishes sharply as young offenders enter their 30s. Skolnick suggests that this "bumper sticker" solution will result in a very expensive prison-building program, while not concentrating on the young who are entering criminal careers.

The creation and use of political frames is more than just vocabulary; it involves symbols, emotions, and notions of justice. Information becomes important when it is relevant to a common purpose, which is built on a set of values and relationships. Facts are assembled and interpreted differently, depending on the frames and broader system of explanation. This development, in turn, contributes to the way citizens participate in debates and the formation of public policy.

Farr warns that elite frames can serve manipulative interests of political elites, in which leaders do most of the conversing and democratic discussion is reduced to campaigning for elections and the casting of votes. He comments that "many political frames are more nationalistic, patriotic, heroic, theistic, familistic, or individualistic than they are democratic." Farr suggests that even the term "democracy" has been "introduced trivially, incoherently, or manipulatively into all sorts of domestic debates, military interventions, consumer advertisements, and television specials."

Creation of computer applications to enhance democratic discussion eventually will use these frame concepts. The old politics often depicted as canned debates and public spectacle is becoming unacceptable to an intelligent populace. New politics demands semantic understanding and identifying the chains of reasoning. These goals require building new tools and networks for the next generation of machine politics.

Back to Turing

One central issue is encryption, a topic with deep AI roots. Although Alan Turing is probably best known in computing circles for his Turing Machine and Test, he developed specialized electronic computation engines to decode German military code, which let the British withstand the Nazi air force. The current encryption controversy involves many players: the National Security Agency, FBI, NIST, telecommunications companies, software vendors such as General Magic, civil liberties advocates, the cypherpunks, and CPSR but no Nazis!

Meanwhile, information needed by the public for political analysis is increasingly available through the networks. A few examples: 1994 marked the first time the budget of the U.S. government is available in electronic format. You can now e-mail the president@whitehouse.gov. The Library of Congress is on-line. UseNet has a range of newsgroup topics, and users can post messages or merely lurk. All bulletin boards seem to be gravitating toward the Internet.

Networking also has proven to be an effective tool for grassroots organizing. For example, SeniorNet, the San Francisco, California-based network with health care as the prime concern, has more than 10,000 individuals. Several city governments for example, San Antonio are experimenting with the electronic town meeting discussion model, which was an idea originally proposed many years ago by Buckminster Fuller. Trade unions are going electronic, although there is no example yet of a union struggle being won or lost on the basis of electronic communication.

A key issue that remains is how to structure wide-scale electronic debate at various levels that is democratic, interactive, and inherently controversial. Can electronic discussion be organized and protected from dominance by lobbyists, special interest politicking, and the dirty politics of character assassination and mudslinging, while protecting the right of free speech?
One environment that begs for experimentation in political exchange and consensus is the World Wide Web, a distributed hypertext-based information system. With viewers like Netscape and Mosaic to unburden users with the technical details, users can focus on interacting with the information itself.

Omnicompetent Citizen

In 1925, Walter Lippman observed, "Although public business is my main interest, I cannot find time to do what is expected of me in the theory of democracy; that is, to know what is going on and to have an opinion worth expressing in every question which confronts a self-governing community.

And I have not met anybody, from a President of the United States to a professor of political science, who came anywhere near to embodying the ideal of the sovereign and omnicompetent citizen."

Lippman's observation still rings true today. Does the public really want a daily digest of political information? An omnious trend toward political dysfunction is that the number who vote in national elections continues to slide below fifty percent of the eligible voting-age population. One possible reason for this trend is that many people believe that political representatives have little to offer in terms of solving the immediate daily concerns of employment, health care, education, housing, transportation, drugs, crime, social decay, injustice, and so on. Maybe, if the right tools were available, people would have a better chance to communicate with representatives, know and protect their own rights, engage in deliberation, test hypotheses, discover knowledge, discuss theory, and better understand world events.

Obviously, merit exists in the public becoming more politically astute and "awakening from the dormant state." Success may depend partially on whether participation can be achieved in such a way as to impinge minimally upon the matters of private life. This "awakening" is the challenge for a politics of knowledge. Advanced information systems at least may put the right tools on the table.

It will happen this way: Imagine a hot afternoon at a future Fourth of July picnic, when you are telling your friends about the details of a new Pelican Brief theory, debating the merits of admitting Cuba as the fifty-first state, or discussing the ramifications of Charles Barkley running for U.S. President . . . nah, please pass the potato salad!

The Political Demographics of Cyberspace

By Michel Bauwens

We have all known that innovation always comes from the fringes, before it is co-opted and integrated by commercial interests.

Undoubtedly, the commercialization of the Internet will also have an influence on the Internet culture. First, traditional businesses will increasingly want a presence on the Internet, in the form of electronic storefronts. Second, there's a new breed of cyber-entrepreneurs exploiting new niches. We do not belong to the group of people who deplores this development. We believe business is a legitimate activity, and that it will not destroy the net. The barter economy and the new cyber-entrepreneurs will find a modus vivendi. The free services and knowledge sharing will survive, supplemented with fee-based services and electronic commerce. There are powerful technological and social reasons why these forces will not dominate the net: the nature of the medium simply does not allow for centralized control and for intrusive broadcasting. Only Invited Persuaders' will be culturally acceptable. As has been proven many times by now, the users of the Internet have enough retaliatory power at their kill unsavory practices in the bud.

The above section is based on personal observations and analysis. What do actual studies tell us?

> 1) That the net is characterized by elite demographics. The typical user is a white male in his thirties, single, with a high educational attainment and above average income. For the future we see an increase of the younger segment and older professionals as well, since corporations are increasingly connecting themselves. We believe that the sexual ratio will not remain as biased as it is today. Evidence from computer classes in primary schools suggest that introducing the Internet acts as a powerful magnet for female students. According to some observers, it is the communicative aspect of the Internet which attracts an increasing number of women. While we believe there will always be educational requirements, lower prices should mean a gradual democratization of Internet usage.
>
> 2) That there is a strong libertarian' bent on the net. Surveys show that in the U.S., there are more Republicans than Democrats online, but that while the Internet population may be economically conservative (which mainly means they are against government intervention), they are not morally conservative (in the sense of being for law and order', against abortion, for the death penalty, etc...). Anti-government, anti-hierarchy, anti-big business, and anti-censorship are the often voiced sentiments of what seems the majority of the Internet user company. At least they are the sentiments expressed by the vocal part!

Do these social forces find a political expression? They indeed do.

I had the opportunity to witness the first conference of the American Progress & Freedom Foundation, led by Newt Gingrich, an organization which seems to represent the economic forces creating the technology. The ideological rationales behind the APFF are the Third Wave ideas of Alvin Toffler.

Speakers argued that just as the industrial revolution (second wave) had to sweep away the restrictions imposed by feudal society (first wave), the third wave forces now should do the same with second wave restrictions. Hence Big Government, and industrial society' type institutions like

the educational establishment, welfare, and unions should be made harmless, and greater freedom of enterprise (no restrictions on cable/telecom mergers) should allow the emergence of a new cyber economy. What was puzzling to me, especially as a European observer, is that not all speakers were Republican. The Board included people not usually associated with the political ideas of a Newt Gingrich. I'm thinking of E and even of Alvin Toffler, who, though known as a personal friend of the Gingrich's, is not a right winger or free-marketeer.

Such a bipartisan gathering would suggest a temporary bipartisan alliance between left and right Third Wave forces, that just as the French Revolution originally united bourgeois moderate Girondins and radically populist Jacobins, similarly cyberspace forces would unite to overthrow Second Wave political forces, and would split up after achieving victory. It is too early to say whether the APFF will have discredited itself before such a process could consolidate. As it turns out, debate on the Internet was quite critical of the AFPP. It was noted that the foundation's primary discussion paper, the Magna Carta of the Knowledge Age', written by George Gilder and Alvin Toffler, among others, seemed to consider cyberspace as a collection of knowledge bases, and not as a collection of people communicating. Reports that the APFF may have been a conduit for donations to the Gingrich political machine may have further weakened the foundation's potential role. However, it must be noted that most par the APFF meeting, with few exceptions (such as Gilder and Dyson), were not indigenous to cyberspace and the Internet, but rather seemed a group of people who intended to piggy-back on the enthusiasm generated by the Internet.

Another expression of cyber-culture comes from the pioneering users. I am primarily thinking of the Electronic Frontier Foundation, a genuine bottom-up political initiative. The idea behind the EFF is that the traditional democratic freedoms should be duplicated and extended in cyberspace. It is the main political force fighting for due process, against censorship, and for the protection of privacy. It tackles head on the new problems generated by the electronic networks. Its leaders come from the sixties generation: John Perry Barlow was a songwriter for the Grateful Dead, and Mitch Kapor not only the founder of Lotus but also a Transcendental Meditation instructor (he still is a practicing Buddhist). Rumor has it that both Gore's staff and the EFF have several Deadheads' on the payroll. In any case, the EFF confirm the strong links between the traditional counterculture, both in its political and mystical/psychedelic expressions, and current cyberspace. They remind us that the personal co above all a political project, to empower individual users against the centralizing effect of IBM mainframes, and that the Internet is seen as a continuation of this empowerment strategy. The EFF is a genuinely popular force in the Internet community, and has succeeded in temporarily defeating the Clipper Chip plans of the Clinton administration. They are able to quickly mobilize hundreds of thousands of electronic signatures to defeat moves in Congress. Thus, the EFF is a left/liberal mirror image of the APFF-type coalition, as it also has powerful corporate sponsors. Though the majority of EFF supporters may perhaps vote Republican (Barlow himself has been an active Republican), on issues of censorship and privacy they are definitely on the side of freedom of expression.

Another expression of the Internet community is the freenet movement. Freenets are locally-based (but internet-connected) networks that aim to enhance the social life of cities through the creation of online communities. The idea behind freenets is to build digital cities, where local associations, governments, and companies, can offer information, and where the local community can discuss and communicate. It is a grassroots effort to democratize the access to electronic information, just as the public library movement aimed at democratizing access to books. Several hundred projects have been successfully initiated. Digital Amsterdam is an European example.

Much smaller, at this stage mainly an intellectual exercise in academic circles, is the cyberfeminist movement. Traditional feminism states that, despite the claims of gender being less important in

cyberspace, the Internet is still a sexist environment. Cyberfeminism provides a more optimistic reading and is fairly typical of the enthusiasms generated by the Internet. According to cyberfeminists like Sadie Plant, the Internet is a quintessentially female technology. First, the values of the Internet, like the free exchange of information, the lessening of hierarchy, and the nurturing aspects of virtual communities, are female values. Second, networking technology is a final proof that the technology is out of control' and that the traditional male quest of control' can no longer operate. Hence, she claims that the Internet represents nothing less than the death of patriarchy. A related strain of thought is represented by Donna Harraway, who in her Cyborg Manifesto argues that women should technology.

Rather than wanting to becoming goddesses (as New Age feminism has suggested) they should aim at becoming cyborgs, half machine, half human. In any case, it does indeed seem that the Internet will be a powerful factor in reconciling women and technology.

Equally small, but very significant is the Extropian movement. While it has only a few hundred members, it connects luminaries like Hans Moravec, the robot historian, and Erik Drexler, the nanotechnologist, and it has an extraordinary cultural influence on magazines like Wired and Mondo.

They are partly responsible for the justification of the reigning optimism on the Internet. Extropians are against the limits imposed by nature and are convinced that technology is the means by which humans can free themselves from natural constraints. Hence, they foster research in cryogenics (Marvin Minsky, the AI pioneer says: if you die it's because you deserve it'), life extension, and believe we are entering the age of the space-bound post-human. Extropians are convinced, and here we totally agree with them, that the Internet is a laboratory for the social practices of the future. What's important here is to realize that the Internet is freeing humans from the constraints of geography, and that we sho political practices reflecting this fact. Radical groups like the Extropians force all the rest of us to squarely face the metaphysical underpinnings of our technological quest, and its occult meaning which is nothing else than that humanity endeavors to acquire god-like powers. As Steward Brand (creator of the legendary Whole Earth Catalog) once said, we are as gods, so we might as well be good at it.'

What is the message of netizens (i.e., the users of cyberspace/citizens of the Internet) toward these forces? Toward the establishment we should say, thanks, but no thanks,' meaning that while we support a better infrastructure, it should not only go to business networks and interactive TV experiments, but also to support the existing Internet network. It is the only medium with a radical democratic and innovative business potential. In fact, the Internet is an incredibly powerful business tool that will guarantee the transition to the of the information society.

To the information highway critics of the democratic left, I believe we should say: don't try to stop a technological juggernaut. If you're not part of the steamroller, you're part of the road. Realize how the Internet and the new networks can actually create a type of society where democratic ideals can actually be implemented. Let's make sure that the poor and the disadvantaged can make use of the new opportunities. Let's defend the hard-won democratic rights in the new electronic environments, support the establishment of freenets and digital cities, and the providing of Internet access for all. Above all, use the networks to your own advantage, to spread ideas worth hearing, and stimulate the needed debate. So far, the response of traditional political forces, at least in Europe, has been woefully inadequate.

We'll conclude with this call to netizens:

The Second Wave created the bourgeois citizen (aided and abetted by the labor movement) which became the motor of social change and political democratization. The Third Wave creates the netizen, the inhabitant of cyberspace, who engages in the sharing of knowledge. Just as the citizen was the motor of bourgeois democracy, netizens will be the vanguard force of electronic democratization.

Principles like open access, universal service, freedom of speech and the protection of privacy are characteristic of this agenda. So the responsibility of the first netizens is clear: it is our task first of all to educate our citizens, government and business people to the advantages and importance of the Internet. Second, to help them in their efforts to join these networks. Third, to make the political world conversant with the new issues involved in the emergence of cyberspace. Most importantly, the realization has to sink in that the old laws do not necessarily apply, and that new creative solutions s sought.

A Book Review of THE JOBLESS FUTURE
By Stanley Aronowitz & William DiFazio
University of Minnesota Press, 1994

Reviewed by Michael Stack / CPSR

This book ain't about no pork-chop. It's serious stuff. The authors contend jobs work as we know it is going away. They cite the tendency of new jobs to be part-time and/or temporary, and often at minimum wage. Official unemployment figures fail to measure the state of partial employment and those who have given up looking for work. The authors mention the thousands of layoffs at GM, IBM, Boeing, Kodak and Sears and that even "the older and most prestigious professions of medicine, university teaching, law, and engineering are in trouble: doctors and lawyers and engineers are becoming like assembly-line clerks...proletarians" (p. 54). The authors comment: " ... we have yet to feel the long-term effects on American living standards that will result from the elimination of well-paid professional, technical and production jobs" (p. xi).

The mass of layoffs and the destruction of high-quality, well-paid, permanent jobs is produced by three closely related developments:

"First in response to pervasive, long-term economic stagnation and to new scientifically based technologies, we are experiencing massive restructuring of patterns of ownership and investment in the global market. Fewer companies dominate larger portions of the world market in many sectors, and national boundaries are becoming progressively less relevant to how business is done, investment deployed and labor employed....Second, the relentless application of technology has destroyed jobs and, at the same time, reduced workers' living standards by enabling transnational corporations to deterritorialize production..." and thirdly, U.S. corporations are locating not only low-skilled jobs, but also design and development activities in other countries such as India and China where labor is both skilled and cheap (p 8-9).

Their thesis may be synopsized: "All of the contradictory tendencies involved in the restructuring of global capital and computer-mediated work seem to lead to the same conclusion for workers of all collars that is, unemployment, underemployment, decreasingly skilled work, and relatively lower wages. These sci-tech transformations of the labor process have disrupted the workplace and worker's community and culture. High technology will destroy more jobs than it creates. The new technology has fewer parts and fewer workers and produces more products. This is not only in traditional production industries but for all workers, including managers and technical workers...." (p. 3).

Commenting particularly on computer programmers: "The specific character of computer-aided technologies is that they no longer discriminate between most categories of intellectual and manual labor. With the introduction of computer-aided software programming (CASP), the work of perhaps the most glamourous of the technical professions associated with computer technology programming is irreversibly threatened. Although the real' job of creating new and basic approaches will go on, the ordinary occupation of a computer programmer may disappear just like that of the drafter, whose tasks were incorporated by computer-aided design and drafting by the late 1980s. CASP is an example of a highly complex program whose development requires considerable knowledge, but when development costs have been paid and the price substantially reduced, much low-level, routine programming will be relegated to historical memory" (p. 21).

Arguing the above is the meat (& potatoes) of the book but chapters are given over to exploring aspects of these developments, particularly the commercialization of science and the university (i.e., the subordination of knowledge to serve profit-motives to the detriment of any other determinant).

Other chapters look at a city-planning office to study the effects CAD has had on the city-drafters and designers over the years; unions and their experience organizing "professionals" such as doctors, teachers and lawyers; the university tiered, tracked and tenure system; and recent writers on class (What!!! Class you say?!).

The authors devote a chapter to class analysis because though soft-pedaling they locate an important nexus of social change in a "New Class" of knowledge workers (after the work of Alvin Gouldner but with important qualifications), especially as the blue-collar worker and the service worker are replaced by automation. They acknowledge that members of the new class have "traditionally been the servant of corporate capital and the state." But Aronowitz and DiFazio see that with the proletarianization of knowledge workers described in their book and while capital still depends on their labor the new class begins questioning their identification with an exploitative ruling elite. Here the authors' argument is weak. They say that computer programmers etc. constitute a new class, yet at the same time while describing its disappearance they are arguing that they really aren't that much different from their blue and pink collar cousins. Why not look to those outside of productio the marginalized former factory workers, managers, operators, (and yes, even programmers), etc., unemployed, or barely employed in temp or part-time or minimum wage work, who have little or no stake in the status quo as the "new class"?

An interesting couple of pages in The Jobless Future traces the origins of "The War on the Poor." A changing perception amongst "liberals and leftist intellectuals" has seen the resurfacing of the 18th century English ideal that "moral character" is built by economic independence, but without consideration that an unemployable class has no hope of participating in a shrinking labor market.

In the last chapter, the authors suggest some "pathways" for the future, taking into account presuppositions of their book study. "In addition, our proposals assume the goal of assuring the ... possibility ...of the full development of individual and social capacities" (p. 343). Things they argue for: The need to reduce working hours; regulating capital to prevent capital flight; education as a right rather than a privilege (particularly poignant in "knowledge" times); a guaranteed income; a new research agenda steered away from profit to human motives and so on. They argue that we need to go beyond "full employment" toward "no employment" through the steps of shorter work weeks, redistributed work load, and so forth, and work to set things up so that such is possible.

Aronowitz and DiFazio's argument for a jobless future is convincing. It's recommended reading for those trying to get a handle on the changing workplace and its social fallout. Their book also seems to have arrived into a spate of no-future-for-work commentary. There's the FutureWork list (see below).

There is also Breecher writing in Z Magazine, a recent Business Week article on "Re-Thinking Work," a Fortune cover story on "The End of the Job," the Canadian book Shifting Time by Armine Yalnizyan, T. Ran Ide and Arthur J. Cordell, and the new book by Jeremy Rifkin, The End of Work.

In the face of these observations and predictions, nothing is being done to address the social dislocation upon us (unless you count prison construction) when the agency by which humans obtain necessities through sale of their skills and abilities is going away. Even worse, as Aronowitz and DiFazio remark at the start of their book, a grand delusion is in operation "as experts, politicians, and the public become acutely aware of new problems associated with the critical changes in the

economy crime, poverty, homelessness, hunger, education downsizing, loss of tax revenues to pay for public services, and many other social issues. The solution is always the same: jobs, jobs, jobs" (p. xi).

An Orthodox Marxist Critique of the Third Wave Study Group: Do Computers Change the Face of Capitalism or Only Give It a Facelift?

By Class Struggle

There is wide discussion in the media today about the impact of computers on society. Columnists speak of the digital age, and it seems like no copy of a magazine or newspaper is complete without a mention of the Internet. The left too has jumped into this discussion.

One group based in Chicago called the Third Wave Study Group has issued two numbers of a magazine called cy.Rev: A Journal of Cybernetic Revolution, Sustainable Socialism & Radical Democracy. The first issue, with articles by Carl Davidson, Jerry Harris, and Ivan Handler, who once had been active in the New Left and the Maoist movement, was submitted to the founding convention of the Committees of Correspondence. They claim that:

> "The microchip's impact is changing everything about our world and the way we live. Civilization is undergoing a quantum leap on the order of the agricultural revolution launched 6000 years ago and the industrial revolution launched 200 years ago. We have now entered a third period of human history. We prefer to call it the information era." These changes are a "revolution in the means of production. New technologies have changed the face of capitalism, affecting the economic base, the relations of production, and are impacting political strategy."

It's true that computers are touching all sectors of economic life. As capital goods, they are employed in product design, drafting, running machines, keeping track of inventory, quality control, monitoring workers' production, in financial accounting and marketing, locating trucks and railcars around the country, taking stock in retail stores and automatically sending new product orders in to manufacturers to re-initiate the productive process. They were used by forty million people at work in 1989 and by even more so today, in every aspect of capitalist production, distribution and finance. Millions of workers have their paychecks automatically deposited to their bank accounts, pay their bills and obtain money through Automatic Teller Machines. Moreover, some thirty-five percent of families have a computer in their homes. Millions use computer networks like Compuserve or Prodigy to play games, send mail, shop, and get news and information. Millions of children play Nintendo and other computer chips are built into TVs and VCRs and their remote controls, and in new models of cars.

This is not the first time a new technology has changed "everything about our world and the way we live." In the last century alone, there were other technological changes which affected every work place and consumer in a manner we can compare with computers today. Electrification brought better light and a flexible power source to every work site. It spread to every home, drastically reducing the amount of household labor through labor-saving machinery, and bringing entertainment and news into the home via radio and TV. Motor vehicles enabled every capitalist firm to get its inputs and distribute its products to market without railroad connections, vastly enlarging the scope of markets. Horse transportation was quickly made obsolete and the entire population obtained a type of mobility that had been accessible only to the rich before. Computerization, in fact, is just the latest of such major technological changes.

Such a change can't compare in historical significance with the prior transformations Davidson, Harris and Handler write about, transformations that resulted in tremendous change in the life of humanity. The agricultural revolution brought an end to the old classless societies based on a hunter-gatherer technology, and led to the development of cities, ruling and exploited classes, the state, and the rise of civilization. The industrial revolution gave rise in a few short years to the modern factory proletariat amidst the ruin of the artisans, and led to an exceedingly rapid development of the productive forces, spreading capitalism around the world. Both the agricultural and industrial revolutions led to a big leap forward in the overall productivity of society and above all changed the relations between producers and the rulers. So far the impact of computers has been in no way so profound. No new social classes have emerged; no classes have been destroyed. Not only that, but they haven't capitalism to resolve its immediate problems. Computers have been introduced widely starting in 1973, but the whole period since that time has been marked by slow economic growth and the lack of productive investment, the opposite of the relative surges of output that occurred in the agricultural and industrial revolutions.

Today the old cash register may have been replaced by a computer that scans bar codes and tells us the bill, but it's the same money that has to be paid for the sale. The Third Wave Study Group says it's changed the face of capitalism, but behind the facelift, it's remained the same old exploitative social system of capitalists and working class. Whether computers are the technology that will inaugurate the "third period of human history" remains to be seen ... to say the least.

The Impact of Computers on Capitalism

The Third Wave Study Group tells us that in the Information Era, the new period we are supposed to be in, "the application of knowledge is now the primary means of new value production." Elsewhere they say, "Physical labor and industrial machinery are now secondary to the value added by information." Perhaps this will be the case in the future, but it's not true now. In this country, which is the most advanced in the use of the new technologies, tens of millions of non-technological workers spend tens of billions of hours a year working in production, extractive industry, transportation, sales and services, creating new value, and far eclipsing the amount of technical labor or "information" expended in society.

Further we are told that computers are now, "the most important tool of production." No method is given for determining what the authors consider most important, but when valued in terms of dollars of accumulated investment, in 1993 computers made up 10.3 percent of all equipment owned by capitalists. A disproportionately high share of these computers is employed in finance, which doesn't produce anything; thus computers make up a lesser share of the tools used in actual production. In the ordinary vulgar terms of what the capitalists pay for them, this hardly makes computers the most important tool of production.

As for the new technology itself, we are told that, "Intellectual capital, developed and held by knowledge workers and encoded in software and smart machines, is the key element of wealth in today's information capitalism." Again no method is given to show how the authors determine what's key. No doubt a computer chip without the circuitry would have no value, but the design by itself doesn't make a chip without the productive process and the employment of various types of labor. In specifying something about the computer industry itself, they say, "computer technology consists almost entirely of intellectual capital, with raw materials costing only one percent and unskilled labor five percent." Such statistics can only mean they ignore the fact that computer chips and computers are produced in factories employing massive amounts of physical capital. IBM has fifty-eight thousand dollars invested in machinery for each worker compared to the forty-five thousand dollars

per invested by General Motors. Intel, the major manufacturer of Central Processing Unit chips for personal computers, is building a new factory in Albuquerque, New Mexico that will cost one billion dollars, including the building, automated chip handling equipment and clean rooms, comparable in size to an auto plant. The production of computers includes power supplies, circuit boards, computer chips, video monitors, disk drives and printers, all of which also embody diverse types of labor, both in raw materials and in assembly.

So it's hardly the case that embodied knowledge is the key element of wealth at least up to now. At most it's what the Third Wavers would like to see. But saying so today boils down to creating an ideology that promotes "intellectual capital," thus giving it a special political role.

Computers and Job Loss

The Third Wave Study Group sees computers as having a major impact on jobs: "In third wave production only a few workers are needed to produce goods of much greater quality and sophistication. This is due to the embedding of microcomputer technology right into the tools of production. By organizing work so most of the manual tasks can be done by technology, the number of workers needed to carry out the task gets reduced dramatically .... The third wave guts entire workforces and industries to the point of collapse."

The introduction of computers, like the introduction of any major technology in capitalism, has a contradictory effect on jobs. The balance sheet of whether it creates or destroys more jobs can't be determined by grand pronouncements about sweeping trends, but only by a concrete examination of the job impact.

Of course computers immediately caused job losses in the manufacture of typewriters and mechanical calculators, which they directly replaced. They have also reduced jobs in certain particular industries.

In the telephone industry, for example, computers have replaced the vast majority of operators. In the chemical industry, companies have removed workers from the refinery apparatus, replacing them with automatic controls, and concentrating the remaining workers in the control rooms. At the level of the economy as a whole, statistical studies show that when more computers are introduced in an industry, the share of white collar workers increases and the share of blue collar workers decreases. But the effect isn't automatic or immediate. And computers are not the only cause of decreases. For example, in the very same period when computers were being introduced, the working class has fought very few fights to resist the increased physical intensity of labor. Furthermore, the introduction of co require more workers rather than fewer for several years, as the change disrupts production. Not to mention the fact that as many workers know often the computers don't run right and it's especially difficult to co-ordinate different types of computers with one another. Workers have to learn new skills, which takes time, and often their productivity drops during the process.

On the other hand, with the massive introduction of computers since 1973, we've seen the growth of entire new industries. Today hundreds of thousands of workers are employed in new plants both in this country and in Latin America and Asia making semi-conductors and computers and all the parts and components that go into them. Further there are software programmers, those involved in the sales of computers, computer maintenance workers, and numerous specialized computer workers in industry.

Computers and microchip technology may dramatically raise the productivity of certain machines, but that doesn't automatically mean that there is a decline in jobs. If the output of the industry in

question is growing rapidly, rapid rises in productivity may go along with job growth. But what is striking is that the overall rate of growth of productivity of the U.S. economy is lower since 1973, the period of both capitalist stagnation and the massive introduction of computers. Though computers have the potential to rapidly raise productivity, this hasn't happened so far at the level of the entire economy.

The technology for the automation of entire industries has been available for a number of years, yet the automation isn't applied. Because the Third Wavers forget that it isn't simply a question of what is technologically possible. The capitalists often have massive investment in the old technology which would be made worthless if they put in large new investments. The decision to invest i like every other investment decision in this society, is determined by its possible effects on profitability. When the rate of profit is low, capitalists often avoid making possible investments. Obviously this has occurred in many sectors, where they haven't put in all the technically feasible automated equipment, or even all the technically feasible equipment of earlier technology.

So up to now, entire workforces and industries haven't been gutted by the introduction of computers. The world described by the Third Wave Study Group may be the world they wish, in which intellectual capital and knowledge workers would reign, but it isn't the real world.

The Knowledge Workers

The Third Wave Study Group says the new technologies have not only affected the economic base of capitalism, they have changed the relations of production. They say three main groups of workers are impacted: the new "knowledge" workers, the declining blue collar workers and the increased ranks of the unemployed. They describe the "knowledge workers" as "a dynamic and growing force of skilled analysts, designers and technicians, filling the jobs created by the new technology." Turning to their conditions at work, they say, "The economic organization of knowledge workers emphasizes less hierarchy, less bureaucracy, more information about and control of the job process, and greater participation or empowerment at the site of work." So they have created a category of workers that are involved with the new technology so-called "knowledge workers." The problem with this category is that it doesn't group people by their social relations to the mean but instead by the technology they work with.

Some people using the new technology, like salaried programmers and electronics technicians, are skilled white collar workers involved with production much like draftsmen or tool and die workers. They are exploited by the capitalists who pay less for their labor power than their labor contributes to the product they help produce. By level of pay, lack of autonomy on the job, domination by managers, and in various cases contact with blue collar production or transport workers, they are just a part of the working class, whether they see it or not. Many knowledge workers find themselves at the bottom of a corporate hierarchy where they have to do very detailed work, not much different from that of a skilled trades production worker. IBM for instance, which is by far the biggest company involved with the computer industry, is notorious for its heavy management structure, which certainly leaves little room for "greater participation or empowerment at the site of work."

Other "knowledge workers" are self-employed as programmers or computer consultants. They are a part of the petty bourgeoisie, who neither employ others nor are employed themselves. Still other "knowledge workers," particularly computer and electronics engineers, work closely with management and have considerable control over their job process. Others supervise workers and become integrated into the managerial hierarchy of control over the work process. They are given a certain status by this society. Their salaries well exceed not only those of blue collar workers but also

other "knowledge workers," and they enjoy more pleasant working conditions. They have opportunities to enrich themselves through investments in stocks, bonds, and real estate, all of which gives them a stake in present society and turns their interests against the working class.

Obviously the Third Wavers include in one single category to which they attribute common interests and the same political role people who ... belong to antagonistic social classes.

Knowledge workers play no important role in the economy without the millions of workers they are linked to. Think of designers and computer programmers working in the auto industry. What is the meaning of their work if hundreds of thousands of workers don't make the steel, rubber and glass that goes into cars, if auto workers don't build cars, and the truck and rail workers don't transport the finished product to the dealers?

The supposed advantage of knowledge workers are their political concerns. The Third Wavers speak of a progressive sector of knowledge workers, whose concerns are "ecology, disarmament, peace and human rights issues, and expanded access to information and education." In fact, much of the new technology was developed for military purposes and many knowledge workers are involved in production connected to arms. It seems doubtful that those working in military production would have any greater interest in disarmament than other sectors of society, especially in the absence of any big social movement challenging militarism. In any case, we have no indication of this. The same is the case with human rights. Both the aerospace and computer industries have suffered massive layoffs in recent years. It's unlikely that many of the white male knowledge workers have become advocates of affirmative action when their jobs are under attack and the dominant ideas in this society blame minorities a white men's loss of jobs. Again, there's no indication of this. That's why rather than examining what knowledge workers actually feel about disarmament and human rights, the Study Group simply asserts that these are their concerns.

The Third Wave Study Group says that, "When socialism embraced the proletariat as the primary agency of progressive change, it also tended to romanticize industrial society." Rather than romanticize industrial society, socialism saw its contradictory nature: how it gave rise to a class whose role in the productive process gave it an interest in transforming society. Socialism never thought that this class would automatically have the social and political consciousness necessary to transform society. It's exactly why the socialist movement strove to build militant organizations to awaken this consciousness. It's the Third Wave Study Group that romanticizes knowledge workers, a disparate grouping which they endow with virtues it doesn't have and couldn't have. No social layer can have these virtues just by the technical roll they play in the economy.

In order to make its point, the Third Wave Study Group not only glorifies knowledge workers, but it denigrates the industrial proletariat. Their reasoning is based on industrial society itself: industry is based on hierarchy. They say, "the authoritarian patterns of managerial hierarchy always reasserted themselves; they were imbedded in the organization of work on the factory floor. Thus these relations could not be permanently transformed while trapped inside the second-wave industrial economic base." According to them, due to this situation, not only does the proletariat reflect the past, it tends to be reactionary: "some blue collar workers fear for the future and fight to retain old ways, regardless of the consequence to society or the environment." So not surprisingly the Third Wavers show little concern over the loss of industrial jobs. "It does no good, for instance, to call for a reindustrialization of the economy along the lines of the blue-collar industry. While some industries can be retained and some jobs can be restored mainly those that were lost due to the business cycle, mismanagement, or unrestricted runaways most of those jobs or industries eliminated by advances in technology and industrial organization cannot be restored." No more surprising is their conclusion:

"Traditional Marxists who view point of production organizing as the most valid form of struggle need to rethink long held beliefs."

In fact, this is the crucial point: the Third Wave Study Group wants to discard the idea that capitalism has organized and socialized workers at the point of production to work together cooperatively and to collectively resist their exploitation, and thus has laid the basis for their running society from below, without hierarchy or bureaucracy. In doing so, the Third Wavers reject the idea that the working class has the power to bring society to a halt and also to reorganize it without a parasitic ruling class.

The Information Capitalists

Finally: The Third Wave Study Group sees a conflict among the capitalists over the old industrial past and the new technology, with the old industrial capitalists trying to defend the industries they are based on, while the new information capitalists are involved in bringing to birth new industries. Among the information capitalists themselves, some are tied to the military and are only interested in profit maximization, while others are "information capitalism with a socially responsible human face, with an eye on making its fortunes in the green industries' of the future." The Study Group sees some problems with these progressive information capitalists: "But we must not allow these factors to cover over the basic class conflict between third wave capitalists and third wave workers. For all their unique and progressive stands on certain issues, the Silicon Valley bigwigs are still notorious union busters and social reactionaries, especially when it comes to their treatment lower-skilled, female and nonwhite sectors of their labor force." Despite all this, the Study Group's policy is to find some allies among these capitalists: "These entrepreneurs may side, temporarily, with reform movements and progressives. This is the meaning of Al Gore's staking out a leading analysis on ecology, as well as John Scully of Apple Computer's sitting next to Hillary at Clinton's inaugural address."

The consequence of this analysis is clear: once more the left is urged to support a sector of the capitalists, the so-called progressive ones, who are far from perfect, but a sector that are supposed to share some of the objectives of the left. More precisely, what can a left movement do that believes an Al Gore can side with its concerns from the pinnacle of power, if not continue its self-destructive ties to the Democratic Party? So, all this so-called theory about the Third Wave and the new era of history ends up calling for support to ... politicians of the old era.

The Third Wave Study Group energetically recommends the works of Alvin and Heidi Toffler on the Third Wave as "one of the best analyses out there." When the Republicans took over Congress the Tofflers made the national news as they were invited to a conference organized by Newt Gingrich in Washington. The Tofflers have been friends with Gingrich for a couple of decades and Gingrich wrote the introduction to their latest book Creating a New Civilization. Gingrich calls the book "one of the seminal works of our time" and points to the Tofflers' visit to Fort Monroe to speak to the U.S. Army Training and Doctrine Command (TRADOC). Gingrich says that the use of stealth technology in the Gulf War was the result of applying their Third Wave ideas, which resulted in the annihilation of the Iraqis' use of Second Wave anti-aircraft.

The Tofflers, with a background in the communist movement, have returned repeatedly to a battle with their former ideas in presentations to various corporate clients and the Reagan White House. "For Marxists, hardware was always more important than software. The computer revolution now teaches us that the opposite is true. If anything, it is knowledge that drives the economy, not the economy that drives knowledge." Further, "The glorification of the proletariat and the theory that it was the vanguard of change, reflects the principles of a low brow economy" i.e. a low knowledge-intensive one. The problem is not breaking the shackles on the proletariat, but freeing the service

industries of the "shackles" of regulations. "Instead of decrying the rise of the service sector and continually attacking it as a source of low productivity, low wages and low performance, shouldn't it be expressly supported and expanded?" And they say, "For today the singl important political conflict is no longer between rich and poor, between top-dog and underdog ethnic groups or even between capitalism and socialism.

The decisive struggle today is between those who try to prop up and preserve industrial society and those who are ready to advance beyond it." The Tofflers take the logic of the Third Wave another step forward ... towards an energetic defense of capitalism.

But the Third Wave Study Group itself is already taking this route: "In our view of socialism, we affirm the entrepreneurial spirit, the motivating energy of the market and the right of individuals to become wealthy through the private ownership of the capital they have helped to create." They sing the praises of the market: "market forces, in particular the drive for innovation and new profits, will be the major devices used to carry out economic restructuring. It should be clear by now that the market is necessary for the practical functioning of any economy." Laws and regulations will be used to steer capital investment into "areas that benefit society," like "new environmentally beneficial technologies" which "may not be taxed at all for a set period." Instead there will be taxes on companies that pollute the environment or prevent unionization. (And no doubt the taxes will fall heavily on the blue-collar workers, who stick obstinately t technology.) The Third Wave Study Group pretends it wants serious reforms, and even talks about the class struggle or socialism. But clearly what they call socialism is but a new era of capitalism ... with a computer in every home.

Technological changes are occurring and having an impact on the social classes. But technological change by itself won't bring about a social transformation of society. Such a transformation can be carried out only by a social class that has an interest in the end of capitalist society, that is, the working class, including many of the knowledge workers who owe their jobs to the new technology under the condition that they join the rest of their class and don't stand apart.

Computers will be very useful in the building of this new society. Today more than forty percent of industrial workers use computers at home, work or school, and even more office workers use computers daily. A more technically skilled working class is one that can use its skills to transform society and to run it in the future. Computers can facilitate the ways the working people of the world can directly participate in making democratic decisions about production and the use of natural resources. Everyone can have access to the plans and input into them. Computer-based automation without the hindrances of capitalist control, exploitation and national borders can free workers from all types of drudgery and unnecessary labor, establish true leisure and abundance, and the material possibilities of a decent life for everyone on earth.

We revolutionary communists see the tremendous potential in computers. But we also see that this potential can't be realized unless there is a socialist revolution to overthrow capitalism and the proletariat takes power. May 21, 1995

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