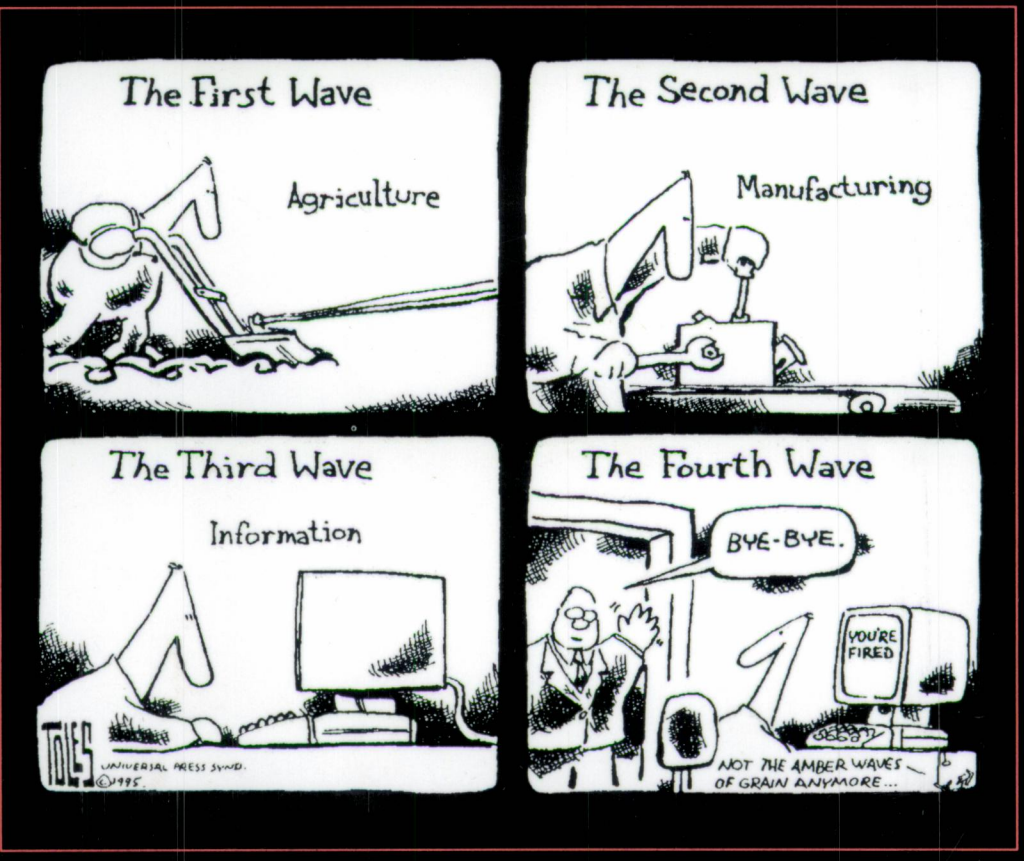
JOB?TECH

The Technological Revolution and Its Impact on Society



EDITED BY ABDUL ALKALIMAT, DOUGLAS GILLS AND KATE WILLIAMS

Job-Tech

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The Technological Revolution and Its Impact on Society

Midwest Conference on

Technology, Employment and Community

Edited by

Abdul Alkalimat

Douglas Gills

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TWENTY-FIRST CENTURY BOOKS AND PUBLICATIONS
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Preface

As the digital revolution advances and the growth of networks link people into ever-growing and changing user communities, it is important to stop and analyze the impacts of these technologies on economic life and the social consequences of change. The Midwest Conference on Technology, Employment, and Community was the vehicle chosen by the organizers to bring together experts on historical change, public policy, urban planning and the community of workers experiencing change on a day-to-day basis. Modeled on a similar conference held at Massachusetts Institute of Technology in January 1994, the Chicago conference focused on the economic and social particulars of the Chicago/Midwest region while retaining the national perspective of the MIT conference.

The University of Illinois at Chicago Library chose to be a conference sponsor and participant because the scholarly community is undergoing a transformation driven by digital, networked technologies. As a member of this scholarly community and historical keeper of the scholarly heritage, the library is the recipient of the power of the technologies while at the same time it faces the prospect of disappearing as a physical entity. The library is a part of the economic and social change today; it is important to understand the trends so that librarians can continue to provide a value-added service in the digitized world of tomorrow. The speakers and participants at the conference shared this need to see into the future. It is hoped that readers of the proceedings will gain insight into the murky world being defined by bits and bytes.

Sharon A. Hogan, University Librarian,
University of Illinois at Chicago

As a community development coalition, the Community Workshop on Economic Development was pleased to serve as a co-sponsor of the Midwest Conference on Technology, Employment and Community. The impact that technology has and will continue to have on jobs and communities is a critical issue for us as we move into the next century. In our work, we seek to maximize the choices that local communities have as they seek economic empowerment, and we are committed to ensuring that residents have access to the technologies of the future. This book and the community education it will give rise to can be important instruments facilitating community voices in the debate over jobs and technology policy and social change.

Wanda White, Executive Director,
Community Workshop on Economic Development

Introduction

Do you have a job? Is your job secure? Heard about any layoffs? Are you in school? Are you a college graduate? Are you computer literate? Do you use a computer at school, at work, or at home? Are you on the Internet? How different are things now than, say, thirty or forty years ago for you or your parents?

Why do these questions worry so many of us? A group of campus and community leaders organized a conference to begin working on the question. This volume contains the proceedings of that conference.

The fundamental changes transforming industrial society are rooted in a technological revolution. The powerful impact of new technology has led to an economic revolution and in turn a social revolution. Led by such advanced industrial societies as the United States, the world is entering a new epoch of human history. Investigating this process in its early stages will help us understand what is going on and change it to benefit humanity. This is a critical task.

One of the basic needs of the industrial system is continuous innovation. This innovation is in the realms of hard technology (smart machines), soft technology (operational information), and organizational forms of management and administration. In other words, there is an insatiable need for new machines, new information, and new relationships. The motivating force has been the search for profit, how to get the competitive edge to sell the most goods at the highest price for the lowest investment.

New technology is giving us the best of times and the worst of times. Productivity is going up, and unprecedented wealth is being created. But an increasing number of people are experiencing a severe decline in quality of life. In general, this technological revolution is producing an economic transformation by polarizing society into extremes of wealth and poverty. Every aspect of society is impacted by this economic polarization, and society can no longer go on as usual.

Too many of us, while affected every day, have not yet seen the entire sweep of the technological revolution and its social consequences. We need to begin a dialogue to design a future worth living in. The scientists are in their laboratories, the educators are in the schools, and people are in their homes and on their jobs (if they aren't homeless and if they are employed).

In each setting there is discussion, sometimes guided by scientific information and sometimes by the popular media but too often limited by the urgency of the situation: a workplace automating; budgets being cut; a company downsizing, and so on. What is not occurring is a broad and democratic dialogue to sum up what is going on and how we can direct things toward a future that maximizes freedom and economic well-being for everyone.

To begin such a dialogue, more than seven hundred people participated in either the MIT Technology and Employment Conference held in Boston in January 1994 or the March 1995 Midwest Conference on Technology, Employment and Community in Chicago. The three of us who edited this book were involved in one or both conferences.

To take the dialogue even further, we developed a "Technological Revolution and Its Impact on Society" course outline for college or community-based studies (see Appendix A, page 203). We have already begun to link instructors and students of that course together via the Internet and the World Wide Web (see page 253). For those planning or considering similar campus-community conferences, we have written up our experiences in the form of a history of the MIT and Midwest conferences (see Appendix B), and reprinted the programs of the two conferences (see Appendices C and D).

Job-Tech in the Context of a National Debate

The two "job-tech" conferences, as they came to be known, were a response to an emerging national debate. The main focus of the debate is how to maintain economic prosperity through the transformation from an industrial society to a society based on electronic information.

The opposing viewpoints on this within mainstream politics are deeply embedded in U.S. political history. On the one hand, there is the legacy of the Roosevelt New Deal and the Kennedy New Frontier, the tradition of governmental intervention to protect the minimum economic rights of working people. This was based on an expanding economy and government debt. On the other hand, the Nixon and Reagan administrations shifted support to the wealthy and their corporate holdings by lowering taxes, cutting government spending, and increasing government debt.

Within these polarities, the Clinton administration based its policy on the belief that as the economy grows into high technology, it will also produce livable middle-income jobs. Clinton argued that it is possible to put Ameri-

cans back to work. Although he remained nominally committed to education and job training, Clinton accepted the conservative position that the national debt forces government to retreat from its welfare role, shrink its social "safety net," and keep taxes low.

Opposition to the Clinton administration emerged as a self-styled revolution from the right wing of the Republican party. The "Contract with America," as rammed through the House of Representatives by the new GOP majority, was the most Draconian slash-and-burn attack on social spending and protections for children, labor, the environment, and so on in the 20th century. The Republican party's operating principle is that society is better off when individuals and corporations proceed on the basis of competition unhampered by any government-guaranteed rights — except when it comes to government support for corporations.

Clinton and the new right-wing House of Representatives Republicans have common ground. They want to cut back the welfare state, keep taxes low for upper incomes, build prisons, expand police forces, and encourage privatization of everything from education to health care to the Internet.

It is important to see the relationship between cutting government programs and building prisons. A more hidden principle seems to be operating here: job creation will not bring prosperity, so more prisons will be needed. The job-tech conferences debated the thesis that we are witnessing the end of jobs, in which case both Clinton and Congress are making a false promise to displaced workers while preparing a police state to handle the inevitable unrest.

It is, in fact, painfully clear that as President Clinton and Congressman Gingrich shake hands, the American Dream is dying hard. Children born in the 1990s will have no experience of the promise of never-ending prosperity that propelled families since World War II. Youth born in the 1970s watched the United States transform from superpower to debtor nation. The debate over how the high-technology economy will benefit all of us is far from over. There are simply many people left voiceless and many people we have not yet heard from.

Opening up the debate with conferences and courses of study can lead to developing people's visions of the future. Once you have a vision, you can translate it into practical proposals and fight for them. Bill Clinton and Newt Gingrich translated their visions into policy initiatives, legislation, programs, and so on, which they advanced to take the country where they wanted to go.

The American Dream, a vision based on past realities, is no longer sustaining us. Until we understand current realities and envision our own futures, the visions of the dominant forces in society — in our case the corporate wealth behind the media, educational institutions, think tanks, publishing houses, and so on — carry us along. The development of a vision that represents and comes from the majority of people, working and poor people, is one of the most difficult and yet precious historical moments. We saw at the Midwest job-tech conference that presenting the facts and the issues of technology, employment, and community is a terrific starting point for people to envision their future and come together around practical proposals.

How to Use This Volume

First of all, read it! It details the ideas presented at the Chicago job-tech conference. Then consider pursuing more study, more research, and more conferences.

More study. The conference touched on many topics others have delved into and written about. You can use the "Technological Revolution and Its Impact on Society" course outline at college or in a labor, church, or community group. You can join others studying these issues by connecting via our Web pages and our Internet discussion list, where we will be posting more resources for teaching.

More research. This conference gives the general outline of the current situation, but more work needs to be done on each specific community, each industry, and each new year, because things are changing very rapidly. For students and faculty, this book itself should be a treasure chest of research ideas to follow up on. There are also many publications to monitor, including *Technology Review*, published by MIT; *Wired*, the major popular journal of the high-tech computer revolution and its new culture; the Tuesday science/technology section of *The New York Times*; the technology section of the London *Financial Times*, which is published the first Wednesday of every month; and the *People's Tribune* and other papers printing stories from the perspective of poor people. A monthly newsstand check can turn up major articles from a variety of sources. Get ahold of some zines, the many self-published magazines circulating today. Get from the Internet the news that doesn't even make it into print.

More conferences. A third job-tech conference is scheduled at California State University at Los Angeles, and we encourage every community and

campus to join in conferences as they are able. The most important aspect of future conferences will be assembling diverse groups that include scholars and activists, middle- and working-class people and those already driven deep into poverty, and jumping barriers of color and nationality. We have compiled a handbook on organizing these conferences and would be glad to share this information and to participate in any new conference project.

This book is divided into three parts. Part one, the plenary sessions, takes you from the opening assertions to the final conclusions of the conference. Part two, the workshops, gives you 17 different close-up discussions of the issues debated in the five plenary sessions. The last third of the book, the appendices, are tools we offer to those many readers who will want to carry the debate forward and press for solutions.

It is exciting to be consciously involved in the dawn of a new age. We welcome you to share our thoughts as recorded in these conference proceedings. We hope you invite us to share yours.

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po·et·ry, *n.* **1:** writing that formulates a concentrated imaginative awareness of experience in language chosen and arranged to create a specific emotional response through meaning, sound, and rhythm **2:** a quality that stirs the imagination.

These three poems, all read at the conference, set the stage for the Midwest Conference on Technology, Employment and Community. They shed light on the questions: Where do we come from? Where are we going?

Chicago

Hog Butcher for the World,
Tool Maker, Stacker of Wheat,
Player with Railroads and the Nation's Freight Handler;
Stormy, husky, brawling,
City of the Big Shoulders:

They tell me you are wicked and I believe them, for I have seen your painted women under the gas lamps luring the farm boys.

They tell me you are crooked and I answer: Yes, it is true I have seen the gunmen kill and go free to kill again.

They tell me you are brutal and my reply is: On the faces of women and children I have seen the marks of wanton hunger.

And having answered so I turn once more to those who sneer at this my city, and I give them back the sneer and say to them:

Come and show me another city with lifted head singing so proud to be alive and coarse and strong and cunning.

Flinging magnetic curses amid the toil of piling job on job, here is a tall bold slugger set vivid against the little soft cities;

Fierce as a dog with tongue lapping for action, cunning as a savage pitted against the wilderness,

Bare-headed,
Shoveling,
Wrecking,
Planning,
Building, breaking, rebuilding,

Under the smoke, dust all over his mouth, laughing with white teeth,

Under the terrible burden of destiny laughing as a young man laughs,

laughing even as an ignorant fighter laughs who has never lost a battle,

Bragging and laughing that under his wrist is the pulse, and under his ribs the heart of the people,

Laughing!

Laughing the stormy, husky, brawling laughter of Youth, half-naked, sweating, proud to be Hog Butcher, Tool Maker, Stacker of Wheat, Player with Railroads and Freight Handler to the Nation.

How Quickly the Good Things Go

Once there was a good job, fine clothes and diamond rings
Houses in the hills, new cars and everything
Trips to the country, parties on Friday nights
A life of happiness and joy, one so sunny and bright

Now my good job's gone, my wife and kids I'll never find
And my life is spent looking for food, everyday from line to line
My house is made of cardboard, now sitting at the curb
where loneliness, destruction and dope is the only word

Now old friends when they see me, they ask how could this be
What happened to all the happiness, why so much misery
That is the question, that if I could answer you would know
How quickly and how easily, all the good things you have can go

One day you are on top of things, looking down at the curb
Wondering about the lines, so brother you haven't heard
That trip to the curb is easy, all it takes is for you to lose that job
Then one day you'll wake up and find that life is truly hard

Then you'll know about the lines, and that search for someplace to sleep
And find out what it feels like to line up for something to eat
Now this story could go on, there is so much you need to know
But I'm not the one to tell you, how quickly the good things can go

America Is On The Move

America is on the move,
Doing what this country do
Making money hand over hand
And oppressing its people too

Its streets are full with homeless
The hungry and the poor
America the land of freedom
But justice is no more

No more justice for its people
Unless one of the rich you are
How could America forget the people
That carried it this far

For without the worker and the artist
And people dying for this country to grow
There would no more America,
America would be no more

America the great
You're slowly fading away
We can see it on the streets
As the homeless grow each day

No jobs, no money
And no place for the poor to rest.
But the world only see the good
And America at its best

Homeless people see it from the bottom
Our people dying on the streets
Our children and babies are hungry
And there's no place for them to sleep

People freezing to death on the sidewalk
And drugs are openly sold
And America you really don't know
About this bitterness we hold

The food lines and the anger
Of people being suppressed
So now we ask you America
To help us out of this mess

America the great
Can't you hear your people calling on you
To help us with our problems
America what can you do

Our babies are crying for milk
But for us there is no work
All we get from you America
Is bitterness, dope and hurt

Now your people are filled with pain
That you so freely give
Wake up America you're dying
Won't you help yourself to live

Part One

Plenary Sessions

Questions for the plenary panelists were held to the end of each session, and sometimes answered by more than one presenter.

The End of Work

This plenary launched the conference by presenting the case for how cutting edge technologies are replacing human labor in virtually every sector and every industry. Following Jeremy Rifkin, three panelists added their perspectives from biotechnology, from Canada and the North American policy debates, and from work with youth.

JEREMY RIFKIN — We are undergoing a fundamental transformation in the nature of work throughout the world. We are moving into a third industrial revolution. We're moving into the first decades of the information age. Sophisticated computers, telecommunications, and robots are fast replacing entire job categories. If you are a secretary or a receptionist or a file clerk, if you work in a mail room, if you are a middle manager, if you're in wholesale, if you're in retail, if you're a blue-collar worker, chances are that if your job has not already been reengineered out of existence by the new technologies, it will be very soon or at least over the next decade.

Let me use an analogy to give us a sense of the magnitude of what's taking place. Over a century ago, a majority of American workers were on the farm. Today, less than two percent of our work force is still in farming. We have sophisticated technologies replacing millions of working people and producing tremendous amounts of food for the world community. That same kind of profound technology revolution is now reaching into the manufacturing and service centers.

When I was a youngster in college in the 1960s, 33 percent of the American work force were blue-collar workers. Today, less than 17 percent are blue-collar workers, and we're still outproducing every single country

Jeremy Rifkin is the author of 12 books including his most recent The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-Market Era *(New York: G. P. Putnam's Sons, 1995). He is president and founder of the Foundation for Economic Trends in Washington, D.C. and has been influential in shaping public policy in the U.S. and abroad.*

The plenary was chaired by Marilyn Borgendale, who is Systems Librarian at the University of Illinois at Chicago. She has long been active in the peace movement and in efforts to broaden public access to information.

in the world. We're the number one manufacturing power. By the end of this decade only 12 percent of our workers will be blue collar, and by the year 2025 we won't have any blue-collar workers left.

We already have near-workerless factories. Let me give you an example from Chicago: U.S. Steel. In 1980, 120,000 men and women produced steel at U.S. Steel. Today 20,000 men and women are producing more steel than a 120,000 did fifteen years ago. Within ten or twenty years from now there will be an even smaller work force, as sophisticated computers and robots increasingly replace human labor on the factory floor.

The hope among economists and business leaders and politicians has been that the service sector would continue to find jobs and employment for displaced workers from our factories. Those hopes are quickly being dashed as this new technology revolution penetrates quickly into every single aspect of the service sector economy.

Corporations are reengineering their infrastructures to make them compatible with the speed of delivery of these tremendous new information technologies. They're flattening the old corporate pyramids, they're eliminating layer after layer of management, and they're creating what businesspeople call virtual companies. These are very lean companies with a small entrepreneurial elite on top, a professional staff, and a small just-in-time work force to get the job done. We even have companies now where "there is no there there." Employees are told to go home with their computer, and if they need space, they can reserve space in what they call hoteling. They have a certain amount of office space they reserve if someone actually needs to have a meeting with colleagues or with customers.

Routine jobs are being eliminated very quickly in many sectors of wholesale. Two hundred and forty thousand jobs have been lost in the wholesale sector in five years, and the wholesale sector is likely to be eliminated within the next twenty-five years, because manufacturers can hook up directly with retailers through the information interchange. They don't need wholesalers.

Even the giant retailers are thinning down. Sears, Roebuck, a Chicago-based company, eliminated 50,000 workers in 1993, and that was a year when profits rose by 10 percent. Let me provide two facts which I think give you a sense of the import of this revolution. Consider that 75 percent of all the labor jobs in this country are what we call simple repetitive tasks. They can be replaced by these computer technologies. On the other hand, only 5 percent of all the companies in the world have even begun to reengi-

neer their operations to make them compatible with these new technologies. So even in these first stages we have barely seen the full impact of this technology revolution on the worldwide work force. The management guru Peter Drucker, whom I don't usually agree with, says, "The disappearance of labor as a key factor of production is the critical unfinished business of capitalist society."

The point I'm trying to make in my book *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-Market Era* (New York: G. P. Putnam's Sons, 1995) is this: Over the next five decades, we're going to see the steady and inevitable decline of mass labor to produce goods and deliver services. Now in the past, when a sector began to let go workers, new sectors emerged to absorb those displaced people. When agriculture mechanized earlier in the century, millions of farm laborers found jobs in the factories. When factories mechanized in the 1950s and 1960s, millions of workers found jobs in the service sector. Now all three sectors, agriculture, manufacturing, and service, are moving into the information age.

The only new sector on the horizon is the knowledge sector. That's the symbolic analysts as we call them: the engineers, the scientists, the computer programmers, the lawyers, the accountants, the entertainers, the writers, the consultants, the teachers. This is a boutique labor sector. It's an elite labor sector. It's not mass labor. Even if you could re-skill and retrain the entire work force in every country with these elite knowledge jobs, there never will be enough jobs available in this knowledge sector to absorb the displaced workers from a mass employment economy.

That's why, when the president of the United States says "job retraining," across the country you hear millions and millions of people saying "retraining for what?" That's why this recent recovery has not been a recovery for the American people but only for the corporations. We have millions of people today who are underemployed or facing declining wages. Many of them are in temporary jobs. Twenty-five percent of the U.S. work force are temporary workers. By the end of the decade a third of the work force will be temporary workers.

We have already seen the disintegration of the social contract in this country. There is no way to protect the democratic experiment in this country when millions of people face the insecurity of temp jobs day to day in their lives. And that's why we have an increasingly volatile electorate: citizens who are flailing back and forth between political parties, anxious about whether there'll be room for them in this new electronic global village.

Let me give you two quick arguments from the other side. Last year I debated Laura Tyson, who was at that time president of the Council of Economic Advisors for the White House. We had a debate on CNN. She is now head of the Economic Council for the President. She has a cabinet position. She said to me, Jeremy, you're a pessimist. She said new products are going to come along in this knowledge age and information age that we couldn't even dream up. They're going to provide markets and jobs. She said, look, the horse and buggy was replaced by the automobile. A lot of workers lost their jobs in the buggy trade, but more people found jobs in the automobile industry.

Well, that may have been true in the past, but today here's the difference. If we were to come up with a new product with universal market appeal today, something comparable to television or computers or automobiles, you could produce the product in a near-workerless factory. You could market the product with a virtual company. In other words, we simply won't need mass labor to produce the goods and services of the coming information age.

Some of the Republicans and some economists and Democrats are hoping to open up markets abroad, saying that will provide jobs. The problem, however, is that the same technology revolution that is affecting us is affecting India, Mexico, China, Italy. In every country, corporations are setting up state-of-the-art facilities that require few workers. So we are seeing the emergence of a two-tier society in every country in the world. The top 20 percent are hooked into the knowledge sector and the global village. They're producing and consuming for each other.

The bottom 80 percent are out of the loop. They're on the outside of that electronic village trying to get in. Most never will. So the reality is that working people around the world face a common threat and a common opportunity as we move into the first decades of the 21st century.

Let me give you one example to make the point. The vice-president of the United States, Al Gore, said, look, the new information superhighway is going to create jobs. Well, that's true. Let's take home shopping by television, the home shopping networks, or computer shopping. Fairly soon, with the interactive data highway, they're going to use credit cards for computer and TV shopping. It is true that will create some jobs for telemarketers and programmers and on-air hosts and guests, but those jobs will pale in contrast to the millions of jobs in retail department stores that will be lost to home shopping. Remember, that's the largest employment sector,

19 million people working out there in retail stores across this country. That's only one of countless examples we could use of the tremendous dislocations being created by this technology revolution.

In the past, the government has been the employer of last resort. When people could not find jobs in new sectors, when technology displaced large numbers of workers, it's been the local, state, and federal governments that have come up with jobs and work programs. Remember, 17 percent of our work force works for some form of government program or agency.

The problem now is this. On the one hand, the marketplace is globalizing, automating, and is going to need less and less mass laborers to produce goods and deliver services. On the other hand, governments are shrinking everywhere in the world and are no longer going to be the employers of last resort.

So the fundamental political issue facing every single country today, and it's not being spoken of by any political party, is what do we do? What do we do with the millions and millions of people whose labor is needed less or not at all in an increasingly automated information age economy? Not one political person in this country in high office is speaking to this issue.

We're going to have to have a debate in every country on how best to share the productivity gains in the information age. Because this technology revolution is a double-edged sword. On the one hand, it has the possibility of tremendous dislocation and disintegration of the social fabric in every country. On the other hand, this technology could free us, could create a renaissance for civilization in the coming decade.

For the last 150 years, we dreamed and our parents before us dreamed that technology would free us for leisure, would free us to get on with more important things in life than just toiling in the marketplace. Now we're on the cusp of a technology revolution that provides that opportunity, yet what we see is something far different. We see a shortening of the work force and fewer people working longer hours at time and a half, because employers would rather do that than have more people at regular hours that they pay benefits to. Then you see millions of others too discouraged to look for jobs. They're part of the underclass marginalized into temporary work, underemployed or in dead-end jobs.

We can do better. What we need is a political moment for a debate, and that debate centers around this question: how do we find the vehicles that will allow us to share the great productivity gains in this technology revolution with all the people? If we don't, the increasing polarization between

the haves and have-nots is going to lead to political extremism, increased violence, social unrest and revolution, or totalitarianism in every single country in the coming decades.

I'd like to suggest two possibilities in closing. There are many other suggestions and recommendations in *The End of Work*. Let me deal with two. We need a debate in this country and in every country around radically shortening the work week to 30 hours by the year 2005. In the first and second industrial revolutions, when technology soared and productivity soared, millions of working people organized and said, we want to take part. The best way we can participate is with a shorter work week at better pay. Everyone benefited from that. We need a movement of working people, parents' groups, civic groups, fraternal groups, religious organizations, organized labor to demand a 30-hour week.

You know that both the political parties talk about restoring family values. Well, we have millions of working parents that aren't with their kids. The only way to restore the family in this country is to have the parents home after school, so I believe we ought to entertain a slogan, "Six and Six." You work six hours when your kids are in school, and you come home when they come home.

The key is, how do you make it work for the employer, not just the employee? I should like you to know that I do seminars with senior executives and CEOs from companies around the world, and they're worried. You know what they're worried about? They understand that they are letting a lot of people go and that as a result there is no purchasing power to buy their own products. Karl Marx understood this in the last century, and Henry Ford understood it in this century. If you replace human beings with machinery, eventually you don't have the purchasing power left to buy the products you're producing.

How do you make "Six and Six" work for the employer? The French have come up with an idea that I embellish in *The End of Work*. Hewlett Packard in Grenoble, France, said to their work force, we'll take you from a 38- to a 30-hour week, and we'll still pay you for 38. But you do something for us. You work shifts. If we can keep the machinery operating 24 hours a day, we can triple productivity and pay you more for working less. Pretty good idea, right? I asked Hewlett Packard executives, why don't you do that in the United States?

The French government has said maybe the government should pay the unemployment compensation insurance for every employee if the company

voluntarily goes to a 30-hour week. That's a good incentive. That will make the company globally competitive. Now, they may lose money revenue to the government on the front end, but they make it on the back end, because if more people are working they're off welfare. They are taxpayers, they have purchasing power, and the economy flourishes.

We could say to employers, if you go to a 30-hour week and you put in profit sharing so that all the workers participate in this technology revolution, we the government will give you tax credits. That way the employers win and the employees win.

Let me go to one other thought before I conclude. What do we do with the millions of people who we simply don't need in the marketplace? As we enter the 21st century, that's going to be an increasing reality. In the past, we've always looked to the private marketplace or the government to solve our problems. If you're Republican, you look to the marketplace. If you're a Democrat, you look to the government. I believe there is a third alternative. That alternative has been here for two hundred years. It's the third sector in American life. The French call it the social economy, we call it the volunteer sector. More than 1.4 million non-profit organizations that are not working for profit but for people, in neighborhoods and communities across this country. This sector, the volunteer sector, if it were an economy, would be the seventh largest in the world. It has assets of $550 billion. Ten percent of all the paid employees in this country are now in non-profit. So it's both volunteer and paid jobs.

Here's the debate I think we ought to have. For the millions of people whose labor is no longer needed in the marketplace except for dead-end jobs, we should say: we'll provide you with an income voucher as a replacement for welfare, if you're willing to be retrained for meaningful work in non-profit neighborhood organizations to build up every single community in this country. Not government jobs, not make-work jobs, not flipping hamburgers in the marketplace. In the non-profit third sector, so that we can revitalize, restore, and rebuild the social economy of the United States of America. It's high time we entertained that debate.

How do we finance it? Obviously, we could tear down the military budget, we could eliminate a lot of bureaucracy. I've got probably a better idea. Our corporations are receiving a $103 billion in tax write-offs and subsidies and benefits each year. We call it, the secretary of labor calls it, Aid to Dependent Corporations. A hundred billion a year. McDonald's actually gets my tax money so it can advertise Chicken McNuggets overseas.

That's unconscionable. I don't think McDonald's needs aid from me and my tax money.

I think we should take that hundred billion dollars in Aid to Dependent Corporations and put it in a pool. That pool could only be used to provide income vouchers — a decent social wage so that millions of unemployed Americans in our rural and urban areas can be retrained for meaningful work in neighborhood non-profit organizations to build the profile of the third sector.

You know, President Reagan and President Bush talked about the third sector and the volunteerism, but they were just not genuine, because they weren't willing to walk the walk to pour productivity gains from this great technology revolution into neighborhoods so that people could help themselves.

So, I make one final suggestion. The third sector is also about volunteerism, and I know a lot of you volunteer in your own neighborhood. Eighty nine million people volunteer four hours or more in their neighborhood each week. That's a lot of volunteering. And for them it's a meaningful part of their life, more meaningful than their job, usually. But a lot of Americans are volunteering less because they are having a hard time makings ends meet. They're working two shifts. They're working double jobs. Many of them are temp workers so they can't predictably say that they will volunteer at a given time and date because they don't know if they'll be working. If we want to really walk the walk, let's say to Mr. Gingrich and to President Clinton, you believe in the third sector. How about passing legislation that would provide a tax credit for every hour that someone volunteers to a neighborhood non-profit organization?

You know the upper middle class gets tax deductions for giving money to those same groups. But middle-class and working people tend to give their time to neighborhood organizations. I think that people ought to be able to have a credit for every hour they donate to a group. My sister is a full-time staff employee at Habitat for Humanity in Chicago. Their organization should have that tax credit. So should the NAACP and every other non-profit organization.

So, to sum it up, we have a tremendous challenge and opportunity in front of us. We also have the possibility of a tremendous dislocation in the world market and in the jobs and in every single economy. I am hoping that this conference will be the first of a series of initiatives where community groups and people involved in the technology come together, wrestle with

these issues. Begin to debate the merits of high-tech populism for the 21st century. Engage the country in a national debate around sharing the productivity gains of this third industrial revolution. And for you computer people in the audience tonight, a challenge to you: why not go on the Internet with all of your colleagues across the country and begin a debate across the world on some of the issues and themes that we've been discussing tonight?

Are we going to allow millions and millions of people around the world to take part in this global village? How best to share the productivity gain? I think the beginning debate ought to be a shorter work week, income vouchers for millions of Americans to rebuild their non-profit community organizations, and a high-tech populism that can bring all of us into the twenty-first century with a more humane economy that we can live under.

[*After hearing the three speakers who follow here, Jeremy Rifkin made these closing remarks:*]

It's been very encouraging this evening to hear the speakers this evening. Either we're all crazy, or we're all on to something. To hear speaker after speaker coming to similar conclusions about the nature of the problem and what has to be done reconfirms my belief that we truly are at a historical crossroads and a real political crossroads for this country.

We're going to be moving into a second recession by the end of this year, at least a serious downturn, and most Americans don't feel they recovered from the first recession. The political fallout, the psychological devastation, that Americans are going to feel when they realize that the recovery did not affect them and the second recession is at the doorstep is going to create the opportunity for a national debate and for some new possibilities.

I wish all of you well with this conference. It's a real trailblazing effort in Chicago, and I hope that the kind of conference that you're involved in this weekend can be repeated in cities all across the United States to bring together community groups and people who are involved with this new technology. That's the best way to begin a grassroots dialogue on how we can create a new social and political movement in this country.

It's time now for millions of people to speak up and speak out and say we demand participation in this new information age. We are not going to settle for marginalization. We are not going to allow ourselves to be placed in dead-end jobs or to be placed in a underclass. Together, I believe, the

working people across this country can began to organize for a new political movement and a new high tech populism for the 21st century.

JONATHAN KING — I'd like to focus on the question of the technological transformation taking place in society, and its impact on our future. It's critically important to recognize that the advances in computers, electronics and genetics are not just marginal advances in technology. Rather, they represent the transition from the industrial revolution to the new stage of history that we are now embarked upon. Most people find it difficult to believe that something really new is taking place and that things are really changing.

Scholars and economists and historians of technology have documented the very many cases during the industrial revolution when labor-saving technology was introduced, throwing people out of work. Social critics attacked the automation process for generating unemployment. In most cases local unemployment was followed by the development of new industries with a leap in employment. The industrial revolution was indeed marked by the continuing increase of employment in commodity production and distribution.

We are now encountering a new phase of unemployment well-described in Jeremy Rifkin's book, as computers, electronics and biotechnology are introduced into the production of all kinds of goods and services. Many people respond by bringing the historical examples forward to argue that this round of layoffs is temporary. But we are no longer in the industrial revolution. We are in a new period of human history, for which the experience of the industrial revolution is an inadequate guide. Let me just give you a few examples from biotechnology, which is one of the more dramatic expressions of the new technology.

In the 1920s, insulin was identified and recognized as a diabetes therapy by Banting and Best in Toronto. The then-small Eli Lilly Company of Indianapolis scaled up the purification and began marketing insulin for use by diabetics. One of the laborious tasks carried out in Chicago and other Midwestern locations was cutting out the pancreases of cattle and hogs.

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Then, from the pancreases which were collected in the hundreds of thousands, the Islet of Langerhans cells were teased out and minced up in a number of plants all around the Midwest. Insulin was purified out of those minced cells from the pancreases from the carcasses and then was provided to diabetics across the United States.

With the advent of genetic engineering technology at the end of the 1970s, the human gene — my gene, your gene — for insulin was spliced out of a human chromosome and into the DNA of common intestinal bacteria. These simple cells can be grown up in giant vats as with yeast in making beer. By having insulin produced in bacteria we are taking advantage of the enormous self-reproductive capacity of living organisms. At the present time, on Jefferson Avenue in Indianapolis, Indiana, one plant produces enough human insulin to provide for the entire needs of the whole United States population of diabetics who need human insulin. And that's just the beginning of the technology.

Computers are impressive, but they don't compare with organisms in terms of their self-reproductive capacity. A factory producing computers or calculators can turn out very large numbers; but it cannot reproduce itself. A bacterium producing insulin is a self-reproducing factory. Every time it doubles, the number of factories double. One bacteria tonight, five billion tomorrow morning. Little increase in the labor force is needed to generate very large increases in production. It's not labor-saving technology, it's fundamentally labor-replacing technology.

The production of commodities other than food using living organisms represents a qualitatively new manufacturing technology. The replacement of manual slaughterhouse work will be liberating in the long run, but the notion that the further development of these technologies will create jobs replacing the old is unsound. Production is going to increase as job creation decreases.

This means a true leap in productivity. Not one of these little increases that the economists talk about, a three percent rise and so on. We are talking about a real transformation. We know about the downside: joblessness. But the upside, even though we don't quite know how to realize it yet, is that for the first time in human history, the productivity exists to provide every single human being on the face of the earth with every bit of material need that can be imagined. One of the automated Macintosh computer plants can turn out enough Macs to put one in every household in the United States, if it were national policy to do it. There is no shortage of

production capacity. In previous periods of history it was utopian to say we were going to provide for everybody. Now that the conditions exist, it's not utopian. It's a matter of realizing it. The technologies can result in the rich getting richer and the poor getting poorer, or it can go the other way; it can be used as a truly liberating technology.

It's important to distinguish between jobs and work. Other people here will make the same distinction. I will use the term 'jobs' with respect to commodity production for a wage. As a result of the enormous increases in productivity, there will be many fewer such jobs in the future. But there is still an enormous amount of work to be done, to reproduce human society, to let every human being realize their potential, to turn the earth into a sustainable ecosystem, et cetera. Once we unleash this technology and free people from jobs, they can do real work. We just have to make sure they get compensated and have a living wage.

The images and models of technology that dominate our awareness are those developed to generate a product to market. This makes it difficult to conceive of what could be done with modern technology if it wasn't enslaved to the market. This is even true in the area of basic research. There are hundreds of biomedical scientists working on more efficient therapies for diabetics than conventional insulin. These therapies, of course, would end up as commodities sold to diabetics by the pharmaceutical or biotechnology industry. However, there are precious few scientists working on what it is that damages your pancreatic cells and causes the disease diabetes in the first place. It's very difficult to sell the prevention of disease by identifying and cleaning up an offending agent.

The emphasis on therapies rather than prevention is even clearer for cancer, lung damage and many other diseases. There are a hundred thousand chemicals out there left over from the industrial revolution in Chicago, and people who live on Damen Avenue are being poisoned by different ones then people who live on Western Avenue. The sophistication of modern biotechnology has made it possible to find out exactly which of these chemicals are damaging our genes. This would lead to their identification and potential clean-up or removal. It would take 10,000 people in Chicago to do that job and it would take them a lifetime. There is an enormous amount of work to be done. The Technology is there, the people are there, the money is there, but you can't get a job doing this work because the current trend supports a strong military budget and corporate welfare. We need massive new public programs to get this work done.

As Jeremy Rifkin noted, 200 years ago, 80 percent of the U.S. population was involved in producing food. If you failed at producing food, you didn't eat. Now, three percent of the population produces food for all of us, and we have discarded the notion that if you don't farm, you can't eat. Who here farms? Yet right now most of us — though unfortunately not all — have enough to eat.

The same thing has to happen for commodity production. The notion that to have a computer you have to be involved in manufacturing something is going to become as old-fashioned as the notion that in order to eat, you have to be involved in farming. No. As a result of being a human being, a member of human society, each of us has a right to the products of human society.

Bill Gates of Microsoft Corporation does not produce computer programs. Rather, thousands of individuals contribute to the development, reproduction and distribution of software. Their contribution, in turn, depended on myriad others who grew the food, wrote the textbooks, taught in the schools, maintained the sewers, drove the buses and trucks, built the factories, and delivered the plastic for the disks. The products of modern technology are the products of the entire fabric of a highly developed society. They should belong to the members of the society, not to a tiny percentage of privileged individuals.

I think meetings like this are extremely important in beginning to say what nobody is saying, namely the truth about the way things have to go. The solution to the contradiction between the potential of advancing technology and the inability to realize the liberating character of it because of unemployment and social disruption is clear: social or public ownership of basic production technologies.

Q. What do you think about these biotechnology patents which allow the developer to profit many, many times, not just once?

It is absolutely outrageous that your genes, our genes, corn plants are going to be owned by some corporation or individual. The Council for Responsible Genetics, together with a coalition of environmental organizations, just launched a campaign called "No Patents on Life." No patents on genes, fruit plants, any living creature or its components. I will leave it to the computer people to develop this, but clearly, the notion that someone should own the Internet, this network that links human beings all over the

world, is totally absurd. I think that's going to be a second front in this fight against intellectual property.

Q. Don't you think that we have developed some technologies, such as nuclear power and genetic engineering, which are beyond our wisdom and morality to put to positive use, so we should choose not to use them?

Under the current conditions where the technology is wielded and directed by private corporations, of course, Rifkin is correct and you are correct. We cannot trust Eli Lilly or Genentech or Biogen to do what they are going to do with this technology. If this technology had been democratically mobilized, we wouldn't have gone ahead and built that factory on Jefferson Avenue. We would have figured out what causes diabetes and prevented people from getting it rather than mobilizing the technology to launch a novel product. On the other hand, the contradictions are within this. The fact of the matter is that millions of people suffer and die from cancer as a result of policies from the previous century.

If this technology was mobilized democratically, as a social technology rather than a corporate technology, you really could make some progress in finding out what's causing people damage and how to alleviate human suffering. And if technology can alleviate human suffering, I want to use it that way. That's the key point, there is nothing intrinsic in technology making it good or evil. If it's used in the social mode, by people, democratically controlled, and it's going to do harm, then you don't mobilize it. If it's mobilized in the corporate interest, you know it's going to be misused, even if it's the most benign technology. Neighborhood gardens can be planted with genetically engineering tomatoes as well as anything else.

Q. With schools in Chicago that have no books for students to use, with $17 million allocated but not put to use to "wire" Chicago's public schools, what about including education in this discussion?

A corporate world that knows there's no shortage of trained workers is not interested in educating the next generation. I don't know about the Midwest, but I know in Massachusetts the High Technology Council, which represents the high technology industry, has reversed its former position. They no longer actively support increasing the education of the population in Massachusetts. Their position is, why should we educate these people? We don't need them, why should we pay for it? So, there is no doubt the corporate sector in America has now come to oppose educating our children, and we know what their solution is: put them in jail.

That's why they're spending billions on building the jails and moving toward a police state, rather than investing those billions into our children's schools and their future.

SALLY LERNER— Canada is engaged in its own struggle over redesigning its social policies and programs. Many fear this effort will fail. Many others, myself included, fear that it will succeed, since its effects will be withdrawal of support from those most in need and continued stigmatizing of the victims of structural unemployment and underemployment.

Canada's social-security policy path can be characterized as an increasingly conflicted excursion away from the 'European'-style social democratic attitudes supporting investment in community well-being, attitudes which prevailed from the 1930s through the 1970s. The move is toward increasing infatuation with the 'tougher' U.S. stance of the past two decades. The U.S. model has favored targeting social spending. But it has widened the gap between rich and poor while holding down official unemployment figures by proliferating low-wage, below-the-poverty-line McJobs. In Canada, as in the United States, the gap between rich and poor has widened. The middle class is losing ground. More jobs are low-paid and precarious.

While there is still strong public resistance in Canada to abandoning the vulnerable and less able, there has been an unrelenting effort to manufacture consent (to use Noam Chomsky's phrase) for substantial reductions in social security expenditures and for a move packaged as "from passive to active" social support. This means switching from welfare for the long-term unemployed to skills training for this group and income supplements for those who do secure employment.

Editorials and business pages argue for deficit reduction as a dire necessity for Canada's financial survival. Media features on "welfare cheats" abound, alternating with politicians' paeans to "training, training, training" as the ultimate panacea for unemployment and poverty. Bureaucratic insiders call this the field of dreams solution: train the people and the jobs will

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come. But there is some suspicion, even among those responsible for designing and implementing the new round of skills training, that the hottest job market to emerge will be for trainers.

In the present context of jobless growth due to technological innovation and economic globalization, the real challenge North American and European decisionmakers must face is the growing polarization of industrialized societies — into an impoverished, "redundant," deskilled large minority and a small, affluent technical-professional elite. In unpleasant scenarios for the future, the group referred to as the working poor increases as more jobs are down-waged. In particular, automation of female service-sector job ghettos such as banking and clerical work, in conjunction with similar moves in the industrial sector reaching into the skilled and middle-management ranks, reduces two-income families to one income. And that one income could be from a lower-paying, non-union job in the fast food, tourism or nursing home sector.

This downward mobility, together with long-term unemployment for increasing numbers of individuals and families, will exact an even heavier toll than at present. This will be felt in reduced purchasing power and material standard of living as well as more cruelly in eroded self-esteem, family breakdown, rising crime rates and all of the other well-documented consequences of unemployment and underemployment. On this path lies the resort to some form of authoritarianism.

Which way will Canada go? In terms of social safety nets, Canada has long been a country that followed the European model, valuing community and looking on social services as an investment in community rather than a reluctant sop to those who just couldn't somehow make it, as in the American model. There is a great difference in those two philosophies. What is very unfortunate is that now in Canada there is intense pressure from right-wingers, backed by the mainstream press, to move toward the American model.

Many of us in North America have decided over the past decade that faith and retraining alone will not recreate a full-employment economy with adequately-waged, secure jobs for all who want them. We are in the midst of a sea change, a basic societal transformation wrought by rapidly changing technologies and economic globalization. To pretend this is not so perpetuates a myth that is a lie. And it is this myth that allows North Americans to cling to the notion that if you don't have a job or can't live on what you earn, you're lazy or there is something wrong with you. The middle

class, which Robert Reich now calls the anxious class, are the most captive to this myth and the most easily controlled, because of their fear of falling into the ranks of the stigmatized "undeserving poor." As structural unemployment creeps up the occupational ladder into the middle class, it may be that the death of the myth is approaching.

We built an industrial world that until recently required an unending supply of workers. To assure this supply, industrial culture invented the waged job, on which most men became totally dependent for self-respect and a livelihood because they had no other means of securing either. For the vast majority of people, this has meant being employed, used, for others' ends, often doing machine-like things that were not good for human beings, in order to get the money without which one could not live.

For a while, the rising tide did raise many ships. Now that's all over. Increasing polarization of North American society, concentration of wealth in smaller and smaller numbers of families, is the order of the day. What I would suggest is that we are in the midst of a revolution called jobless growth. And a necessary part of this revolution is the need to reject the idea that if you don't have a job that gives you a pay packet, it is your own fault and you barely deserve to survive. Another part of the revolution is that unions no longer have the power they once did to protect jobs and workers. What power does a union have when companies can move jobs offshore and get the same work done for a small percentage of North American wages? What recourse do unionized workers have when they are replaced with robots?

How must we respond to this revolution? One of the first and hardest tasks will be to figure out how to decouple work from income. There is plenty of good work to be done, in your home and your community, for the environment, your family, and yourself. Envision each day or week as a rich mixture of activities, rather than the best hours spent doing what someone else wants you to do so that they can make a profit. In his book *The End of Work*, Jeremy Rifkin says, look, we all do or could do useful and needed work. Let's turn things around and begin to give people a "social wage." Others call this a guaranteed annual income. In the U.K. and Europe, where they have been fighting for it for over a decade, they call it basic income or citizens' income. It appears to be an idea for these revolutionary times: provide every individual with the means to secure basic necessities, and share the available paid work, through a much shorter work week, for example. Imagine the freedom!

But how on earth could we justify this or afford it? It's been suggested that much of the technological wonderfulness that has made Microsoft's chairman, Bill Gates, the world's richest person is based on social investment in health, education, law and order, infrastructure and R & D. I call it social investment because all of these have been heavily, often totally, subsidized by tax dollars. If all that social investment of taxpayers' money has started to pay off in advanced technologies that reduce the need for human labor, then where's our dividend, our pay-off? It may be a revolutionary question, but we're in the middle of a revolution.

Q. What about the technology that served to set speculative capital circling the globe, bouncing from place to place, driving investment decisions without any social responsibility or morality behind it?

It may seem a minor thing and so far away that it doesn't affect you, but every day, 24 hours a day, trillions of dollars circle the world electronically. Eighty-five percent of that, it is estimated, is totally unproductive speculation. It also leads to little jolting things like the drop of the Mexican peso and other similar problems. It could bring down the global economic system in a very ugly way.

One of the beautiful ideas that some people I'm working with have taken up is based on something called the Tobin tax. Twenty years ago, a Yale professor named James Tobin proposed that we tax all speculation at a small rate. Back then, of course, there was much less speculation. Now the Tobin tax is taking on new life. You start taxing that electronic speculation in the financial markets, which is totally unproductive and can in fact be very negative and pernicious. After that, my friends in Canada are proposing a "bit tax." This would be a minuscule tax on all electronic activities, which would produce money to help fund the basic income and do other good things, for the environment and so on. This electronic activity is creating the new wealth of nations, and we must find a way to capture that for the greatest social good.

LUIS J. RODRÍGUEZ — If we have all this immense capacity, all this technology, if we have for the first time the ability to bring a great amount of resources and abundance to bear on all the problems that we have been talking about, why is it that we are going in the direction that we are going? It's like the saying goes, if you don't know where you're going, anyplace will get you there. One of the things that government does is redirect social energy and social resources. Government isn't directing it towards what I think all the panelists are talking about. The energy that is embodied in every human being and that can be liberated by technology is going towards imprisoning those who cannot be valued in this society, because they have no work.

What am I talking about? I'm talking about one and a half million people in this country sitting behind bars. Three million more are affected by house arrest, probation, parole. The rate of incarceration in this country is growing so fast that by the year 2053 — this was in *USA Today* — a full half of the population will be caught in the criminal justice system. So somebody is taking the social energy and social resources somewhere else. I think that this is the challenge.

I have been able to work with young people over the last couple of years, and that has been my own personal liberation. To see the youth tell the truth. They envision a world already. Talk to them enough and they will give you answers. They don't have the knowledge that we have, they don't have the experience that we have. All they know is that the ground has been pulled out from under them. They react very vividly in several directions, but one direction, unfortunately, is towards their own death. Too many of our youth literally feel they don't have any place to go. Their value as human beings under the present social circumstances is completely gone, and they act that way. Once you begin to work with young people to empower them, to give them a sense of their own ability to transform things, they don't want to die any more.

This whole nonsense that Gingrich and the Republicans are trying to put forward, this Personal Responsibility Act, says that it's us who are irre-

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sponsible, who don't want to work, and therefore they've got to pass a law to get us working. I'm telling you, you cannot be responsible if you don't think that you matter. I have talked to some beautiful young people, women and men, who really feel they've got to have their babies now because they are not going to live to be eighteen years old. They've got to do whatever they got to do, now, because they are not going to get anywhere. Where does that come from?

If this is a revolution, which I believe it is, then what is it that has to be revolutionized? The technology is going, it's not stopping. What has to be changed are the old relations that are binding us in a systematic way to oppressor-oppressed, exploiter-exploited. It isn't so much to try, for example, to get employers to do something different. Why do we even need employers? These are the things that we have to look at.

If every young person was given the tools, the technology, and the ability to engage it themselves, why do they need to work for anybody else? They can work for themselves, and it's creating new relationships that I think we have to address here.

We have everything in our hands and yet these old relationships are tying us down. One of the most revolutionary periods of our history was the ending of slavery. That relationship between the slave owner and the slave, the trade in flesh, had to go away, and this was fought tooth and nail. Millions of people died to change that. Do you think the people in Congress are going to accept this change in relationships? No, they are not. But I think here we can prepare to deal with it, here we can prepare to start addressing these issues, coming together, organizing, politicizing, working in communities that right now do not have any power over their lives.

When I got out of jail in California, many years ago, the last time I ever served any time, there were thirteen prisons there. There are thirty eight prisons in that state now and twenty more being built as we speak, and crime is not going down. It has nothing to do with crime. It has to do with redirecting energy. When you're building two hundred thousand beds as cells, it's like that movie "Field of Dreams" when the man says, "If you build it, they will come." Somebody is going to fill those cells. It's going to be your children. It's going to be possibly you.

Our kids are not criminals. They are not killers. They are not there trying to undermine everything. They have the dream. They have the possibility. But it's being redirected to behind those bars, and we have got to be able to look at that and say, we don't need those old relationships. The

revolution I'm seeing is that for the first time, we can change the social relationships so that everybody looks at each other as an equal, knowing that each of us is valuable. There is no social valuation going on here that if you are part of a certain class, a certain color, a certain kind of background, you're better than this other person. The revolution is where everybody feels that they matter and where every child in this country is nurtured, every child is allowed to grow and develop and every child is given the tools to empower and develop their own world in their own way and according to their own dreams.

Q. How about some real empowerment of the people as opposed to the Democrats, the Republicans, or some of the third parties that only pretend to be for the people? And with schools in Chicago that actually have no books to pass out, what about education?

Whatever we do in the next couple of days, and whatever we do tonight, has to be translated into political action, into organization, strategy, tactics. Schools? My son's kindergarten class had to have children in closets, it was so overcrowded. He was getting bites on his legs from bugs in the preschool before he got to kindergarten. There are 25,000 kids overcrowded in our schools in Chicago, and the money is not going to go there, as we said before. Even though you think that's where they would go to develop the brains and the capacities of these kids to care, the technology is not going there. To change this is going to require activity on our end.

We need to understand exactly the environment we're in. We need to understand the world that we are entering. We need to understand all the ideas of everything that's going on. But, I tell you, that human element is the key to me. If anything is going to change, it's because we've organized to change it. If it doesn't change, it's because we didn't do that.

Q. Can you give some examples from your experience of the potential of youth leadership, and could you comment on the future role of the U.S. military?

Last year I visited this youth prison in California called the Nelles School. There is a section in there called the Nixon unit. There are ten- to 16-year-old kids in this unit, from sex offenders to murderers. I asked the prison to let me talk to them. They said that nobody had ever addressed them before and I asked that I do it. They opened up the place, and it was almost total darkness. These kids had not seen any light. I asked them to turn on the light. The kids were living in cells, two tiers with little holes in

the middle of the doors. There weren't even bars so they could look out. When they went through the doors, they were pulling up their pants, squinting, because they had not been in light for months. They came down and we had a talk and those kids, they cried, they laughed, they had a lot to say. One of the guards told me that he had never seen these kids show that kind of emotion — a lot of rage, but never that kind of emotion, until I was there in Nelles, in Whittier, California.

Situations like this are spreading, Nelles is not an exception but an example of the future offered to our troubled youth. If we are leaders, one of the things that leaders have to do is solve problems. We have some problems to solve in these next few days: somebody has got another answer. The question about the military — I don't think the same relationships of power are replayed nowadays where you had Germany, France, England, the United States, Japan and Russia at each others' throats. It seems to me they are more in cahoots as far as their interests go. A lot of the military, even though it's been pared down, seems to be turning against those who this society cannot accommodate. Against people in Haiti, in Mexico and Chiapas, in Africa, which everybody knows has been literally written off, Somalia and all of these places. The military seems to be turning against those that somehow this world and this economy and this capitalist system cannot accommodate and deal with. Somebody said in Chicago recently that to deal with gangs, you should bring the National Guard in here. That's what I'm concerned about, the military being used against those who just cannot quite fit in. So we've got to come up with other answers. We are leaders. Here is the problem. What are our answers?

The Future Before Us

This plenary examined more closely the technological changes behind the end of work. Professionals helping develop or apply the new technologies reported on changes in design and engineering, agriculture, libraries, and health and nutrition.

TOM DEFANTI — When I first started in this business, the Holy Grail was what you see on the end of the desk here, a laptop. At that point it was code named the "Dynabook" and it was a thing that people were working on at Xerox's Palo Alto Research Center in California. The computer systems that they used to do that Dynabook with had a fraction of the memory and computer speed and graphics that the laptop here possesses right now, which many of us have and many of us want. And that costs something like $1,000. Back in 1973 it was about $250,000 worth of equipment. Today's laptop has a direct lineage back to those people working on a quarter of millions dollars worth of equipment in 1973. It took a while. The thing to remember, too, is that we have had inflation since then so we are really look at a device would have cost you $750,000 in 1973 — in which case it wouldn't be on the end of this desk.

So what I'm going to show you today is something that costs three quarter of a million dollars today and that is likely to in some way be part of our lives. In the context of the conference, technology, jobs and community, everybody that I know in this business not only has one job but has three so there is lots of work to go around. What I want to do is show an eleven minute videotape that explains where all this stuff came from and what it's good for. It was made for congressional staffers in Washington to understand what the game plan was as part of a national high performance computing initiative that is part of the National Information Infrastructure

Thomas A. DeFanti is a Profesor of Electrical Engineering and Computer Science at the University of Illinois at Chicago where he directs the Electronic Visualization Laboratory (EVL) and the Software Technologies Research Center. He directed the the development of a computer system which allows scientists, engineers and designers to climb inside a three-dimensional image of a physical object.

The plenary was chaired by Nancy John (see page 48).

which is now the Global Information Infrastructure as of last week. So please, let's uncap the projector, bring the lights down and start the tape.*

The current virtual reality systems are the result of three decades of research, starting from a need for sophisticated flight simulators and advancing through better hardware and software. By the early 1990s, systems were really able to immerse the user in the data. Virtual reality replaces building real prototypes in manufacturing. It can also visualize cancer and visualize the waves used to zap the cancer. With virtual reality, the researcher or the designer gets inside the robot that they themselves are controlling.

Virtual reality is expensive now, but there will be many uses, even in the home, in entertainment, games, music and so on. Further development of virtual reality will also allow the generation of images in real time that now take over an hour to produce. This will benefit industry and research, for example in medicine and weather forecasting.

[*After the videotape, DeFanti took questions from the audience.*]

Q: Much of the film looked like science fiction to me. What is the actual state of utilizing this technology and when will this become something that people know about?

I have about fifty graduate students involved in this, another twenty people or so in Urbana, and another twenty or so in Argonne National Laboratory. We use it everyday. We have a major grant from the National Science Foundation to help small companies use this to do what is called virtual prototyping or looking at things that they are manufacturing to supply to large companies. Most of the growth in jobs in the United States in the past two hundred years has not been in big companies, which have been downsizing, but in small companies that have become suppliers to the big companies. That's a phenomenon that none of us have any control of, particularly. The communication tools between the big companies and the small companies are pretty abysmal, so we intend to use this technology to

* *Tom DeFanti's 11 minute videotape illustrated seeing, touching, and manipulating data through virtual reality machines across the country and the world, in all kinds of industries and uses.*

allow people to design things in collaboration with people in other locations without traveling.

This kind of technology is propagating now fairly rapidly. It's a directed extension of computer-aided design which, like it or not, is responsible for everything that is non-human, non-biological, in your life. Biological product design is moving onto computers, too. As for human products, people are using this technology to design various prostheses to help humans have better control when they lose a limb or need a hip implant or something like that.

Q: What skills will people need to use this technology and how do you see that changing in five or ten years?

What we are working towards as computer scientists is to get the software tools so that it really becomes like word processing, where the user is adding the content, not the computer programming. People in our laboratory are a mixture of computer scientists and engineers and fine artists and design artists, bringing skills in communicating with visuals as well as programming the visuals. And we can't go to the store and buy our parts. They have to be engineered from scratch. So there is a whole continuum in the undergraduates, graduate students, faculty and staff that we work with, from soldering things together, to the deepest computer programming, to the usage and the event staging.

Q: Why are you working in a university environment when you could be in a commercial field by now?

I've been at this university for 21 years now, and I rather like teaching and working with students. In the early 1980s, the funding for the kinds of things that I did dried up for one reason or another. So we started a company in the video game, computer, TV, cable arena in order to do what we now call multimedia technology. We had this working in 1980 and had it going out to cable TV people. I found myself spending all my time with accountants and lawyers, and I decided that this was not a reasonable way for me personally to live. I said forget it, and so that's the reason.

Q: What are the grander public purposes for this technology, besides the more commercial things that are happening?

I've always been interested in general purpose enlightenment. This is a way to learn things, to see things that you can't see, things that are very, very difficult to learn. We are, in fact, discovering things you can do to

benefit people or to enlighten them if for you benefits only come out in columns on a spreadsheet.

Q: In the video, what was the simulation of particle dispersal in the atmosphere based on?

I believe it used data recorded in atmospheric monitoring stations on pollutants moving over the Los Angeles Basin. People actually record this data, and we bring it in on computers and we make visuals out of it. Why do we make visuals out it? Well, if you look at piles of numbers, you have a stack of papers this high that nobody could make conclusions from.

We use virtual reality most for communicating to management. When you have to get your complex idea across to policy makers, to vice chancellors or whatever, to company managers who might be skilled in leveraged buyouts, for instance, but know nothing about the product or service that you're trying to do. You have to communicate to these people. It's worth a lot to communicate to these people. If you don't communicate to them you are out of business. You don't get to do what you want.

Q: I would rather walk through a park than spend our societal resources developing some way to have that experience on a computer. A company with OSHA violations isn't going to change because of a computer simulation, but as a union organizer I have to go out on the shop floor and organize. Haven't we already met the real needs of society as a whole with the computer power we have already?

I probably spend more time walking around parks than you do, so I understand what you mean. We are not trying to do parks. We are trying to get to the heart of the design process so that when things are built, there are less mistakes and they are less costly to prototype. You know from writing that using a word processor makes things easier because you can revise. Remember what it was like when you made a change and you had to retype the whole thing? We don't do that any more. This is the same thing but with the design process. When you want to make a change, because you discovered that in fact this part hurts people, you design the next one and make sure that that's not going to happen. We can test out robots in virtual reality and make sure they do what they are supposed to do spacially, so they don't create problems in the future.

I'm not saying that we are going to solve the problem you refer to right now. But with the National Institute of Standards and Technology we are working on shop floor planning. Before they put the machines down, be-

fore it's too late to change, before it takes a sit down strike in order to change something, they should get it right in the first place. Maybe they should even get your signoff on it that your people, having been brought in, agree that this is the way to lay the shop floor out. We do things like customer focus groups where people come in and they give car companies information about how they want the car to look like from the inside. Instead of consumers voting in the marketplace and having the Japanese win — all because they are doing more of this kind of advanced computer design. The question is, how do you shorten the time it takes to respond to consumers? We're focusing at this point on the manufacturing process.

We spend an immense amount of time shoveling ourselves around in cars on the expressways going places. There is a lot of effort to try and cut that down in car pools and things like that. Now if you use computer aided design, you can give people the chance, as a lot of companies are doing, to work at home one or two days a week. You cut the commuting dramatically and I guarantee most people will do that instead of carpool, if given the chance. Now, how you get this for the factory workers, I don't know. I'm not an expert in factory work. But the factory designers, can they work at home? Yes, they will be able to.

One of the things that I always considered absurd was that fifteen years ago we had the technology to bring instruction into the home. The reason we couldn't afford it is that the university does not pay the cost of bringing everybody from Schaumburg, Illinois, or wherever to come to Chicago for classes. If it was part of the university's burden to pay for transportation, we would have solved the distance learning problem fifteen years ago. But it isn't our problem. We're not funded to do that so we don't do it.

DON HOLT — By way of background, I wish to explain that the Illinois Agricultural Experiment Station, which I administer, is the research arm of the University of Illinois College of Agriculture. We conduct agricultural research in extensive laboratories in buildings on the Urbana-Champaign campus. We also maintain several research farms,

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plots, flocks, and herds in the diverse soil, climatic, and socio-economic environments of Illinois.

There is a general perception that when our nation was young everybody farmed, and that now all Americans plus many in other countries are fed by just a few farmers, who constitute less than two percent of the population. Actually, it takes more people than that to feed and provide other agricultural products, like wood, textiles, and biobased fuels. To put this situation in perspective, it is important to know that as recently as 150 years ago, when our land-grant institutions, with their unique combination of research, teaching, and extension/outreach were just being formed, the farmer was the producer, processor, distributor, retailer, and consumer of agricultural products and provided almost all of the inputs and support services. Farms were relatively self-sufficient.

The most significant agricultural change of the past 150 years has been the great division of labor and specialization. The U. S. agricultural enterprise involves not only farmers but also a vast, loosely organized, and highly decentralized conglomerate of financial institutions, builders, equippers, suppliers, transporters, consultants, branches of government, government agencies, educational unsteadiness, and the media. Farmers constitute a small fraction of the people involved in the agricultural enterprise, which employs about 20 percent of the population. Even this relatively large number stands in stark contrast to China, where sixty to eighty percent of the population are employed in the industry of agriculture.

One more item of background: I understand that I was invited to participate in this conference because keynote speaker Jeremy Rifkin quoted an article of mine that appeared in *Science* magazine in 1985. In that article, I described several specific items of computer hardware and software that were, are, or will be used in agriculture. In hindsight, I realize that the most important contribution of computers to agriculture is enabling the high degree of vertical coordination required to deliver agricultural products in sufficient quantities and at low enough prices to meet the needs and desires of large urban populations. In fact, I describe what is probably the most important development in computerized agriculture, the automated inventory system used in large grocery stores.

With that background, I want to tell some stories that illustrate changes in agriculture, especially as they affect Illinois and Chicago. Along the way, I will mention a few new technologies, but for the most part I will talk

about why new food and agriculture technologies are developed and adapted and what impact they have on employment and communities.

I am very pleased to be here and to participate in this conference. I've always loved Chicago, ever since I was very small. My grandmother used to bring me up here at Christmas to visit the toy department at Marshall Field's. We lived on a farm outside the little town of Minooka, about 15 miles southwest of Joliet. When my grandmother was growing up in the late 1800s, she attended boarding school at Lakeview High School in north Chicago. She really knew her way around the city.

Grandma told me an interesting story about her high school days. One day she and one of her friends were walking around down in the loop when they noticed a tall, strikingly handsome man with long blond hair, a big, wide-brimmed hat, and a fringed, buckskin jacket. They followed him for a while and found out it was William Cody, better known as Buffalo Bill. He was in Chicago with his wild west show.

By that time, the buffalo that Cody had hunted almost to extinction were mostly replaced by cattle. The thousands of calves born on the great plains spent about six months to two years there eating grass and then were shipped to Iowa and Illinois to be fattened on corn. A year or two later they were shipped to Chicago to be slaughtered and processed. The best quality meat went to the restaurant trade in New York and to other big eastern markets.

When I was in grade school in Minooka in the early forties, every year or two, they would bring us up here to the Union Stockyards, which were about 20 blocks south on Halsted Street, to see the slaughter and processing of cattle and pigs. meatpacking was Chicago's principal industry and the packers, especially Swift and Co., Armour, Wilson, and Cudahy were the biggest employers in the city. In the heyday of the stockyards, in the fall of the year when almost all cattle were marketed, it wasn't unusual for over 100,000 head of cattle to arrive in the yards by rail and truck on Mondays and Wednesdays, with smaller runs on Tuesday, Thursday, and Friday.

Later, in the late 1950s and early 1960s, I operated a farm just outside of Minooka. I fed cattle and shipped them here for sale and slaughter. We used to follow the trucks up old 66 (now 55), then east on 55th Street past Midway Airport to Halsted and north to the yards, so we could watch the commission men sell our cattle. That wasn't always fun, especially when you had shoveled several thousand bushels of corn into those cattle and then found out it was just for the exercise. Or, worse yet, that you had to

pay for the exercise. The Union Stockyards, where meat supply and demand came together in one place, served as a great mechanism of price discovery. But I usually didn't like the price discovered for my cattle.

There were signs of impending change in the cattle industry, but livestock people in Chicago and the Midwest didn't read them well. During the 1940s a young man, Ken Monfort, from an old ranching family in Colorado, began expanding the family cattle feeding operation so that by the 50s he was feeding over 10,000 head per year. He timed the purchase of feeder cattle so he could feed and market cattle year round, providing a more steady and predictable supply for packers. The Monfort family contracted with neighboring farmers to produce feed, by the 1970s purchasing over 400,000 tons of silage each year. They had full time purchasing agents scrounging the range for good buys in feeder cattle.

Other big feedlots sprang up in several places in Texas, Oklahoma, Kansas, and Colorado. The farm magazines publicized these operations a lot, and Illinois cattle feeders, including me, wondered what those big operations were going to do to us, with our little herds of 100 or 200. I remember that we were reassured by the experts. They said the big feedlots, because they had to purchase all their feed and labor, posed little threat to Illinois cattle feeders. They thought the big companies would not be able to survive long down-cycles in the cattle market.

In the early 1960s, Ken Monfort built his own packinghouse right next to his feedlots in Greeley, Colorado. He used the latest automation techniques and employed mostly migrant labor. Many other independent meatpackers sprung up out on the prairie, closer to the source of supply. I don't know whether the Chicago packers and their unions didn't see it coming or what, but within a relatively short period the stockyards and the packers and all the support industries were gone from Chicago and all those jobs with them.

In 1987, Monfort merged with ConAgra. Besides supplying quality cuts of beef for home and restaurant use, they produce a number of differentiated products, including pizza toppings, pastrami, microwaveable meatloaf, and a number of precooked beef products, including short rib, corned beef, and beef kabob. Through vertical integration, vertical cooperation, market coordination, and effective use of technology, ConAgra, Cargill, IBP, Tyson, Perdue, and other agribusiness firms are revolutionizing agriculture. They contract with thousands of farmers and ranchers to produce feed, breeding stock, and in some cases fattened animals. These vertical partner-

ships, integrated by contracts and coordinated by high-tech information systems, are a major trend in agriculture. The farmers who produce grain and livestock under contract trade some of their independence for more predictable costs, prices, and markets.

Incidentally, the most important technological advance in beef production in recent years has been a feed additive called Rumensin. Rumensin increases the efficiency with which ruminant animals digest feed. It does this by suppressing the inherently inefficient methane-producing bacteria that inhabit the rumen, one of the four stomach compartments of ruminants. As a side benefit, it reduces the amount of methane generated by ruminants, this sparing the ozone layer, which is attacked by methane. Unfortunately, it is not ruminant animals but wetlands and paddy rice production that produce most of the ozone-destroying methane.

And now, as Paul Harvey would say, "for the rest of the story" of Chicago and cattle. Today, more than half (more than 80 percent if you exclude hamburger) of all beef consumed in the U. S. is produced in those big feedlots in the West. Ken Monfort is the principal stockholder in ConAgra, with stock worth $150 million. He's been a Colorado legislator, has won numerous good citizen awards, has been sued frequently for alleged exploitation of migrant labor, frequently gives million dollar gifts to charity, and currently pays for Greeley's sewage treatment facilities, because his packing plant contributes twice as much sewage as rest of the city of Greeley.

Illinois now ranks tenth among the states in cattle feeding, with numbers far below the leading states. There are no Union Stockyards in Chicago, the International Livestock Exposition is not held each year in the Amphitheater as it was for so many years, and there are few meat-packing jobs in Chicago. I'm standing here talking to you instead of feeding cattle 65 miles southwest of here. So much for the theory that the big western cattle feeders can't survive long down cycles in the cattle market.

What about the rest of Illinois agriculture? We rank first among the states in soybean production and processing, second to Iowa in corn production, and first in corn processing. More major food firms are headquartered in Illinois than any other state. Many of them are in Chicago. Those firms gross over $100 billion annually. The largest food processing plant in the world is operated by Kraft right down there in Champaign. It has more than a square mile under roof.

But we had better be alert. Last year, North Carolina surpassed Illinois in swine production. There is rapid expansion of swine production in the

southeast and in west Texas and Idaho. One of my colleagues came back from North Carolina and said he had seen a swine operation with 100,000. "Amazing," I said, "100,000 pigs." "No," he said, "100,000 sows." That translates into 1.5 million fattened pigs per year. Does this situation sound familiar?

Key technological advances in swine production will come from biotechnology research now coming to fruition. We don't want to publicize this very much, because a lot could go wrong, but we have a two-week old pig at the University of Illinois that has a milk gene from a cow. We are close to being able to make these transformations routinely. Among other things, we are working on genetic transformations that will cause lactating animals to secrete proteins that are not found in normal milk or not to secrete proteins that are found in normal milk.

Thus, lactating animals could be used to produce complex pharmaceuticals relatively inexpensively. Milk composition can be changed so that young animals grow faster and are more disease-resistant. Cow's milk can be made more suitable for human infants and people who need low-fat diets. Lactose sensitivity and milk allergies could be mostly eliminated. There are many other possibilities.

Why are we seeing the big structural changes in agriculture? Why do agricultural operations get larger and more vertically integrated? Why are fewer people employed in agriculture? These changes are driven by competition to meet the needs and desires of an increasingly demanding and discriminating consumer, capture larger shares of global markets, and meet the logistical demands of serving large relatively affluent urban populations. They come about because there are great economies of scale associated with agriculture, great advantages to specialization and vertical coordination, and great advantages to be gained through management that is disciplined by the market and closely attuned to consumers.

To illustrate the logistical dimension of the problem, just imagine if you were buying groceries for the Chicago metropolitan area today, you would have to buy 1,370 tons of potatoes, 950 tons of fresh fruit, 242 tons of melons, 1,113 tons of fresh vegetables, 1,176 tons of red meat, 155 tons of fish, 609 tons of poultry, 2,425 tons of eggs (that's 400,000 dozen, by the way), and 2.5 million gallons of non-alcoholic beverages. That much must be produced, transported into the city, and distributed every day, a great logistical challenge.

How does this affect the way we do agriculture? One of our larger fruit and vegetable producers mentioned to me some years ago that he had just installed a $300,000 cooling facility, one large enough that he could drive a truckload of produce into it. He said he had to build this facility to stay in business. Among other things he produces melons for the big grocery wholesalers in St. Louis. He said those people would not accept produce in less than semitrailer loads. When you arrive at their warehouse with your semi load of melons, they will stick a thermometer in some of them. If the temperature is not within a range of 37° F plus or minus a degree or two, they will tell you to turn your semi around and take the melons home. That is because unless the melons were quickly cooled after picking and can be handled in large quantities, they cannot be delivered to grocery store shelves in St. Louis in the quantity and quality demanded by consumers.

As you and I walk through the grocery store, make our selections, and check out, the computers remove our items from the store's inventory list. In this way, loud and clear messages are sent back down the value chain to the producers and processors. Those messages are, we want wide selection, quality, safety, convenience, and reasonable prices, and we want these things in trainloads and semi trailer loads, not in pickup trucks or automobile trunks. The small, inefficient operators who are not constantly trying to improve their technology and their production and marketing systems cannot respond adequately to those demands. Incidently, in my opinion, the computer's major contribution to agricultural change has been the automation of grocery store inventory management.

The issue of jobs generated by agricultural technology takes an interesting twist. Technological advances that lead to greater productivity tend to reduce the labor and other inputs required to produce basic agricultural products and services. This is good for the nation and the world, because it reduces the relative cost of meeting basic needs, frees resources to produce the many other goods and services we all want, and allows us to confine agriculture to very productive land instead of having to expand agriculture into marginal lands and natural areas.

Agricultural productivity must increase more rapidly in the future than it has in the past if we are to feed a growing world population that is rapidly developing increased expectations. Among other things, this will require an aggressive agricultural research and development program. Illinois should play a major role in this unfolding drama primarily because of the productivity of its soils and its great agricultural institutions, both private and

public. As the widely-traveled wife of one of my colleagues stated so eloquently, "You can start anywhere in the world and come toward Champaign, and the land gets better."

Chicago can benefit economically and employment-wise by capitalizing on its proximity to this great natural resource base and assuring that as much as possible of the raw agricultural material produced on Illinois land is processed in Chicago. We need to form the strategic alliances that will make this possible.

Q. What research is underway to improve food safety and quality?

Under our so-called Functional Foods for Health initiative, research is underway at both campuses of the University of Illinois on the health benefits of specific crops and foods made from them. Some of this work is directed at soybeans, in which there are unique compounds that seem to lower cholesterol levels in people with dangerously high levels. There are also reports that some soybean constituents prevent tumor formation in tumor-sensitive rats. We hope this means that soy products may help prevent cancer.

The University of Illinois at Chicago maintains a huge database of information on medicinal plants. Research is focused on finding plants that can be eaten or used to manufacture foods with beneficial health effects. One problem is that plants contain many naturally occurring carcinogens (cancer-causing compounds) that we consume every day. We have to consume some of these common plants to survive. In fact, diets high in vegetable material are particularly healthy. We hope our research will increase the selection of foods with proven health benefits.

Q. Are there so few farmers that they have no political influence and are subject to the whims of a largely urban population?

Most farmers and agribusiness people feel that they are definitely a political minority group. They are well organized, however, and wield disproportionate political power. That power is decreasing as their numbers decrease. One of the consequences will probably be the demise of direct and indirect farm subsidies. There is a school of thought that this change will be good for the industry, since subsidized industries are vulnerable to astute competition.

Q. How did the labor unions contribute to the demise of the Chicago meatpacking industry?

I don't know what the specific labor issues were at that time, but the companies were under great competitive pressure and needed union cooperation to meet the competition. Even the western feedlots encountered labor problems. At one point in the mid-70s, Monfort's packing plant was losing $25 million a year. The unions were unwilling to make wage concessions and accept a profit-sharing plan, so Montfort closed the plant for two years and opened again as a non-union operation. Workers in the plant after it reopened received cost-of-living increases and participated in a profit-sharing plan. In these situations, management and labor are subject to the harsh discipline of the market and must negotiate realistically if jobs and businesses are to survive.

Q. Would more people be put to work in agriculture and could we feed more people if we farmed organically?

The world population continues to increase and will probably reach eight to ten billion over the next 20 to 30 years. Many people are looking at this situation from a research standpoint and asking if agricultural productivity can increase enough to feed this huge population. We conduct research on organic practices for those who wish to produce organically and consume organically grown products. In general, it is important to find out which systems require the least total inputs to produce the needed supply of food. Surprisingly, the so-called low input systems are not always the ones that require the least total input. They definitely require more labor than capital intensive systems.

As productivity increases and economies grow, agriculture gets a smaller proportion of the total economic pie. To avoid dividing that portion among too many people, it would seem wiser to move people out of agriculture or move them to higher level jobs in agriculture. History shows no advantage to increasing the number of stoop-labor jobs in any industry.

To fit in the agriculture of the future, organic farming must contribute to increased productivity. The capital intensive agriculture that developed over the last 50 years, largely based on improved genetics, chemical fertilizers, and pesticides, has had some important beneficial effects. To illustrate, if we tried to produce the 1990 corn crop with 1950 technology it would have taken 220 million acres instead of the 66 million actually required. This would have required extending corn production into areas only marginally suited or unsuited for corn production, with devastating effects on the environment. If we can achieve the necessary productivity increases

with organic approaches, then organic farming can survive as a viable practice.

In my opinion, we are more likely to see successful combinations of organic, chemical, and biotechnology approaches in agriculture. We already see the practice of "no-till," which involves leaving organic residues on the surface to protect the soil, sweeping the southern cornbelt. It is necessary to use pesticides in no-till, but there are great savings in energy, machinery, and labor, as well as important reductions in soil erosion and improvements in water quality.

We face another problem in organic farming. Unless there is animal manure available to spread on the fields, there is no way to replace the phosphorus and potassium taken off in crops. Eventually, these must be replaced or yields decline sharply. The consumption of red meat is not high enough to support the number of animals required to generate enough manure to replenish these nutrients. Nitrogen can be replaced with legumes, which fix atmospheric nitrogen in organic form, but there must be animals to consume those legume crops. Phosphorus is most likely to become a limiting factor in crop production in the future, since the known reserves are supposedly enough for less than 100 years. The supply of potassium, however, is enough for several thousand years at current rates of use. These rates will inevitably increase, however, and we will have to find new ways to provide those nutrients.

Biotechnology will help reduce the need for chemical pesticides by making possible more pest-resistant crops. As yet, we don't have crops that are resistant to weeds, so chemical herbicides are in wide use. We should not rule out the possibility of producing chemical pesticides that are safe for humans, biodegrade rapidly, and control pests effectively. Great strides have been made in that direction already.

NANCY JOHN — I'm going to spend just a few minutes talking about libraries and how we are caught up in the vortex that is technology. Then I'm going to talk about what I think is a ray of

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sunshine that libraries bring to the technological situation that the world finds itself in.

Libraries really came into being because of technology. If Gutenberg hadn't managed to print all those books, we wouldn't have all the libraries that we have today. For most of you, the library is a collection of materials. That is, you go to libraries to check out books. For some of you, the library is a warm place on a cold day or a cool place on a hot day. And unfortunately for only a few of you the library is a staff of knowledgeable individuals who can help you find information. That is our staff, which we think is our greatest resource. It is often the last thing that individuals think about.

In our collections we have books and journals. We have manuscript materials. We have sound recordings, films and videos, graphics, computer files, maps, and even some objects. Our buildings are large, full of chairs and tables, bookstacks and service desks. We have staff that work at circulation or at the reference area. We have catalogers who catalog books, people who buy the books and decide which books go into the collection, and specialists in government documents, rare books, and children's literature. In the past, we were the victim — or the conqueror, I'm not sure which — of several technologies which are familiar to you. The typewriter: early in this century, writing library hand was taught in America's library schools so that the librarian could write clearly by hand the call numbers on the spines of books, and could write easy-to-read catalog cards. The typewriter changed the way we labeled the books and the way we produced catalog cards.

We had a less fruitful experience with the creation of micro-formats. Microfilm and microfiche have been a real boon to libraries allowing us to store large amounts of materials in a small space, and also probably the most uncomfortable way that any reader could ever try to use the materials. This continues to be an ongoing battle.

And finally the photocopier: for a long time, when people came to the library they had to check out an item, taking the information home with them. The photocopier allowed them to leave the item in the library and take a facsimile of it home. That really changed the way people were using libraries.

But let's look at what digital technology is now doing to our collections. First of all, it's the numbers. Technology has made the pool from which libraries can buy materials much larger than it ever was before. A friend of

mine says any fool can publish a book, and with desktop publishing I'm afraid that's getting closer and closer to being the case. There are huge numbers of publications. You might think that the wealth of publications would drive the cost down. In fact, that has not been the case. The cost of producing books is going up. Part of that is due to the fact that we are making better books. They have better quality production, and they are physically better objects. Part of that is due to some very interesting public policy in the early 1980s. The Internal Revenue Service passed a regulation which is called the Thor Power Tool Regulation. What has this to do with libraries? What it said was that the hardware manufacturers of this country could no longer keep large inventories in warehouses and write them off as a tax loss. This new cost to hardware manufacturers also applied to book manufacturers. Technology has allowed them to get around this by printing many smaller runs of books rather that one larger run with inventory stacking up.

In my own case, my husband and I had a book published last summer by the American Library Association. The first printing came out around July 1, the second printing came out around October 1, and the third printing is happening about a year later, because they are just gauging the market to see how many copies they can sell. That has an impact on the availability of information.

The items themselves are changing: *Jurassic Park*, the book; Jurassic Park, the computer file. One I'm happy to cuddle up with at night and it can excite me as I'm trying to nod off to sleep, but if I wonder how those dinosaurs might sound. the other one actually lets me punch a button and hear what somebody thinks the dinosaurs would sound like. I'm holding here *MLN*, a publication from Johns Hopkins University Press. They've put this exact issue out on the Internet for free. I can leaf through this one; with the on-line one I can do full keyword searching and download it to my computer. The *Encyclopaedia Britannica*: if you are over at our library, we are a beta test site for the on-line Encyclopaedia Britannica available by subscription over the Internet. The hardcover I can carry around and leaf through; with the Internet Britannica I can do full key word searching of all forty four million words, pull up the images — a very different kind of thing. The *Washington Post*: if you go over to our library, we will be very happy to show you our electronic subscription, where you can search the text, display individual articles, and download them. Finally, the *Random House Dictionary*, which weighs about seven pounds: in CD, it is a lot

easier to carry around. On the other hand, if you ask me to look up a definition of a word, I'm at an distinct disadvantage without a CD drive and laptop in my briefcase. And finally, I had to show you one fun thing. You know all those catalogs you get in the mail? This is a compact disc of mail order catalogs: Land's End, Sharper Image, and all that.

The library building is changing too. We filled it up with wiring. We filled it up with equipment. We are worried about the security for the wiring and the equipment. What does that mean? Well, we have a constant battle. We used to have chairs and tables, and now we have equipment. What's the balance between giving people access to the technology and equipment they need to do their work, and giving them adequate people space? A really serious problem: The computer and the books both like it cold and maybe dark. The books would like it a tad damper than the computer does. That's an interesting question for us.

Plus, now we are building virtual buildings. The University of Illinois at Chicago library and the Chicago Public Library have embarked on a wonderful project. We're building the Chicago Public library virtual building. We've put something on the World Wide Web that my presentation would have shown you. Come to the library and see it. You can click on your local branch of the Chicago Public Library on a map and up comes information with the address, the phone number, the hours, the several ways to get there on public transportation. If you are interested in knowing what the collection's strengths are, if you are interested in knowing a little history of the building and that sort of thing, you can click on it and up it comes. We are beginning to think about ways to recreate the building out in cyberspace.

Last, the staff. The skills of the library staff have never been challenged more than right now. All of us don't know what we are doing, that is, we continue to do the things that we've done for so many years: we buy the books, we catalogue books, we make them available, we check them out, we help people to find information. But while it used to be that we helped people to find information in books, now we help people to find information by teaching them how to use their word processor. It's certainly a far cry from what I learned in library school twenty years ago. The library staff are moving very rapidly into the technology world in terms of support. It makes their jobs more complex. It gives them an enormous amount of change and a need for learning skills. We are trying to offer electronic services. We're trying to develop "knowbots" that can go out and find in-

formation quickly for you and give you the context, so that you can see the bias to the information you retrieved. We're trying to make it easy in human life by making it graphical and fun to play with.

So where are we going with technology? It's clearly a means and not an end. I'm glad to say that in the case of libraries, technology is bringing us closer to our mission, which is to give the right information to the user. It is threatening our traditions and giving us new ones. It is opening up some new service possibilities. Finally, it's offering us some new solutions to old problems. The crumbling books on our shelves? We're beginning to look at ways to reformat those so that we can save them for posterity.

But there is this interesting ray of light that I want to touch on very briefly. It relates to the book that my coauthor Ed Velauskas and I are currently writing. We have 18 success stories of libraries in companies, schools, communities centers, universities in North America that have provided their users with on-ramp facilities to the global information infrastructure.

They are teaching people how to use the technology. They are teaching people how to use the computers. They are teaching people how to find information. They are teaching people how to fight back about information out on the system that they don't like.

That role of the library as an activist, as an educational force in the global information infrastructure, seems to be very much alive, and that's the role that I think is quite interesting. There are seven or eight Titans fighting for control of the global information infrastructure. Education and libraries are the Third World. We are nowhere in those eight Titans. I think that there are going to be some changes in the next year or two, because education has managed to wake up and see that there are some things to be lost and there are some things to be gained. I hope and I think that libraries are going to be out there in the middle of that.

JONATHAN KING— Many of the speakers at this conference will describe the ways in which advances in technology are leading to sharp increases in productivity with far fewer people, resulting in systemic

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unemployment within the current economic system. This same technology, harnessed in the right direction, has the potential to liberate us from many of the ills of the industrial revolution. Unfortunately, people have grown skeptical about the potential of science and technology as forces of human liberation.

Looking back over the history of technological development in this century, we spot many junctures when people were led down the wrong path: the premature development of nuclear reactors, the investment of scarce medical resources in heart transplants, the massive application of pesticides to food crops and the ecosystem. In the future, we need to avoid these errors; this requires identifying crucial junctures before we have taken the wrong turn. Because biotechnology is at the very beginning of its role in human history, there are a number of cases where we can see these junctures clearly.

Lets consider a few examples: I've chosen them from the arena of health and nutrition, since we all have to deal with this regardless of our employment or unemployment, and since a significant component of current ill health derives from excesses of the industrial period.

First, curing versus preventing cancer. Cancer is the third leading cause of death in the U.S. and often results in painful and debilitating death. It is particularly tragic in children. We understand many of the underlying mechanisms in the initiation of cancer. Most cancers are caused by exposure to agents that directly or indirectly damage the genes that control the growth of human cells. Samuel Epstein describes this with great clarity in his excellent book *The Politics of Cancer* (San Francisco: Sierra Club Books, 1978). These carcinogens cause mutations, changes in the DNA structure, of human genes. The results of the damage are that cells multiply and proliferate in an uncontrolled fashion.

A great deal of effort among clinicians and biomedical researchers is directed toward developing cures for cancer. Many of the approaches such as chemotherapy and radiation treatment are very damaging in their own right, but better than letting the cancer develop unchecked.

Though we need to continue to develop cures and treatments, in the long run the priority should be reducing the incidence of cancer among us, preventing the development of the disease in the first place. Most people recognize that for lung cancer there is no mystery with respect to causation: the tobacco industry. Terminating the production and advertising of cigarettes would sharply reduce the incidence of lung cancer. In the case of

tobacco, an entire industry is organized to prevent the implementation of such policies. The same course, identifying the causative agents of other cancers and reducing exposure to them, exists for many other cancers. The technology already exists to take a sample of someone's skin, breast or throat cells and test to see if the genes in these cells have been damaged by carcinogens. In many cases the chemical agents causing the damage can be identified. Perhaps it is compounds in tobacco smoke, perhaps benzanthracene from auto, truck and other exhausts, perhaps aromatic amines used as dyes? Or perhaps specialized chemicals that you are only exposed to if you work in a certain place? The technology exists today to identify which set of chemicals damaged the DNA of children in a certain community or of people in a certain workplace. We would then know what to look for in that workplace, and could eliminate or sharply reduce human exposure.

There is very little research of that character going on in the United States. Why is the identification of the agents that causes cancer such a limited priority? Because you can't sell the prevention of disease very efficiently. There is no market for the discovery that some agent out there in the Chicago environment is causing cancer and has to be removed.

One consequence is reduced biomedical research in that direction. There is no product development in that direction. There are no kits being developed that you could use to check your own DNA. The biomedical research that would reduce the suffering of millions is shackled by the coupling of health care delivery to the profit system.

Let's take another example: tissue regeneration. In a transportation system dominated by automobiles (and this won't rapidly change), accidents are a leading cause of death among young children. Very often there is major tissue damage or there are burns, and you need tissue replacement. If you have to get a transplant, even from a closely related individual, the incredible specificity of the human immune system recognizes the tissues as foreign and the tissue is rejected. An active area of biomedical research has been the development of poisons to suppress immune response in a burn patient, for example, who needs a tissue transplant. This is a somewhat aberrant form of biomedical research. It would be much better if you didn't have to suppress the immune system, because someone who is burnt and undergoing surgery needs their immune system to protect against wound and other infections.

Advances in biotechnology, combined with the ability to grow human cells and tissue outside the body, have now led to the situation where it's

possible to take a few cells from any of us — cheeks cells, skin cells, blood cells — and grow them outside the body into an patch of functioning tissue. We can grow skin, we can grow arteries and veins, and soon we will be able to grow organs. There will be no need to suppress someone's immune system when they've had an accident and they need foreign tissue. You'll grow organs, cells, tissues from their own sample, which you might have frozen away, and transplant it.

The only problem is that this capacity is being developed in the commercial sector to sell to patients. We will have to buy back our own cells, and in the absence of a national health service or system, many of us won't be able to afford it.

Years from now, when we no longer have automobile accidents at the level we have now, maybe tissue regeneration won't be a necessary technology. But for many years to come, there are still going to be hundreds of thousands of children who are hurt in automobile and related accidents. Injured children or adults will not be able to benefit if they can't afford this technology. The direction of this technology is correct, but the form — private ownership — is wrong.

Much of the potential of biotechnology is being distorted by its development as an engine of high profits. There is no question here of fair return on long term investment. Genetic engineering and biotechnology are the products of 50 years of public investment in basic biomedical research Our tax dollars developed both the basic understanding of gene structure and function, and the technology for modifying genes. Just at the point when there were products that could be marketed, such as insulin, the technology was privatized. Perhaps hijacked would be a more accurate term.

In my earlier comments I described the production of human insulin in bacteria. The research that led to this was carried out in a federally funded laboratory at the University of California/San Francisco. A group of entrepreneurs rented space in an old warehouse in San Francisco and moved the project to that warehouse. They then called human insulin the product of a company which is now called Genentech. It's a very famous company, but that was our research, it was our product. We shouldn't have to buy it back.

Don Holt described some recent developments in the agricultural revolution. The agriculture revolution predates the industrial revolution. It taps the enormous reproductive capacities of organisms to produce more food for the human population.

The application of biotechnology to the productivity of organisms makes organisms into factories which will produce not just food, but all manner of other commodities. We don't have a significant dairy industry in the Boston area, but there are some ungulates not found in many other places: genetically engineered goats carrying genes for cow's milk in their udders. Other animals are carrying human genes for a variety of proteins with therapeutic potential of interest to the pharmaceutical industry. One next step forward will be to have the genes for human milk proteins expressed in cows, so you get human-like milk from the cow. These are all self-replicating factories. They are not science fiction scenarios but just around the corner.

Many people in the industry and in research argue that if it wasn't for the private sector investment in the biotechnology industry, we wouldn't get the wonderful products. But the counterargument can also be made; because of private development, we're not going to get many of these wonderful products! The transparency projected here shows a recent article from the *Boston Globe* about Repligen, a biotechnology company in Cambridge, Massachusetts. It reports that Repligen is cutting nearly half its staff and delaying or postponing promising drug plans. Repligen is a leading example of a biotech company; our students work there, my colleagues sit on the advisory board, and the products that they are going to develop are useful. Now, why is Repligen cutting nearly half its staff and delaying or postponing promising drug plans? Because the day before, the newspapers in Massachusetts made clear that venture capitalists in New England were cooling their enthusiasm for biotech stocks and the stock market was cooling its enthusiasm. One consequence of this will be the retardation of the development of some useful therapies. Because a tiny fraction of the New England population has decided that they are not going to get the return on the investment that they want, we're not going to get some of the drugs that we actually need.

At present the stock market or the venture capital sector decides whether the fruits of biotechnology and modern biology and modern genetics should come to the community. This is an antiquated form of social organization, like monarchy or feudalism, which needs to be transformed to a more equitable, efficient, and democratic form.

In the case of the automobile industry, it's been so long since there was public production of automobiles that nobody can even imagine that scenario. In this case, only ten years ago biological agents would be brought

into existence by the National Institutes of Health. They would be publicly developed and socially owned. During World War II, the government contracted for the development of penicillin because hundreds or thousands of troops were dying of wound infections on the European front. They gave the contract to a pharmaceutical company, but it was publicly financed.

When it turned out that the economy needed highways, we established a national program to develop highways. It's an unfortunate example, but when we "needed" an atomic bomb, there was a national campaign to develop it. The new technologies, if they are going to be properly developed, need to be socially developed. There should be a public investment policy, public ownership, and public sale. It's interesting, the cross between the genetic engineering industry and the software industry, because there the mechanism of privatization is the awarding of private patents for intellectual property.

The sequence of human genes is now something that can be patented. Thomas Jefferson, who wrote the patent laws and was a leading plant breeder on the world stage, was very conscious 200 years ago when we excluded living creatures from the patent laws. For 200 years, living creatures weren't patentable. Then in the 1980s, the Supreme Court said, yes, you can patent a genetically engineered organism. At the present time biotechnology, pharmaceutical and agribusiness corporations are scrambling to apply for patents on human genes, cell lines, and a great variety of genetically modified organisms. The selling off of the Internet by the National Science Foundation represents a similar privatizing of public resources on a vast scale.

We are right at the point where these policy decisions are being made. Will these powerful tools be publicly owned or privately owned? I hope that as all of us come to understand these things more clearly and we come to understand our own and our children's interests, we'll take our stake for the public development of the products of social knowledge.

Q. How do the links between research and industry compare in biology as against agriculture?

The history of agricultural research is intimately tied with the development of the agriculture industry and agribusiness in the United States. It's the earliest example of the integration of research and private industry. There is no agriculture research that's not connected with agribusiness in the United States. Biomedical research (as opposed to health care delivery)

has until recently been only loosely tied to the pharmaceutical industry. After World War II, biomedical research took place outside the pharmaceutical industry, outside the American Medical Association, and in fact in opposition to it. There are a large number of biological and biomedical researchers who are not connected to the biotechnology industry and are not connected to the pharmaceutical industry. However, increasingly, with the exclusion of the lay public from the public meetings, the questions never get raised.

I was at Purdue University in the 1970s, so I have a 1970s view of the agriculture industry, and I was really brought into the modern age by Don Holt's presentation. As Don laid it out I was thinking, it's ripe for public ownership. If there ever was an industry that's now fully integrated vertically and horizontally, it's agricultural production and distribution. There are just a few groupings across the United States. It's only one little step from that private formation to having that public formation. Politically it's an enormous social step, but organizationally it's very small, and I think some people have to be thinking that way. The commodity monopolies are going to raise food prices at some point just like the oil industry did with oil. Food is just too important to be allowed to be manipulated as a commodity, I think as a consumer anyway.

The Morning After: In the Wake of the Technological Revolution

This plenary looked at the social result of the new technologies. The former mayor of one of America's quintessential industrial towns; a union leader on strike in the "heartland," and activists from within the Black and Latino communities reported their experiences.

RICHARD HATCHER — I am really pleased to be here and really appreciative of the fact that this conference has been called. For me, the terrible thing about the 1990s thus far is what seems to be a deafening silence from those progressive forces in our country who have historically challenged efforts to oppress and exploit the people of this country. The very fact that a group of people are willing to get together and talk about the effect and the impact of technology on our lives and on our communities is extremely important.

When I was elected mayor of Gary in 1968, United States Steel was our largest employer, and approximately 40 percent of all jobs in the city were to be found at U. S. Steel and its attendant companies, those companies that performed certain parts of the steelmaking process. At that time, the process of making steel was very, very job-intensive, that is, it required very large numbers of people. I believe the steel mills in Gary and East Chicago and along the southern part of Lake Michigan produced more steel than any other complex of mills in the world with the exception of the mills in and around Pittsburgh, Pennsylvania. There was a time that if a person

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The plenary was chaired by Douglas Gills, who is Assistant Professor at the University of Illinois at Chicago Center of Urban Economic Development and School of Urban Planning and Policy. He co-authored Harold Washington and the Crisis of Black Power in Chicago *(Chicago: Twenty-first Century Books, 1989).*

was able to walk, crawl or run, any way that they could get to the employment office for the steel mills they would very likely be given a job. They would have the opportunity of getting a job.

These were not just jobs in the steel mills. These were jobs that paid very well. People were making $13, $14, and $15 and more an hour. From that standpoint, they represented a very large part of the economy of the city. United States Steel was the largest taxpayer in the city, and it had played a very dominant role in shaping the policies of the city's government historically. That all changed and changed rather suddenly For one thing these steel mills were growing old and by 1967, 1968 most of them were at least fifty years old. They were becoming more and more obsolete.

The Japanese and the Germans who had come to this country following World War II and toured the mills to find out precisely how steelmaking was done in this country had learned their lessons very well. They had gone back and constructed steel mills that were extremely efficient — more efficient than the mills that existed here in America. In addition to that, greed played a very large role. There was very little reinvestment in terms of upgrading the steelmaking process, at least in Gary, and as a consequence by the seventies these mills were no longer competitive. By then it was possible to produce a ton of steel halfway around the world, ship it here to the Midwest, to Chicago or elsewhere, and sell it at a price that was much lower than the price for which that ton of steel could be made right down the street at U. S. Steel's Gary Works. Obviously, labor costs in some of the other countries were substantially lower also.

The reality was that these steel mills could no longer compete. I recall it was around 1979 when there was an announcement by U. S. Steel that they had decided they were going to upgrade their technology. That is exactly what they did, and in the process between 1979 and 1981 approximately 70 percent of all the jobs that existed at the steel mill in Gary disappeared.

Technology reached the point where the superintendent of the mill could boast that it was possible to introduce the raw materials required to make a ton of steel at one end of the plant and process them all the way through the plant to the point where it came out as a steel ingot and that human hands would never ever touch the steel or touch any part of the materials required. The steel mill was computerized, and as this process evolved, there was absolutely no need, no use, for thousands and thousands and thousands of people who had seen the mill as their ticket to a comfortable life and a comfortable retirement when they reached the age of 65.

Thousands of people found themselves suddenly out on the street with no training, certainly no golden parachute and really no prospects. There was some talk that there was going to be retraining of people, teaching them how to run computers, but the reality was that men and women who had spent most of their lives making steel were not suited for that retraining. The mills knew it and there wasn't enough retraining money anyway. So the day came when the general superintendent of the plant and I met and I raised the question with him: "Mr. Superintendent, what is the City of Gary to do about these thousands of people who are on the streets, have no job, have no prospects of jobs — what are you going to do about that?" And his response was, "Mr. Mayor, that's not my problem, that's your problem. My job is to make steel as efficiently as I can, and it's your job to take care of the people of this community."

And that's how it was. Our city took this huge hit from which it has not yet recovered. We had another fairly large automobile parts plant at the time that was purchased by a German company. Within weeks of the purchase of the plant, which employed over 5,000, the company decided that it was not efficient enough. The company closed the plant down. So we took a hit and lost almost 50 percent of all the jobs that existed in the city within a period of less then three years. And as I said it is something that the city has yet to recover from.

I just want to conclude by telling you the very worst thing about all this. It's not that I personally, nor the people of Gary, were not in favor of progress and change. The very worst thing about what happened to our city was the absolute powerlessness, not only of the people of that community, but of its elected officials. African Americans controlled the city council, controlled the school board, controlled pretty much every governmental agency and institution in the city, and yet played absolutely no role in making the decision that threw thousands of people out of work and left the city really struggling to survive to this very day.

The reality is that people may run for many different public offices, including president of the United States, and yet my very deep suspicion is that there is no distinction between what happens to cities and what happens at the national level. There is a great reality that the people who sit in the boardrooms, who sat on the board of U. S. Steel, on the board of the major financial institutions, on the boards of the major utilities — nameless, faceless people whom I didn't know even though I was mayor of the city

— made those decisions that had such devastating implications for the people of our community. We had absolutely nothing to say about it.

That process continues in our country, and unless there is an organized and countervailing effort to inject the concerns and opinions and judgments of the people into the process, it is going to continue. Unfortunately, it is basically the people that will pay if this process continues as it is going today.

Q. In your opinion, what is holding people back?

I think that we need to understand what people are talking about when they talk about technology and when they suggest that technology of necessity means that we have to reduce the number of jobs, that we have to put more people out of work. We will reach the point where somebody may produce shoes in the most technologically perfect way, but no one will be able to afford to buy the shoes. There has to be some rationality injected into the process of developing technology. Right now it's all driven by profit and greed. People really don't count, and that's what has to change.

Q. Does a movement in the streets, in the communities or the unions, help out elected officials who are negotiating with corporations such as U. S. Steel?

As these changes that threw so many in Gary out of work were taking place, the strength and power of unions seemed to be declining. There was a direct confrontation over one of the smaller plants within the U. S. Steel complex. The company told the union, if you do not accept the terms that we are offering, we will shut down this plant and throw maybe two or three thousand people out of work. The union stood firm and said, we won't accept those terms. U. S. Steel closed that part of the plant down.

We reached the point in trying to deal with U. S. Steel on taxes where they were not paying their fair share, or on pollution where we found that U. S. Steel wanted no part of anti-pollution technology. They did not want to install the kind of technology that would have made the air cleaner, that would have made Lake Michigan cleaner. They resisted that technology while they embraced the other technology that made it possible to produce steel without using people.

One day we finally became so frustrated about several of these things at once that I called the manager out at the plant and basically said, if you do not change your policy, I'm going to ask the workers at U. S. Steel between the hours of eleven o'clock and twelve thirty — or something like

that — to simply stop working. Very frankly, I had no idea that even two workers would stop working if I said stop working. But the effect on management was instantaneous. They went through the ceiling. They got the newspapers to write editorials saying, this is terrible, this is not the way normal mayors act. He's interfering with this business. Nevertheless, we went ahead with it. We said as of a certain hour we are asking everybody out at U. S. Steel to simply stop working for that period. Don't leave your machines, just stay there but stop working. About half the people that we knew and had some contact with did it. The effect was amazing! Literally the next day the company officials were in my office, asking how could they become a real partner with the city and work with the city on a number of things. Now, it didn't last once they felt the collective action had ended. Cooperation evaporated.

So yes, a collective movement would have a very direct impact. Let me just close with this comment. A few years ago I woke up one morning and suddenly the kinds of ties that I'd been wearing all my life were obsolete. People were wearing ties with all kinds of really wild colors and to this day I have absolutely no idea who did that. I don't know who decided one day that ties should change. But I know why they did it. They did it because that meant everybody had to go out and buy new ties, or at least people like me had to go out and buy new ties. It seems to me that's what happens with technology. One day you wake up and everything has changed. You have absolutely no idea who changed it, but you know why it was changed. So a reaction, a counter-movement within the community is really critical. U. S. Steel is producing more steel now with about seventy percent fewer workers than it did when it had all of those workers, so it's able to boast, oh we're doing fine, we're doing great, we're profitable. But Gary and the people there have simply been devastated by it.

Q. Do tax abatements reflect the real value corporations add to a community?

In Gary just very recently, U. S. Steel got about $130 million in tax abatements. So in effect the wealthiest citizen in the city was given welfare. At the same time, the city was unable to pay its legitimate bills.

We still have a major problem in this country, and that is we still tend to make our decisions based upon race. Both whites, Blacks, and everybody in between still tends to make their decisions based upon race, when the

decisions ought to be made on the basis of economics and on the basis of fair treatment for all.

When this new wave of technology comes to be full blown, you will find that the same people who ran the railroads and worked, literally used, slave labor, will be running the new technology highway. They will be in charge of that also. That's if we allow it to happen while we're busy fighting these battles on the basis of race. As people, really as victims, we get distracted over irrational issues such as race. I use the term advisedly, but Congressman Ron Dellums used to talk about the New Niggers. Those Ph.D.'s laid off up in Massachusetts? They are New Niggers now. In other words, you've got a whole group of people who themselves are victims, for the benefit of a relatively small group of people. We have to understand this. If that group of people, whether they be women, other minorities, working people, ever decided to put these differences aside and come together then you would see that there is no way that they could not succeed.

We are helping to cut our own throats with the kinds of votes that were cast in the November election. Some of the people who thought that their vote was the right thing to do are going to find out that it's going to hurt them as much as anyone else. Somehow we've got to come together as a group of people who are united around our economic best interest. That's what I think has to happen.

DAN LANE — I bring you greetings from southern Illinois, and from my understanding, that's anything outside of Cook County.

I'm not so sure there is a Morning After. I'm not so sure these aren't problems that we've had for many, many years. Maybe during the 1950s and 1960s it seemed to take a different look and people seemed to enjoy a certain lifestyle, but there were also a lot of people being oppressed. They knew what it was like to go hungry, to not have a job. Nobody used that word technology, probably. But I do know, the whole issue that we have to look at is who is going to benefit from this technology, or maybe the question is, can we all benefit from the technology?

Dan Lane is assistant chairman of the bargaining committee for the United Paperworkers International Union Local 7837, which represents the workers at Staley Manufacturing Company in Decatur, Illinois. He began working at Staley 23 years ago, but has been organizing and educating people about the union struggle since a company lockout in 1993.

When I look at southern Illinois, I look at a war zone. What's happened in the last three to five years in southern Illinois? There is a group down in southern Illinois some of you might be familiar with, the United Mine Workers. They were on strike for over seven months: 13,000 workers. The United Auto Workers, representing the Caterpillar workers: 15,000 workers out there. International Brotherhood of Electrical Workers, representing the CIPSCO workers, that's a utility company down in southern Illinois: approximately 2,000 out. Of course the UPIU, which I'm from, representing the Staley workers: another 750. In fact, when we first went out, there were 100 workers more. There are the operating engineers who were tied in with the CIPSCO strike that were locked out: another 700 to 800 workers.

When we use the words "war zone," a class distinction or class fight is really going on. I want you to take all those numbers for a minute and add them up. You're talking about more than 30,000 workers. Thirty thousand workers. And that isn't talking anything about attempts to organize by the Teamsters or anybody else. These are actual organized plants or mines or whatever that are out and have been out for a considerable amount of time. And then you take the 30,000 times the average family and now you are talking about 120,000 people. Families that are being affected, and why?

It comes down to the same issues that have been there for years: replacement workers, sub-contractors, and so on. For example, in our case of 800 workers, they want to shrink the plant down to 200 but they want to use 600 contractors. What it creates is a kind of a bidding war for your standard of living, our standard of living.

That's nothing new. All anybody has is take a little journey back in history, back in the 1930s. What was going on there? There were a few that had jobs and there was a whole bunch going without it. And what did they do? Did they give them raises? No. They took money away from them and they sped the production up. Similar tactic, no different. We can call it work groups, we can call it anything we want, it's all the same thing — workers expected to work longer hours, rotating shifts, alternative shifts.

Now what's the big deal? Well, nothing other than the fact that you become a slave to your job. I mean, if you don't mind that, then that's fine. Not only do you become a slave, but you lose contact with your community, you lose contact with your family. It's an obstruction of the family values they keep talking about on the other side that Corporate America is

trying to protect. That's what they are trying to protect, but they want you to buy into all these things.

Okay. Health and safety's always been an issue, the only thing is now we paint it up, put a little color on it, call it Occupational Safety and Health Administration, call it the National Institute of Occupational Safety and Health, but what it gets down to is that you have protection in the plants. I would say, Not! We still have workers being poisoned every day through the chemicals that we were talking about earlier today. They're exposed to asbestos, things like that, or just simple accidents. People still get ground up in mills. People still get asphyxiated. Staley had three such incidents in the last five years, prior to the lockout. It's still happening.

Going around like I do, there's good news and bad news. The bad news is we're locked out. The good news is we get out of our own circle. We get out and start meeting people and see things a little bit differently outside of Decatur, Illinois. Even get up to Chicago once in a while, and the fact is, it isn't as strange. We have a hostile government here, although it's trying to be painted a different way. It promotes corporate welfare. Then at the same time, it's willing to deny children food programs. Something just doesn't make sense. Is that any different than what happened 50, 60, 100 years ago? I don't think so.

This hostile government promotes little tax or no tax for the rich and the corporations. It has that philosophy that the poor feed the poor. That's this country and has been this country. These are the times we live in and these are the times that's been there. These same issues are the one's the Staley workers are fighting for.

When you say a new age, the fact is that we have to be very conscious. I think that's what we in the Staley fight are resigned to: We each have to make up our mind, what kind of community do we really want? The fight at Staley is about a voice for the worker. Not only in the workplace — as we got out in the community and we started reaching out, we realized that there had to be a voice in the community. We have to start looking at things a lot differently than we have in the past.

Our minds have to come together and start talking about things when we go back to who is going to benefit? Living 50 miles away from Decatur and not even knowing what the issues are or that this strike is even going on, that's the way they keep us divided. As a society, as a local, as a community of people, we have to decide: are we are going to go back — con-

tinue on the jungle ethics, the survival of the fittest — or are we going to be our brother's keeper?

Where does that lead us to? It leads us to start thinking of empowering people, looking at sharing work. To not simply say, well, technology is taking over, we're all going to work 12 hour days, 80 hour weeks and gee whiz, it's really tough, that's just the way it is, and there goes 600 people but I've still got mine — today. We have to realize that if there is someone here or out in the community who feels that they have no value, no importance, no worth, then that's the person you are going to find with a gun in his hand, that's the person that's going to be selling dope, that's going to be the person that you are going to be building all the prisons for.

The decision that we are going to have to make as workers in the Staley fight is to realize that this is much larger and it goes outside of southern Illinois. It is very much a global affair and we have to be in contact with our brothers, whether it's north or south of the border or it's east or west as far as the oceans. Thank you very much.

Q. In your opinion, what is holding people back?

This debate has to go outside these walls and get out on the shop floor. There is a whole communication going on there from the other side, the corporations, Rush Limbaugh, that whole group, that has convinced people that somehow or another there are a few individuals that ought to have it all and the rest of us just ought to expect what's out there, whether it's being without a home or less safety standards or whatever. The whole debate has to be on the factory floors, it's got to be in the neighborhoods, it's got to be in the churches, it's got to be something people have to get out there and keep out there.

If you look back, you can learn a lot from the African American movement trying to gain rights, recognition, worth as far as in the sight of the community at large. Education, mobilization, confrontation. The education is recognizing that we all have value and we all ought to be able to share and we got to get out there and get that message around.

The other piece is that we cannot be afraid to take it to the streets, in Massachusetts to the capital there or as we did in December down in Springfield, the capital here, at Staley's or wherever. You got to take it out and discuss it, but you got to take it a step further than that, because we have to make those demands. We have those rights as human beings. It's as simple as that.

JOHN BETANCUR — There is a song in Spanish, and I will take some words from it that somewhat summarize the experience of Latinos in Chicago. The song says, "I'm not from here, I'm not from there, I don't have age or a place." The experience of Latinos is one of eternal immigrants trying to carve out a space where all spaces have been already taken.

I understand the present as the accumulated result of the past. I do not like to try to explain the present by the present itself. That becomes a process in blaming the victim. I see yesterday in today, and I see today in tomorrow. The Morning After is in many ways the Day Before. Whatever we are doing now is tomorrow and whatever was done yesterday is today. To understand the Latino experience here, not only do we have to review yesterday but also to understand today.

From yesterday, the picture is not very nice. Let me give you a few pointers. Latinos were integrated first to this country through conquest and purchase. The Southwest was conquered by the United States. Puerto Rico was also conquered by the United States and made part of this land by force. The Latinos that lived there were made citizens by force, in fact foreigners in their own land. The Louisiana Purchase and the Gadsden Purchase annexed other Latinos to the United States. We became part of the goods that were purchased. That's how our humanity was defined: as conquered people and purchased people.

Later on, Latinos were brought to this country by employers who had run out of cheap labor and therefore found the Latino labor very promising. It was labor next door which could be brought to do the dirty laundry and sent back when the laundry was clean. This experience very much defined the role of Latinos in this society, immigrants from Latin America who come, work, and go back — broken families, circular migration, temporary work.

The third group of Latinos being brought to this country has to do with the manipulation of Latin America by the United States. We have Latinos coming here as political refugees. We also have the elites associated with

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U.S. interests in Latin America which were displaced by social movements and revolutions. And we have the peasants and the poor that were left homeless from those revolutions. U.S. intervention in Latin America displaced all these Latinos and forced them here. This is a very bad beginning for a group of people to start a new life. It has also shaped American thinking about Latinos. It has shaped the role that America has designed for Latinos.

We talk about immigration as an issue of individuals desiring to leave a country and move into another one because there are more opportunities there. We don't realize that immigration is much more than that. It's the process of one country intervening in another, uprooting many people and forcing them to become homeless, migrants. We don't realize that immigration is also a situation in which people are deprived of their territory and are made, by force, into parts of another territory, indeed foreigners in their own land. I want to use this as a basis for the discussion of today.

We are again being made into the scapegoats for a society that cannot resolve its own problems, and therefore has to find someone else to blame. Latinos did not come here out of their own will but out of the process that I'm talking about, and they didn't have a choice. They came to this country to be that kind of labor that comes back and forth, those eternal immigrants. In fact the undocumented problem was not created by a Mexican who was able to escape the border patrol and come to this side. The undocumented problem was created by the U.S. government and by the U.S. employers who found that having undocumented and unprotected workers was a very unique source of wealth. Not only could they abuse them, but they could pay any kind of wage to them.

Employers lured them: most of the undocumented immigration was initiated by employers at the border trying to get people for nothing. There was a whole industry at the border making money out of bringing undocumented workers and shipping them to Chicago and other places. The undocumented problem was also created by immigration laws. The U.S. claims to the world that it is the land of freedom and opportunity — give me your hungry and so on — but it uses immigration as a tool of domination of other countries and selectively brings in certain elements from those societies and eliminates others. While the immigration policy for Europe was largely open until 1920, the immigration policy for Latin America has been very selective and very political. In that sense these people were forced to come here as undocumented workers.

Latinos have been concentrated in manufacturing industries and laborer occupations with limited or no career ladders. We have been segregated in barrios, box cars, and barracks, temporary tenants as landlords recycled unlivable accommodations. We have been made to start at a lower level than other groups in America, and to start all over each time we come or return.

Today, the Day After, when America cannot feed its own people, not because it doesn't have the resources, but because the resources are in the wrong hands and are not adequately distributed, America is looking at these Latinos again.

Entire moderate to middle income working class Latino communities went down with the closing of the steel mills and other manufacturing opportunities. These were communities we had just begun to form; Pilsen became the first majority Latino community in Chicago only in 1960. We were forced into service jobs or resorted to all kinds of survival mechanisms, from the informal economy to the extended family to collective living to make ends meet. We are the ones that have to go back home and the ones who have to pay for the problem. We are going basically from being immigrants to being criminals.

If you are an undocumented worker, brought by the kinds of things that I am talking about, you don't have any rights in this society. Now, with Proposition 187 and the other things that are being promoted throughout the land, we don't even have the right to be human and to have the most basic services. We are criminals by just coming to this country.

Not only that, but even our own humanity and culture are being denied, and we have been racialized. America has this problem defining who people are. Either they are white or they are Black, and if they are neither white nor Black there is a big confusion. In the case of Latinos, they have turned peoples, a series of nations and cultures, into a single inferior race, the Brown race.

When I first came to this country I went to Louisiana. I went to register at the University there. I filled out all the forms. In one of the forms there was a space that asked for race. I wasn't race-aware before I came here. Latin America is very different and race is a cultural thing, not just a color thing. But I debated what should I put here? Finally I decided that meant color, and wrote in white. What a mistake! I took the form back to the clerk and she started yelling my name over the microphone in a way that I couldn't understand. We don't know how to pronounce each other's names

and we have to Americanize them in order to understand them. Finally I figured out it was me. I came to the desk and said, What did I do wrong? How do you dare to call yourself white, she said. You are from Latin America. I said, What do you mean, then what am I? And she said, you are Brown, and it was the birth of the Brown race for me.

Latinos know about domination deep in their hearts. They can make a difference in the discussion of the future and the search for alternatives in a society that is trying to deny its own people the right to live.

Q. In your opinion, what is holding people back?

We have separated our discussion of the issues from our practice of resolving them. For instance, instrumentalizing the universe. Technology is about building things, building tools, turning the universe into an instrument so that we can become the gods that we have always dreamed about. That's how we have approached technology and that's been very much blinding. We all have this feeling of the superiority of those people who are the holders of technology. We haven't even thought what kind of technology or what kind of research we would go into that would expand our human dimension rather than expand our ability to dominate the universe. We have to go back to the basics and discuss what being human is all about and how can we link back to our roots. We have been depoliticized. We have become mere listeners. To us discussion is a spectacle, is a TV show, rather than something that is deeply affecting our own life and something in which our future and that of the generations of this earth is being shaped.

The things which we created became our bosses and even the myths that we created became our dictators. For instance, today everything is justified in the name of the economy. This will improve the economy and therefore everybody has to kowtow to the economy. If you go hungry and you starve in the name of the economy that's the new patriotism. In the past you died for ideas, now you die for the economy. I don't know to what extent we want to change that, but it is very much putting our priorities upside down and that is very much related to our media revolution, to the way we sell things, to the fact that we are no longer humans, we are consumers.

Some of us are very busy trying to hang up there on the slippery slope so that we don't go to the bottom. Those that are at the bottom are too busy trying to keep their head up above water, what we call survival. And those who control the resources are too busy trying to get more. Altogether we are too busy playing the same game. I think we have to sit down

and make a decision and the decision is what do we want to commit our lives to. Start redefining what being human means and start recreating society.

GENERAL BAKER — I would like to thank the organizers of the conference, panelists, fellow workers and friends. It's always indeed a pleasure to come to a forum like this and discuss this question of the advance of technology and its effect on working people. I work on a blast furnace in Dearborn, Michigan, on the midnight shift and I've been working there for probably the last twenty years and the kind of changes in production that we've seen have been tremendous. Production is nothing like it was twenty years ago, as other panelists have said today.

As a trade unionist, I was the chairman of a bargaining committee. There, you never really get a chance to discuss the question of technology in open forum, except when the company comes and tells you you've got to accept a modern operating agreement, or else we are going to close this plant. So it's really a pleasure to stand here and be able to discuss this thing in an intellectual sense and try to receive the result of it.

Our theme is "The Morning After" and I have some figures here I want to show you. This is part of the Morning After. In 1994, U.S. auto production hit 12,200,000 vehicles per year, which was second only to 1978, when it hit 12,800,000. This is just U.S. production not North American production. I think it's important to talk about that part of the Morning After, because they arrived at that 12,200,000 with one-half the work force that we had back in 1978.

General Motors in 1978 employed 560,000 workers. In 1994 GM employed 325,000. Ford had 200,000 in '78, 101,000 in '94. Chrysler had 130,000 in '78 and now has 66,000, and that's including the old AMC workers who are now part of or under Chrysler. So obviously this is part of the Morning After.

Steel production hit banner levels this year, and I think it's important to talk about that part of the Morning After because that productive might that technology has brought belongs to us. I think we've got to look at the

General Baker is a 30-year Detroit autoworker and trade unionist. He has helped found organizations from the Dodge Revolutionary Union Movement in 1968 to the League of Revolutionaries for a New America in 1993.

Morning After to try to figure out how are we going to bring this might of production that we now have under our control. It's important to understand it from that point of view.

I'd like to say further, that in a lot of ways, most of us that are working love to see these robots. On one hand you hate him, on the other hand you love him. Especially if you are working on the blast furnace. With all the burns and things I've got from trying to keep the iron from burning me up, I can tell you that is some work that human beings should have never done anyway. So in one sense we are happy to see the robot and the same time we are devastated by its results. I think it's important to see this with Richard Hatcher from the point of view of Gary. If you all had a chance to see the movie "Roger and Me" with Michael Moore, you saw it from the point of view of Flint. The story of Detroit is similar to that.

Detroit has been devastated by this new production. Growing up in Detroit, we called it baptism to go into the auto shop. If you were a young man, ain't no way in the world you'd grow up in that city not working for Chrysler, Ford or GM before you were grown. Detroit led the nation in single home dwellings. Auto wages bought enough so we didn't have a lot of brownstones and apartment buildings. Everybody had homes.

One of the ways you can tell it's the Morning After is this. A few years ago they started talking about Detroit and Devil's Night. Now, Devil's Night takes place all over the country. Everybody's got a Devil's Night, a night of mischief every October 30, you see in Detroit we take two nights. We had reporters flying in from France, Japan and everywhere to Detroit to see Detroit burn on Devil's Night. They couldn't figure out what was happening. So many workers had lost their single family homes and cars that they would take the opportunity on Devil's Night to go and torch them so they wouldn't have to pay the bills and could write it off on the insurance company. So we became the Devil's Night capital of the world, just based on the fact that what had happened to us was the loss of our jobs. It wasn't easy to understand, but that was one of the results of the Morning After.

Obviously, we have a lot to be proud of and in the course of the struggle people are fighting back in various ways. Every event of new technology that came into the shops was fought on some level or another by individual workers and trade unions and others. One of the difficulties we have is a lot of trade unions don't want to stand up and admit that we've been defeated and a lot of trade unions took that defeat. We have guys running around in Detroit arguing about accepting a modern operating agreement like they

are innovative as opposed to accept it as a fact that we didn't have strength to resist any further than that.

So it's a real pleasure to be able to talk about that this way. There is a lot of hope in this situation. Obviously, the increase in electronic production has led to the devaluation of human life. You can see that in Detroit probably better than anyplace else in the world. Because back in January, when they opened up the new auto show in Cobo Hall, they had a black tie affair with tuxedos, and twos doors away from Cobo Hall and all the new automobiles there is Ford Auditorium that is a homeless warming center. The homeless people come in and warm up every night and they throw them out every morning, right next door to the Auto show.

When I left Detroit coming here today, the Cobo Hall Center still had the Society of Automotive Engineers convention loose all over the place, and all kind of new robots and innovative things in Cobo Center, and homeless people living next door to it. A question of the devaluation of human life doesn't exist any better more visually than you got right there on the riverfront. Ford Auditorium was prime riverfront property looking over into Canada and is now the drop-in center for homeless people to warm up in at night. That kind of shows you the contradictions we are confronted with. There is a hope in a lot of this. People are fighting back, in all kinds of ways.

We had the history of all the cutbacks. You'd think that with the loss of jobs, people would be fighting for the right to have a job. Yet we see the debate raised on the right about whether or not you have the right to panhandle or the right to beg. Not about whether or not you have a right to a job. You can see the kind of contradictions we are confronted with generally in society.

We've got a lot of hope. A lot of people living around the city of Detroit in abandoned buildings have to slip out in the middle of the night with buckets to the fire hydrants so they can get water to live for the next day. A proliferation of kerosene tanks at all the gas stations that didn't use to be there because people are using illegal and other methods to try to stay warm at night. This is an example of the resourcefulness that people have, to try to find a way to free themselves from the shackles that we are confronted with. So we got a lot to be hopeful about.

We've got hope in the productive might that we now have and the struggle to figure out: how do we control this and use it to help ourselves? The latest figures tell us that steel is cheaper than wood. That just shows

you the productive might that we got. So rather than try to build houses all the time out of wood, let's make some steel houses somewhere. We have a lot of examples of the struggles that can be brought to bear on our side.

We ought to look forward to this Morning After and the future that we confront it with. Technology has thrown us out in the streets, and we ought to be happy, on one hand, but be prepared to battle over the control of what's being produced. It was our labor and the wealth beaten off our backs that built the robot that they put in there. We ought to be able to stand up here and proclaim that, as we proceed to establish a new kind of morality, as we fight back on the Morning After.

Q. Where is the hope, as opposed to the struggle, in the Morning After?

It's important to note that obviously we have a bright future in front of us. The only way you can get to it is with the historical lessons that we are trying to give here today. This productive might that has developed over the history of this country, even though it's not under our control, should free us from some of the tasks that we've done historically. We have to look forward in that light, in terms of trying to raise children and talk about future generations in a sense that we were never able to in our day. We still had some back breaking to do. The productive might hadn't reached the level that it has today. We can produce enough for everybody to be able to live comfortably without ever having to lift a stitch. And I think we really have to talk to the youth today about that possibility and elicit their help and support. Which way should we look to the future? What do we need to prepare for? It's a bright day in the sense that we can talk about what's possible like we're doing in this conference.

Q. In your opinion, what is holding people back?

A lot of the trade unionists and a lot of the workers in the auto shops don't have a chance to debate this thing this way. I think we have to get this message out broad and wide about what's confronting us. People point to everything except the development of technology to explain why we ain't got no more jobs. Foreign this and foreign that. They leave the struggle so confused without pointing clearly to the results of the technological production, which really clears up the debate. To the degree that we can do that, we can draw more forces into understanding clearly how to focus at where the enemy is. We get so broke up — little groupings trying to figure out what's wrong — instead of getting a clear focus on what happens and then trying to proceed. So I think one of the things we have to do is really

promote these kinds of efforts where we are able to discuss this thing from the standpoint of technology. *The Economist* magazine wrote about Rifkin's book, saying technology is another spook out here and we don't need to look at it. There are so many subterfuges, trying to hide this question about technological development. At the same time, they never concretely explain the rise in the homeless population in this country. About the end of the seventies and the eighties, we got all these homeless people all of a sudden. We've had technological developments for ages and eons until we made the leap to electronics and all of a sudden all of these people now have no houses to live in. The sharper that we can make the debate on this question and win more forces over to the discussing is how we can get out of it.

I also agree with Dan Lane. The struggle for a confrontation and the struggle for survival are the things that are going to lead us forward. Let's make our ranks swell based on the people that we can draw into the struggle.

Q. Do tax abatements reflect the real value corporations add to a community?

To add to Richard Hatcher's answer to that question, I want to say that the beat goes on. You can go get American Metal Markets newspaper today and see all the new work to be added by the various corporations. To decide what city is going to get the work, they'll be there at the city halls demanding a tax break. They'll use the same jargon they used before — we are going to create jobs — even when they've had job creation contracts they backed out of. In the case of Willow Run in Michigan, the judge issued an injunction against General Motors, and wasn't going to allow GM to leave, because GM wasn't going to fill the new job quota that they said they would. But the Supreme Court immediately overturned that.

That beat still goes on. It's just a question of confronting these city halls with these neighborhoods and demanding that they don't get the tax breaks, and that's taking place too, in various cities.

Moving Forward: Local Initiatives

People are organized to fight back against the destruction of industrial society as we've known it, to think globally and act locally. In this plenary, activist-intellectuals from the campus and the community reported on their experiences using local resources to fight poverty, racism, environmental problems, and immigration policies.

DAVE RANNEY — I've been asked to talk about the work of our center, the Center for Urban Economic Development, which is here at the University of Illinois at Chicago and has been in existence for sixteen years. We are a technical and research center that has been formed to meet the economic development needs of Chicago's lower-income and minority communities as they themselves define those needs. Over the course of our existence, we have developed certain principles of how we operate. These principles, with the current political situation, form the basis of how we approach the subject of today's panel.

First, we focus our work on communities and community organizations that serve lower- and moderate-income and minority residents. Second, the nature of our work is determined by the needs as residents define them in those communities. Third, in all of our projects we aim to increase the capacity of community organizations to engage in economic development and housing development and community planning. It's really a grassroots, resident-based, approach to things.

During the existence of our center, the United States and the entire globe has been undergoing significant structural changes. We've seen an incredible growth in telecommunications technology and process tech-

David C. Ranney is Associate Professor at the University of Illinois at Chicago's Center of Urban Economic Development and School of Urban Planning and Policy. His current research is on the impact of transnational investment policies on job loss in the Chicago area and he has helped establish local organizations and programs to support dislocated workers.

The plenary was chaired by Alice Palmer, who is a State Senator from Chicago.

nologies. Yet despite the growth in productivity and exports from Chicago, Illinois and the United States as a whole to the rest of the world, the communities in which we work have been in a continuous process of decline. During this period, the net loss in manufacturing jobs in the Chicago area has been over 150,000. Over half of those jobs were lost by African Americans and Latinos. These losses have not been compensated for in any way by the growth of the so-called service sector. In fact, people who were earning below $15,000 in 1977 have lost over fifteen percent of the purchasing power of their income, while folks who were earning over $50,000 have enjoyed an actual increase of over fifty percent.

These numbers suggest massive unemployment, an alarming rate of homelessness, and an alarming rate of decline in communities that we've been trying to help and work with. These trends in Chicago are very consistent with national trends as well.

The loss of well-paying manufacturing jobs by so many U.S. workers, especially African American and Latinos, is the explanation for what people have begun to term the "underclass." It's become popular to point to a decline in family values and to talk about teenage pregnancy and gangs and drugs and so forth as if they are the problem. At our center, we see such social disorganization as stemming from a growing lack of opportunities due to economic decline.

It's popular to see the loss of manufacturing jobs and a lot of the decline as a natural response to competition brought on by economic globalization. The term "restructuring" is used with great abandon to explain the continuing plant closings and even massive layoffs in the service sector. Thus the Clinton Administration proposes training programs that focus on training for occupations in high-tech, high value-added industries.

But high technology is not sufficiently defined there, not connected with an adequate analysis of opportunity, for Clinton's to be an operative basis for job training priorities. Plus, there are significant flaws in the analysis. Has technology caused an increase in the demand for skilled "high tech" labor at the expense of less skilled occupations? The recent work of the Economic Policy Institute and others has demonstrated that technological development does not explain the growing income inequality of the 1980s and early 1990s. Furthermore, high-tech, high value-added industries tend not to hire very many people at all.

Many economists have noted a growing concentration of ownership of capital worldwide, so competition cannot be the explanation for restructur-

ing. Our own research has suggested that a growing part of the global output is being produced by networks of global firms that make use of high capital mobility, global outsourcing (buying supplies from all over the world), joint ventures with other global corporations. Restructuring is often directed toward a global production strategy and not toward being "competitive," whatever they may mean by that.

The globalization of the economy has resulted in an economic polarization and a declining middle class in the United States. Our own analysis of Chicago-area job loss, the North American Free Trade Agreement and the most recent outcome of the General Agreement on Tariffs and Trade talks all suggest that the global corporate strategy aims to cheapen production costs through undermining global standards for wages, working and living conditions, consumer safety, and environmental quality.

These are some of the considerations that inform what we do. On the one hand, an urban-based university such as ours must address the very immediate and dire needs of community people with whom we work. We must attempt to generate jobs and income for the residents of these communities. But at the same time, because immediate programs will not necessarily address the trends that have given rise to the problems to begin with, it is every bit as critical to include in our work a strategic perception and a program that is directed toward more fundamental change.

Thus, our immediate efforts are geared toward the development of what I call a line of defense for the inner city. This must be coupled with an educational and organizing strategy promoting an understanding of the cause of the decline that people have experienced and developing longer term solutions.

Along the line of defense, one requirement for improving the lives of community residents in the short term is to link labor market strategies with development strategies. We call that labor-force-based development. The period of deindustrialization and decline that I've talked about means that there are now thousands of dislocated workers in our communities who once were part of the labor market but are no more, and that the system of labor market entry through schools and trade unions has broken down.

We need a strategy that bases economic development on the need to employ particular workers in a particular community. At the same time, labor market policies for job training have to be linked to specific development proposals so that there are jobs at the end.

On the development side, most production is occurring through highly mobile global webs in order to cheapen production costs. In the short term in those industries, therefore, there is no point in trying to compete through industrial retention and renewal schemes. But there are parts of the regional economy in most major cities that are place-bounded. In Chicago that means the universities, the hospitals, the state and local government, and some selected manufacturing industries such as metals. These major employers are relatively fixed in place. So, let's focus on more place-bounded industries and firms, identify the occupations and skill requirements there, and identify their potential suppliers and their occupational structure and skills requirements. Attract and retain firms that supply the more grounded institutions. Focus community attention on the hiring and procurement policies of these institutions.

On the labor market side, our work needs to be linked to hiring and procurement campaigns and the occupational and training priorities that they generate. The Center's labor market intervention means three different things: basic skills development, linking school and work, and retraining dislocated workers. We focus all of these on those parts of our regional economy that are not now part of the global web.

Now, that's an immediate line of defense, but because the trend of global restructuring is towards more comprehensive mobility, global outsourcing, and a lowering of global standards, this strategy is limited and constantly undermined. The recent adopted negotiation of the General Agreement of Tariffs and Trade turns GATT into a world trade organization and makes local procurement and hiring policies illegal, if they restrict global outsourcing or discriminate against "foreign firms." Firms with operations or potential operations in locations with low wages or poor workplace safety or environmental standards can use their mobility to whipsaw local firms into compliance, even if they are linked to place-bounded industries. So our immediate efforts need to be coupled with longer term strategies to move community and labor organizing into the broader global arena.

The globalization of the economy means that efforts to maximize employment, income, and improvement within the policy confines of a single community, region or nation are futile in the long run. Workers now operate in a global labor market. Gains in one location can easily come at the expense of working people in other locations. The concept of solidarity and

collective action so essential to the community and labor movements' historical development needs to be extended globally.

There are, in fact, developing international networks geared toward putting controls on capital movement through solidarity around mutually agreed upon standards — standards for wages, for workers' and human rights, for working conditions, for consumers and the environment. Our center can and is trying to play a role in bringing information to the community and labor groups with whom we work about the impact of globalization on their lives. We're linking people with emerging social networks that are pushing a people-centered development agenda in the emerging supranational policy arena.

I've been part of a trinational group that spent the last two years discussing in Canada, the United States and Mexico and increasingly in the rest of Latin America a proper basis for sustainable trade and development initiatives for the Western Hemisphere. We have talked in detail about inequality, human rights, the right of local areas to their own economic development policies without the interference of outside corporations. We're producing a working document called "Toward a Just and Sustainable Trade Development Initiative for the Western Hemisphere." It's very important for this kind of activity to be brought to the community level. That will establish a line of defense against the onslaught of these new developments that we have been talking about here. It's very critical to bring the community and these more international struggles together.

Q. How can we be boundaryless in our approach to organizing, rather than collaborating with the multinationals pitting Latino or immigrant workers against the U.S. workers' movement and Blacks against Latino workers?

From the point of view of transnational corporations, the labor market is the world. Looking at labor markets in very narrow terms leaves workers at a disadvantage. Even when they are in their home countries, Latinos are put in competition with U.S. workers, without leaving Mexico and other places. We have to begin to stimulate discussion amongst peoples in different communities in this hemisphere or elsewhere and establish that understanding. If you have that kind of understanding about the global labor market, then the principle of attacking inequalities can really become grounds for organizing work to go forward. That has to include a very strong and clear stance on the current immigration situation.

LOURDES SILVA — First of all, I'd like to introduce Comité Latino. We are an organization that is based here on the North Side of Chicago and has existed for approximately twelve years. Our primary work is around issues of immigration, education and housing. Currently, we are especially involved in fighting the aftereffects of the anti-immigrant wave of Proposition 187 in California.

For the sector of people that we work with, particularly the undocumented immigrant, the issues we're discussing here have life and death consequences. The changes in the economy, the displacement of workers, the elimination of jobs, are resulting in ever and ever greater difficulty for these people to survive. We have to understand this in order to mobilize our communities in the proper way.

The economic crisis that is taking place here as a result of the changes in production and of the permanent unemployment is also taking effect in the native countries of the immigrants that come here. The avenues are closing more and more as to where people can go. You no longer see a great back and forth of the immigrant population, because it is no longer possible.

The anti-immigrant sentiment that has been fostered in this country has developed before, but in this particular time it is extremely severe and extremely dangerous. It impacts not only the immigrant, but society as a whole. This anti-immigrant sentiment is resulting in worsening living conditions, because the immigrant is forced to become more and more underground and be denied service either directly or through the fear of the consequences of seeking services in hospitals and so forth.

Fifty percent of Latino children and youth in Chicago, particularly in the North Side I'm describing, live at or below the poverty level. The medium income for Latinos is $12,213 a year as compared to $21,000 for whites. In Uptown, Latinos account for a full 40 percent of those with less than a ninth grade education. Housing is a major issue. More than 14 percent of cases that are reported of sub-standard housing occur within the Latino community. And poor Latinos spend 74 percent of their income on rent alone. Immigrants today are facing more obstacles than at any time before.

Lourdes Silva has worked as a bilingual teacher for almost twenty years in both Los Angeles and Chicago. She is President of Comité Latino, a housing, education and immigrant rights organization in Chicago, and is an editor of the Tribuno del Pueblo.

The type of punitive proposals that are being presented throughout the country, following the pattern of California, are extremely dangerous. These include the potential elimination of bilingual education and cutting legal residents out of various forms of income support. I have here a fax about the Personal Responsibility Act which is currently under consideration in Illinois. It would bar legal immigrants from federal programs including Medicaid, Aid to Families with Dependent Children, food stamps, supplemental security income, school lunch and breakfast programs, as well as federal housing assistance, amongst others.

There is as well the more direct effects of high technology. There is currently a proposal to put into effect a computerized identification system that would be used whenever anyone would apply for a job or for any kind of services. There is the high tech machinery that we've seen employed at the very border where people come to enter into the country.

This is not just our historical relationship with the third world and the poor people who come to this country to make money. The immigrant worker is really part of this internationalization of the economy. It is not people coming as beggars. It is not people coming to take advantage. It is propelled by the very economic systems under which we function.

Here on the North Side, the growth of the immigrant population has been 45 percent over the last ten years. It continues at a very high rate. Research shows that while it's true that the increase of technology and of the supposed service sector is not creating jobs, the economy still has a great number of unskilled positions which don't require much education and don't even require language proficiency. That is where most of our immigrant population is currently employed, as well as in servicing the lifestyle of those that are on the high range of the economic polarity. The maids, the service workers in that capacity are this immigrant population which tends to center around the major global economic centers that are Los Angeles, Houston, Chicago, and of course other parts of the world.

In this light, we have to understand what kind of a position we have to take as a community. There is no return to the home country. The jobs are shrinking. The political climate is severe and hostile. This requires that we work with our communities to build our sense of dignity, our sense of where we fit in this economic structure, and from that begin to develop solutions as to what we are going to do about it.

In Comité, we are daily barraged, and I mean barraged, the phone doesn't stop all day, with telephone calls from people who are being laid off

without any pay. From people that are being discriminated against on the basis of being undocumented or being Spanish speaking. From women who are suffering the side effects of this economic crisis by being beaten at home or by the kind of problems that they are experiencing with their children. This is the human, day-to-day, real impact. We can look at things rather technically, but it comes down to flesh and bone and how people are going to be able to make their way in this world. That's what we have to deal with on a day-to-day basis.

We try to deal with it from the position that we are trying to build. We are not simply trying to calm someone fears or stop someone's husband from abusing them or help you find a job. We need to take these people and build in their consciousness an understanding that they do have an ability to transform things. Therefore, we work to educate our community and develop strategies to respond not in a passive way but by recognizing our collective strength.

We feel that we have to go on the offensive in this period. It is not a period in which we say, Oh, my gosh, they are coming after us, we'd better hide. No. We recognize that without the immigrant population this economy would sink. They know that and they try to pretend that we don't know that. They try to act as if it's otherwise, as if they are doing us a favor. Well, that's simply not the case. Without immigrant labor, they would simply not survive. I'm talking about those who control the multinationals that control the international economy.

Therefore, we enter every sphere of social life. We are part of the community. We work in churches. We work in schools. We work in the streets. We allow people to come in and stay with us and talk, and through that we are building groups, small groups. We are not going to be able to tackle the big picture until we have tackled the marginal status of most of our population.

Just a point on that. I think that when we talk about building from the bottom, we aren't talking about doing that alone. This is a problem for society, but it is crucial that the people that are most affected stop being the object of repression and become a subject in this picture, become the ones that begin to put forward what society can be and how we're going to go about making our needs met.

In Comité, we recently developed a group called the Association of Workers. That really came from a lot of individual cases of people coming to us with complaints and with problems. We said, you know what? We are

not going to resolve this for you. We don't have a job to offer you. We better sit down together and determine what we are going to do. This group has now grown to some 80 people that meet on a weekly basis. They have created some alternatives. They have created a job bank within themselves where they now inform each other of what's possible. They have been training each other with the assistance of labor people and others as to what their rights are. This has changed their attitude totally from being subservient and in a weak position to being able and willing to go out, reach out to others, and begin to create bonds in the community.

We had a case recently that shows the change in attitude of a lot of the undocumented workers. There was a communications service company on the South Side where the employer all of a sudden claimed that he didn't know that these 200 workers were illegals. He simply told them the next day, see you later, and kept from them three weeks pay and any kind of benefits and such that were owed. Several years back, you would have never seen these workers again. They would have simply gone into the woodwork. They contacted us, and they said, we're going to fight this one because we don't have any choice. We need this income. We've been working for our money and we have a right to get that money. They've begun organizing and are currently filing a suit against the employer which very possibly can be won.

Because it's an international question, because we know that we can't just simply run away, people begin to confront the very structures that are keeping them down. That has to be done through a process of education, knowing what's impacting us and beginning bit by bit to confront it, whether it be the political structure, some of the community structures, some of the structures in our own family and community life that keep us from collectively working together.

It is necessary that we create multiple basis of power in the community that can serve as instruments to exert pressure on those who hold formal power. People have power of which they are not conscious, and raising consciousness is one of our primary tasks. People can sustain these existing structures and that gives them the capability to transform them as well. It's from that perspective that we work together to strengthen ourselves with information, with ties in this large city of ours, in order to confront and begin to create alternatives to what exist today. Creating new social relationships means creating new values. We have to break with what the cur-

rent structure has provided us. We have to be able to back each other up. This is going to constitute the basis for a new way of looking at society.

Q. How can we be boundaryless in our approach to organizing, rather than collaborating with the multinationals pitting Latino or immigrant workers against the U.S. workers' movement and Blacks against Latino workers?

In order for immigration not to be used as a wedge to divide our communities — which is what they have succeeded in doing — we've got to recognize the objectivity of that immigration. It's not "here come these people trying to take our things." Immigration arises from real economics, not just an individual's will.

We have to look at the issue not as a defense of one group versus another, but as how are the multinationals setting up the problem and how do we break with that? In order to break with it, we have to first recognize what drives that flow of labor, not just to this country but globally. Once we understand that, we can stop looking at each other as the problem and begin to turn the tables. For instance, if they're internationalized, we also have to be organized across all lines.

ORRIN WILLIAMS — People for Community Recovery is located on the southeast side of Chicago near the Altgeld Gardens public housing development. Hazel Johnson, the founder of our organization, who has been characterized by Ben Chavis as the mother of the environmental justice movement, calls the location of the office and the housing complex, which she lives in, a toxic donut. Altgeld is surrounded by municipal landfills, former incinerator sites, the water reclamation district and a host of industrial facilities. Our organization works within the environmental community, but we also consider environmental issues in the context of other issues. Environmental issues can't be separated from community development or economic development or social justice issues in general.

Orrin Williams is on the staff of People for Economic Recovery, an urban environmental organization based in the Chicago Housing Authority's Altgeld Gardens development, where he conducts research and develops community education programs. He also serves as Community Outreach Coordinator for the AIDS Research Alliance/Chicago.

In terms of what's happening with respect to environmental regulations, we have a lot of concern about the direction the regulatory situation is going. Hazel represents People for Economic Recovery on the general council for the Common Sense Initiative, which is directed by the United States Environmental Protection Agency. I represent our organization and the environmental justice community on the iron and steel sector, and another worker in our office represents the environmental justice community on the automotive sector. The Common Sense Initiative is primarily concerned with pollution prevention in various industrial sectors. Other sectors are computers and electronics, printing, metal processing, and the petroleum industry.

Part of the difficulty in that particular process is that the stakeholders in the process are environmental organizations, environmental justice organizations, regulatory agencies from the local, state, and federal and members of the manufacturing sectors that I just mentioned. We spend a lot of time going round and round about the direction that the Common Sense Initiative is going to go. We feel compelled to keep industry on track, because they want to center the discussion on the notion that regulations make it difficult for them to do business and to profit, as opposed to staying centered on the notion that pollution prevention is critical in terms of environmental and human health. Beyond that, however, People for Community Recovery is real concerned about the whole question of community and economic development, particularly as it is generated from the context of environmental and human health.

What's the interface between technology and community and economic development? For example, a lot of people that we talk to see a lot of opportunities to work when they walk out their door. If you consider, for example, that it's been estimated that sixty percent of the housing stock in this country needs to be renovated and forty percent of it needs to be replaced, to us that constitutes work. If you look at that work potential from the context of environmental and human health concerns, other opportunities present themselves. For example, if you look at energy conservation in residential housing, one aspect of that would be how windows operate in terms of heat loss and heat gain. To fit all the older houses in this country with new insulating windows means a lot of work. That oftentimes is not considered when we begin these kinds of debates.

If you want to look at the housing sector again, just dealing with the lead issue alone constitutes a great opportunity for work. At People for

Community Recovery, we had a training program last summer, training sixty workers to do lead-based-paint abatement. We were supposed to announce the program throughout the city and offer a broad base of people the chance to participate. Once the word got out in Altgeld that this program was going to be happening, we had 400 applicants for 60 positions. When you look at the opportunities to do lead-based-paint abatement, virtually every residential dwelling in America built before 1979 is loaded with lead based paint. There is money available to do lead-based-paint abatement in only 60 units of public housing in Altgeld. Yet Altgeld has over 1,000 units. Opportunities present themselves that we think are critical.

We also have the situation where the industrial processes in this country, as they leave urban areas in particular, have left behind a mess. The brown field sites need to be cleaned up. In Chicago, for example, we are hard pressed to even find land to build new schools on, because of the environmental degradation on a lot of the vacant land. That land will have to be cleaned up, or the alternative is to use park land. Now, we don't have enough open space in cities as it is.

We can go on and on and on just in terms of energy efficiency and energy conservation and the whole question of manufacturing. How about refrigerators? Refrigerators utilize 30 to 35 percent of our annual electricity expenditures. How about the development of local manufacturing initiatives that manufacture refrigerators that conserve energy and that are locally manufactured? Those processes can be transferred to other regional centers across the country.

There is a considerable amount of space in this city that has been left vacant by the industrial displacement. Some of that space can, in conjunction with the rural agricultural community, be utilized to develop a urban agricultural program. Processes and techniques such as hydroponics, which could use quite well a lot of the computer based technologies to make sure that the hydroponic systems operate efficiently and effectively.

Take landfills. Even if we stop landfilling tomorrow, those sites are going to be offgassing methane for years to come. That methane can be used to generate energy resources for a huge urban agricultural complex. Aquaculture? The wild fisheries in this country are on the verge of collapse from being overfished. We can produce fish in our cities, in our communities. Do we need to have supermarkets that consist of thousands of square feet of just an overwhelming array of products? Some of that square footage can be reduced and that space can be used to grow a variety of vege-

tables, particularly green leafy vegetables. It would combine an urban agricultural complex with a rural complex. The combination of those two kinds of systems can lead to the development of a locally based agricultural system that provides opportunities for plenty of people to work, particularly young people.

There's plenty of work to be done. We simply have to look at what it takes to survive as a people and as a community. That work is ongoing. It is sustainable. It requires maintenance and it requires the participation of a lot of people. Technology has phased out a lot of industrial work, but there is plenty of work to be done. Somehow we have to figure out how to develop the capital base for a whole new way of looking at things and doing the work that needs to be done.

Q. Can organizing communities include what we used to call in the Philippines "backyard industries," cottage industries, in response to the multinationals' globalization which puts workers' rights on the shelf and even violates human rights?

We are doing an analysis of what environmentally-based entrepreneurial opportunities exist, from a very small microenterprise level up to industrial manufacturing opportunities. We know, for example, that weatherization and insulation is viable. We can talk about retrofitting windows, but that's a long term project. So what do you do in transition to the point where that happens? We would like to see programs that train people to do that kind of work but also train them in all aspects of the business and development so that a viable sustainable business sector can emerge. Once training is done and business plans are complete, people should have loan programs desinged to give them access to start-up capital.

PHIL NYDEN — This talk could best be titled, "Adding Chairs at the Research Table." The Policy Research Action Group (PRAG) has been a five year process of facilitating collaboration between university-based researchers, community-based researchers, and community organizations — a collaboration where all involved are equal partners.

Phil Nyden is Professor of Sociology and Chairperson of the Sociology and Anthropology Department at Loyola University Chicago where he helped to establish the Policy Research Advocacy Group. His most recent publication is the forthcoming The Collaborative Community: Research for Social Change *(Pine Forge Press: Newbury Park, Calif.).*

In any city there are an incredible amount of resources in the form of university faculty and students on the one hand and community expertise on the other. These are resources that can be used to push for progressive change in communities. The Policy Research Action Group has been linking researchers to activists and linking similar policy projects throughout the city. Rather than five organizations or five projects in a metropolitan area going from square zero to square one we are trying to get five groups working together so that they can go from square zero to square five together. In this era of declining resources in both the communities and the university, this efficiency is quite important.

Also in this age of information, policy research is a political resource. Research produces information that can guide grassroots social change; it is information that community activists can use in pressuring for social change. In one project in which I've been working, the community organizer is always saying that having our research is like having a pocket full of "factoids" that he can use to convince policymakers of the importance of his organization's agenda.

Historically, the relationship between community organizations and researchers has not been exactly a warm and fuzzy one. While some projects start out with warm relationships, they very often fall apart. This partially because one feels like the other did not keep their part of the bargain. It is also because both sides may be talking past each other and insensitive to each others needs. Researchers, for example, may resent the pressure put on them by a community organization to get something done on a tight time schedule. We all know that academics think of things in terms of semesters and not in terms of tomorrow. Also, community-based organizations themselves can get frustrated by the slow process of the research and may think that some research methods, like sampling, or detailed survey questions, add unnecessary complications to the policy research process.

Tensions between community-based organizations and universities are also fed by community resentment of the resources of the university and the past unwillingness of the university to share those resources with the community. The quintessential community organizer, Sol Alinsky, tersely commented, "The word 'academic' is synonymous with 'irrelevant.'"

Despite these tensions, despite these conflicts, there are successful examples of university-community collaboration. There is also an increased sophistication of community organizations themselves in terms of capacities to complete research.

I'd like to explore that relationship between community organizations and researchers a little more. How can this be molded and directed into bringing about more effective community based change? I would also like to give you more details on our Policy Research Action Group.

A basic premise of collaborative research, and the key understanding of the Policy Research Action Group, is that kernels of solutions to today's social problems are already there, in communities. It doesn't take a think tank in Washington to figure out a solution, when in fact it already exists in communities. People living in communities already know something about what works and what does not. Community organizations know parts of the answer, but it is a matter of communities with similar issues talking with each other — comparing notes — and starting to look at how those solutions can be brought about. Given this view that part of the solution is already known to members of the community and that a systematic analysis of this knowledge can produce policy alternatives, we need to change the way research is done.

Traditional community research has meant an academic going out into the community, coming back into the university, writing for a discipline-based journal. Very often the community organization doesn't see any of these journals. Maybe, a year and a half down the road, they might see something. Our new model of community-based research means involving the community at all steps of the research from conceptualization to research methods design, to data collections, to analysis, to writing, and then to disseminating this information. There's absolutely no reason why we can't add chairs for community people at the research table. For years, academics have talked to each other and critiqued each other's work. There's no reason why there can't be community eyes, ears and voices at that research table, community leaders can challenge researchers and bring a healthy irreverence to the research. Heaven knows that academics are an irreverent lot, willing to challenge established notions. Why not add a few community leaders, who are no slouches when it comes to challenging the status quo?

What we are doing in this new model is expanding the definition of "peers." Within the university, we talk about peer-reviewed articles and peer-reviewed research. We are just broadening the definition of peers. There is no reason why practitioners and community leaders can't be involved in policy research as peers. In fact, without that input from outside academia, you only encourage disciplined-centered arrogance. The idea

that policy research issues must be defined only by sociologists or psychologists or economists is wrong. This discipline-centered activity has a tendency to produce research which goes off into the clouds and is irrelevant to communities.

This is not to say that all research done within academic disciplines is useless. Some of this work written with academic jargon is useful and needs to be translated into everyday language. Academics involved in collaborative projects can serve as translators. There very often are bits of useful information in what might look like obscure articles. At the same time, collaborative researchers need to write in a style understandable to people both inside and outside academia.

As part of this new collaborative model, the community side also has to recognize a few things. There is a need for the community to recognize that what may seem to be overly complex standards of research produced a legitimacy that then makes policy research more powerful politically. Also, faculty often need to publish to get tenure and get promoted within the university. Providing some leeway so that university-based researchers can collect additional information or publish versions of policy reports in academic journals is also important.

The success of the Policy Research Action Group has been in part the product of trust between researchers and activists that has been built up over the past five years. This is a trust built in the process of working together. PRAG is a group of about 25 people, half of them academics, half community activists. PRAG provides neutral space — a space that's not in the university and not in the community. It's a common ground. It is what has been described as "free space."

We are working to better utilize the progressive research capacity in the city. Very often in a city like Chicago there may be a community organization on the South Side or the West Side that wants to do research on a particular issue. However they may not know where to go, in which of the many universities, in which of the many departments, to find faculty or students interested in working with them on the research. PRAG seeks to find a good match between a researcher who is really interested in doing what a community needs to have done. So we're trying to provide a matchmaking service so that we can more efficiently use the resources we have. We are also trying to get beyond the progressive "old boys" and "old girls" network. One of our goals is to enlarge the number of people who do progressive community-based research. To expand this network, we are

bringing new people in, younger researchers who will continue to do this. This is one way of building a significant new capacity.

PRAG currently consists of three core universities — the University of Illinois at Chicago, DePaul University, and Loyola University Chicago — and about 15 community-based and citywide organizations have been involved in the process. We have supported over 120 collaborative projects over the past five years. We fund and support these collaborative projects in the form of providing undergraduate and graduate interns, graduate research assistants, and apprentices — staff or volunteers from one community organization who will work with another community organization on a policy research project. We have provided small grants to projects. More recently, we're getting whole classes, for example a methods class, to work on projects as part of their semester curriculum. What we are doing here is growing new collaborative researchers and providing a new model of how people do research and how people relate to the community. We will not fund a project that is merely a professor's idea. The project must be a community-driven collaboration between researcher and practitioner.

One of the things we have found in supporting grassroots collaborative work is that social policy ideas can come out of local experiences, they do not always have to be developed by think tanks inside the Washington, D.C. beltway. Today, with newly available computer communications possible, local organizations can communicate with other local organizations. We are facilitating these linkages between projects in Chicago. There is no reason why local groups in one city cannot effectively communicate with local groups in another city. We have the technology to change the way policy research is done. We have the technology to strengthen the grassroots voice in the development of policy alternatives.

So rather than thinking of national policy developing out of some high powered researchers in an elite university or some one in some major national think tank, you can actually get communities talking with each other in a much more decentralized way.

Before I finish, let me give you a sense of the variety of projects that PRAG has supported. We helped the Center for New Horizons set up a "blues historic district" on the South Side. We supported the Chicago Legal Clinic in producing a manual called *Non-Profits Beware*. The clinic was discovering that a lot of non-profit organizations were getting donations of land and buildings loaded with asbestos and other toxic hazards. "Freebie" land and buildings were turning out to be million-dollar liabilities. Unbe-

knownst to the clinic, the manual got into the hands of someone in Congress and was used to modify federal legislation.

Other policy research areas that we have supported include examination of job development in recycling, community policing, exposure of immigrant women service workers to chemical hazards, community development without displacement, preservation of affordable housing, and improved access to higher education.

These are just a few of the projects we have supported, and there are also many other areas in which we need to do more collaborative research. We have just begun to realize the potential of collaborative university-community policy research. There is plenty of need out there are plenty of room out there to work together. Competition shouldn't be the word. Rather, opportunity — the opportunity to collaborate in bringing about positive change — should be the word.

Moving Forward: Seizing The Future

Struggle without vision is a journey without a destination. This plenary proposed long range goals and strategies for accomplishing them. The visions of these four experienced innovators brought a positive conclusion to the conference. We can indeed solve our problems, and a future for all of us is within reach.

CARL DAVIDSON — To me, thinking strategically, as a famous man once said, 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 statistics and projections about the situation as a whole regarding our topic today. ,

We all know that in this country we have a problem of technology doing away with jobs faster than that same technology is able to create new jobs. We are faced with a deficit of jobs. In addition, the third wave, the third industrial revolution, or whatever term you want to use for it, is 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 started with factories that are smaller but far more efficient and productive than the factories typical of our industrialization, fifty to one hundred years ago.

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

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The plenary was chaired by Maria Trinidad Rodríguez, who has been an editor of the Tribuno del Pueblo *for over ten years. A former bilingual teacher and court interpreter, she is active in her son's local elementary school where she is co-editor of a parent's newsletter called* High Expectations.

3.1 billion people. That means every year for the next 30 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 of the third world urban centers. There you find huge concentrations of population, places like Mexico City with its 30 million inhabitants, expanded by massive numbers of peasants, a "surplus population" that has had their jobs and their work eliminated by the global market, especially by American agribusinesses. 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 Jakarta in Indonesia, the population density is 143,000 or 130,000 per square mile. Within the next 25 years, we are going to have 20 megacities with populations of more than 20 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 that with what the average new baby being born would consume in other societies. The average American baby over its life span will consume three 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 something that's part of our political creed. The problem is that if we had every nation become equal to what we are right now, we would probably cause the biosphere to collapse. That's because the kinds of wasteful consumption and use of energy resources, individual automobiles, all those sorts of things would make it impossible for the biosphere to sustain a world where everybody was equal on today's standards.

If we're going to have equality, people in this country in particular 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 come about when we're talking about thinking strategically. The main conflict becomes one between the power and the 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, Gary Becker 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 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's these elites are saying is wrong with the country.

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. It means that it's normal to die early and it's abnormal to be successful. That's the underlying assumption of these economic theories that we've had up 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 basis of the economics of scarcity for the first time. The information revolution is set-

ting the conditions for an economy based on abundance for the first time in human history. 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 commodities increased, information itself has become a crucial commodity. In many ways information behaves like the traditional commodity, but there is one important difference. Information is the only commodity that 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 R. 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 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 timeframe, 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 the 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 the economics of scarcity. The problem is not a lack of re-

sources. We don't lack day care centers because of a lack of resources, when at the same time we can built 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 a failure of political will. Primarily this is a result of the collapse of the traditional liberalism that brought us to this point. But it's also part of 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 and enable us to generate new wealth. What would this mean in terms of actual policies and programs? Let me give you 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, you had a large number of G.I.'s who had been demobilized, and even with the post-war 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 say to them, go off and learn something. The veterans didn't even have 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 that this government ever did. It simple 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 that suggest for us today? It means it's not enough just to increase your welfare benefits in a system that 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 of educating oneself, 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 solution.

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 point for 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 the 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 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 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 problems of the 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 naming those 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 of our discussion on strategy. I don't expect us to find all the answers this weekend, but I hope we've made a good beginning.

MICHAEL WARR — Worldwide, the military, the police and the governments that control them are rapidly and creatively applying new technology to very old tasks. Imagine if J. Edgar Hoover, Joseph McCarthy or INTERPOL had access to today's digital technology! On second thought, don't imagine. Just replace the names with Newt Gingrich, Jesse Helms, and your local police department. If you think that the technological tools that exist today are merely the toys of yuppies and geeks, just another passing social distraction, then consider the following global and domestic applications of low and high technology.

You remember the Gulf War? It was summarized in the oxymoron smart bomb. It was also the first war to be won and censored with microchip intelligence. In the Netherlands province of Friesland, the latest 486 computers have been installed on street corners to report crimes. On one of these computers alone, three thousand crimes were reported in one month. The Dutch police are hurriedly bringing the rest of the street corners on-line, according to *Wired* magazine, and the rest of Europe is following suit.

Also according to *Wired*, in 1980 the F.C.C. eliminated all ten watt radio station licenses, thus preventing the U.S. population who does not have the resources from having a voice on the FM band. The government fee to open a small radio station is at least $50,000. A basic underground radio station can be built for two hundred dollars. That is illegal, however, and the F.C.C., with a vehicle equipped with a phase antenna array, can under optimal conditions pinpoint the location of one of these operations within fifteen minutes.

While many social theorists project a future society of information age haves and have-nots, clearly we already exist with such a polarity. Technology is not used merely to transfer information and ideas. It is used to rule. The dissemination of knowledge has evolved from a situation in which books were produced for the wealthy and information was scarce, to one in which social control includes manipulation — the presentation of selected information to as many people as possible and the simultaneous denials of information simply by not providing it. Although the conflict over ownership is a historical constant, obviously the forms of technological control

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change. Owning a printing press in medieval times would be like owning a television station today. Being published then would be like being interviewed on "60 Minutes," a privileged event, although much more accessible today. The majority of us own a television, but have not a hope of owning a television station. We have no direct control of content. Technologically, we now have the potential of a worker owning the microchip version of a Gutenberg press, providing the content and having access to a medium with which to widely distribute that content.

Whether it is low or high technology, we know enough about the capabilities of technology and science to move beyond amazement and toward using the hardware and software manifestations to transform the world around us. As with knowledge, the question is not how much of it is available, but what are you going to do with it? It is within the battle over the possibilities of transformation that a struggle over access, over intellectual property, and over the application of human values to technology is being waged.

The combining of computer and telecommunications technology with software, optical, digital, cellular, satellite and modem applications has significantly sped up the time that it takes for the potential social and economic impact of that technology to take place. Laws and legal structures, which historically lag behind their rivals in new technology, are being debated and developed at breakneck speed compared to the past. This is because the stage between research and development, market, and profit is shorter, largely because of software and microchip technology. This is compounded by the fact that technology also makes itself more available, in more markets, more competitively. All of this means, for example, that whatever data resides on police files in your hometown is accessible within seconds to any other policeman in the world with a computer and a telephone line. In the seconds that you have been pondering what the police know about you, the legal limitations to what you can or cannot do with technology that you have access to are being developed, with little input from the general public.

Howard Besser, an associate professor in the School of Information and Library Studies at the University of Michigan, projects that the information superhighway has to be a two way street. He says that for technical reasons, many designs for the information superhighway incorporate an asymmetrical balance of bandwidths, which is akin to a ten lane highway of information coming into your home with only a one lane highway going

out. If the model or design for the national information infrastructure follows that type of architecture, very few individuals will be able to become information producers. Most will be relegated to the role of information consumers.

This is a critical concern. We cannot use technology to transform society if we are simply passive users or consumers, and not actively deploying and producing technology in our own interest. The impact of technology is cross-generational, regardless of how many "I can't program my VCR" jokes we hear. Eventually most of society has to conform to a technological standard, whether it's putting an anti-smog device on our car or dumping the eight-track player simply because the record companies choose not to provide the latest Grateful Dead in that format.

Trying to inform the consciousness of a society that has evolved under the influence of information technology solely with communication tools based in transistor or mechanical technology is defeatist. This doesn't mean suddenly rejecting paper technology for screen technology. Obviously, the media monopoly has not deserted newsprint for fax modems. Instead, that monopoly is wisely using every available technology to reach every accessible audience. Becoming a high tech consumer is based on the question, "How will you be paying for that?" Thus, while the transfer from one technology to another is taking place faster than at any point in history, the ability to communicate with the old and new mediums is vital.

We are already far behind in the race for access. Over time, equal access to telecommunications technology will further democratize communication so that everyone in the world could have access to this conference. We're using the modem to communicate with New York today, but the possibility of everyone having access to this conference already exists. But since communications requires a compatible receiver and transmitter, and our society is technologically capable of providing that link, but not socially and economically organized to insure that it happens, such equal access is possible but not yet practical, because it is not profitable. Reaching every American family is more possible today via broadcast technology than computer technology. Broadcast is a relatively old but effective technology. However access is an issue here as well. We all have access to television and radio as passive consumers, but we have extremely limited access as producers of information. And the most reactionary sections of our government are working to pull the plug on even that limited access. To have such access combined with computer applications would be revolutionary

in America in terms of knowledge expansion and networking on a cultural, social and political level.

While access is critical, sharing knowledge is not enough. Something has to be done with that knowledge. Technology has to be used as a means of mobilizing millions of people and not simply as a means of transferring information to them. That is why content is so critical. Driven by the demands of the marketplace, the producers of computer technology are desperately working to move their products out of the fourth into the fifth phase of marketing and production. Although these phases are constantly regenerated in a technological sense, as products they have very definite beginnings and endings, typically going from design to production to marketing to business applications to home applications. The current concentration on moving computer technology to the home and combining office and home applications is paving the way for potentially interacting with most working class Americans, including intellectual workers, via the Internet.

Since multimedia is the application that the business world has decided will convert millions of home users to computer technology, there is a concentration on CD-ROM today. Any individual or group of individuals who want to transform American society will also have to use such applications as CD-ROM and other multimedia applications to confront and change the status quo. This is not buying into the hype. It is a recognition that America is a large, complex, and diverse society and it cannot be accessed through one medium alone. Just as books continue to be written to provide an alternative history and future ideas, such critical thinkers as Jonathan Kozol, bell hooks, Eduardo Galleano, Adrienne Rich, Nelson Peery and many others have to be accessible on CD-ROM as well as every other medium, especially, in my opinion, the public telecommunications network. Preparations, however, also have to be made for bypassing the public network when and if it is made unavailable or denied to the public.

We need a manual of the revolutionization of technology and its application to social transformation. That manual could answer such questions as, how can digital and optical technology be used to raise social and class consciousness? How can old and new technologies be used separately and in conjunction to mobilize for action? What structures can we set in place for training and for the application of technology to social change? What are the strategies for countering technological discrimination and insuring technological access, both as recipients and producers of information? The

answers to these questions will make the difference between knowing technology and deploying technology.

We know that the world's technological capabilities are out of sync with our society's economic priorities. We also know what that technology can do. It is time to apply the technology to our ideas.

Q. Are you saying everything is going to be gravy just because information is abundant? People can't eat information.

On this laptop computer up here right now, there is far more information than I could easily just pull up off the top of my mind, but I can access it on the computer. The issue is not so much one of a quantitative question as a qualitative question. What can you do with the information? Do you have access to it? How we can transfer that information into action? I'm not so much worried about how much of it is there but that I have access to it to use it in a way to transform the world around me.

Information is not edible, but the distribution of food is controlled by the ruling class, and for us to have control of the distribution of food we are going to have to use all the resources that we have to transform this society. For instance, the whole question of a society with no money says that there is no longer a bourgeoisie! So we are again talking about a transformation of our society to achieve a goal. I just see information and the control of information as the mechanism for revolutionary change, not as something that can resolve problems by itself.

SALLY LERNER — Over the past two days, I've heard many eloquent voices in the plenaries and in the workshops. Voices that were asking: How do we rescue and protect our children? How do we stop the jobs from leaving town? How can I survive without a job? How do we resist having ourselves defined and judged by others in terms of categories of race, gender, ability and worthiness that are constructed and imposed by others?

I notice that all of our voices protest against being defined and controlled by forces other than ourselves. What we reject is "power over," the

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power that enables some people to decide what most other people's opportunities, work and lives will be.

How has this come about, this power over others in our world? As you know, this is the history of humankind. It's about conquest in many, many forms: force of arms (the sword, the gun, the whip, shackles, beatings, imprisonment, torture) and through such force, control of land, of the means of production, of work, shelter, food, wages and the means to live. Most of us do not control any of those things in any real way.

Coming more to our era, although not entirely, we see finally the force of the mass media, the instruments of indoctrination, of manipulating and manufacturing both desire and consent — and thereby of defining who we are, what we should want, and who among us is deserving and who is not. These are sometimes called the myths or the stories of a culture. In our time, they are not conveyed by our elders, not by wise people that we have selected to do so. They are almost entirely conveyed by the mass media. Even should you care to fight or rage or protect your children against the mass media, it is nearly impossible to do so.

Even as we speak, these same media are invading our schools. While that's happening, virtual reality, of which we saw a very colorful demonstration the other morning, looms in arcades and in the ever popular home "entertainment" that everybody would like to sell us. This, I believe, will soon threaten total obliteration of our children's potential selves.

Now, that's of course the bad news. There's been a lot of good news. We are healthier, in many ways, than we were a hundred years ago. More groups are less oppressed, more aware, more educated, and have more opportunities.

But we still have what the topic of this conference is all about, what I have come to see as very harsh new realities to face that are at their base questions of power, questions of who decides what our lives will be like. We are facing structural unemployment of unprecedented scope. It is deriving from an almost inextricable march toward needing less human labor to produce both the products and the profits that the private sector, which controls everything, wants. If we don't face that and take the message back to the people upon whom each of us has influence and at least discuss it, then there is a great danger. We will delude ourselves and the public and the politicians will continue to delude themselves or just plain outright lie.

Now I would like to just talk a little bit of strategy. These are really difficult things to talk about because no one has any answers, so strategy is

just the right word. How might we come to grips with these problems in ways that would allow us to have some hope for our children and allow them to have hope? Will this be a better world or a nightmare world? How can we take control and have power over our own lives in the face of these new realities of technological change and economic globalization?

Can it be at gunpoint that the majority of people take control? I believe that history and current events suggest that lasting peace and justice and fulfillment of human potential do not come by this route, even when it appears briefly to succeed. I wasn't always but I'm fairly sure of it now. If you go that route, patterns of subjugation simply take on new forms, and some (based on constructions of race, ethnicity, and gender) barely change or reverse so that the other guys are down.

Then how do we move forward? I believe the answer can be approached in this way. First, break dependence by creating self-reliance. I don't think it's ever possible to have power and control over your own life as long as you are largely dependent as an individual or a community on the largess or whim or even perhaps the self interest of someone else. We heard such excellent examples this morning of how people are trying to do just that in Chicago. And there are examples from all over the world, so this is not a particularly revolutionary nor groundbreaking idea.

It's really important to remember that as long as you're dependent, you'll never have control and power. You'll never be your own master. So, to the extent that any group that organizes itself to be a community, particularly at the local level, and becomes more self-reliant for basics such as food, shelter, health, safety, and education, to that extent people take power.

What does this look like? Community-owned banks and loan programs: you have to have your own source of seed money and capital, otherwise, forget it. We learned that with redlining and some other charming practices. Barter systems and community money: these are nice interim things to have, and they show people that they have some power. There are lots and lots of models around. Import substitution is an interesting idea. Look around your community, much as Orrin Williams was saying this morning, and find out what you are importing from who knows where at great environmental expense and damage. Maybe you could make it in your place, maybe you could create jobs, just as you could create jobs by renovating and copying and doing energy-efficient things. Workers' and buyers' coop-

eratives have worked better in some cultures than others and they have always been the only way to go if we really want to take control of our lives.

Perhaps community-based non-profit organizations, what Jeremy Rifkin calls the third sector, could deliver health care and education. Perhaps community-based policing, but to my mind, much more urgent and vital is a community attempting to take control and to move toward a better and more empowered future. Most of all, there must be intensive community attention to youth in all of the activities that we've noted above. We must be integrating children from the very earliest age, as the best part of their education, into positive community-building activities that would reward their effort, build their confidence and capabilities and most of all help them to develop a clear vision of what meaningful, uncoerced work is all about, who they are, and who they can become in a revived community.

We do very poorly by our young people in general, in every social class, in almost all communities. We did badly by them even before we were all rushed and working three jobs and having latchkey kids. We have never known what to do with our kids. We have looked on them partly as property and partly as an annoyance and partly as something that we love so desperately that we don't really even know how to deal with them. I think plugging them into real life is the key.

All of this takes vision, energy, persistence and hard work. To build lasting self-reliance and community viability also requires resources, including money. You can get recycled lumber and all sorts of great things like that and do a great deal without very much money, but eventually you will need to take the second step. The first step, remember, is to become less dependent and more self-reliant on the ground with solid achievements to build on. The second step must be to organize politically and inclusively to demand the just distribution of both the material (including technological) and intangible social product of all our human striving and accomplishments over the many centuries. That this is so unequally distributed is simply unacceptable. Political organization is required to acquire the power to demand, successfully, that changes take place in society.

The power won't be won, I would argue, unless "we" become a more inclusive "we." This conference has been a good place to see this happening. We widen the circle of people who understand their own need to take power over their own lives. We widen the circle of those that we call brothers and sisters.

A third and final consideration: what goals and objectives should our inclusive political organizing be based on, in this world of new realities where more of us and many of our children will not even be allowed to be wage slaves?

I believe that we must base an organizing strategy on the demand for a adequate basic income guaranteed to every individual citizen. This social wage, as Rifkin and others call it, could be delivered to every individual without strings. More likely to be accepted is delivery of such a social wage through the creation of non-profit organizations and individual tax credits tied to the performance of the needed work in this society. This includes child and elder care, building affordable housing, environmental protection and restoration, preventive health care programs, community food production, lifelong learning, and the realization of human artistic and spiritual potential. This is what life is supposed to be about. We were never meant to be used by others as machines.

This could be financed in a variety of ways: by collapsing welfare bureaucracies, streamlining and diversifying education, cutting out aid to dependent corporations, taxing the corporations responsible for pollution, taxing financial speculation and other bads.

As complementary goals to an organizing campaign based on a guaranteed basic income program, which provides a floor of decent living for everyone which we can well afford, we would focus on affordable housing alternatives, sharing what waged work there is through shorter work weeks or work years or shared jobs, and the many other options which are being fully discussed now in very encouraging ways. Ideally, worker control and ownership of community-based business and industry would become the norm through various cooperative arrangements.

None of this is easy to design nor to sell politically. The devil is always in the details. But I believe we have no choice but to move forward on this path, building confidence, self-reliance and the strength to seek power as we go.

Q. Could cooperatives help solve our problems?

A culture has to be developed in order for coops to succeed. Our education would have to be very different in order to make cooperatives (particularly producers' cooperatives) successful, because what you need is egalitarianism. You need initiative. You need curiosity. You need constructive debate. You need to have learned how to cooperate rather than com-

pete within a group. My own sense is that it's a much preferable way of conducting business, having been exposed over the years to the 4,000 breathless business books that come out every year discovering all over again such things as, if we treated our workers as people, we would be much more successful.

NELSON PEERY — 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.

Nelson Peery has been an active revolutionary since the 1930s and helped to found the League of Revolutionaries for a New America. He is the author of the path breaking Entering an Epoch of Social Revolution *(Chicago: Workers Press, 1993); his most recent book is the memoir* Black Fire: The Making of an American Revolutionary *(New York: The New Press, 1994).*

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 scientist 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.

As the applications of these new scientific marvels to the workplace expanded, a new economic category, the structurally unemployed, was created. A hundred and fifty 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 work force 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.

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 pro-

duction. 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 and economic.

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 ten 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.

Part Two

Workshop Sessions

The New Biology

Biological research has made great strides over the past two decades. Now it is possible to split genes and manipulate the basic units of life through genetic engineering. This panel discussed issues facing workers in this field. Should we allow new life forms to be patented as private property? When and how should this new technology be used to manipulate human life? How will the risks of bioengineering be avoided? How will the benefits get to everyone?

Fred Cohen first described his work in biology as contributing towards understanding what are the molecular events underlying learning, memory, and cognition in general? His work also relates to finding ways to treat people pharmacologically.

Cohen gave an overview of U.S. spending for science. In the U.S., science was advanced by the federal government. President Eisenhower oversaw a massive infusion of funds propelled by a fear that the country was not staying ahead of the Soviet Union. From that point on the government remained concerned about what the Soviets were doing and how we could make military advances. Today, in contrast, Clinton's proposal for the science budget, which is more optimistic than Congress will pass, is to allocate less than one percent of the federal budget to science. This is the lowest figure since the systematic federal emphasis on science began in 1958. And remember, Cohen said, the scientific enterprise today is massive, not like in 1958.

This is going to affect the youngest people, Cohen pointed out — the ones without tenure, the post-doctoral researchers, the undergraduates. Will scientific research careers make sense for them? It also hurts the science going on in the lab. People are becoming more conservative, thinking about how their research will look when they're up for another grant? Will they be able to get another job?

Chair and panelist: Jonathan King, Department of Biology, Massachusetts Institute of Technology, Cambridge, Massachusetts. Panelists: Fred Cohen, Department of Biophysics, University of Illinois at Chicago; and John Marsh, graduate student, Department of Biology, University of Illinois at Chicago.

When Cohen began his career he was doing, in his words, "really crazy research" that led ultimately to some very interesting work. In science, you want a certain amount of creative chaos to force a creative spirit. That's being squelched by today's tight economics. It's unfortunate, because just ten years ago people weren't even dreaming of the scientific possibilities that are opening up today. Biology has never been more fertile. The convergence of biotechnology, molecular biology, and computer technology is allowing researchers to approach fundamental problems, previously inconceivable problems, yet the funds and the security to be creative are not there.

Jonathan King pointed out that biomedical, physics, computer science research is intimately connected with higher education in the United States. As a professor at MIT, congressional appropriations pay part of his salary. Graduate students and undergraduates do his research. It's been made clear that if you want new knowledge, you have to couple the research with the education of scientists. University of Illinois at Chicago receives overhead on the grants that come to a given university lab. That overhead pays for the teaching assistants, the copy machines, the electricity. The two functions, research and education, are inseparable and the funding for research has buoyed funding for higher education.

Then why do the scientists and the new graduates have to scramble for jobs today? Consider how expensive — and dangerous — it is to have highly educated, unemployed people, King explained. In Massachusetts 20 years ago, the computer industry said it needed more computer scientists. The industry supported new campuses opening up computer science departments, including University of Massachusetts and others. Now the computer industry no longer supports an expansion of higher education. Their position is, let's cut down on the number of people we're educating, for economic and political reasons.

King also commented on the moves towards expanding patents, particularly to allows patenting of new forms of life. Thomas Jefferson said that patents were a form of monopoly and that the United States had just fought a war to throw off monopoly power. Jefferson was against monopoly, but in 1789 it was hard for inventors to make a living, and not wanting American inventors to starve, he argued to give them a local (i.e. U.S.-only) monopoly on their inventions. Patents were to keep inventors from suffering. This is not their purpose today.

Recently the Supreme Court, in a five-to-four vote, ruled that you can patent genetically altered microorganisms. There were those of us who opposed this, as it was setting a precedent, King said. All molecules, cells, species on the surface of the earth, certainly all human beings, are the product of millions of years of evolution. The privatization of that stuff is not in our interest. If I have patented a gene, I'm not going to tell any other scientists what the sequence is, because I'm going to make money off my privatized knowledge.

Right now nobody owns the genus bovus, which is the cow. You can own a cow and you can own a calf from that cow, but you cannot keep somebody else from raising cows. Part of the new patent law is the privatization of a whole type of organism. Pharmaceutical firms will have the patent on a genetically modified mouse, on one mouse and all its progeny, in perpetuity.

John Marsh related how his parents came through this system some time ago, and they and their classmates all got jobs coming out of the university. But when he started graduate school, things were a lot harder. Would he be funded the whole way through? He got lucky and got funding at the University of Illinois at Chicago for five years. Another stage is getting a job. Ohio is limiting by state law the number of graduate students there can be, saying that any more and they won't be able to get jobs at the end of the process. So as he is in process towards a doctoral degree, it looks more and more like his choices have changed. He can't assume he'll go into academics. He might have to be an entrepreneur or a contract scientist on five year stints. That's the New Biology as you're going through this process.

He also spoke about the narrowing of areas of research and the pressure not to be creative and experimental. His advisor, a brilliant scientist, often has to spend all day telling the government why what he does is important, when he'd rather be doing the science himself.

Other problems arise from hazards in the labs and hazards created in the lab — from chemicals dangerous in their pure form, paper and plastics piling up in landfills to genetically engineered plants that are resistant to natural predators, insects, whatever. These plants all have pollen and could grow up anywhere; a particular species of corn, say, could take over a geographic area.

One participant related that in Denmark, citizens are able to contribute to decisions about whether a particular technology will be introduced in the country. There was a decision made by a combined citizen-scientist-

bureaucrat panel to not allow the new bovine growth hormone (BGH) into Denmark. Is it possible to erect those kinds of structures in the United States? he wondered.

BGH and similar issues are handled by the same process by which we handle other conflicts in this country, said Cohen. The special interests dominate. The question is, how as scientists can we effectively partake in the political process and have our interests represented. Here we've got our great educations, yet in Washington the National Rifle Association lobbying effort puts our to shame. We aren't very effective in the state legislatures, either.

King added that without universal education, we won't have the theater for the knowledge we develop to be used. To base BGH policy on the facts, you have to have a significant fraction of the population understanding agriculture and resistant strains, and right now we don't have that. Today's solution is to have $10 billion to build prisons, but we could have $10 billion to educate and do research.

The Federation of American Scientists has full time lobbyists on staff and put its members on a rapid response system, King said, but they and the other professional societies are focused on the number of grants. They have no position on general employment, on health care. Who represents the views of the biophysicists, the professors and technicians and graduate students and people who sell lab supplies? Our profession has not lived in the real world. Within the professional societies, people are awakening to the larger issues that we will have to take charge of for science and for scientists to be able to progress.

Robots and Political Economy

If human labor is the yardstick for measuring the value of things, what happens when robots, microbes, and microprocessors do the work? If people are not working, how do we distribute food, housing, and other things people need? When products can be replicated ad infinitum by digital machines, what is the meaning of "property"? Are new classes coming into existence around new technologies? This panel looked at some of the important issues behind the practical problems posed by new technologies.

James Ho began with a prosperity dilemma and a productivity paradox. Fewer workers are needed while companies use technology to create more and more product. Meanwhile productivity has not increased dramatically through the 1970s and 1980s, because we've been going through a process of learning, experimenting, re-thinking how work should be done in the new technology environment. With fewer workers required to produce more things, do we need to rethink the whole arrangement? Do 20 percent get good jobs, in high tech, and 80 percent get nothing? Why pay CEO's so much — in some cases, even when the company is losing money? Can we come up with a reasonable way of sharing the pie?

One option is for the government to legislate that nobody can make more than a certain amount. We have evidence from history that we may not want to go that far, where everyone has a job, but that is not good for overall productivity, and prosperity goes flat.

Another option fits in with Jeremy Rifkin's presentation to this conference: change our values, set other goals in life besides having a real, full-time job. Changing our values, quality time could become more important and prosperity could be redistributed.

Chair: Jim Davis, Computer Programmers for Social Responsibility. Panelists: James Ho, Department of Information and Decision Sciences, University of Illinois at Chicago; Jerry Harris, Third Wave Study Group and cy.Rev: A Journal of Cybernetic Revolution *editorial board; and Bruce Parry, political economist.*

Jerry Harris then reviewed Alvin and Heidi Toffler's three wave model, that society is moving from agricultural society, to industrial-based society, to the cybernetic or information society. Each wave is a combination of physical and intellectual work, but in the cybernetic society, intellectual work comes to dominate. Less labor, less energy, fewer resources are required to make things. Technology replaces human labor.

Contrary to Karl Marx's formulation that labor creates wealth, technology and nature also create wealth, Harris said. Capitalists wouldn't invest in technology, he argued, if it wasn't more productive than workers. Corporations expropriate knowledge from the worker, put it into a machine, and get rid of the worker — technology is a more advanced form of labor.

Today, products are cheap to produce, but even more than low prices, we see high corporate profits. Companies must use technology to accumulate profits, must grow or die in the market competition. Capitalism restricts how new technology can be used, and undercuts its actual potential as far as providing what we all need and want.

What is the value of information? How do you account for intellectual labor? How do you value the output? It may be obvious for a steel mill, but not for an intellectual worker. If you sell information, you can still keep using it. This is different from an industrial economy. To expand production today, you add more knowledge (software, data) to your hard drive. In the industrial system, you'd need more factories, raw materials, workers. This is a radically different system. What is capital stock today? What is the value of a school such as MIT? These are some of the questions that need to be answered.

The labor market is also changing dramatically. Home work, part-time work, contract work — 60 percent of new jobs are contingent labor. The largest employer is Manpower. A worker can be as productive in 20 hours as he or she was in the old system in 40 hours, so we're turned into temp or part-time workers with no health care. The standard of living for U.S. workers peaked in 1973. This change begins to destroy the commodity system.

We need to disconnect time and wages. We may need to shorten the work week and redistribute work. Technology is used to create wealth for a few and poverty for many. We need to put technology to work for the many.

In this new environment, how do capitalists make money? They create wealth without production via speculation. Fifty times the amount of

wealth circulates in money markets versus manufactured goods. This money is just information that circulates in a 24-hour-a-day market. The recent collapse of Mexico's economy is the best example of what speculation produces: a handful of speculators can drive the economy. Who pays when speculators pull out? Peasants, workers, the middle class. The market is an outmoded, second wave idea.

The capitalist market destroys the potential of the Third Wave economy. Capitalism needs information to be owned, which holds us back. Either accept that 20 percent of the world's population will be well off, with 80 percent living in poverty, or recognize that the market is an outmoded Second Wave idea.

Bruce Parry dealt with the question of value — commodities having value, on the basis of which they can be bought and sold. The question of value really only has meaning in the industrial period, and we are going into a period where value will cease to have meaning. Right now we are in a transitional period that will determine the outcome. Value comes out of the production of goods by human beings for sale. Value is realized in circulation. Some value is returned to the worker as a wage, and surplus value becomes profit. This is the basic Marxian model.

With electronics, the cycle where wages are paid to workers and workers use wages to buy goods is broken. If robots are producing with no labor, no new value is added in production. Totally automated production is not here yet, but it is the direction we're headed in. Today, robot-produced commodities with no value are placed on the market next to objects with value. It is this contradiction that is disrupting the system.

Since value is a measure of how humans interact, this disrupts our entire society. We see the rapid centralization of capital, with fewer producers, and further rationalization of production. We see the market shrinking. We see society's class structure changing. We see a class of people who will not be able to find their way back into the work force in the present structure. We see corporate taxes cut and welfare payments, education and so on attacked. Absolute wealth piles up at one end of society, absolute poverty at the other. People are not cattle, and are fighting back. So people are fighting for a new system that can distribute goods in the age of robots. The only force capable of making this change is this new class with no relation to today's means of production and nothing to lose by changing things.

Access to Information

Information comes in many forms: world news, entertainment, nutrition guidelines, health warnings, user manuals, train schedules, job opportunities, community events, and so on. Information is necessary for survival. As money becomes the critical factor in gaining access to information, are we splitting into a society of information haves and have-nots? With more information travelling over computer networks, are community computing centers, freenets, and other types of community networks a solution? This panel, organized by the Chicago Coalition for Information Access, discussed what's being done to wire all of Chicago.

Doug Gordin's work as a graduate student is networking high schools and middle schools around the country. This fits into his model for education for the future, where the student is a doer instead of a container to be filled. In his work he looks for student to be involved in long-term multi-person projects, using all sort of resources and communities.

Most classrooms lack telephones. Students rarely write letters. Today's learning, his kind of learning, requires that students have access — to other students, to teachers, businesses, local governments, and access beyond their geographic area. The community has to be involved in educating children. That means computers and telecommunications.

But it's not enough to just add computers and a network to an impoverished school, and walk away. Students need access to a lot of material resources: newspapers, telephones, stamps, desks, science materials, chemicals, burners, pulleys, wheels, plastics, microscopes. In a classroom which is bare expect for desks and chalk, learning cannot really go on.

The very nature of work is changing. Sophisticated technology takes procedures and encodes them so they can be reproduced automatically.

Chair: Carl Davidson, Chicago Coalition for Information Access, Networking for Democracy. Panelists: Doug Gordin, Ph.D. student, Northwestern University School of Education and Social Policy; Antonia Stone, Founder, Playing to Win Network, New York; Marilyn Borgendale, Systems Librarian, University of Illinois at Chicago; and Sprite, Autonomous Zone.

Rifkin argues that this leads to reduced work. Gordin argues that the one constant is labor, that we will never replace work because the technology will never have human creativity. Formerly, the only way to share one's expertise was to either share the product or train others in the process. Now we can embed these processes in computers, thus multiplying people's ability. We just need to focus on smaller systems, not larger ones, with closer gaps between people and more equal distribution of wealth, including across school districts. This is a goal we should set ourselves. Gordin referred people to the writings of E. F. Schumacher.

Instead, the Chicago Public Schools has done things like eliminating arts in the schools! They've made a few subjects sacrosanct and set them to fighting amongst themselves for resources. With a new paradigm for learning, dance can take you into learning anatomy, physics, and so on. Computers and networks can foster change in this direction.

Antonia Stone pointed out that even in a room bare except for chalk, learning will take place if you have people who can use the chalk, and do anything that will make connections. Technology can enable us to make connections. That's how it is enabling or liberating.

This conference program asks, How can we put technology to work for our future and our children's? It has to empower us to do things better that we want or have to do. It has to enable us to do things we don't know we can do. But from technology working for us to securing a decent future is a big distance. That's why she started Playing to Win, to begin to travel that distance. Playing to Win is an umbrella organization of local community computing centers ranging from two or three machines all the way to 50 machines, at after-school centers and elsewhere.

The operating principles of Playing to Win are: Everyone who wants to should have access, and to have access you need a computer, yet not everyone has a computer. Second, possession or access to a computer isn't sufficient. People have to help you, teachers (or someone has to help the teachers), people from your neighborhood, people who know your interests and needs and can show you how to do what you want to do. Third, you have to make the benefits of information technology obvious, because they are not obvious.

Marilyn Borgendale addressed the idea that pretty soon people will be wired and they'll have all the libraries of the world at their fingertips and we won't need librarians. She feels that whatever technology can do in that regard, it must, but that librarians will still be needed to guarantee people

access: what do they want or need, is it in the collection, is it in a form someone can receive, and so on. She related one of a set of librarians' visions of the future, where a Native American student can travel by computer to the world's museums and he can see all his tribe's artifacts, rotate them, listen to a guided tour by the curator and to reflections from tribal leaders, and repossess his cultural history in order to have a better hold on his future. [Discussion in the workshop took that forward to where his tribe would have the real artifacts, letting others see them "virtually."]

So a librarian's functions that need preserving in an information age include making sure that material is selected, preserved, organized and distributed effectively to people. Technology allows for an explosion of ideas and exploration — if information that has only been accessible to a few can be accessible to all. How to solve the problems of preserving electronic information? Programs, databases and bulletin boards have already been pulled from the Net; in one case the only existing record is a videotape made at the University of Illinois library of someone using a now-lost database. How to design things so that you can walk up to a computer and get what you want by simply saying, "Give me ... ?" We can work on making information "smart" so it can find those who are seeking it.

But as the information age has been proclaimed, funding for libraries, for literacy programs, for the National Endowment for the Humanities, keeps going down and completely out. Access to information isn't just wires. It's a network of people. We have to see that everyone is included. Is the public having the say. Will the Internet be interactive? Can people who've been pushed out of the economic process come right back in, through having access to information?

Sprite has been involved in establishing an infoshop in Chicago called the Autonomous Zone. Their idea is to get information out so more people can take collective action to solve problems. The infoshop includes a free school, a library and bookshop, meeting space, and a connection to the Internet. They've hooked up with other infoshops around the country, and within Chicago to other youth subcultures, hip-hop, rap, punk, all to get people working together. They're helping a community center on the South Side, Nkrumah Washington Center, get on-line, planning out how to use computers to teach kids and adults who are hostile to other teaching methods and want to use computers to get around that. A local hip-hop center is interested in starting another infoshop in Chicago.

They have battled having no money. They have also had to battle people's alienation from technology, a fear of dependence on technology. But running counter to that is a great deal of interest in zines, in doing it yourself, in pirate radio. He's been working on getting hackers to turn to helping people get access.

Sprite sees the gap between the haves and the have-nots getting wider, but the door open for ways to overcome that — but only for the time being.

Discussion opened up with realizing that there are many avenues to expanding people's access to information technology, and turned to the challenge — that Congress and the telecommunications industry and others are making decisions that could threaten this process. The telephone companies want us to pay them for the time we're on the information superhighway, whereas now you can "talk" over the Net with someone on another continent without any concept of being charged for that. The Internet, participants felt, is a social good, a social infrastructure, and people have rights to it.

So powerful forces are "taking a new thing and fitting it into old model," Antonia Stone commented. "There's a tremendous potential, making available to the world a lot of experience, creativity, interests and participation. ... We have to promote this or we'll lose it."

Printing and Publishing in the Digital Age

Chicago has historically been one of the world centers of the publishing, advertising, and media industries. Probably no other field has been more dramatically changed by new technologies than communications. This panel discussed current and future trends, and how workers have fared in the "digital convergence."

Chris Molnar writes under the name Diamond Jack. He started writing with an anonymous name and outside the established media because he felt censored and attacked for what he wrote. The *Irish Echo* and the *Irish People* wrote about his exposé of a government agent infiltrating the Unification Church which also involved the Irish liberation struggle. Eventually the story Chris wrote saw the light of day in the *Chicago Tribune*, but only because of the controversy.

Lumpen Times practices an anti-copyright policy; they encourage people to reproduce the information and ideas from the paper, but to credit the source.

Liane Casten showed the workshop a list of stories of hers which have been downloaded by other people or organizations off of private databases, without her knowing anything about it. Businesses have hired people to type in what took her months of hard work, and they then download it to customers for a fee, say, $8 by fax or $3 by electronic retrieval. She gets no royalties, nothing. The National Writers Union calls this practice piracy.

It's an erosion of the rights of writers. Writers and publishers used to sign a contract giving the publisher only the right to be first to publish a

Co-Chairs: Mary Ann White, Printer's Row Bookfair and Chicago Coalition for Information Access, and Lew Rosenbaum, Guild Complex and Printer's Row Bookfair. Panelists: Chris Molnar, Lumpen Times*; Liane Casten, freelance investigative journalist and member of the National Writer's Union; and Dan Kaplan, Interactive Services Manager,* Chicago Reader.

piece in North America. The writer could then sell and resell that story, perhaps with a different lead or geographical focus, or reworked in some other way.

Her union is working to identify who is doing the piracy and what they're pirating. Three major writers, Alice Walker, Isabel Allende, and Jessica Mitford, have each asked Information Access Company, a big on-line full-text databases providers, for an accounting of the downloading of their works. They have gotten no response. Meanwhile, big publishers are offering lesser-known writers what Liane called "contracts from hell" that specifically take the electronic rights to their product away from the writer. Time Inc.'s contract for freelance writers and photographers gives full electronic rights to the magazines, not the creator, while their on-line edition of *Time* magazine moves ahead. All the "copyright industries" — publishing, recording, filmmaking, and video production — account for six percent of the U.S. gross national product and enjoy more than $36 billion in foreign sales annually.

The National Writers Union has taken publishers to court on this issue and is moving to establish an electronic rights agency for writers, photographers, screenwriters, news writers. One proposal is modeled on the ASCAP, the music royalty sharing system, and it's called MADCAP, Magazine and Document Choice and Profit. One electronic database company in Denver is working with the union to develop a prototypical royalty arrangement. But Information Access Company has refused to meet with union officials and claims to have licensing agreements with magazine publishers. The National Writer's Union feels these agreements are illegitimate.

Casten sees this as the same thrust as big corporations rooting for NAFTA and GATT approval — they will take the profits while they control all expenses, including the cheapest labor they can find.

Dan Kaplan spoke about technology and jobs in the newspaper industry. His own job, developing telephone and on-line products at the weekly *Chicago Reader*, didn't exist anywhere in the newspaper business five years ago. The growth of new media ventures such as this has provided some new jobs, but in no way does this make up for the losses.

Printing is the oldest of industrial processes. The International Typographical Union successfully controlled the introduction of new technologies for years, taking responsibility for training the workers at each technological leap. But the unions treated the introduction of computers as an-

other automation, not as a fundamental change in the way publishing would be accomplished, and this hurt them.

Computer typesetting as introduced in the 1960s cut labor costs by 40 percent and meant that typesetting and printing could take place at great distances from the market. The *Los Angeles Times* and the *Oklahoma City Times* were early adapters of this technology and did not have strong unions. Strikes elsewhere proved ineffective in protecting jobs; the editorial staff and managers were able to put out the paper themselves. Many papers went out of business. Only in the United States could changes of this magnitude take place without first discussing the human questions. In Finland, printing unions and publishers signed contracts that said no one would lose jobs to new equipment.

Over the 1980s and 1990s, the demand for print materials continued to rise (even through newspaper readership fell), but the system was more efficient and far fewer jobs were needed. By 1996, the *Chicago Sun-Times* will be fully paginated, meaning there will be no more production department pasting up the pages. The entire process up to the printing of the plate that goes onto the presses will be done through desktop publishing. Production people are being retrained and offered other jobs within company or early retirement packages. Any hiring will be non-union desktop publishers.

Today, more than 200 daily papers and nearly all the alternative presses have voice mail "talking personals" or some other interactive service. America Online includes 27 newspapers and magazines. The World Wide Web includes references to 35 newspapers and 37 magazines. The printed newspaper is quickly becoming a gateway to electronic information; the *Chicago Tribune*, for example, has a minority stake in America Online and provides a lot of stories on-line. Writers' jobs are also affected by interactivity. Will a journalist write a controversial story if he or she knows that their e-mail will be flooded with responses?

Discussion then centered on the difficultly of making money off writing when it can be duplicated ad infinitum. Don Goldhamer asked if there couldn't be some other solution in the direction of the patrons of the arts, where the value of creative artists is recognized and writers and others are supported to do their work. Ultimately, he said, the technology is going to defeat any other approach. Liane Casten agreed, but added that if the union can get her $1 out of $3 for each electronic download of her story, she'll be glad for it.

Another participant asked, if you can download an entire book from the Web onto your computer and print it out, if you can write a book and upload it onto the Internet, then who'll need to go buy any books? Casten responded that those with access to the Internet are still not the total population of this country, so we are eliminating from the discourse those who can't afford a computer.

New Technology and Our Workplace

New technologies are transforming the contemporary workplace. Every job that is not being lost is being redefined, reinvented and "reengineered." Workers face increased pressure to be more productive and more cooperative. New trends like telecommuting, "mobile computing," and electronic monitoring are changing the workplace. Are workers better or worse off? This workshop discussed these developments and look at strategies for dealing with them.

Beverly Addante, who designs remote work arrangements, described workplace trends: work at home, hoteling (where a worker reserves an on-site office for particular hours or days but has only a locker to call his or her own), remote work centers where workers from different companies put in regular hours away from their own company. All these are driven by technology.

People have worked in telephone booths for some years, but affordable technology allows us to work in lots more places. There are vans which have offices designed into them. There are dramatic cost reductions — IBM, Xerox, Dun & Bradstreet are each having several thousand people work at home. Dun & Bradstreet's occupancy costs are $300 million per year; telecommuting and related efforts will save them $30 million. IBM has four employees for every workstation in their mobility centers. They plan on going to six to one.

Dual career couples, changes in the family, even the Clean Air Act mandating getting cars off the road is driving this. Addante is seeing more involuntary telecommuting or hoteling. People also work at their customers' offices.

Chair: Millie Ankrum, Organizer, American Federation of State, County and Municipal Employees Council 31. Panelists: Beverly Addante, Telecommuting Works; Don Goldhamer, Chicago Committee to Defend the Bill of Rights and Computer Professionals for Social Responsibility; Roy Singham, President, Thoughtworks; and Claire McClinton, United Auto Workers Local 659, Flint, Michigan.

Kentucky used to be an agricultural and coal mining state. They have multi-use centers that serve telecommuters, the self-employed, others, with a ready-made technology infrastructure. Kansas, North Dakota, Colorado, California also have telecenters, some funded by the federal government. The future, Addiante concluded will include traditional offices as well as all these other arrangements.

Don Goldhamer described new information gathering, monitoring and surveillance of job candidates and employees. With computer networks established, it is possible for employers to observe and record everything an employee does in the workplace. Legally, employers are entitled to do this and to use that information as they see fit, unless they have raised workers' expectations about privacy by making formal or informal agreements. In one particular case that stands out, the courts ruled against having a hidden video monitoring system was in the employee washroom. But new construction in conference centers and hotels includes these monitoring cameras.

Many companies feel entitled to conduct background checks, polygraphs, drug tests, personality tests which can be only marginally related to being able to do the job.

Roy Singham explained that his company helps financial institutions reengineer processes and redesign systems to reduce the time it takes to do something such as process an application or respond to a customer. They produce systems that dramatically increase the productivity of labor. Today five percent of technology expenditures by American corporations go for telecommunications — with vendors, customers, other third parties — but by 2002 that figure will be fifty percent.

He sees a dichotomy emerging from this efficiency: the simultaneous creation of the unemployed and the overemployed. The typical work week for people in his industry is 65 to 90 hours. The mobile (i.e., working anywhere) work force, which is a little different from the telecommuting work force, is still a small percentage of the total work force, so the process is barely underway.

Clearly, the quality of life for those unemployed is horrible. What is the quality of life for those who remain employed? Machines work 24-7, 24 hours a day, 7 days a week. That standard is being extended to individuals, especially the top 25 percent of the work force. His small PDA (personal digital assistant) keeps him attached 24-7, receiving e-mail the way a pager beeps you with someone's phone number.

By 2010, about two billion people will be connected to the Internet — a third of the world's population. As a whole, the tendency is towards a worldwide reduction in employment, but over the next five to seven years there will be an increase as this technology is developed and applied.

Claire McClinton showed a poster for a robot which read, "Some jobs aren't meant for people, like lifting a 400 pound engine block." At her pressed metal plant, she said, you see the before and after in this leap in production. One work group uses eight workers to make a line change in two or three hours. On the other side of the plant, using state-of-the-art equipment and programmable controllers, one or two workers change the line in less than five minutes. She's seen where workers have to fight for fans when it's extremely hot, while the robots are installed with cooling fans and air conditioners to keep them from overheating.

In one situation, three different work groups fought each other to be the one to repair the robots. They came to a consensus that each group would repair a different type of breakdown.

In 1972, 350 workers were dismissed after the first auto manufacturing robots were installed in Lordstown, Ohio. Angry, they smashed robots and cars. General Motors praised robots as saviors; GM had 302 in 1980, 1,758 by 1982. Chrysler had 4,500 workers making 800 subcompact Omni Horizons a day at their old Jefferson Avenue plant. At the new plant, 850 Jeep Cherokees are made each day with less than half the former work force. A department of 30 welders — always with burns and repetitive strain injuries — now has robots and two workers left. It's good to get out of the fumes, McClinton said, but is the guy who stands at the mall with a sign reading "Laid off GM worker, I will work for food" one of the 28 ex-welders?

Lean production followed the robots because they reorganized the work process. Now there's no stockpiling of cars or parts, and so on all the way to work teams. Workplaces have become pressure cookers. Workers compete against the robot and each other.

In opposition to the downsizing, an insecure and overworked work force has in places gone on strike (in one GM plant, successfully) to demand that auto companies end overtime and hire more people. But at Mexican auto plants, workers earn $1 an hour, and robots are there too.

McClinton won applause from the group after she concluded, "We must declare that prosperity be ours. The ones that work next to the robot and

the ones replaced by it demand to be the beneficiaries of the good life the robot offers."

There was discussion over how France had provided minitels for people nationwide and jumpstarted their computer communications. Roy Singham pointed out that the whole world economy of the 21st century will be based on communications and the control of that. The stakes are huge. As a result, companies are responding very quickly, but the social (as opposed to profit-driven) response is much slower. Technology unfettered, he said, ought to create openness of communications between human society, but within our social organization it becomes contained. As an example: e-cash on the Internet (the equivalent of a cash transaction) takes transactions out of the control of the banks and credit card companies. They don't want that. Or there's an electronic agent that runs around the Internet searching for something for me — then who owns that knowledge of where to find something on the Internet? Trillions of dollars are at stake.

Recalling Roy Singham's concept of the overemployed and the unemployed, Don Goldhamer raised a proposal to separate income from jobs.

Beverly Addante pointed out how resistant companies are even to changing the paradigm from full-time work. Singham described that when businesses are investing 20 or 30 percent of a worker's salary in training them, they don't want to allocate that training money to people they aren't getting full time work out of. So part time works for people who are already trained. Don Goldhamer pointed out that if we were educating the entire population to be knowledge workers, we'd be able to put people in all different kinds of work arrangements.

Picking up from Goldhamer, Nelson Peery argued that the mode of distribution has to be in sync with the mode of production. Can capitalism survive with 50,000 people living in the bowels of New York City, with a whole new class of unemployed encompassing engineers and doctors as well as unskilled laborers? This class, he said, is forming outside of the relations of bourgeois society. They neither own nor work. This class is growing faster than any other class in this society. When slaves came into agriculture and pushed the Roman working class out, that was the beginning of the destruction of Rome. We're seeing that today, Peery said. What's going to happen, he asked, to the human beings? We aren't just discussing the productive process, but also the disjoining of that process from the process of distributing the product.

What Happened to Steel?

A steel industry is fundamental to an industrial society. The United States has been a world leader in steel — Chicago and Gary combined have been one of the country's most important centers of steel production. Today, the steel mills are closing, employment is down, and technological advances are being made elsewhere. What happened to steel? This panel looked at the steel industry and discuss its relative decline, with a focus on the steel workers, their families, their communities, and their union.

The steel workshop consisted of three presentations. The main focus was on the steel industry and how it fit into the broad patterns of industrial development and decline over the 20th century.

Lou Turner made a presentation on industrial development in general. He suggested that we should not look on U.S. industry as a monolithic structure, but instead incorporate its diversity based on sectoral, regional, and political differences. The example given was that while industry is leaving the old rust belt areas, it is growing in the south. Further, there is an emerging labor movement. In the catfish industry in Mississippi, ten of the 11 plants are recently organized. In fact, catfish workers are militant, and even when out of strike in one plant, an entire department was hired on at another plant.

However, the situation in basic industry in the north is very different. In the auto industry, the 1970s were a time of technological change, especially in the use of computers and robots. Workers were replaced in key departments of auto plants, especially in assembly (where robots took over spot welding) and the paint shops. This led to two major developments in the reconfiguration of the workplace, job classifications and the team concept. Over ten years, the job classifications in a Dodge Truck plant declined from 121 jobs to 13 jobs. The concentration of skills required of each worker

Chairperson, Richard Monje, United Steel Workers Union Local 15271. Panelists: Tom Misa, Professor of History, Illinois Institute of Technology; and Lou Turner, Managing Editor, News and Letters *newspaper.*

eliminated the "free time" a worker had, as the multiple tasks forced them to move rapidly from one work site to the next. Also, the work was no longer assigned on an individual basis, but on a group or team basis. Even when one was caught up on one's own work, there were times when more had to be done to keep the group on schedule (based on someone's absence, or illness, etc.).

Tom Misa spoke specifically on the history and the current crisis of the steel industry. The U.S. steel industry grew rapidly so that after 1860 it became the third largest in the world. By the 1920s it was the largest in the world, and by the 1950s it was the preeminent global center for steel production. Why did this happen? Was it due to the "great individuals" such as Andrew Carnegie, John D. Rockefeller, or J. P. Morgan? Was it due to structural factors in the organization of the industry? Or was it due to the abundance of natural resources? All seemed to have had some impact. But these same factors seemed to have led to its decline.

Misa indicated that the steel industry has developed in stages, with each stage bringing forward a diversity in the industry, representing different technologies and organizational methods to produce different kinds of steel. The first stage was the production of steel for rails driven by the expansion of the railroads. This had to be done fast and cheap, without much concern for quality. The next stage was the structural steel needed for building skyscrapers. This required a higher grade of steel that cost more to produce. The third stage was steel produced for battleships, where the steel industry followed specifications for quality and cost developed by the Department of the Navy. Finally, the fourth stage was the production of crucible steel for factory use. The final stage is that with greater technological development, greater profits can come from a smaller work force producing a more expensive product. Misa gave the example of a Pittsburgh plant making parts for jet airplane engines employing 25 people. A big cavernous plant was empty except for one end of it where the small work force produced profits for the company. But, where were the other workers who used to work there?

Much of the problem that the steel industry faced after the 1960s was the result of three things. The steel industry failed to adjust itself to the technological innovations required to serve new clients who needed new kinds of steel. They did this before the 1950s, but failed to do so afterwards. Also, the U.S. government spent $1.4 billion to export technology that when utilized abroad wiped out the export market that had been a

profit margin for the U.S. steel industry. Finally, the trade unions failed to advance a plan in its interests and led to a go-along-to-get-along collaboration with management, contributing to this general pattern of decline.

Richard Monje spoke to the crisis in leadership among the workers, especially in the trade unions. He indicated that there is a great deal of confusion among workers, not about what is wrong, but about what solution will solve the problem. The changes began coming in the 1970s, especially in the team concept, the new job super-classifications forcing one person to take on several jobs, and the elimination of grievance positions (calling them problem solvers, but without real results). From the 1970s into the 1990s, there have been examples of heroic fightback, but to no avail, because the fightback has not been guided by a plan for a solution, a program for practical struggle.

The discussion exposed alternative conceptions of a solution. Misa indicated that local governments continue to explore avenues for regional industries oriented to niche marketing. Examples of this have been the Harold Washington administration in Chicago (1983-1987) and the town of Lowell, Massachusetts, trying to recapture its industrial base. This has been successful for the textile industry of Northern Italy. General Baker contrasted former mayors Richard Hatcher of Gary, Indiana, and Coleman Young of Detroit. Hatcher argued that his attempt to fight U.S. Steel layoffs failed, whereas Coleman Young claimed a victory for having two modern assembly plants in Detroit, even though being modern meant that they employed less than one-third of the workers who would have been formerly employed.

Finally, a workshop participant made the observation that perhaps a key concept has to be reprogramming. The computer is used to reprogram the robot when a new job has to be done, just as the team concept is used to reprogram the individual living worker to change jobs and adapt to new circumstances.

Monje ended the workshop by calling on all participants to learn more about the problem, and to continue to fight back against economic decline. However, understanding the problem and fighting back will not produce the answer we need. The critical task is to forge a program for solving the problem, not a pie-in-the-sky abstract demand, but a practical program for change that can united the many forces in the battle. This is the main problem we face, and the main problem facing workers in the steel industry.

Work and the Global Economy

New international agreements like NAFTA and GATT are clearing the way for a restructured global economy. This is being set in motion by the largest industrialized countries, both for their global access as well as for regional economic blocs. The search for cheap labor and new markets is sped up by new communication and transportation technology. What has been the impact on workers in the United States, Canada, and Mexico? How can our communities achieve security and well being in the global economy. Scholars and trade unionists debated these critical issues in this workshop.

Cecil Blake, who is from Sierra Leone, described the predicament of Africans, who are leaping straight from agricultural economies to production based on electronics. It's hard, he pointed out, to run computers when you don't have electricity. Africa, he said, needs machines that are dust resistant, that do not depend on a electricity power grid. He also shared the concept of the Poorest Billion. Out of the world population of six billion, that one billion is either the center of a spreading genocide, as we see in Africa today, or the source of energy for a transformation we all desperately need. Blake also called for using the new telecommunications technologies to build bridges between people, not between economies or corporations, but a human chain sharing information about how to build communities.

Dave Ranney described globalization itself. Globalization has been directed by capitalist enterprises which used to be politically and economically situated in nations but which are now supranational, without ties to governments. Technology has allowed them to bring about globalization: telecommunications allows money and information to flow, and process

Chair: Kate Williams, People's Tribune *Speakers Bureau. Panelists: Cecil Blake, University of Indiana Northwest Department of Communications, Gary, Indiana; Dave Ranney, University of Illinois at Chicago Center for Urban Economic Development and Department of Urban Planning and Policy; and Noel Beasley, Amalgamated Clothing and Textile Workers Union.*

and transportation technologies allows production to spread over the globe.

It hasn't been companies acting by themselves. There's been an explosion of corporations operating with each other: joint ventures, cross-licensing, outsourcing, takeovers. Meanwhile, global institutions (for instance the International Monetary Fund, the Global Agreement on Tariffs and Trade, the World Bank, the North American Free Trade Agreement) are carrying out functions that used to belong to nation-states.

So globalization isn't a rational, neutral process of progress, nor are individual corporations bringing it about. It's a class-based response to a deep global economic crisis that surfaced with the collapse of the post World War II order, also known as Bretton Woods, when the U.S. dollar was taken off the gold standard and the United States began to lose its position as the center of global capitalism, when the 1974-75 recession set in.

In response to the chaos of that collapse, capitalist forces created a new world order — a supranational policy agenda and a supranational policy arena to implement it. The agenda is to resolve the global crisis by cheapening the cost of production. That means total capital mobility directed towards lowering down standards worldwide: wage standards, environmental standards, workplace standards, consumer safety standards, and human rights standards, all of which add to the cost of production.

To implement this new world order, a development model was proposed. Structural adjustment programs imposed by the IMF and the World Bank became a model for how to impose this new world order. Initially these programs were for developing countries — and hit Africa hardest — but they have spread. We see it in the quid pro quo for the Mexican peso bailout. We see it in the Contract with, or on, America. Structural adjustment means:

- eliminating all barriers to trade (such as tariffs, labor rights, environmental standards, etc)
- eliminating barriers to investment or capital flows (no protecting industries such as by import substitution)
- protecting narrow corporate interests in technological development by extending national patent rights to the entire world)
- tight money policies that keep interest rates up and inflation down
- privatizing public enterprises, and
- eliminating social safety nets and governmental programs.

The result is lower living standards for most people, redistribution of income upward, and more highly concentrated ownership of capital.

Ranney pointed to two different responses that suggest a way out. First, in various countries movements are forming that transcend various organizational limits and link environmental and economic justice organizations. Second, these organizations have begun an international discussion to develop strategies for raising global standards by working together.

Noel Beasley told a story about a factory in Fredonia, Wisconsin, where his union has represented workers for about ten years. Originally, there were about 150 workers in the factory, predominantly Anglo. A few years ago, that factory was purchased by a major international conglomerate. They closed several factories, including one in Chicago, and consolidated all operations in Fredonia. Close to 300 new workers were drawn from the Latino barrios of Milwaukee, the opportunities to hire Anglos having been exhausted.

Three weeks ago, the Immigration and Naturalization Service audited the factory's employment records and informed the owners they had ten days to terminate 265 unionized workers, because their papers were not in order. After great effort, Beasley's union saved three of the workers' jobs and won extension of the termination window from ten days to 90 days. This was as expected, with President Clinton calling for shifting dollars to the border, adding military force to the borders, even charging people for crossing the border.

But the surprise came when Labor Secretary Robert Reich announced that 5,000 new jobs were created in the Midwest in January and February, 265 of those were the jobs of the undocumented workers at that plant in Fredonia, Wisconsin. Every time the INS makes a raid and throws workers onto the street, those statistics go into the job creation figures. That is the job creation program of the post-NAFTA period.

That's why, Beasley continued, ACTWU and the International Ladies Garment Workers Union are merging, trying to forge a new union for this period. The work force of this time and place is drawn from many countries and many unexpected places, and is being treated in a uniformly violent and vicious way, whether it's in Fredonia, Wisconsin, Guatemala, Mexico, or the Dominican Republic.

Beasley made a second point about the global workplace having fundamentally changed in the last few years. From about 1920 to 1990, the Soviet Union and the United States fought it out globally and ideologically for

the allegiance of workers. Within various countries, workers would take a side and line up for one or the other. That has changed.

Right as the Soviet Union was collapsing, Beasley and other visiting unionists found themselves at a day care center in Kiev, fully staffed with professionals serving 5,000 textile families in a huge mill right behind them. A very apologetic director of the center said to them, "We're very embarrassed and humbled to have to show you this downtrodden day care center. We know that the ones in U.S. factories are far superior to ours." Beasley had to correct the director and explain how it is the nightmare of all working parents in the United States what to do with their children while they are off at work. And Beasley knew that within six months to a year, when the economy and political system changed, the Kiev day care center would be closed.

Beasley was working with U.S. workers during that same period on the battle against NAFTA and then GATT. He described the shock on their faces as they heard from workers from Canada and Mexico. They learned that the U.S. health care delivery system was really far inferior to Canada's, and that Mexican workers had access to clinics even after they were laid off, while U.S. workers lose their insurance card and have no access.

Beasley's point was that when the Soviet Union collapsed and the U.S. economy collapsed, workers lost those two ideological alternatives to identify with. There's a lot of political and ideological confusion, he said, because it seems on the surface that there's no side to choose anymore. Lots of workers in his union have realized, as their contracts were attacked or their factories closed, that they live in the former United States, even as their counterparts in Kiev live in the former Soviet Union.

Beasley closed by saying that we have to take this moment and turn ourselves outward militantly and aggressively to change the way so many of these structures work. Unions have to become hemispheric and global and begin to represent the needs and aspirations of the unemployed and the dispossessed as much as they do those who have the few remaining jobs and the few remaining benefits.

Whether you look at the Luddites breaking the looms in England in the last technological revolution, or the paper tape for mechanical embroidering that evolved into the modern computer, garment workers know what technological change means. Over 15 years they have been the workers first attacked in the drive to export manufacturing and import goods. It happened first with shoes and then with all kinds of apparel.

It was tragic, Beasley said, but it forced his union to deal with unions forming in the Dominican Republic, to reach out to brothers and sisters in Mexico, Guatemala, El Salvador. It hasn't been us helping them in their efforts, he said, or them helping us in ours, but shaping a new kind of industrial union that goes across international borders and deals with the type of companies that dominate right now.

After these remarks, the discussion began by focusing on the fact that despite 30 percent combined unemployment and underemployment worldwide, despite the new phenomenon of permanent employment everywhere, there seems to be very little social unrest. Why? Because even in a world where information circles the globe in seconds, people do not know what is happening and why. Real information is minimal. The forces that concentrate capital also concentrate information.

So the discussions and actions that we see take extra meaning for us. In Chiapas, they know they can't just get up and move to Mexico City or the United States. Their relatives tell them it's no better there. So they stand and fight where they are. Or in Marlo Morgan's bestselling book, *Mutant Message* (New York: Harper Perennial, 1994), an aboriginal tribe speaks to the world about the global disaster as they see it, where business is serving itself and destroying life. Or ACTWU and ILGWU organizes across borders. Or this conference itself takes place. We have to recognize this as convergence.

One participant commented that we have to prepare for the structural adjustments, the lowering of standards wherever we live. For instance, he said, I'm from New York, where the state university system and the city university system are looking at a 50 percent tuition rise over the next 12 months. The campuses are always a critical center of debate and activity, and we have to prepare for this.

Will Getting the Training Mean Getting the Job?

Becoming skilled in the new technologies means at least a college degree, and in many cases, years of graduate school. But with unemployment in the scientific fields at a 25-year high, will getting the training mean getting the job? This workshop discussed this question from the standpoint of scientific and research job prospects in the public and private sector. The session was designed especially for graduate students.

The workshop focused on public and private sector investment in research, and how this impacts those getting advanced training. The main issue is what kind of research is being funded, at what levels, and what kinds of jobs will be opening up.

Walter McFall gave a report on the general situation of the 726 federal labs, including the ten big national labs run by the Department of Energy. Argonne was the first major one devoted to the three national concerns: energy, environment, and basic science. The general situation is that everything is being cut, downsized and asked to narrow the focus back to the basic mission. Even Argonne has been given just a two year period to phase out everything except its basic programs.

The Department of Energy asked Robert Galvin of Motorola to do a report on the federal labs. He formed a commission of 23 people plus staff to collect data including making visits to ten major labs. They reaffirmed the three main aspects of the research agenda, but concluded that management of the system is inefficient, the staff is oversized, and more attention should be given to safety. Two other major points were made about the research agenda. Big science will likely go on, but as a global undertaking not by

Chair: John Marsh, Department of Biology, University of Illinois at Chicago. Panelists: Walter McFall, Argonne National Labs; Steve Orzack, Department of Ecology and Evolution, University of Chicago; Scott Berman, AT&T/Bell Labs; and Penny Brichta, Director of Human Resources, Searle Research and Development.

any one country. This is the trend in space exploration and research, as well as high energy physics.

This is good for training but bad for careers. There will be an increase in post-doctoral research positions, and opportunities for faculty sabbatical appointments, but there will be fewer permanent research positions. The temporary positions used to be for two years at Argonne, now the postdoctoral appointments are for three years, and only one in ten has any chance of a permanent appointment.

Steve Orzack began his presentation by describing the situation that many young scientists find themselves in. Focusing primarily on the academic research scientist, Orzack pointed out that similar to those pursuing careers in the national labs, Ph.D.s are not finding tenured or permanent positions in our universities. Contrary to the warning issued a decade ago by the National Science Foundation that America would suffer from a lack of young scientific elite in the coming years, the opposite is true. The pool of job seekers is much larger than the number of available positions. Consequently, postdoctoral positions have become "holding patterns" for young scientists. Some spend more than six years in two or more different laboratories before finding a permanent job (if they're lucky). Many simply drop out of science altogether. This relatively new phenomenon creates a great deal of competition and insecurity which is arguably counterproductive to the scientific process.

Tying the workshop into the larger themes of the conference, Orzack made an interesting point concerning the career expectations of the scientific elite. As he put it, scientists have long taken advantage of resources not available to those in non-technical academic pursuits, such as the arts. Scientists are now forced to face the lack of resources that faces many non-science academics as well as the poor and working class.

To ameliorate these difficulties for the young scientist, Orzack suggested networking and flexibility in order to maximize one's options. As a member of the Young Scientists Network, he also stressed the need for those who create what we call high tech to explain our role in society as well as our needs and problems.

Penny Brichta, as a representative of science in the private sector, echoed many of the comments made by Walter McFall and Steve Orzack. She stated the Searle routinely receives hundreds of applications for a given position and often interviews less than 10 percent of applicants for a given position. On the up side, many corporations involved in biotechnology are

continuing to grow and increase their work force. However, job seekers still outnumber jobs, a situation that Brichta conceded is not likely to change in the forseeable future. Another trend that was mentioned is the de-emphasis on basic research at corporations like Searle. As Brichta described it, the research is more focused on cost-effective and immediately applicable research.

Scott Berman acknowledged that his current employer, AT&T/Bell Labs, functions similarly. Bell Labs is analyzing its success based on "profit and loss statements" and as a result engage in very little "pure" science. Berman went on to point out that difficulty in finding a permanent position and the resulting insecurity are nothing new to engineers. As a 15 year veteran in the field of electrical engineering he has worked at Zenith, ITT and AT&T/Bell Labs. He noted that during the 1970s, Chicago-area Zenith was producing 5,000 television sets a day and employed thousands. They have since left Chicago for Mexico, eliminating many of the factory and highly skilled engineering jobs which they provided. According to Berman, Bell Labs began laying off workers in the 1980s for the first time in their history!

It became clear in these presentations and the discussion that followed that although many of those with advanced training in science and engineering eventually find employment, the situation is worsening. Despite what we have been taught to believe, it appears that getting the training does not necessarily mean getting the job.

Access to Education

Education is at the heart of the new high tech world. Getting a high tech education means being wired in, and not getting it means being left out. What role can new technologies play in preparing the citizen of the 21st century? Who is being wired in and who is being left out? Will the educational opportunities we need be spread evenly across society? If not, what can be done about it? This panel looked at these issues, and present innovative education projects in the Chicago area that address these questions.

Joan Fitzgerald began by asking, How is technology increasing the skills required for jobs? Who has access to jobs? Center for Urban Economic Development (CUED) has been developing projects to increase inner city student access to jobs. In *The Great U-Turn: Corporate Restructuring and the Polarizing of America*, (New York: Basic Books, 1990) Barry Bluestone and Harrison Bennett argue that the service-sector wage structure will be highly polarized. The government's Bureau of Labor Statistics build on that to say there will be another dropping out of the middle in our hourglass-shaped economy. A majority of service- and goods-producing firms that the BLS surveyed choose automation and cutting the work force over increasing their work force. Technology deskills and eliminates jobs. But also technology will require maximum skills for future jobholders.

CUED has gotten started a metalworking/machine tooling program which connects students at two high schools to Daley College where students proceed to get a one year certificate or a two year associate degree. The Illinois Institute of Technology then joined up so students can go on here to get a bachelor's degree in manufacturing technology. Students can jump off this program at different levels, but with credentials.

Chair: Sheila Radford-Hill, Center for Urban Economic Development, University of Illinois at Chicago. Panelists: Joan Fitzgerald, Center for Urban Economic Development, University of Illinois at Chicago; Lunaire Ford, North Central Regional Education Laboratory; John Mundt, Administrative Computing, Glenview School District; and Mordechai Mark MacLow, Department of Astronomy and Astrophysics, University of Chicago, and DuSable High School Internet Project.

Or there's the Chicago Manufacturing Center, which trains workers at companies which are adopting new technologies and helps expand those companies' markets to counteract the shrinkage of the work force as the new technology is implemented. CUED is linking schools to the Chicago Manufacturing Center so there's up-to-date training for students and job connections for them, too.

Lunaire Ford spoke about the Chicago Algebra Project which he's involved in through the Chicago Public Schools and beyond. Algebra is a key barrier to entry into the economy and the work force for Chicago-area public school students. The Algebra Project is added to the rest of the math program at 100 school systems across country, using familiar experiences and innovative learning methods to teach algebra concepts to sixth, seventh and eighth graders. The aim is to increase the number of now-underrepresented Blacks, Hispanics, other minorities and poor whites completing college preparatory sequences. Robert Moses, who started it, taught math in New York City and was a longtime civil rights worker. The program was brought into local school systems by concerned parents.

Years back, folks needed to read and write to be a part of the industrial system. Now we have a different kind of literacy requirement, one that includes such things as the ability to use software. But even more basic than that — and the focus of the Algebra Project — is the ability to handle quantitative information and think analytically and critically. These skills allow students to participate in the kind of society we will have. The Project is also moving into using the Internet and software and bringing college students and professors to our students to talk about the technological society they're headed for.

John Mundt explained that he was there because his district connected itself to the Internet two years ago, branched out to five other kindergarten-through-eight school districts and the public library and two village governments to make a community network. They took one very fast Internet connection and shared it over cable TV, which is still the cheapest way to go in the 40 percent of communities where it's possible.

He has personally connected about half the Illinois schools that are connected to the Internet, and he's frustrated because there aren't yet more people hired to do this. For $1,000, a school could connect itself to the Internet, with a $50 monthly connect fee through Net Illinois, so you can run a bake sale and put your school on the Internet.

Is it the be-all and end-all? In some ways it is, he said, but we have to abandon a lot of the thinking and modalities of the past. School superintendents and most teachers won't. People want to plan, organize, research and train about connecting to the Internet, and all this time they are not hooked up to the Internet. Get your kids connected and then we'll see the future. If your kids can point and click, they can navigate their way on the Internet and find things.

E-mail and the Web are all you need. All we need to do is connect people, Mundt declared. That's where the jobs are, that's the way kids think, that's the way employers think. Motorola and Zenith, both in his area, are now trying to bring a product from concept to the market in six months, because that's how fast a product can become obsolete. The only way people can match that increasing speed is to be wired and think electronically. All of the Glenview students from fourth grade up to eighth have e-mail accounts. They think electronically, they think globally. They share e-mail not just with kids in their school but with brothers and sisters at university and people around the world. E-mail breaks down barriers between people and allows kids to find information and bring it into the classroom, to discuss things around the world.

This is where the future is, whether it's good or bad, equitable or inequitable. If you don't go that way, you'll be left to die like the dinosaurs. Hopefully, at least in Glenview, Mundt said, we've got our kids heading in that direction. They'll be better equipped when they hit the job market. As for wiring the high schools, they've had kids from the East Side, that's the rich side of Glenview, walk in and ask, "Where's my Internet connection?" Daddy — who's the vice president of something — calls the superintendent and that effects a change there.

Mordecai Mark MacLow, an astronomer who has helped wire DuSable High School, explained that astronomers were among the first on the Internet. He's been on since 1986 and now 98 percent of astronomers are on the Net. It's changed astronomy completely. When they go to a conference, they send the papers over the Internet. He gets e-mail routinely from the Ukraine, Japan, Spain. He works with people he's never seen, by e-mail. Other professions can expect the same in five years.

The first Internet node in the Chicago Public Schools came up in January 1995 at DuSable, on Chicago's South Side, near the Robert Taylor Homes housing development. The school is 100 percent Black and 80 percent of students live in the housing project. People in the community are

isolated. MacLow referred people to the school's World Wide Web page: (http://www.dusable.cps.k12.il.us/) for more information on the school.

The DuSable Internet Project was initiated by a science teacher at DuSable High School and himself. They had already collaborated on taking DuSable students camping and introducing them to the dark night sky. Half the kids on the trip had barely been out of the city of Chicago. That's why the Internet had to go to DuSable: to reduce the isolation of the teachers and make them more effective with more resources, and to break down barriers for the students, let them sit in front of a Macintosh running the World Wide Web and reach out into the world. Five clicks of a mouse and a student's looking at a weather map of Africa that was transmitted an hour ago. Wow! that opens his eyes.

When you have that kind of draw, you build skills. E-mail is writing to communicate, not to do an essay some teacher's telling you to write. You want to put a home page up on the Web? No problem, technically, if you can write. The school newspaper is already computerized, so putting it on the Web means that the *Panther Press*, a newspaper that reflects its community, will soon be available worldwide.

Their aim is a computer in every classroom, so teachers and students can use it daily. Right now they have one room with seven machines in it full every day, and they've only been on-line a week and a half. People want the Net.

The project started as a two-person project. They formed a technology committee at DuSable. The committee educated themselves and won other teachers and the principal over to getting wired while they were also raising funds.

Sheila Radford-Hill wrapped up the presentations urging everyone to take the presenters' handouts, start with themselves and one other Internet-hungry person, galvanize the commitment of others, find a technology partner driven by altruism or better yet by some product in hand, and innovate by transferring what's going on elsewhere into an educational or community program.

The first question came from Carl Davidson: What are we doing to get rid of the savage inequalities, or will some schools and communities be entirely Third Wave and others left behind? The panelists said there had to be a fight for money, because the money is there but it's not being applied everywhere or in everyone's interest. You have to jump in. John Mundt in particular said, "Don't wait for the state to do anything — they won't." Par-

ticipant and teacher Marilyn Hunter told how technology can be brought into schools with profit as a priority — selling Cadillac equipment and services at unneccesarily high prices. and setting it up so its not useable. David Joslin, who works at the Midnight Special bookstore in Los Angeles, told how the bookstore network is expanding into the Pico Aliso Housing development with funding from a community organization.

Enthusiastic discussion also covered guaranteeing that young people create things on the Internet rather than just being recipients. Commenting again on the inequalities, substitute teacher Nancy Singham expressed the view that getting on the Internet, making such a democratic form of communication accessible to everyone, will help us solve our social inequalities.

Racism and the Violence Initiative

Social policy toward people in need has changed over the past 25 years from support, to neglect, to attack. Twenty-five years ago we were hiring more social workers; now we are hiring more police. The rationale for this comes from bad science, bad politics, and bad manners. People who support this change in policy argue that the poor lack the brain power to get out of poverty — they are poor by natural causes. Advocates of the new policy use biased IQ tests to prove their point. Some even argue that they can tell at birth whether a baby will grow up to commit crimes. This panel discussed how this pseudo-science is being used to justify cuts in social services and an increase in the use of the police and prisons to deal with inequality.

This workshop examined one of the main ways that a repressive anti-democratic environment is rapidly developing in the U.S. The Violence Initiative refers to U.S. government programs to control violence among young males, mainly Black youth. *The Bell Curve: Intelligence and Class Structure in American Life* by Richard J. Herrnstein and Charles Murray (New York: The Free Press, 1994) is a book that provides ideological justification for the Violence Initiative and other programs suspected to come. This workshop took up theoretical, historical and practical aspects of these topics.

Richard Miele's presentation focused on the book *The Bell Curve*. He provided a background for this work by discussing the eugenics movement of the 1920s and 30s. Eugenics means "the study of improving the human species by improvement of inherited qualities." However, more than encouraging procreation, the eugenics movement took measures to stop people it regarded as undesirable from having children. In fact, in Indiana a sterilization law was passed in 1926, and upheld by the Supreme Court in 1927. The approved basis for sterilization was so-called "moral imbecility,"

Chair and panelist: Richard Miele, Department of Sociology, Indiana University Northwest, Gary, Indiana. Panelists: Ora Harris, Chicago Coalition Against the Violence Initiative; and Karen Reid, Department of Minority Studies, Indiana University Northwest, Gary, Indiana.

which could be interpreted as the cause behind a young girl running away from home (regardless if the home was oppressive), premarital or extra-marital sex. This law wasn't taken off the books until the 1970s.

The Bell Curve maintains the same analysis but substitutes being "dull" for being "of moral imbecility." This work uses the standard I.Q. tests for measures of acceptability, and is written as a praise poem for the so-called cognitive elite. Richard Herrnstein, one of the authors, had long been an advocate of making value judgments on who should and shouldn't be having children. If intelligence is inherited, then the I.Q. test should help us "breed" better people. The U.S. initiator of the sterilization law was honored by Adolph Hitler, and Miele argued that *The Bell Curve* fits the same pro-Nazi policy.

Ora Harris argued that the Violence Initiative is a plan to use a genetic based model to predict criminal behavior, and in turn to promote the use of biochemical (drug) treatment. This is targetted at poor Black male youth. In 1992 the National Research Council published a report titled "Understanding and Preventing Violence," in which researchers were encouraged to search for a chemical basis of criminal behavior.

By 1993 the Black Network on Children's Emotional Health created the Chicago Coalition Against The Violence Initiative. Harris stated their basic position: "Social ills are not the fault of poor or Black people, and violence is not based on one's biological make-up. We should place the focus on poverty, racism and unemployment." The coalition is working to stop this policy by building public awareness of what is happening and to get a petition signed. They meet monthly and have a newsletter.

Karen Reid made a practical political presentation that brought both previous presentations together. She discussed how the school system, the welfare department, and the criminal justice system work together to attack young Black males. She also emphasized that while the Violence Initiative started as a program against Black people, it is really a program against poor people.

She described the crisis as a war being waged against children, and gave a description of how she has experienced the system in Gary, Indiana. If the school system finds a child to be outside their profile of acceptable behavior, then they can bring in a social worker. There is an increased tendency by the welfare officials to propose biochemical treatment, to control the youth through drugs. If the parents object, their family is turned over to Child Protective Services, and always this also means the Juvenile Court as

well. If the parents continue to object to the drug treatment, then the judge can order that it be carried out. If the parents continue to protest then their child will be taken from them.

Reid said: "The Violence Initiative program is very hard for families to get out of. It seems the more you combat the system the more you are labeled, hence the more your child is at risk and likely to be taken out of the home. This is a political process for controlling poor people and keeping them from speaking out!" She was speaking from experience, as she is fighting this same system now to protect her 15-year-old son.

The discussion focused on alternative reasons for poverty and what should be done about the overall situation. Richard Miele stated that the victims are being charged with the crimes others are committing. He made a call for a radical movement: "We have to change enough of the structure that they can't give with one hand and as soon as possible take it back with the other."

John Slaughter of Atlanta, Georgia commented that there is no scientific basis of racism, so why is this attack and the rebirth of the eugenics movement taking place now? He went on to say that the technological revolution was making the labor power of poor people useless, and at the center of this useless labor is the Black worker.

Reid closed the session by stating, "We're losing our children to poverty as early as the third and fourth grades. By the time of junior high school, many of them are lost. The middle class doesn't think this applies to them and their children, because they don't understand that this economic crisis and the new technology is going to force many of their children into poverty as well."

Prisons, Police and Their Technology

As poverty increases, so does the number of people in prison. There is also an increase in the use of the new technology by the police for surveillance, arrest, incarceration, and behavior modification (including the use of torture, drugs, etc.). Congress is cutting funds for social programs and increasing funds for police. This workshop discussed how new technology is being used to limit our freedoms in society and inside the criminal justice system.

Steve Whitman described a 25-year shift by the federal and state prison systems to relying on control-unit prisons, not to house every prisoner but to terrorize and control people inside and outside the prisons. In control units, prisoners are totally physically controlled all the time, let out of their cells for only 30 minutes a day, no exercise, no education, no congregate dining. (On the average, federal prisoners spend 13 hours a day out of their cells.) The control unit was modeled on a practice discarded in the 1860s and 1870s because it was driving people crazy.

Marion federal penitentiary in southern Illinois was opened to replace Alkatraz in 1963 and became a place to move all the dissidents and political prisoners in the United States. So Marion concentrated the most resistant, the strongest, prisoners. By 1970 a two-year strike began there. The Bureau of Prisons (BOP) ended it by removing all industry from the prison and locking down one wing, one-quarter of the prison. That became the first control unit in the history of the United States. By 1983, the whole prison became a control unit.

In debates with the Committee to End the Marion Lockdown, the Bureau of Prisons has said, if you allow us to keep Marion, we'll put all the bad apples in one prison and that will free up the rest of the prison system. The Committee's argument has been that instead, Marion was going to pull the rest of the prison system towards more and more repression.

Chair: Karen Reid, Department of Minority Studies, Indiana University Northwest, Gary, Indiana. Panelists: Steve Whitman, Committee to End the Marion Lockdown; Tony Prince, People's Tribune*; and Flint Taylor, People's Law Office.*

Twenty years later, there are 36 control-unit prisons in the United States. There have been struggles and trials over the Pelican Bay control unit in California. This year Illinois announced they're going to build a control-unit prison, the Supermax prison. Control units, Whitman said, are the government's ultimate vision of the way they want to treat people, in particular people of color.

Tony Prince discussed police abuse, brutality and deadly force. First he pointed out that when Gary, Indiana, was entertaining a proposal for a $35 million tax abatement for U.S. Steel — after their work force had dropped from 30,000 to 7,000 and local unemployment had risen to 65 percent — U.S. Steel offered to purchase 30 new police squad cars and donate $400,000 for the Gary Police Department. The same amount of flat, cold-rolled steel that used to take hundreds of men 12 days to produce is now produced in 20 minutes. His point was that the growing influence of the police in this country cannot be separated from the growth of huge number of people cut off from their previous livelihood.

The *People's Tribune* started a Deadly Force column six years ago after receiving reports from all over of police brutality. Now they can hardly keep up with incidents where deadly force is applied or there's a routine escalation of police presence and the use of force. The system has said people are expendable, we don't need them. The possible fruits of the new technologies are not going to the people of the United States. Instead we are being incarcerated, shunted aside, attacked. To Prince, the most important effect of technology is the creation of a class of people who have no productive relation to society and in the eyes of the system have become a burden. This class bears the brunt of the police brutality.

At the same time, he said, the control technology they are developing minimizes danger to the police and maximizes deadly force to the population. A man in Massachusetts was sprayed with chemical mace and then hit with an electronic stun gun. Since the mace was flammable, he burst into flames and died two months later from third degree burns over 90 percent of his body. Or look at San Diego, where you are electronically booked, you enter your plea and with legislatively-mandated minimum sentences there is no judge's discretion. As the technology advances, they are able to expand the scope of repression.

Flint Taylor described how high technology in the 1969 attack on the apartment of Black Panther Fred Hampton was that the Chicago police used a machine gun, they drugged Hampton, they used an informant and

went early in the morning. Twenty-five years later, Taylor and others uncovered twenty years of systematic torture by Chicago police officers and their commander, thanks to a large movement and two large trials that exposed Commander Jon Burge using electric shock, plastic bags over the head (the technique of dry submarino), to extract confessions from young Black and Latin men, to terrorize the community, the innocent and the guilty, people picked up in sweeps and people picked up for very serious crimes. Taylor and others documented 56 occasions of police torture.

According to Taylor, you can see a continuum from the everyday intimidation, the stops, the illegal search looking for a gun or for contraband, the phantom traffic offense, all the way to the arrest and criminalizing of children starting at age nine or ten. Children are picked up for standing on the street corner or for some phantom offense, taken in for what they call a station adjustment where their parents are brought down. They begin to think of themselves as criminals. Then there is the endemic brutality, from putting the handcuffs on too tight to shooting you with mace to torturing you to killing you in your bed. Your fate depends on the officer's racism, anger, and sickness and what level of control they're trying to have in a given situation.

By the year 2000, half the African American men aged to 18 to 39 will be in prison. Books like *The Bell Curve: Intelligence and Class Structure in American Life* by Richard J. Herrnstein and Charles Murray (New York: The Free Press, 1994) explain that you lock up all the men, you take the children away from the women and you put them in institutions and that's how you maintain control. Congress tears up the repressive crime bill that Clinton put through and puts the Republican version in: longer mandatory sentences, no discretion by judges, playing chords of fear that have been composed by public officials and the media.

Here in Illinois you have a state habeas corpus called a post conviction. They passed a law that you have to bring that within three years after your conviction. That way they can execute all the people they want to execute within three or four years, and not allow them to develop any kind of record to show that they've been falsely prosecuted, that they're innocent, or that the death penalty has been discriminatorily given to them. At least ten of the 56 torture cases Taylor and his team uncovered resulted in a confession as the sole or the primary evidence against that individual, who then got the death penalty. Taylor discovered that one of these men now on Death Row was actually tortured by Jon Burge himself. But this new legis-

lation is designed to get people to the electric chair as quickly as possible, to deal with crimes where there are no victims, to deal with the drug problem by locking people up as "three time losers," putting mothers in prisons, taking them away from their children because they have a drug addiction for longer and longer periods of time. That's what we're talking about and why we have to be so strong in our opposition. We have to make the connection between social programs, education, and prisons.

Taylor emphasized that there has been no change in crime statistics from the year 1970 to the present. In proportion to the growing population, the same amount of crime, of violent crime, is going on. What has changed, he said, is the ten o'clock news. More than that, the new technologies have given us new soap operas: entire trials on TV to manipulate our thinking about the criminal justice system.

Taylor urged people to expose this and the real Draconian justice that is meted out on death row and elsewhere — stun guns that supposedly don't hurt, "soft" bullets. We're being sold fear, he said, and then we're being sold a level of safety that control simply cannot provide. The kind of control they have in the housing projects sounds good, but the by-product of all that is that women say the guards wouldn't let them into their apartment, called them names and fondled them. Incredible violence goes on behind giving free rein to the police and the private police forces to do what they want in poor communities, particularly in the high rises in public housing. The worst repeater cops in the city are there going door to door, breaking doors down.

Karen Reid wrapped up the presentations with a story from Gary, Indiana. At the start of the July 4th weekend in 1994, with lots of visitors in the area, Gary police and the Indiana drug task force arrested 80 people in a raid on a local housing project. Twenty-one children and one 70-year-old man were arrested. He was taken out of his store (which he had owned for some 21 years), thrust on the floor, handcuffed and taken down to the station along with the employees. Police ransacked the store. The housing project has since been reconstructed with a police subunit right inside it and a six-foot gate surrounding it. Down the street, a facility for juveniles has been created and expanded by five more units. So in Gary, Reid concluded, police, prisons and technology have really been used to control the poor.

The discussion jumped into how to rally opposition to these developments. Prince and Taylor both described an invisible majority of people whose own lives are touched by this expanding brutality and are ready for

alternative solutions, especially when they find out who is really in prison and being executed. One strategy put forward was to present the economic costs — for instance $7 billion in school lunches are being cut and that is exactly the annual price tag for prison construction. Ask people would they rather feed their children or build prisons? The media disregards a growing national indignation about abuse by the police. The Chicago Police Department receives three to four thousand abuse complaints a year. In the case of the effort to allow illegally obtained evidence to be used in court, 54 percent of people polled agreed but 42 percent said they'd rather be threatened with an increase in crime than surrender their fourth amendment constitutional rights.

A participant from Los Angeles, Cynthia Cuza, voiced that those in prison are among the educators, the leaders, of the 80 percent that Jeremy Rifkin talks about as being shunted aside today. People reach the point, she said, where there is nothing further the police can do to them, so they have to speak out. She expressed that just as after the police acquittals in the Rodney King case, we're seeing the beginning stages of people responding as never before.

What New Jobs Should Be Created?

The alarming rates of unemployment reflect the impact of new technology on manual labor. There is still a lot of work left to be done, not by robots but by people. In a high tech economy, how can we ensure that everyone who wants to work gets to? Cleaning up the environment, life-long learning, caring for our children and our elders, cultural enrichment — there is lots to do.

Bonnie Rice began with the warning that if we're looking at the future as perpetuating the industrial practices that are going on now, we are going to run into problems. Today we're producing goods in an unsustainable way. We have higher levels of contamination in our air, water and food compared to just a few decades ago as a result. Greenpeace is looking towards clean production for the future, using minimal resources to produce what everyone needs, eliminating the toxic inputs. There are lots of examples where this could increase jobs, moving from resource-intensive centralized production controlled by a handful of multinational corporations to environmentally safe localized production, community- and region-based.

Greenpeace has been working towards clean production in the dry cleaning industry. Right now all dry cleaning uses an extremely toxic chemical. But water, biodegradable soap and skilled labor can replace that toxic chemical. Clean production can mean more skilled labor and more labor overall, creating jobs. This can also work in agriculture and in energy production.

Rice reported that at 5301 N. Broadway in Chicago is a demonstration dry cleaners using the new process, which is called wet cleaning. Dry cleaners are under intense regulatory pressure, which is justified, because of the toxic nature of the present technology. Now they can decide to invest $50,000 in equipment to keep within the environmental regulations or

Chair: Beth Vargo, DeVry Institute of Technology and WZRD radio. Panelists: Bonnie Rice, Greenpeace; and Bill Eyring, Center for Neighborhood Technology.

$20,000 in equipment and training to go the new route. A typical small plant-on-premises cleaners has a manager making $12 an hour, workers making five to seven dollars an hour, and maybe children working there if it's a family business. By switching to wet cleaning, the same people would get trained and earn more an hour. Instead of a family that is always on the edge of sickness from daily chemical exposure, they'd be a healthy family. Plus, this technology prevents dislocation of cleaners for environmental reasons. It's a good example of clean production and small business in the community.

Bill Eyring discussed job creation in the environmental industry itself. Environmental clean-up technologies and energy conservation would create a lot of jobs if we switched from nuclear energy, inefficient lighting, and so forth to conservation and other energy sources.

To take an example, one particular public policy is keeping jobs from Chicago and is an environmental disaster. For the last 25 years, the city has operated the only municipal incinerator in Illinois. It's been ignored by most people, but now it needs either to be rebuilt for $150 million or to be shut down and alternatives found for the waste that goes there. Mayor Daley's plan calls for rebuilding it, issuing bonds, privatizing, and involving Waste Management Inc. A coalition on the West Side is opposing this and putting forward an alternative. Eyring's organization is a part of the coalition, and they were surprised to find that there's a thriving sector right here in Chicago to take on recycling — using the same material that's been going to the incinerator, which employs about 80 people and has contributed to poisoning the environment with lead and other toxics. The waste could be going to local manufacturers and creating 600 manufacturing jobs, not to mention the jobs sorting and collecting the trash. For example, a local newsprint company has recently added capacity in paper recycling, but is desperately looking for recyclable newsprint. Or Chicago Paperboard, a 100-year-old company making soap boxes and the like, is so short of low-quality paper — different from what goes into newsprint — to recycle into boxes that they are now importing paper from as far away as Detroit. The 600 manufacturing jobs created according to the coalition's calculations break down to 300 in paper, 75 in plastics, 50 in composting, and the rest in metals, appliance repair, and other manufacturing.

But how do we make the transition? How can a city change its policy? It's a political fight, Eyring said. If the city hired recycling people and community organizers for its department of recycling, they'd go to the

ward offices and collect joint proposals from the haulers and existing sanitation workers and community groups and volunteers. The community would mine its own waste for its own benefit.

We don't have a mayor who will shut down the incinerator, but we have a coalition of determined community organizations and several wards that are organizing, Eyring pointed out. Once they succeed in shutting down the old incinerator, the next step is to reformulate their coalition (including sanitation workers, community people, and haulers) and win a contract from the city to use local waste material to create jobs.

Who is Deciding?

New technology is not developing by itself, but has emerged as a result of billions of dollars of public and private investment. It is being used in ways that increase the accumulation of wealth for some and increase poverty and economic insecurity for others. Who are the decision makers? How can we gain a voice in these critical decisions?

This session focussed on the social context of the new technologies and avoided discussion of the technologies per se. At issue were the utilization and social impact of the technologies and political processes as they contribute to the extraordinary concentration of wealth among a small social class, while the growing displacement of workers results in the rapid escalation of deep and terrifying poverty. Moreover, the failure of society and government to deal effectively with the basic issues of housing, nutrition, jobs, health care, the ecosystem, and an environment for children conducive to their becoming healthy, educated, self-respecting adults poses a threat to political democracy. In contrast, Alkalimat pointed out, we have Al Gore and the entire Clinton administration promising to reinvent government, while Newt Gingrich, under the influence of Alvin and Heidi Toffler, urges us to acquire laptops as the master passkeys into the future. They show no "in the trenches" concern or significant involvement in work for the general welfare.

Alkalimat called attention to one impact of the new technologies by noting that 1994 sales of personal computers exceeded sales of TVs. This is heartening when one compares the passive act of TV viewing to interactive PC dialoguing on the Internet. However, unless PC access can be made pervasive, rather than limited to the more affluent, further polarization of the population will result. And TV viewing is addictive: the average American home views TV 40 hours per week; in the Black community, 70 hours per week.

Chair: Abdul Alkalimat, Department of African American Studies, Northeastern University, Boston. Panelist: Rado Mijanovich, New Union Party.

In introducing Rado Mijanovich, Alkalimat emphasized the need to project a vision of the future and to think about the questions:

- Who is going to do the deciding about the future course of society?
- Who can do the deciding?
- Who should do the deciding?

Mijanovich opened his presentation with a discussion of the objective situation which confronts our society. Namely, that we have a capital structure, largely owned by two to four percent of the population, that is capable of producing goods in superabundance; and that worker access to this productive capacity is predicated on the realization of a profit from the sale of the goods produced. Thus, when sales decline, because of competition or other market forces, workers are laid off and "no help wanted" signs go up. Add to this the replacement of workers by robots and automation, and we find ourselves in the incongruous situation of suffering want and privation in the midst of a huge potential for goods production.

The solution to that problem is obvious on its face: change the basis of production from the present production of goods for sale and profit to production of goods to satisfy human need. How to do this involves changing our socio-governmental organization from the geographically-based political democracy, under which private ownership of the means of production (the capital structure) is legal, to a production-based economic democracy, under which the means of production will be socially owned and operated for the common good.

The units of government in an economic democracy would be defined by the respective service institutions and goods production industries. This concept of society provides for a two-branch pattern of social / governmental administration, one devoted to the production of goods and the other to services and infrastructure.

Basic to this concept is that we would not vote for regional political representatives but for workplace representatives to coordinate our workplace with others in the same industry or sector. Through town hall meetings we would give direct input at the community level to the service and infrastructure branch of the economy. In addition we would elect the supervisors and administrators of our workplace unit who would be coordinators rather than bosses as we know them now.

Elected delegates from the regional workplaces connected to the same product or service would constitute a regional workplace council and a na-

tional workplace council would be similarly constituted to coordinate the work of all the regions involved in the same service or industry.

An All-Society Industry Council would be constituted of delegates from each of the national councils with the function to collate the resources and capabilities to meet society's requirements as formulated at the local community levels.

Mijanovich stressed that though much of this structure is already present in the staffing and facilities of the existent capital structure, much thought and discussion is needed to insure the implementation of a concept which will assure each of us the opportunity to be a contributing participant in society.

As for legal and ethical issues, society's existing capital structure didn't just grow; it is the product of the labor of generations of workers. Also, the U.S. Constitution guarantees us the right to make such changes as will serve the general welfare, as was done when property laws were changed to end slavery. More to the point, the collapse of a social order follows on its inability to provide a viable existence for its citizens. Historically, when that happens, it is swept aside, as happened in Eastern Europe and the USSR. Can it happen here? Events seem to point in that direction. It is important, in the event of such a crisis of collapse, that we set about (within the framework of our constitution) establishing a new economic democracy or face the consequences of the capitalist establishment using desperate means to maintain its privileges.

A brief summary of comments from the ensuing discussion follows.

- Mijanovich's economic democracy does not deal with decision making in the workplace. How are workplace tasks to be allocated? Will present social divisions in the workplace be replaced by job rotation?
- Technology has pushed society into the endgame of capitalism. Widespread distribution of an abbreviated paperback of Rifkin's book *The End of Work* would speed the realization among a broader spectrum of the population that no one is immune to the forces causing marginalization of ever greater numbers of workers.
- *The Dispossessed* by Ursula K. Le Guin (New York: Harper Collins, 1991), though a science fiction book, speaks to how a social system based on workers' councils would work.
- As in other jurisdictions, Minnesota legislators and a sympathetic governor are crafting laws to totally deregulate telecommunications, thus

eliminating present requirements that cable companies provide public access.

• The mere fact of capital ownership is no longer the single most important consideration in social analysis. Control of and access to the means of production should become the focus of attention. Trade union pension funds already are the majority owners of Fortune 500 company stocks. However, they are denied control of the companies because of laws relating to pension funds. Looking ahead, though, the commanding heights of tomorrow's economy are not the mines, mills and factories. They are the Stamford University Research Institute, the institutions of the Research Triangle in North Carolina and other such not-for-profit institutions, and they are already public property.

• From a European perspective, the old ways of trade union activities and various political alignments do not support the hope for revolution. However, the new telecommunications technologies and the Internet offer, through collective and community action, an opportunity for us to deal with many problems, not the least of which is the coalescence of many marginalized groups, with the workers still employed and to adapt the new technologies to effect positive change.

• The technological revolution is the causal basis for the new global realignment that is intensifying the drive for profits and the greater concentration of wealth among a smaller population group. With the old social contract being violated, the revolution is ongoing, and the growing numbers of marginalized permanently unemployed constitute a new revolutionary social class.

• Many of the homeless marginalized are not of revolutionary timber, and would likely go in the wrong direction. Witness the Wiemar Republic.

• The Mondragon cooperative experience in Spain has demonstrated the viability of a community involved in entrepreneurial capitalism.

• Community-oriented activity is important in the Black community. That kind of community organization was destroyed when Blacks were displaced from Africa. Blacks must reinvigorate community organizations and be thinking of actions which will serve their community interests on their own terms.

Fighting Back Against the New Poverty

People being laid off today face a new kind of permanent poverty — unemployed, or barely employed, but always at or below the poverty line. Many others are one paycheck away from this kind of poverty. Some people are forming new kinds of organizations to fight back against the conditions that force them into poverty. Moreover, these new social movements are raising fundamental questions about democracy and economic well-being: Why is poverty allowed in the richest country on earth? Why are people homeless while housing is empty? Why are people hungry in a country that pays farmers not to grow food? This panel summed up campaigns of struggle and propose new plans of action to fight against poverty.

Jon Rice, a school teacher and community activist, spoke about People for Community Recovery, an environmental advocacy group composed of public housing residents in one of the poorest areas of Chicago. He presented a graphic history of this area, Altgeld Gardens, built over a former garbage dump and saturated with toxic waste. He argued that environmental crimes had been perpetuated by the Chicago Housing Authority, the City of Chicago, the Water Reclamation District of Chicago, and the private corporation Waste Management Inc.

Altgeld Gardens was built on the Pullman Industries dump, a site they used for over 100 years. After the public housing was built, the City of Chicago used adjacent land for another dump used by the city and surrounding suburban areas. Rice reported that study after study distorted the situation and provided no reasonable explanation for the alarming health problems of people who live in the area. However, People for Economic Recovery and the vast majority of the people of Altgeld Gardens have also assessed the problems that the residents face, and they have concluded that the problems are the sewage treatment center, the open dump site, Waste

Chair: Hondo T'Chikwa, Crossroads Support Network. Panelists: Jon Rice, People for Community Recovery; Leslie Willis, People's Tribune*; John Slaughter, author,* New Battles Over Dixie, *Atlanta, Georgia; and Morenike Cheatom, Public Welfare Coalition.*

Management Inc, and the political officials on Waste Management's payroll.

People for Community Recovery and much of the Altgeld Gardens community have taken a stand. We are here, they say. We are not moving. The media may ignore our fight, but since the media does not care about us according to Rice, then we don't care about them or the system that they support. We need a new media, Rice said, one that the people can control.

Rice explained that the various levels of government agencies, together with elected officials, the corporate community and the media collaborate to suppress information. They seek to demobilize community activism such as among Altgeld Garden residents.

Leslie Willis commented that the traditional news media confuses and demobilizes readers by suggesting in story lines and headlines that nothing can be done to address the suffering and oppression of the people or by leaving the brutal message that people are poor, hungry and increasingly homeless because of their own actions and not because the American political system has failed them as humans in need.

Willis also introduced the concept of the new class and the new poverty, linking the two concepts to the struggles of the people at Altgeld Gardens and the struggles of people across traditional lines according to the imperative of the new technologies. The new technologies are creating political potential for common bonds to be forged between people being dislocated from the middle class and those assumed to be part of the so-called underclass. Willis asserted that the old class boundaries no longer apply, as the well-educated, relatively more affluent, middle class is being impoverished. More and more of them are beginning to swell the ranks of this new class.

For Willis, the new class represents the new social phenomena in society. It is comprised of the of people who can no longer sell their labor and skills on the market. They can not sell their ability to work anymore.

John Slaughter also engaged participants in the political implications of the new poverty and the realities of the new class. He used the tools of political economy, history and social movement analysis to demonstrate how the New South has developed, how the evolving mode of production and economic life can be distinguished from the current mode of development of the political economy, how the emergence of the New South is not a local and regional phenomena, how it is bound up to the national and international economy, and how the distinction between the rural and the ur-

ban is an invalid one today. He also argued that the struggles of the labor movement of the 1930s and the civil rights and Black-power phases of the 1960s movements offer rich lessons that are still applicable to the movements of today and the 21st century.

According to Slaughter, the mechanization of Southern agriculture and the introduction of factory-based production created the foundation for the subsequent dismantling of the plantation and land-tenancy system, creating the migration of millions of land tenants, sharecroppers and small farmers to leave the agricultural economy to enter the urban-based factory system of wage slavery. Now, a new socio-technical revolution is impacting the South as it has the North over the last two decades. The factory system of large scale labor-intensive production is being dismantled, replaced by robotics and specialty market production.

Slaughter, a Southerner by birth, was most effective by linking his presentation to the Selma-to-Montgomery (Alabama) march. He pointed out that the conference was being held on the 30th anniversary of the attack on the Edmund Pettis Bridge. The relatively new technology of that time, national television, made it possible for the world to follow the struggles of the 1960s. Not only did it spread the news, national TV heightened the contradictions within the system of racist segregation and domination holding up a way of life that had been displaced by the mechanization of agriculture and the industrialization of the Southern labor force, even as racial privilege died hard.

For Slaughter, the key lesson was that the African American people demonstrated that it was possible to fight and win against all odds. When people organize and resist, when they analyze their situation and struggle, good things happen. Moreover, the struggles of the African American people, both in the North as well as the transforming South, allowed sections of society to move onto the national political scene and further extended democracy and justice within capitalism. Slaughter was adamant that the fundamental economic relations that bind exploiters to exploited, oppressor to oppressed, require a fundamental transformation of society. The new kind of poverty that Slaughter presented to the participants demanded a new kind of social order — socialism.

Whenever people are in motion, as they are all over the South today, Slaughter said, there is room for optimism. But Slaughter brought a cautious optimism, pointing out that victory is only assured if we are better organized and more determined than those who want to hold back the

clock or who see the revolution as well as some of us do and want to build a police state. That's why today in the New South there are programs and plans from politicians to reintroduce prison slavery in the form of the chain gang.

Morenike Cheatom is the Director of Policy for the Public Welfare Coalition, a coalition of welfare reform activists and support organizations. Cheatom pointed out the importance of linking up the popular resistance to the strategic demand for basic transformation of society, especially in the field of struggle for basic human rights and services. Cheatom was passionate in her appeal to defend the hard-earned gains of those who fought for welfare policies that provide a safety net. The system is in crisis, she said, and it is important for those who may not yet be on welfare to protect the status and life chances of those that are currently on the system.

Cheatom presented detailed information on the Illinois legislative assault on welfare under the guise of eliminating supposed opportunists who use the system to cheat the taxpayers.

Subsequent audience discussion brought out quite clearly that the real welfare cheats are the rich and the corporations. They receive government subsidies while pressing to take away the woefully inadequate provisions of the human and family care system just as a whole new strata of people — well-educated and previously employed in well-paying jobs, with adequate health and pension support systems — are being marginalized.

The net effect is to stigmatize those who need the safety net, so that others who will need public assistance will not want it or will be too embarrassed to accept it. The result will be further alienation of people from their basic rights and the effective demobilization of a popular demand for progressive restructuring of public assistance for the new class. Among the ranks of the new class will be Black, Latino, Native American and white dislocated working people and their families.

Developing Communities

The new economic climate is forcing communities to adapt or be left behind. The communities most likely to miss out are poor ones. This workshop discussed community-level plans of action to address these fundamental issues.

Greg Gaither noted that he had been employed in the Chicago Public Schools for a decade and that he had seen many changes over that period. Gaither sees his task as assessing the limitations of prior efforts of drug prevention within the system that tried to address student drug abuse without addressing adult drug abuse at the same time. Gaither described the area of the city in which he works in South Chicago/Calumet River. He provided an overview of the Drug Free/Drug Prevention resource allocation, staffing and the past approaches to solving problems. Gaither pointed out that one structural problem was that while some schools spent all their money, there were many who had to turn dollars back into the central school authorities. Gaither identified some of the traditional initiatives under the Drug Free Initiatives: midnight basketball and after school or weekend alternative programs for youth and families. These innovations went well beyond the "just say no" programs introduced under President Reagan, which placed all responsibility on the individual to address society's drug problem.

One new initiative established teams of weekend basketball players. The kids in the program all had to bring their fathers or surrogate fathers. On opening day of the program in fall 1994, there were 70 fathers accompanying their kids — a terrific turnout. The program made clear to everyone

Chair: Nacho González, Economic Planner/Outreach Specialist, University of Illinois at Chicago Center for Urban Economic Development. Panelists: Greg Gaither, Drug Prevention Counselor/Drug Free Coordinator, District 10, Chicago Public Schools; Doug Gills, Assistant Professor of Urban Planning, University of Illinois at Chicago College of Urban Planning and Public Affairs and Center for Urban Economic Development; Scott Addison, freelance community economic development planner; and Walter "Slim" Coleman, Fair Share Coalition and Justice Graphics.

that basketball was not an end in itself but a means of solving social problems for the community, and identified drug abuse and trafficking as a manifestation of adult male unemployment.

Snyder Truck, a transnational trucking firm with routes extending into Canada and Mexico, then announced that it wanted to recruit some minority truck drivers at a nearby housing development. Snyder Truck officials were quick to point out that they must be drug free, have high school diplomas and no criminal records. Only two or three applicants were qualified under their criteria.

It was clear that Snyder was not sensitive to the conditions plaguing most poor urban communities. So Gaither's program went to South Shore Bank and the community colleges to set up a job readiness/rehabilitation program, targeting the adult males who wanted to support their families. Then they went back to Snyder to press their demands that the company modify its employment policies.

According to Gaither, This experience showed that drugs and violent crimes are systemic and tied to global restructuring of the industries and occupations. Second, even if Snyder could have hired 50 people, there are not enough jobs to meet the demand. Third, many firms are using tactics to disqualify rather than to qualify Blacks, other minorities and poor people, Lastly, without community action and organization, people don't stand a chance going up against big firms like Snyder.

Doug Gills's focus was upon how the socioeconomic and technological revolution was impacting upon citizen participation and social mobilization within urban communities. Gills' presentation focused upon four points: (1) the "urban" is a condition and not a place and has significant global dimensions; (2) the technological revolution raises significant potential for the expansion of the transmission of knowledge and information; (3) it also poses major challenges with respect to community economics and power; (4) the reform movement is good, but the struggles in themselves do not change the fundamental structure of society at the macro or micro level.

The major strategic question, according to Gills, is how do we have a strategic vision and at the same time maintain positive, non-reformist, work within the reform movement? The struggles in urban communities, if they are progressive, are a problematic of both democracy and social equity. "Equity and extension of democracy are the bottom lines," Gills noted. Dave Ranney and General Baker both raised in their plenary presentations the problem of most reform movements lacking a strategic vision, while

Baker was emphatic about overcoming the effects of dehumanization and victimizaton in the reform struggles at the community level. Gills referenced contemporary urban community-building activity as essentially bridging activity, that is, approaches that create or facilitate windows of opportunity to link reform struggles to extend democracy and provide for the maintenance or extension of equity struggles to the necessity of fundamental change. As noted by other conference presenters, Gills insisted upon the need to interact in the day-to-day struggles that give the people hope, that avoid blaming the victims for systemic problems.

Gills noted that community-building as bridge-building activity did three things: (1) educate people to the possibilities of building a new society, resulting from exposure of the contradictions and tensions of the current urban political economy; (2) create models out of social action that provide people glimpses of the future; and (3) provide concrete, substantial benefits or relief through immediate fightback. Gills concluded with key aspects of the current urban crisis: (1) it is a product of the capitalist system's exploitative and oppressive relations; (2) it is global in nature; (3) the new technologies, while creating tremendous productive capacities, are relegating great numbers of people to the margins of society, jobless and homeless, while a few people get richer and richer; (4) the next generations are likely to have an even more difficult time achieving the American Dream, and their dreams are being shattered or turned into nightmares. Gills linked the community struggles in Chicago to the empowerment zone federal policy initiative as an example of the limits of reform policies and movements. He suggested that the three forms of community (place, condition and interests) were having points of convergence within urban centers.

Scott Addison presented an innovative multimedia presentation focused on urban industrial site preservation and reutilization. Addison criticized traditional planners for being rigid and failing to see the human and social dimensions of urban planning. He critiqued social economic planners for not recognizing that economic development requires capital investment and job generation cannot be based upon entrepreneurialism. "We need a mass investment in reindustrialization tied to local and regional markets, rather than to global markets," he said. Addison used slide presentations of several industrial locations in Chicago to highlight his points. Addison suggested that while there will never be a reindustrialization based on manufacturing, many manufacturing sites can be redesigned into "work and live" centers, combining small-scale light manufacturing, assembly and residen-

tial quarters in remodernized factory spaces. He further argued that a combination of community-based development groups, institutions, and socially-conscientious lending from public and private sectors can be the basis of developing employment opportunities and saving factory-based residential communities on the other. Addison admitted that these are interim steps.

Walter "Slim" Coleman focused upon the relationships between rebuilding viable school-communities as centers of learning and development, with the demand for adequate access of school age youth to math and science based technologies. Coleman was insistent that technology in the hands of the rich, wealthy and powerful was resulting in the dumbing of most Americans through crass consumerization of technological gadgets. Meanwhile the math and science at the base of these new electronic technologies are being denied to our youth and children. Coleman agrees that the new technologies will result in very few jobs for an increasing number of people in the work market, while an even great proportion of the population will be relegated to the margins without the knowledge underpinning the new technological wonders. Coleman spent time discussing the Chicago Algebra Project and recent interventions by organized community groups to influence public education policies and curriculum that insure that every high school student would have completed algebra by the end of the eighth grade. Coleman was focused in his view that all kids, especially poor Black and Latino youth, could learn to master mathematics based on the utilization of their own collective experiences and on the commitment of trained, socially conscientious teachers with the overall involvement of parents and community residents. Coleman, who has been instrumental in the formation of a intervention into the Chicago Public Schools called the Chicago Systemic Initiative along with the Chicago Algebra Project, asserted that the most socially significant aspect of the creation of a demand for algebra and enhanced mathematics at the junior high school level is not that all the kids will be science-literate and land well-paying jobs—because he doubted that the jobs would be in the social system and in the economy to meet the demand—but that "these youth would be armed with the skills to assist their communities in social problem-solving." Seeing mathematics as a language and logic of collective problem-solving is the major implication of the social technological revolution, according to the longtime community activist. "Without access to these skills, then I do not see how poor and alienated people and the future generation of the 21st Century will survive. To me

this is a political question. So far, the masses of people and the ordinary citizen is on the verge of being shut out of the real side of the technological and scientific revolution, math is a weapon of class struggle. We have been cut in on the consumer side and shutout on the production and distribution of ideas that make sense from a collective survival point of view," noted Coleman. That is why Coleman and other education and community activists in the education reform motion in Chicago have recently formed the Parent-Community Council on Math and Science Technology as a grassroots mechanism to do popular education and lead action struggles centered around the linking of the struggle for popular mathematics with other survival issues in oppressed and marginalized communities.

Chicago, From Hog Butcher to What We Envision

In 1914 Carl Sandburg published his moving hymn to industrial Chicago. Chicago was hog butcher for the world, tool maker, stacker of wheat, the nation's freight handler, and maker of steel. Today, the stockyards are gone, the steel mills disappearing, and transportation systems are run by computers. If "Chicago" were written today, what would it say? Or if written in 15 years, what would we hope (or fear) it to say? This session, organized by the Guild Complex, was a writing workshop to envision the Chicago of today and tomorrow.

As we struggle with a constantly changing technology, trying to understand and amass all the information we need in this information age, we need the courage and the ability to adapt, over and over again, to a situation that will not stay still; courage in the face of a shrinking situation, in which most of us know that if we are not out on the street now, we are only a paycheck away from it. We have to know what it is that we want in order to be able to differentiate, in the vast and overwhelming amount of information available, between what is necessary to us and what is not. All the knowledge and information in the world will not help us, without the imagination that makes it ours, and without our own vision to fit it into. We need courage; we need adaptability; we need vision.

So it was important that a place was made in this conference for this workshop. With everything in our schooling militating against our imagination, and with everything in our culture telling us not to believe in our visions, it is easy to see why very often imagination and vision are overlooked in favor of "dealing with reality" — as though we could deal with reality without imagination or vision. Our educational systems can actively discourage imagination; in order to survive, imagination goes underground.

Workshop leaders: Anne Schultz, Founder and Director, Institute for the Imagination; and Dino Lewis, poet, Homeless Writers Coalition, Sacramento, California.

It is very sad that we so often use the term "real world" to mean a world that is already circumscribed, a world in which we frequently feel victimized because it is defined by somebody else, and our own vision is irrelevant. Bereft of vision, we are likely to live aimlessly, lacking the meaning, purpose, and place in the scheme of things that is rightfully ours. Knowing our vision, however shaky it may sometimes be, we have a sense of who we are, and how and where we fit it. The object of this workshop was to build a community — real, however brief — in order to focus together on the discovery and articulation of vision in our individual and collective lives.

Our plan was to use spontaneous imagining, with its built-in suspension of judgment, to arrive at individual vision, move to reciprocal vision, and then to collective. The suspension of judgment is crucial; if we censor our spontaneous images, either because we do not like them or because they are not consonant with what we already know and have thought about, we will not learn anything new. If an individual vision is true, it points us towards our part in the whole; it leads us, if we will take it in that direction, to collective vision. If we start from collective vision to try to find individual vision, we may abandon our own vision and thus abandon ourselves. If a collective vision is not grounded in the individuals who share it, it is likely to be adversarial, with a deep and not always conscious premise that intrinsically we lack power. This premise can become a self-fulfilling prophecy. A vision can help us to break from adversarial thinking, because it is deeply grounded in who we are.

To say that vision is not adversarial is not at all to say that it is passive and that we do not need to fight. We do indeed need to fight — using all the strength, power, and substance of our shared vision.

The workshop was in two parts. The first had to do with creating a context for vision, the second with the vision itself. A vision is embedded in the past, is accepting of the present, and points towards the future. Creating the context had to do with each person's sense of these three. To focus on the past, the workshop began with a poet and actor John Starrs reading Carl Sandburg's "Chicago" (see page 7).

When he had finished reading, the group recalled and discussed the images and the connections they made to them — the exuberant masculinity of the big shoulders; men with 300 pound pigs on their shoulders and the blood on the streets around the stockyards; one woman's family coming in the 1920s to the big city, the city of workers, to make their living — a ro-

bust and happy city, very different from the increasingly jobless city of now; strong men whose work is now done by people sitting in glass buildings in front of computers, a slick, skyscraper, stockyardless present, as far away from the hog butcher as you can get; the city of the past, exuberant and defiant, conquering everything, that has now become the "second city." What does that mean to you, the second city? workshop leader Anne Schultz asked, and Lew Rosenbaum answered, "It means we ain't shit," and so on, the images beginning haltingly, then gathering momentum and pouring out, as one person's image triggered another's. Overwhelmingly, the images of the past were more positive and vital than those of now. Only one person spoke of the anger and destruction of both times.

Briefly they wrote, then — images that they remembered from the poem and from the discussion — quick images of their own past and present. Kay Strauther, for instance, wrote:

> Past: new people coming to settle from many places. Settle in little neighborhoods with people of their kind. They stick together...
>
> Present: people are still coming to settle but they are more scattered, more mixing, mixing names, ancestors, colors, sharing the same problems. Down the road, people begin to understand that time brings a change...

There was more of a positive feeling of possibility in the writing than in the telling.

Dino Lewis, a poet formerly homeless in Los Angeles, read a poem of his, "How Quickly the Good Times Go" (see page 8). The poem took the workshop deeper into the present that lives side by side with the past of the stockyards and the present of the slick skyscraper. He took it to the streets between and beyond the skyscrapers and the reality of life on those streets. He took it deeper into the soul of this conference on jobs and technology to the internal place where many of us who have jobs now are afraid that the person he's talking about in the poem could be us.

Lewis talked about the importance of writing this poetry for himself as a human being, and the importance of sharing it with others, so that they can gain courage from it, and feel less alone. He gave an example of a time when he was set upon by two young men because he was wearing a red jumpsuit. With a second poem about that incident, he gave the group an

opportunity to see how poetry can be made out of immediate experience, and how it changes one's relationship to the experience by giving one imaginative mastery over it.

At that point the participants wrote down any issue or issues that they were dealing with in their own lives right then — in the second part of the workshop, they might find themselves referring to these issues.

With images of the past and present as a foundation, the second part of the workshop began with reading a poem of the future by Otto René Castillo, "Return to the Smile" from *Tomorrow Triumphant* (San Francisco: Night Horn Books, 1984). This is a poem of hope and optimism which was good to hear. It's so easy, even seductive,to get pulled down into the awfulness of things. Vision, by its very nature, is hopeful and optimistic, and part of the hope of the workshop was that in coming up with a vision, the workshop participants would leave with a strong feeling of individual and mutual possibility.

Piaget has said that all contradictions are resolved on a higher level — not some, but all. Contradictions are resolved in the specificity of vision. This doesn't mean a denial of the negative at all; it only means to bring hope and optimism to the struggle. Time was running short, so the group didn't spend much time discussing the Castillo poem. It was more urgent to go back to their own future using an exercise invented by Zoie Keithley, a writer who teaches at Columbia College and in the writing program of the Chicago Teachers' Center. The exercise is called "Folk Tale As Metaphor."

The participants imagined their lives one, two, even five years from now, close enough to be able to connect to where they were going right then. Schultz asked them, Where do you want to be? What are your goals? Participants jotted down notes and a few people read back what they had written. Then Schultz guided them on a journey towards the goal or goals they had identified. She started them with making a list:

1. Something powerful from your ancestors, that you will be bringing with you as you move towards the goal.
2. Three unhealed wounds that you bring with you on this journey.
3. Three tasks you must complete.
4. Three obstacles you will have to overcome.
5. An unexpected friend who will help you.
6. An unexpected strength in you that will come forth.

7. A horrific monster you will have to slay.
8. A wound of awakening you will suffer.
9. A talisman or a lucky object you bring with you from a master or teacher that you knew.
10. Five tools that will help you on the way.
11. A song, poem, chant, or prayer, that will lighten your steps and carry you through to your goal.

When they were done, they looked over their lists, circling the things that were the most important and some sharing with the group. Many of the participants told their monsters. There was the monster of lethargy; the monster of going it alone; the monster from a childhood dream, half bird of prey, half Nazi officer, who ate people. How can you deal with this monster? Schultz asked the writer. "Just like in the dream. Outsmarting him with words was the only way. He was cruel and emotionless and would not respond to feeling," answered participant Tom Hirschl.

What about the unexpected friend? Schultz asked, remembering the monster of going it alone. That writer didn't know, but after writing, he realized that knowledge would defeat the monster. There was also the monster of our use of virtual reality, with its capacity for positive use or for abuse.

Then it was time to write, using the things they had included in their lists, a narrative of their journeys. Schultz asked them to write in any way they wished — in the third person, in the form of a folk tale, in images, a poem — but to be aware of moving towards the goal they had written down at the beginning. They wrote for about twenty minutes.

When they read back, there were more monsters. "The monster is where I live. It is America," wrote Lewis. "An old but not a magic dragon / large and purple / lackadaisical dragon / whose bottom / spreads across / the path / shedding large tears..." came from Leslie Willis.

This exercise can be left totally open-ended or can be a folk-tale writing exercise. The advantage of a folk tale is that the participants are more likely to discover something new, to really move towards a vision of the future that will contain new possibility and surprise them, that will speak to them of a deeper truth than they could get to by writing only what they knew. In this workshop, Tom Hirschl, who had told the very powerful image from a dream, of his sister and himself sitting in a playground in his childhood and

the strange creature that appeared, half bird of prey, half Nazi officer, abandoned this image when it came to the writing. Instead he wrote a polemic about social and political issues. Tom said later that it was easier to change the subject and write the polemic than deal with the image, with the content that he did not fully understand. He missed a chance for discovery, which is perfectly legitimate, but a pity just the same. We feel vulnerable in the face of discovery and much safer staying with what we already know. It would be good to encourage people to work with images rather than with ideas.

Mike Hammermeister raised a question in what he wrote that went full circle back to why have a workshop on imagination in the first place:

> My concern is how do we incorporate what we learned of ourselves, using this method of freeing the inner self for discovery? What can we do to encourage this process of understanding what it is we must confront in order to establish a collective voice in overcoming the problems that we must deal with daily in order to survive?

The next steps would have addressed this question. The group would have looked together at the monsters, the strengths, the wounds, the obstacles, and the goals, and they would have worked to combine these images; and then to find the collective voice and vision. There was not time, in an hour and a half, to take these next steps. At least another hour and a half would have been necessary. But it wasn't so bad to be left with the question; and with the feeling that even the hour and a half was worth it. People went away imaginatively refreshed, with a rich feeling of having done something for themselves, together. Hopefully, at some later time the group will come together again and take the remaining steps. The images will still be there, to pick up again, to contemplate, and to see where they might go from there.

To close, here is "Gangs Bang the Internet," a poem Lew Rosenbaum wrote in the workshop:

> Kids on my block plug
> into the corner computer center
> and write and draw
> THE WORLD

Youth, Culture and Survival in a Jobless World

The greatest burden of the economic crisis falls on youth. Inner city youth face unemployment rates as high as 50 percent. When youth respond with new cultural forms, they are attacked for violating the norm. However, each generation must deal with its environment, whether older people like it or not. This session was for youth to discuss projects for change in the Chicago area as well as taking control of their own lives.

This workshop was aimed at youth, and it was designed to be led by key youth activists in the areas of culture and politics. The participants in the workshop included high school, college, and non-student youth, as well as parents and community activists who work with youth. The main development of the session was that the youth who led the workshop completely threw out the structure of presentations followed by discussion, and set up a fully interactive, maximum participatory workshop. There was less of a linear narrative and more of a dialectical circle. Each person was asked to state their views and each began to respond to statements already made. The longer the discussion went, the more themes emerged, and on that basis an intellectual focus of the overall discussion became apparent. A new workshop format emerged that seemed chaotic but maximized democracy, that began with experience and eventually led to theoretical issues.

The participants each explained what they were getting from the conference and why they were interested in youth. The two main aspects of the conference mentioned were the diversity of people all grappling with the same issues and the impact of technology and on society — the people and the topic. A homeless writer wanted to discuss the profound meaning of graffiti. A journalist wanted to discuss the youth and police because he had just covered a police murder case. A 75-year-old veteran of the struggle

Chair: Bill Upski, The Subway and Elevated Press.

said she simply felt young. A business person said her business focuses on helping young people. An artist said he thought youth have the new ideas about culture. Others said they were having difficulty organizing the youth in their neighborhood, trying to form a youth wing of a political organization, and of course some were young.

Upski made three overall points about youth:

1. The fight for social justice begins in your own circle, in your own environment.
2. The youth need to work hard and be productive, to create the world we want to live in;
3. The youth need to join in the fight for power.

It was at the end of the workshop that several young people gave back their two biggest issues about vision and a plan of action. One said, "While we are dreaming about the new technology feeding our consumer jones, we need to find a reason to live, other than those same old jobs that you say won't be there. We have to discover a new meaning for life. Why can't we all be artists? While can't we spend our lives creating?" The discussion began to explore the social and historical content of human freedom.

Another youth said, "How are we gonna do all this? It's okay to talk and stuff, but the real deal is what you gonna do?" They heard the talk and began to demand that everyone do the walk.

Part Three

Appendices

Appendix A

Course Outline: The Technological Revolution and its Impact on Society (Social Change in the United States in the 1990s)

The technological revolution based on computers and biotechnology is just beginning. However, enough has happened to lead many analysts and scholars to predict a revolutionary transformation of society on a global basis. This is a course outline for the study of the technological revolution.

At every stage of development in the history of capitalism, there have been corresponding innovations in curriculum development. In the United States the Land Grant colleges were created to accommodate the industrialization of farm and factory in the nineteenth century. The general curriculum was designed to include more science and technology. In the middle of the 20th, the two-year community colleges were created to educate clerical and technical workers. In this context curriculum revisions were aimed at extending the academic preparation of high school to meet changing job requirements.

The curriculum revision of the information age has been taking form over the last two decades, focusing on math, science, and the use of computers. However, no basic courses have been institutionalized and integrated into the general education models. Our course outline is a contribution toward this end.

As this course outline is adopted and modified, we will be using the Internet as our main vehicle for communicating across campuses and communities with students and other instructors. Everyone who reads this book should consider becoming involved. We are interested in opening up an international discussion on the possible scenarios for the 21st century. All points of view are welcome in this process. The main issue is not whether you agree with any particular formulation. Our main concern is to seek truth from the facts in an environment of respect and honesty.

This curriculum can be taught in a four-session community-based study group, a ten-week quarter, or a sixteen-week semester. Instructors can adapt the course to the local requirements and share their adaptations with

others. Community organizers, church activists, booksellers and professors of sociology, history, business, biology, African American studies, and creative writing have already indicated their interest in teaching from this course outline and will adjust it according to their subject matter and level of instruction.

BASIC COURSE CONTENT: THE FOUR REVOLUTIONARY PROCESSES

The revolutionary process is a complex transformation of all aspects of society. At the risk of oversimplification, we have divided the overall process into four different but related topics for study: the technological revolution, the economic revolution, the social revolution, and the political revolution. These are simultaneous processes that influence each other, but they all rest on technological change and are consummated by political change.

Technological Revolution

Tools and techniques used for the acquisition and production of food, clothing, and shelter are essential features of how society develops. We therefore use technological change as a basis for our study of history. If we use this approach, we have to understand three stages of revolutionary transformation of all societies: the agricultural revolution, the industrial revolution, and the information revolution.

The current information revolution is the main focus for this course, however. The information revolution is defined by the importance of discovering the genetic code for life and the digital convergence of all electronically based information. This includes many diverse elements, such as the basic energy source of electricity, new materials (e.g., fiber optics), computers, biotechnology, satellites, and the Internet. These new technologies constitute a revolution that is changing our lives.

Economic Revolution

The economic revolution includes unprecedented levels of productivity in new centers of capital accumulation and the rapid creation of a new permanently unemployed population. It takes the form of extreme economic polarization between a small billionaire class of new high-tech capitalists and a rapidly growing class of impoverished people.

This economic revolution changes the forms of economic life. The corporation is being "reengineered" with new managerial practices, especially such new concepts as flexibility, networking, the team, and lean produc-

tion. At the same time, more and more people are being expelled from secure working lives into the insecurity of temporary, part-time, and minimum wage jobs. The economic geography of the United States is dividing into spaces of ostensibly safe zones of privilege and forbidden zones of violence, poverty, and disease.

Social Revolution

As economic polarization becomes more and more extreme, social organization is torn apart. This constitutes a social revolution in which the old society is destroyed and a new one takes shape. All of the social institutions that were built in the industrial society are being torn apart. For example, the public schools were designed to educate the industrial workers but are no longer useful in the new capital-intensive economy. With the trend now toward privatization, public education that was once a civil right is now becoming a market place commodity. The same is happening to health care, water, and so on.

Times like these test our grip on the American Dream. The vision of the good life has to be brought into this debate and defined in terms of civil rights guaranteed to everyone. The top priority of the new society will be either to protect profits for a few or to establish a decent quality of life for everyone.

Political Revolution

All of these revolutionary processes (technological, economic, and social) are managed by creating laws. The recent takeover of the Congress by reactionary right-wing forces has pushed politics in this country further into a revolutionary mode of destroying society. They are eliminating legislation designed to regulate capital in the interest of the common good. They also set the context for the rapid surfacing of a broad-based armed militia movement, a fascist presence in government, and a right-wing propaganda apparatus based in talk shows and the electronic church.

This political revolution is not expanding mass democratic participation in society. It is limiting access. It is eliminating minority set-asides, affirmative action and redistricting rules that ensure minority representation.

But this is a period of great change. There is also the developing movement of those locked in poverty, the voiceless. On the basis of the new wealth, a new society is possible in which people are guaranteed a high

quality of life. There is a great struggle brewing to determine which way the society will go.

TEACHING THE COURSE IN THE COMMUNITY

This course can be organized as a community study group consisting of one session on each of four revolutionary processes. If you wish to supplement this book with additional readings, our Web page includes suggestions. Goals for a four session study might include the following:

1. acquaint people with the basic issues of the four main revolutionary processes;
2. involve people in the policy debates associated with each revolutionary process;
3. begin to express individual visions of how society ought to be organized and run;
4. encourage people to get involved in formulating plans and taking action to make their visions a reality.

TEACHING THE COURSE IN AN ACADEMIC SETTING

This curriculum can be taught in lectures or in seminars. Each week can focus on a new topic to identify the basic question and determine the extent to which changes are revolutionary processes. There are two fundamental questions: What dynamic forces are shaping the transformation of society? What policy options do we have to shape the new society?

The class should be based on local conditions. Students should be encouraged to participate, given time to discuss information, and formulate their own ideas. Students can get the most out of the course if they are required to prepare a research report on a topic of their choice within one of the weekly topics.

While we suggest each course be organized on the basis of the four revolutionary processes, we encourage the instructor to choose from the weekly topics listed below. This course is designed for the United States, but we are reaching out to faculty and students outside of the United States as well. We suggest that these courses be comparative.

The bibliography below is general, but this course can be taught in many specific disciplines. As other more specialized bibliographies develop, we hope to present them on our Web pages. There are alternative content areas to emphasize as well as methods. Because envisioning one's own indi-

vidual future is so critical to engaging in this debate, we particularly encourage all adaptations to include creative writing. In addition to the poetry published at the beginning of this volume and the extended summary of the Midwest conference's writing workshop, "Chicago, From Hog Butcher to What We Envision," more suggestions are posted on the Web page. We encourage the use of fiction and poetry as required readings and as acceptable forms for student research papers. Ideas for content areas include:

- **HISTORY**. Emphasize the historical developments over the 20th century. Review alternative approaches, including the Tofflers' perspective of the three waves of economic revolution, the comparative experience of the industrial and postindustrial technological revolution under socialism and capitalism, and a comparison of the industrial countries and the developing societies.
- **POLITICAL SCIENCE**. Emphasize the issues of power, policy formulation, and decision making. Alternative approaches might focus on legislation, judicial decisions, technological revolution, presidential politics, and the like.
- **SOCIOLOGY**. Emphasize the impact of these developments on the social institutions of society. This might focus on the transformation of the family or the school.
- **ECONOMICS**. Emphasize the accumulation process and the social organization of the labor process.
- **ENVIRONMENTAL STUDIES**. Emphasize how the revolutionary processes are impacting the environment. Examine dangers and opportunities.
- **SPECIFIC COMMUNITIES**. Emphasize how the revolutionary processes are impacting women, African Americans, Spanish speaking communities, Native Americans, or people in your particular city or region.

THE INTERNET*

This course will be taught in many locations in the United States and elsewhere. The Internet will be used to assist all participants, enabling stu-

* *To participate in the on-line discussion and to see postings elaborating on this curriculum, join the job-tech discussion list on the Internet or visit our Web pages. Detailed instructions are on page 245. You can also contact our publisher, Twenty-first Century Books, at (312) 538-2188, fax (312) 538-1128, or e-mail tcbchgo@aol.com.*

dents to interact, permitting cross-disciplinary sharing, encouraging a global discourse, and driving our intellectual study of the new technology with the technology itself. As we study the emergence of the future, we will bring it into existence.

MAIN TEXTS AND RECOMMENDED READINGS

MAIN TEXTS

Abdul Alkalimat, Doug Gills, and Kate Williams, eds., *Job-Tech: The Technological Revolution and Its Impact on Society* (Chicago: Twenty-first Century Books, 1995).

Stanley Aronowitz and William DiFazio, *The Jobless Future: Sci-Tech and the Dogma of Work* (Minneapolis: University of Minnesota Press, 1994).

James Davis, Thomas Hirschl, and Michael Stack, eds., *Cutting Edge: Technology, Information Capitalism, and Social Revolution* (London: Verso, forthcoming).

Jeremy Rifkin, *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-Market Era* (New York: Putnam, 1995).

Alvin Toffler, *Power Shift: Knowledge, Wealth and Violence at the Edge of the 21st Century* (New York: Bantam Books, 1990).

GENERAL HISTORY

Richard Barnet and John Cavanagh, *Global Dreams: Imperial Corporations and the New World Order* (New York: Simon and Schuster, 1994).

Martin Canoy, Manuel Castells, Steve Cohen, and Fernando Cardoso, *The New Global Economy and the Information Age: Reflections on Our Changing World* (University Park: Pennsylvania State University Press, 1993).

Barry Jones, *Sleepers Awake: Technology and the Future of Work* (Oxford: Oxford University Press, 1982).

Paul Kennedy, *Preparing for the Twenty-First Century* (New York: Random House, 1993).

Joan Rothschild, *Feminist Perspectives on Technology* (New York: Pergamon Press, 1983).

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Manuel Castells, *The Information City: Information Technology, Economic Restructuring and the Urban-Regional Process* (Oxford: Basil Blackwell, 1989).

Douglas Dowd, *The Twisted Dream: Capitalist Development in the United States Since 1776* (Cambridge, Massachusetts: Winthrop, 1974).

Bennett Harrison, *Lean and Mean: The Changing Landscape of Corporate Power in the Age of Flexibility* (New York: Basic Books, 1994).

Robert Reich, *The Work of Nations: Preparing Ourselves for Twenty-First Century Capitalism* (New York: Random House, 1991).

Juliet Schor, *The Overworked American: The Unexpected Decline of Leisure* (New York: Basic Books, 1992).

Computers

Brian Kahin and James Keller, *Public Access to the Net* (Cambridge, Mass.: MIT Press, 1995).

Kevin Kelly, *Out of Control: The New Biology of Machines, Social Systems, and the Economic World* (Reading, Mass.: Addison-Wesley Publishing Company, 1994).

Nicholas Negroponte, *being digital* (New York: Knopf, 1995).

Howard Rheingold, *The Virtual Community: Homesteading on the Electronic Frontier* (New York: Harper, 1993).

Doug Schuler, *New Community Networks: Wired for Change* (Reading, Mass.: Addison-Wesley, forthcoming).

Biotechnology

Michael Fox, *Superpigs and Wondercorn: The Brave New World of Biotechnology and Where It May Lead* (New York: Lyons and Burford, 1992).

Ruth Hubbard and Elijah Ward, Exploding the Gene Myth (Boston: Beacon Press, 1993).

Daniel Kevles and Leroy Hood, eds., *The Code of Codes: Scientific and Social Issues in the Human Genome Project* (Cambridge, Mass.: Harvard University Press, 1992).

J. R. Kloppenburg, *First the Seed: The Political Economy of Plant Biotechnology, 1492-2000* (Cambridge, England: Cambridge University Press, 1988).

Vandana Shiva, *Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology* (London: Zed, 1993).

AGRICULTURE

Willard Cochrane, *The Development of American Agriculture: A Historical Analysis* (Minneapolis: University of Minnesota Press, 1993).

David Goodman and Michael Redclift, *Refashioning Nature: Food, Ecology and Culture* (London: Routledge, 1992).

Robin Mather, *A Garden of Unearthly Delights: Bioengineering and the Future of Food* (New York: Dutton, 1995).

Paul Raeburn, *The Last Harvest: The Genetic Gamble that Threatens to Destroy American Agriculture* (New York: Simon and Schuster, 1995).

Jeremy Rifkin, *Beyond Beef: The Rise and Fall of the Cattle Culture* (New York: Dutton, 1992).

MANUFACTURING

Edward Greer, *Big Steel: Black Politics and Corporate Power in Gary, Indiana* (New York: Monthly Review, 1979).

Kurt Hoffman and Raphael Kaplinsky, *Driving Force: The Global Restructuring of Technology, Labor, and Investment in the Automobile and Components Industry* (Boulder, Colo.: Westview, 1988).

David Noble, *Forces of Production: A Social History of Industrial Automation* (New York: Knopf, 1984).

Gregory Squires, Larry Bennett, Kathleen McCourt, and Philip Nyden, *Chicago: Race, Class, and the Response to Urban Decline* (Philadelphia: Temple University Press, 1987).

James Womack et al., *The Machine That Changed the World: The Story of Lean Production* (New York: Harper, 1990).

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Stephen Bradley et al., eds., *Globalization, Technology, and Competition: The Fusion of Computers and Telecommunications in the 1990s* (Cambridge, Mass.: Harvard Business School, 1993).

Stewart Brand, *The Media Lab: Inventing the Future at MIT* (New York: Penguin Books, 1988).

Anne Wells Branscomb, *Who Owns Information? From Privacy to Public Access* (New York: Basic Books, 1994).

Noam Chomsky and Edward Herman, *Manufacturing Consent* (New York: Pantheon, 1988).

Douglas Rushkoff, *Media Virus!: Hidden Agenda in Popular Culture* (New York: Ballantine Books, 1994).

ENVIRONMENT

Bunyan Bryant and Paul Mohai, eds., *Race and the Incidence of Environmental Hazards: A Time for Discourse* (Boulder, Colo.: Westview, 1992).

Herman E. Daly and John B. Cobb, Jr., *For the Common Good* (Boston: Beacon Press, 1994).

Samuel Epstein, *The Politics of Cancer* (San Francisco: Sierra Club Books, 1978).

Paul Hawken, *The Ecology of Commerce* (New York: Harper Collins, 1993).

James Trefil, *A Scientist in the City* (New York: Anchor, 1994).

EMPLOYMENT/JOBS

David Dembo and Ward Morehouse, *The Underbelly of the U.S. Economy: Joblessness and the Pauperization of Work in America* (New York: Apex Press, 1993).

Chris Freeman and Luc Soete, *Work for All or Mass Unemployment? Computerized Technical Change into the 21st Century* (New York: St. Martin's Press, 1994).

Frank Gaffikin and Mike Morrissey, *The New Employed: Joblessness and Poverty in the Market Economy* (London: Zed, 1992).

Barbara Garson, *The Electronic Sweatshop: How Computers Are Transforming the Office of the Future into the Factory of the Past* (London: Penguin Books, 1988).

Shoshana Zuboff, *In the Age of the Smart Machine: The Future of Work and Power* (New York: Basic Books, 1988).

POLICE/PRISONS

Mumia Abu-Jamal, *Live from Death Row* (Reading, Mass.: Addison-Wesley, 1995).

John Hagan, ed., *Crime and Inequality* (Chicago: University of Chicago Press, 1994).

Darnell Hawkins, ed., *Ethnicity, Race and Crime: Perspectives across Time and Place* (Albany: State University of New York, 1995).

Wilbert Rideau and Ron Wikberg, eds., *Life Sentences: Rage and Survival behind Bars* (New York: Times Books, 1992).

Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century* (Boston: Little, Brown, 1993).

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Thomas Boston, *Race, Class and Conservatism* (Boston: Unwin Hyman, 1988).

James Jennings, *Understanding the Nature of Poverty in Urban America* (Westport, Conn.: Praeger, 1994).

Elliot Liebow, *Tell Them Who I Am: The Lives of Homeless Women* (New York: Free Press, 1993).

John Schwarz and Thomas Volgy, *The Forgotten Americans* (New York: Norton, 1993).

William Wilson, *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy* (Chicago: University of Chicago Press, 1987).

COMMUNITY DEVELOPMENT

Abdul Alkalimat and Douglas Gills, *Harold Washington and the Crisis of Black Power* (Chicago: Twenty-first Century Books, 1989).

Commission on Global Governance, *Our Global Neighborhood* (New York: Oxford University Press, 1995).

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Robert Lavelle, ed., *America's New War on Poverty: A Reader for Action* (San Francisco: KQED Books, 1995).

Gregory Squires, *Capital and Communities in Black and White: The Intersection of Race, Class and Uneven Development* (Albany: State University of New York, 1994).

YOUTH

Donald Bakeer, *Crips: The Story of the South Central L.A. Street Gang* (Inglewood, Calif.: Precocious Publishing, 1992).

Leon Bing, *Do or Die* (New York: Harper, 1992).

Ice T, *The Ice Opinion* (New York: St. Martin's Press, 1994).

Luis J. Rodriguez, *Always Running* (New York: Simon and Schuster, 1994).

William Upski, *Bomb the Suburbs* (Chicago: Subway and Elevated Press, 1994).

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Robert Conot, *Rivers of Blood, Years of Darkness* (New York: Bantam, 1967).

Robert Fisher and Joseph Kling, *Mobilizing the Community: Local Politics in the Era of the Global City* (Newbury Park, Calif.: Sage, 1993).

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Gerald Horne, *The Fire This Time: The Watts Uprising and the 1960s (Charlottesville: University of Virginia Press, 1995).*

Frances Fox Piven and Richard Cloward, *Poor People's Movements: Why They Succeed, How They Fail* (New York, Vintage, 1978).

VISIONS

William Greider, *Who Will Tell the People? The Betrayal of American Democracy* (New York: Simon and Schuster, 1992).

Nelson Peery, *Entering an Epoch of Social Revolution* (Chicago: Workers Press, 1993).

Marge Piercy, *Woman on the Edge of Time* (New York: Fawcett Crest, 1976).

Alvin and Heidi Toffler, *Creating a New Civilization* (Atlanta: Turner Publishing, 1994).

Jim Wallis, *The Soul of Politics* (New York: New Press, 1994).

Appendix B

A Chronology of the MIT and Midwest Job-Tech Conferences

The first job-tech conference was the Technology and Employment Conference held January 21-22, 1994, at the Massachusetts Institute of Technology, a world center of scientific discovery and technological innovation, in the aftermath of the so-called Massachusetts Miracle. The Massachusetts Miracle was the economic turnaround during the administration of Governor Michael Dukakis that was to pull the state out of its 1970s downturn. Federal and state dollars funding education and public works along with research, development, and production associated with the electronics and computer industries fueled the Massachusetts Miracle, which quickly became a regional crisis.

As organizers explained in making a case for the Technology and Employment Conference, "In Massachusetts, every major manufacturer in our flagship industry, computers and electronics, has laid off thousands of workers. This is a striking phenomena, given that this industry is leading the revolution in technology and communications. Biotechnology, the other emerging new technology, is growing, but generating far lower levels of new employment than had been projected. ... Technological progress is currently coupled to growing unemployment and a decreasing standard of living. In this context, women and national minorities remain the 'last hired, first fired.'"

The job-tech sponsors were MIT's Technology and Culture Seminar and Community Fellows Program. The Technology and Culture Seminar, which is jointly supported by the Office of the Episcopal Chaplain and the Office of the Provost, has organized forums on pressing social issues in technology since the late 1960s. Its special role has been to bring forward such issues as ozone depletion, nuclear power safety, nuclear war, military conversion, and scientific integrity before they were professionally palatable to academic departments. Before it was possible to obtain grant funds, teach courses, or publish scholarly papers on these issues, the Technology and Culture Seminar brought in national leaders and often prompted academic involvement.

The Community Fellows Program was established in 1971 by Mel King (a former state representative, founder of the Massachusetts Rainbow Coalition, and longtime leader in Boston's education struggles) to bring to MIT individuals who have emerged as community leaders on many fronts. As part of the Department of Urban Studies and Planning, community fellows have a period of study about urban and rural communities designed to enhance their skills and enlarge their vision of the future. In recent years, the program has had a special focus on the problems of youth particularly in a period of growing joblessness.

The MIT conference included five plenary sessions, fifteen workshops, and five small group discussions about future work and proposals for action. Over 300 people attended the conference.

One of the major points of focus was how the high-technology revolution impacted productivity. It became clear that a juncture has been reached in production across many industries, but the centrality of the auto industry led to naming the change as moving from the Ford system to the Toyota system. In 1913, Henry Ford established the modern assembly line and revolutionized production. In the 1960s, Toyota implemented lean production based on robots, computers, just-in-time production, the team concept, and so on. That second great productivity leap increased output by decreasing the work force and applying new tools and techniques. Work hours were extended for those workers still on the job. Tom Kochan of MIT and Juliet Schor of Harvard University made key presentations on the productivity leap.

These gains in productivity contrast with the struggle waged by workers to fight the related reengineering of job specifications and downsizing. Wherever lean production has been introduced in the United States, workers have had to fight the accompanying layoffs and lower wages. But because of the transforming effects of this leap, the social struggles have outgrown any narrow economist conception of employed workers fighting for their economic security. General Baker of the United Auto Workers and the League of Revolutionaries for a New America, David Arian of the International Longshoremen's Union, and Elaine Bernard of the Harvard University Trade Union Program made key presentations on these developments.

Beyond the employed workers, and more fundamental a problem, are the people expelled completely from the social contract. These people would have been workers, but they now face permanent unemployment and are forced onto welfare, into public housing, or, in the end, out onto the

streets. The conference reflected on the Bill of Economic Rights proposed by President Franklin Delano Roosevelt in a state of the union message in January 1944:

1. The right to a decent paying job;
2. The right to adequate food, clothing, and recreation;
3. The right of every family to a decent home;
4. The right to adequate medical care and the opportunity to achieve and enjoy good health;
5. The right to adequate protection from the economic fears of old age, sickness, accident, and unemployment;
6. The right to a good education.

The conference ended with a discussion of what to do next. Organizers continued to meet, encouraged other universities to host similar conferences and have themselves planned a follow-up conference. Several publications have emerged from the process.

A short time later, Abdul Alkalimat met with David Ranney and Doug Gills, both of the Center for Urban Economic Development (CUED) at the University of Illinois at Chicago, to discuss the possibility of holding a Midwest conference. As a result of this meeting, the CUED staff agreed to host a conference. University librarian Marilyn Borgendale joined the process and was instrumental in getting the University Library and the Academic Computer Center to join CUED as the official conference hosts.

These three co-hosts made a broad call for organizations and individuals to get involved in the conference planning process. The organizations that responded were at the center of the ferment over technology, employment, and community. They included the Computer Professionals for Social Responsibility, the Chicago Coalition for Information Access, Networking for Democracy, *cy.Rev: A Journal of Cybernetic Revolution*, Sustainable Socialism and Radical Democracy, the Community Workshop on Economic Development, the National Organizing Committee (now called the League of Revolutionaries for a New America), several local school councils (elected community committees at each Chicago public school), and the *People's Tribune* newspaper and its speakers bureau. Students and other individuals also joined the process.

By the end of the summer the Chicago group had a plan to organize lead-in activities and outreach at the same time as planning the conference

itself. The first activity was an on-campus lecture in September 1994 at the University of Illinois at Chicago by MIT Professor Jonathan King, who had chaired the Boston conference six months earlier. King's talk on the technological revolution was instrumental in consolidating the planning committee and broadening support among local faculty and students.

The next event was an on-campus lecture by MIT Professor and internationally known activist Noam Chomsky in October 1994. Chomsky had spoken at the Boston conference, and through the efforts of the People Tribune Speakers Bureau had agreed to speak in Chicago as part of the activities to build the conference. More than 1,200 students and others from across Chicago came to the talk and engaged in lively discussion. Chomsky was eloquent in his exposure of corporate totalitarianism and the anti-democratic policies of the United States. The Midwest Conference on Technology, Employment and Community was announced at this event.

The planning process began to take shape. Meeting agendas would typically include an issues discussion, and then a review of the program under development and the outreach plan and progress. Over 50 people attended these meetings, with a 'core' of about ten regularly in attendance. From August to January we met on a monthly basis, and then we began to meet weekly until the conference in March.

The issues discussions were exciting for lots of reasons. In our diverse committee it was impossible for the "techies" to fall into jargon without being called on it. Language use became a real barometer of how effectively we were educating ourselves and building a consensus. We saw that a convergence of views was taking place and the clash of languages was just the cost of initiating this discussion. We were determined not to accept watered-down definitions for terms like jobs and work. Other participants had to fight tendencies to belittle technology.

The most revealing discussions were in response to the most simple and straightforward questions: When did the high tech revolution begin? Why are computers really so important? What is a revolution anyway? Are jobs really being lost forever? Why is this conference relevant to people who are not in a university or in high tech? How can we explain all of this to the average person? Participants regularly brought copies of newspaper or magazine articles and information they had picked up since the last meeting or that they had searched out in response to the last session. The conference began inside the planning process.

Part of the planning process focused on reaching out to potential conference participants. We published 50,000 copies of a four-page tabloid with the basic program of the conference and a call for broad mass participation. This was distributed widely throughout the Chicago area to over 25 institutions of higher education and as many community groups. At this time we also began a discussion list on the Internet, which was the start of a virtual conference on technology, employment and community (see Appendix E for more on that experience).

The plan was to go for a great diversity of conference attendees from the campuses and the communities, especially those communities normally excluded from such conferences — youth and low-income people who live in the "forbidden zones" of public housing and Black or Latino ghettos. One committee member was invited to a large meeting in such a community only to discover that it was a community event to feed the homeless. The organizers told everyone that they had to listen to a speaker before being allowed to eat. They listened, partly trying to hear if the conference process was going to lead to employment, but mainly as a necessary "price" for the meal they had come to get. As it turned out, several people were really interested in the conference and actually attended. Other speakers were also successful in community meetings, high school assemblies, college classes, churches, and on the radio. What seemed like an abstract topic could be presented so that "real" people would be interested in coming.

The momentum picked up. A February Black History Month program was sponsored by the Chicago Public Library Social Science and History Division, coordinated by David Williams, a research librarian at the Harold Washington Central Library Center. The topic was "The 'Electronic Superhighway' and Issues of Equitable Access to Information: What are the Implications for Black and Other Inner-City Communities?" The outreach was aggressive and very broad.

The conference planning committee discussions were equally as intense. The committee adopted six main themes for the conference:

1. What is technology? What is high technology? What is new about it?
2. Is this new technology creating jobs? Is it eliminating jobs? Whose life is getting better and who is getting worse off?
3. How is the new technology changing our communities and the quality of our lives overall?

4. Who has access to the new technology? Are we/is society becoming more or less democratic?
5. Who decides what technology gets developed and how it is used? When and how are the important decisions being made?
6. What kind of society does new technology make possible? What kind of society do we want? How do we get there? What's in the way?

The conference program was developed from these theme questions and consisted of five plenary sessions and 18 workshops over two and a half days. Over 400 people attended. The mix of conference participants was what we had hoped for, a diverse group that included representation from every particular community. We had physicists and poets, senior scholars and youthful rappers, high tech computer specialists and low tech community activists, concerned people and theoreticians of the new technological revolution, etc. In this respect the Midwest conference was very different from the more academic Boston conference.

We began with the poetic tribute Carl Sandburg made to Chicago as the industrial icon of early 20th century America. At the time, railroads, steel mills, and stockyards anchored the economy. But now a new Chicago is part of the new world being born, and so now we have high tech manufacturing, virtual agriculture, and biotechnology.

The plenary sessions handled the broad themes of the conference and the workshops captured the particular issues of relevance to Chicago and the Midwest.

An estimated 100 people went through conference sessions aimed at getting participants and their organizations on-line. Sharon Hogan, University Librarian and director of the Academic Computing Center at the University of Illinois at Chicago, made available to us on-campus computer facilities and volunteers to design and staff the sessions. People were anxious to get their hands on the machines and learn first hand what the conference had been discussing. Sitting side by side were faculty and community activists, students and trade unionists, Blacks, whites and Latinos. You could feel America's desire to be wired and on line.

The conference also used new technology in bringing the keynote speaker to the conference by speakerphone and in linking over the World Wide Web to a simultaneous conference in New York; these efforts are detailed in Appendix E.

The Chicago conference was a high energy affair. Some people left with unanswered questions, but everyone had some questions answered. More importantly, everyone left with new questions.

The process continues on. Attendees from several other cities have since begun to plan or explore ways to hold conferences in their regions. A number of Midwest conference planners contributed to this book. Conference planners and attendees have taken the job-tech questions to their networks for further debate and development of policy solutions.

Appendix C

Program of the MIT Technology and Employment Conference

Boston • January 21, 1994

Welcome: Ken Reeves, Mayor, City of Cambridge

OPENING PLENARY: [9AM]

The Impact of the High Technology Revolution on Productivity

Electronics and Genetics: From Lab to Factory
Jonathan King, MIT

Automation of Auto Manufacture
Tom Kochan, MIT

The Globalization of Manufacturing
Helen Shapiro, Harvard Business School

The Continuing Mechanization of Work
David Arian, International Longshoreman's Union

CONCURRENT WORKSHOPS [11AM]

• *Changing Production Technologies*

The Engineer's Role
Louis Bucciarelli, MIT

Information Technology, Productivity, and the Reorganization of Work
Erik Brynjolfsson, MIT

Cleaner and Safer Production Technologies
Ken Geiser, University of Massachussetts/Lowell

Shop Floor Initiatives at SEMATECH
Rand Wilson, Jobs with Justice Coalition

• *The Internationalization of Production*

Corporate Strategies in the Global Economy
David Levy, University of Massachussetts/Boston

Moving Manufacturing Abroad
Arthur MacEwan, University of Massachusetts/Boston

NAFTA and the Trade Unions
Elaine Bernard, Harvard Trade Union Program
Declining Wages and Living Standards
Bruce Parry, National Jobs with Peace Campaign

- *The Telecommunications Revolution*

National Information Infrastructure
Brian Kahin, Harvard University
Insuring Public Access
Steve Miller, Computer Professionals for Social Responsibility
New Roles for Computer Professionals
Coralee Whitcomb, Computer Professionals for Social Responsibility
Employment Impacts
Ken Peres, Communications Workers of America

- *The Biotechnology Industry*

Scientific Opportunities
Sonja Guterman, MIT
Projected Growth
Lynn Klotz, Devonshire Partners
The Problem of Overinterpretation and Simplistic Paradigms
Harvey Bialy, Biotechnology Magazine
Unfulfilled Promises of the Biotechnology Industry
Sheldon Krimsky, Tufts University

CONCURRENT WORKSHOPS [2PM]

- *Entering the High Tech Job Market*

The High Tech Job Market
Bob Weatherall, MIT
High Tech Skills for the Disenfranchised
Ro-Andrienne Davidson, Bay State Skills Corporation
Is the Playing Field Level?
Margaret Daniels Tyler, MIT
A Student View
Colin Chapman, graduate student, MIT

- *The Electronic Office*

The Automated Office
Erica Foldy, Massachusetts Coalition on New Office Technology

Undervalued Technical Work
Janet Wilder, Harvard Union of Clerical and Technical Workers

Electronic Surveillance
Laurie McLaughlin, MIT Women's Forum

Women, Welfare and Work
Ellen Convisser, National Organization for Women

- *The Changing Reality of Computer Jobs*

The Computer Industry Work force
Charley Richardson, University of Lowell

Coping with Layoffs
Marlene Archer, Boston Computer Society

Access to Information/Access to Work
Jim Davis, Computer Professionals for Social Responsibility

Closing Doors to Minority Youth
Godfrey Dogan, D.C. Associates

- *Converting from Military to Civilian R & D*

Civilian R & D in the Post Cold War Period
Gary Chapman, 21st Century Project

Physics After the Cold War
Kosta Tsipis, MIT

The Changing MIT Environment
Herman Feshbach, MIT

Campus Efforts
Vera Kistiakowsky, MIT

University Conversion
Rich Cowan, University Conversion Project

- *Sociobiological Justifications of Social Inequality*

Brain and Behavior
Steve Chorover, MIT

Fragile X Syndrome
Ruth Hubbard, Harvard University

The Myth of the Underclass
Ralph Gomes, Howard University

Medicalization of Social Problems
Evelyn Hammonds, MIT

PLENARY [4PM]

The Impact of the High Technology Revolution on Jobs

Overwork, Gender and Unemployment
Juliet Schor, Harvard University

Where Have All the Jobs Gone?
Richard Barnet, Institute of Policy Studies

An Autoworker's Story
General Baker, National Organizing Committee

• January 22, 1994

PLENARY: [9AM]

The Employment Crisis and its Solutions

The New England Situation
Sarah Kuhn, University of Massachusetts/Lowell

Equal Rights for the Unemployed
Abdul Alkalimat, Northeastern University

Whose Global Economy?
Noam Chomsky, MIT

The European Job Crisis
David Feickert, Trade Union Congress, England

CONCURRENT WORKSHOPS [11AM]

• *The Impact of Unemployment on Education*

The Struggle for Quality Public Education
Denise Simmons, Cambridge School Committee

The New Technology and the New Illiteracy:
Black Community's Survival Crisis
Ronald Bailey, Northeastern University

Education for Unemployment
Walda Katz-Fishman, Howard University

• *Alternatives to Plant Closings*

The National Pattern of Layoffs
Frank Levy, MIT

State Intervention
Barbara Baram, Commonwealth of Massachusetts

Restructuring Labor-Management Relations?
Frank Emspak, University of Wisconsin

The Employee Buyout of Market Forge
Dave Slaney, United Steel Workers Union

- *Converting from Military to Civilian Production*

Recent Experiences in New England
Leticia Rivera-Torres, MIT

The Federal and State Budgets
Richard Krushnic, Jobs with Peace Campaign

Conversion Efforts in Massachusetts
Brian Moriarty, CPPAX

A State House Perspective
Mark Draisen, State Representative

- *Struggles in the Shadow of the High Tech Industry*

Building a Youth Center in the High Tech Shadow
Rev. Nelson Foxx, St. Bartholomew's Church

Child Care in the High Tech Shadow
Lisa Dittrich, Cambridgeport Children's Center

The Carpenter's Union Experience
Mark Erlich, Carpenter's Local 40

Running for Office on a Welfare Budget
Dottie Stevens, Massachusetts Welfare Rights Union

- *Changes in Agriculture and Food Production*

The Hybrid Corn Experience
Deborah Fitzgerald

Food Production and Distribution in the Era of Smart Technology
Tom Hirschl, Cornell University

Agribusiness and Ecology
Richard Lewontin, Harvard University

Regulation of Genetically Engineered Food
Wendy McGoodwin, Council for Responsible Genetics

PLENARY [1:30PM]

Where Do We Go From Here: Job Creation

Mel King, MIT
Elaine Bernard, Harvard University
John LaRose, New Beacon Books, London, England

SMALL GROUP WORKING SESSIONS [2:30PM]

Creating Jobs:

Housing, Transportation Infrastructure
Human Services
Education
Communication and Information
Financing Job Creation

CLOSING PLENARY [4PM]

Reports from the Small Groups

Rev. Scott Paradise, MIT Chaplain

Appendix D

Program of the Midwest Conference on Technology, Employment and Community

Chicago • March 2, 1995

Welcome:

David Ranney, University of Illinois at Chicago Center For Urban Economic Development and College of Urban Planning and Policy

OPENING PLENARY [7PM]

The End of Work

Chair: Marilyn Borgendale, University of Illinois at Chicago Library

Poetry: Dino Lewis, Homeless Writers Coalition, Sacramento, California

Mission Statement: Doug Gills, University of Illinois at Chicago Center for Urban Economic Development and College of Urban Planning and Policy

Keynote:

Jeremy Rifkin, Foundation for Economic Trends, Washington, D.C.

Discussants:

Jonathan King, Massachusetts Institute of Technology Department of Biology, Cambridge, Massachusetts

Sally Lerner, University of Waterloo Department of Environment and Resource Studies, Waterloo, Ontario, Canada

Luis J. Rodríguez, poet, author, critic

Questions and Answers: Abdul Alkalimat, Northeastern University Department of African American Studies, Boston, Massachusetts

• March 3, 1995

PLENARY [9AM]

The Future before Us

Welcome: Abdul Alkalimat, Northeastern University Department of African American Studies, Boston, Massachusetts

Poetry: John Starrs, Actor/Poet/Playwright/Director

Chair: Nancy John, University of Illinois at Chicago Library

Panelists:

Tom DeFanti, University of Illinois Department of Electrical Engineering and Computer Science

Don Holt, University of Illinois at Urbana-Champaign College of Agriculture

Nancy John, University of Illinois at Chicago Library

Jonathan King, Massachusetts Institute of Technology Department of Biology, Cambridge, Massachusetts

CONCURRENT WORKSHOPS [11AM]

• *Access to Education*

Chair: Sheila Radford-Hill, University of Illinois at Chicago Center for Urban Economic Development

Panelists:

Joan Fitzgerald, University of Illinois Center for Urban Economic Development

Lunaire Ford, North Central Regional Education Laboratory

John Mundt, Administrative Computing, Glenview School District, Glenview, Illinois

Mordechai Mark MacLow, University of Chicago Department of Astronomy and Astrophysics and DuSable High School Internet Project

• *Racism and the Violence Initiative*

Chair: Richard Miele, Indiana University Northwest Department of Sociology

Panelists:

Richard Miele, Indiana University Northwest Department of Sociology

Ora Harris, Chicago Coalition Against the Violence Initiative

Karen Reid, Indiana University Northwest, Department of Minority Studies, Gary, Indiana

• *New Technology and Our Workplace*

Chair: Millie Ankrum, American Federation of State, County and Municipal Employees Council 31

Panelists:

Beverly Addante, Telecommuting Works

Don Goldhamer, Chicago Committee to Defend the Bill of Rights and Computer Professionals for Social Responsibility

Roy Singham, Thoughtworks

Claire McClinton, United Auto Workers Local 659, Flint, Michigan

• *What New Jobs Should Be Created*

Chair: Beth Vargo, DeVry Institute of Technology and WZRD radio
Panelists:
Bonnie Rice, Greenpeace
Bill Eyring, Center for Neighborhood Technology

• *Will Getting the Training Mean Getting the Job?*

Chair: John Marsh, University of Illinois at Chicago Department of Biology
Panelists:
Walter McFall, Argonne National Labs
Steve Orzack, University of Chicago Department of Ecology and Evolution
Scott Berman, AT&T/Bell Labs
Penny Brichta, Searle Research and Development

• *Chicago, From Hog Butcher to What We Envision*

Workshop leaders:
Anne Schultz, Institute for the Imagination
Dino Lewis, Homeless Writers Coalition, Sacramento, California

CONCURRENT WORKSHOPS [2PM]

• *Who is Deciding?*

Chair: Abdul Alkalimat, Northeastern University Department of African American Studies, Boston, Massachsetts
Panelist: Rado Mijanovich, New Union Party

• *Fighting Back Against the New Poverty*

Chair: Hondo T'Chikwa, Crossroads Support Network
Panelists:
Jon Rice, People for Community Recovery
Leslie Willis, *People's Tribune*
John Slaughter, author, Atlanta, Georgia
Morenike Cheatom, Public Welfare Coalition

• *Work and the Global Economy*

Chair: Kate Williams, *People's Tribune* Speakers Bureau
Panelists:
Cecil Blake, University of Indiana Northwest Department of Communications

Dave Ranney, University of Illinois at Chicago Center for Urban Economic Development and Department of Urban Planning and Policy

Noel Beasley, Amalgamated Clothing and Textile Workers Union

• *Printing and Publishing in the Digital Age*

Co-Chairs:

Mary Ann White, Printer's Row Bookfair and Chicago Coalition for Information Access, and

Lew Rosenbaum, Guild Complex and Printer's Row Bookfair

Panelists:

Chris Molnar, *Lumpen Times*

Liane Casten, freelance writer and National Writer's Union

Dan Kaplan, Chicago Reader

• *The New Biology*

Chair and panelist: Jonathan King, Massachusetts Institute of Technology Department of Biology, Cambridge, Massachusetts

Panelists:

Fred Cohen, University of Illinois at Chicago Department of Biophysics

John Marsh, University of Illinois at Chicago Department of Biology

• *Robots and Political Economy*

Chair: Jim Davis, Computer Programmers for Social Responsibility

Panelists:

James Ho, University of Illinois at Chicago Department of Information and Decision Sciences

Jerry Harris, Third Wave Study Group and *cy.Rev: A Journal of Cybernetic Revolution*

Bruce Parry, political economist

PLENARY [4PM]

The Morning After

Chair: Doug Gills, University of Illinois at Chicago Center for Urban Economic Development and College of Urban Planning and Policy

Panelists:

Richard Hatcher, Valparaiso University School of Law

Dan Lane, United Paperworkers International Union Local 7837, Decatur, Illinois

John Betancur, University of Illinois at Chicago Center for Urban Economic Development and College of Urban Planning and Policy

General Baker, United Auto Workers, Detroit, Michigan

GETTING YOUR ORGANIZATION ON-LINE WORKSHOP [11AM]

Instructor: Al Schorsch, University of Illinois at Chicago
Assistant: Nick Geovanis

2:00 - 3:00 p.m. Driving Lessons on the Information Highway
Instructor: Nick Geovanis, University of Illinois at Chicago
Assistants: Christopher Stewart, Michael Livshutz

2:00 - 5:00 p.m. Open Computing Lab
Volunteers: Robin Burke, Lou Mancini, Dan Kaplan, Michael Livshutz

3:00 - 4:00 p.m. Driving Lessons on the Information Highway
Instructor: Philippa Gamse, Total Net Value, Inc.
Assistants: Nick Geovanis, Christopher Stewart

• Saturday, March 4, 1995

PLENARY [9AM]

Moving Forward: Local Initiatives

Chair: Alice Palmer, State Senator
Panelists:
Dave Ranney, University of Illinois at Chicago Center for Urban Economic Development and College of Urban Planning and Policy
Lourdes Silva, Comité Latino
Orrin Williams, People for Community Recovery
Phil Nyden, Loyola University Chicago Department of Sociology and Anthropology

CONCURRENT WORKSHOPS [11AM]

• *Access to Information*

Chair: Carl Davidson, Networking for Democracy and the Chicago Coalition for Information Access
Panelists:
Doug Gordin, Northwestern University School of Education and Social Policy
Antonia Stone, Playing to Win Network, New York, New York
Marilyn Borgendale, University of Illinois at Chicago Library
Sprite, Autonomous Zone

• *Prisons, Police and Their Technology*

Chair: Karen Reid, Indiana University Northwest, Department of Minority Studies, Gary, Indiana

Panelists:

Steve Whitman, Committee to End the Marion Lockdown

Tony Prince, *People's Tribune*

Flint Taylor, People's Law Office

• *Developing Communities*

Chair: Nacho González, University of Illinois at Chicago Center for Urban Economic Development

Panelists:

Greg Gaither, Chicago Public Schools

Doug Gills, University of Illinois at Chicago Center for Urban Economic Development and College of Urban Planning and Public Affairs

Scott Addison, freelance community economic development planner

Walter "Slim" Coleman, Fair Share Coalition and Justice Graphics

• *What Happened to Steel?*

Chair: Richard Monje, United Steel Workers Union Local 15271

Panelists:

Thomas Misa, Illinois Institute of Technology Department of History

Lou Turner, *News and Letters*

• *Is There a Future In the Software Industry?* *

Chair: Nick Geovanis, University of Illinois at Chicago

• *Youth, Culture and Survival in a Jobless World*

Chair: William Upski, The Subway and Elevated Press

GETTING YOUR ORGANIZATION ON-LINE WORKSHOP [10AM]

Instructor: Al Schorsch

Assistants: Greg Downey

10:00 a.m. - 5:00 p.m. Open Computing Lab

Volunteers: Michael Hammermeister, Sajjad Lateef, Greg Downey

* *A summary of this workshop was not available for this volume.*

11:00 a.m. - 12:00 p.m. Driving Lessons on the Information Highway
Instructors: Armin Roeseler, Michael Hammermeister

12:00 - 1:00 p.m. Driving Lessons on the Information Highway
Instructor: Armin Roeseler

1:00 - 2:00 p.m. Driving Lessons on the Information Highway
Instructor: Nick Geovanis
Assistants: Greg Downey, Dan Kaplan

CLOSING PLENARY [2PM]

Moving Forward: Seizing the Future

Chair: Maria Trinidad Rodríguez, *Tribuno del Pueblo*
Panelists:

Carl Davidson, Networking for Democracy and Chicago Coalition for Information Access

Michael Warr, Guild Complex

Sally Lerner, University of Waterloo Department of Environment and Resource Studies, Waterloo, Ontario, Canada

Nelson Peery, League of Revolutionaries for a New America

Appendix E

How to Conduct a Virtual Conference: Our Experience and Recommendations

When we first began to plan the Midwest Conference on Technology, Employment and Community, we also began to make use of technologies new to many of us. We launched a virtual conference to take place on the Internet in the months leading up to the conference. We used this conference for communicating with planning committee members and other interested parties. In doing so, we could not even include everyone helping to plan the conference, because so many of us did not have access to the Internet. So it made perfect sense, at this conference on the new technologies, to help bring conference planners and participants alike up to speed by adding Internet hands-on and how-to sessions to the conference agenda itself.

As the conference approached, we learned that a related conference, "The Wages of Cybernation: A Working Conference on the Future of Work," was taking place in New York City on the same days as our conference, and we decided to expand our virtual conference to include sharing session summaries and individuals' comments back and forth as the conferences took place in New York and Chicago.

We also turned to technology to solve a communications problem the day before the conference, when a back injury struck keynote speaker Jeremy Rifkin. We used a speakerphone and the auditorium public address system to allow him to speak, hear other presenters, and take questions from the audience without leaving his home in Washington, DC

Since the conference, on-line discussions about technology, employment and community continue. Large parts of this book are posted on our Web pages, and teachers, students and others using this book will be able to communicate via those pages and via our discussion list on the Internet.

Our use of telecommunications technology within the conference process mirrored the actual ideas we were debating and served to strengthen the conference in three ways:

1. We demonstrated the transforming effect of the new technologies. Going on-line for the first time concretized the message of the conference for many of the planners and participants.

2. We demonstrated new working relationships between computer-literate people and those without access to information technologies. Computer and library professionals were able to exercise their commitment to broadening access to technology. Others were able to take home new skills and make contacts with people working for community computer access. New relationships between people will be part of the way forward through this technological revolution.

3. We included more people in the debate over technology, jobs and community. Telecommunications technology allowed people to participate in the conference and the debate from remote locations.

We hope that organizers of future conferences and other educational and organizing efforts will learn from our experience. This will broaden participation and help communities understand, use, and fight for access to the new information technologies. We want others to use our evaluation.

Virtual Conferencing With The Internet Discussion List

Campus sponsorship of the conference opened doors for Marilyn Borgendale, a university librarian on the planning committee, to establish an electronic discussion list for the conference on the university's computer network. An Internet discussion list best suited our purposes. With this setup, any person in any location with an Internet address can sign on and then send and receive text about a particular topic. We wanted to provide continuous postings and discussions over a period of months. Our goals were to tie the Boston and Midwest conferences together, give ideas for the Midwest conference agenda, and initiate a discussion which would attract more people to help plan or attend the Midwest conference.

One of our first postings was Sally Lerner's paper, "The Future of Work in North America," originally published in the March 1994 issue of *Futures*. We posted drafts of conference documents and programs as well as invitations to planning meetings. About 300 people subscribed to the list and participated in discussing the issues and the conference. Because of the name of the list, job-tech, people also came to the list looking for jobs in high tech, so we had to prepare ourselves for mistaken postings. We also learned that the more you put into managing a list — posting interesting items, helping the discussion move forward — the more vital your list will be. More advance statements from conference presenters would have further stimulated discussion over the months before the conference.

The Hands-On And How-To Sessions

The hands-on and how-to sessions included "Getting Your Organization On-Line" and "Driving Lessons on the Information Highway." A total of 100 people, one quarter of those at the conference, took part.

"Getting Your Organization On-Line" was presented by Al Schorsch, a university staffperson involved in "wiring" local community organizations. As well as explaining the technicalities of going on-line on a small budget, he explained which local groups and institutions will help in this process. People sat down at personal computers as Schorsch guided them in exploring the Web for resources. Community organizers were particularly interested in "Thomas," the federal database of current and new legislation, and in on-line funding information, such as requests for proposals.

"Driving Lessons on the Information Highway" aimed to introduce individuals to the practical realities behind the debate over the information superhighway, and to show them the Internet's capabilities for making connections and dishing out information. The instructors assumed absolutely no prior knowledge or experience on computers.

The sessions used only one Internet tool, Mosaic. FTP (File Transfer Protocol), Gopher and various indexing mechanisms such as WAIS were presented as special cases of Web access using Mosaic.

Each session started with a ten minute discussion of the Internet and how it fits into the debate over technology, jobs and community. Then a half-hour guided tour took each participant, sitting at a personal computer, through a specially constructed Web page and its related links to other Web pages. The page emphasized information related to technology, employment and community and to African Americans, Latinos, and wage-earners of all backgrounds.

Following the guided tour, attendees explored their own interests via the Web with the unobtrusive assistance of volunteers with Web experience.

Since the campus Academic Computer Center was a sponsor of the conference, we were able to use computer labs next door to the conference site. If the conference center building itself had been adequately wired for personal computing networks, we would have held the sessions physically alongside the plenary and workshop sessions. As university buildings are modernized, future conferences will have this facility.

Virtual Conferencing On The World Wide Web

By the time we decided to put our conference sessions directly on the World Wide Web and to link to a simultaneous conference in New York City, network technology had already served to extend other conferences beyond adjournment and beyond the number of actual conference attendees. We did this by posting our program, workshop notes, plenary speeches, reading lists, and relevant essays. Beyond this, however, technology enabled knowledgeable members of our planning committee to facilitate active sharing of information and communication between the participants in Chicago and New York during the two simultaneous conferences. Anyone on the Internet reading our Web pages during the conference could also add their comments and questions.

Robin Burke and Don Goldhamer, both of the University of Chicago, and Jim Davis were able to borrow equipment, obtain a site for our Web pages on university computers, and design the Web pages. At the conference itself they recruited a team of volunteers who typed session notes into laptops for immediate Web posting. Conference participants could electronically comment on events or start conversations on other issues that concerned them. Because we put our one borrowed personal computer just outside the plenary sessions, it was easy for people to drift out of the main hall and sit down at the computer. To add to the text, Marilyn Borgendale was able to borrow a digital camera, take pictures at the conference and arrange for them to be uploaded onto the Web pages.

Lessons Learned

In virtual conferencing such as we did with our discussion list and our Web pages, audience and interactivity are the primary considerations. Our audience was originally intended to be local groups of community activists, but even by 1995, these people were still unlikely to have Internet access. Many interested academics also had difficulty getting the necessary access and were not yet conversant with the Internet. But the list and the Web pages were particularly useful for participation from outside Chicago or New York. They have contributed to the drives in various cities to mount regional Technology, Employment and Community conferences. They allowed people interested in this book and in teaching about technology, jobs and community to contact us as we edited the conference proceedings and developed the course outline. For instance, a discussion list of creative writing professors contacted us with great interest in teaching job-tech, so

we decided to expand upon how the conference used writing to encourage people to envision their future. In the six months between the conference and the publication of this book, the number of people on-line is likely to have doubled. Undoubtedly virtual conferencing will take off as well.

Interactivity has to be adequate enough for remote users to see a connection between what they are doing and the conference itself. People at the conference input their observations and interacted with remote participants. The greater the details of what was happening at the conference (pictures, rough transcripts of talks), the greater the reaction from cyberspace.

In sum, we make these suggestions for conference planners:

• Establish a electronic mailing list, if at all possible. Be sure that people on the list understand its purpose. A regular posting of the group's aims and maintenance of a frequently asked questions (FAQ) file can cut down on extraneous traffic.

• Hands-on workshops can help make concrete some of the abstract discussions that surround technology.

• Internet publishing is like other kinds of publishing. It pays to develop your message and have an organized presentation. On the Internet in particular, publicizing your list or your pages appropriately is very important.

• Electronic interactivity is a very attractive option, but don't underestimate the amount of effort required to make it workable. Review your resources and determine what avenues are appropriate.

• Consider the long-term utility of information produced during the conference. Multi-media broadcasts, for example, are not likely to be captured and stored, but texts can usually be maintained indefinitely.

Resources are available on the Internet to facilitate virtual conferencing. These are listed here along with their Internet locations:

• Mailing list programs

LISTSERV: http://www.lsoft.com/listserv.html

MAJORDOMO: ftp://ftp.greatcircle.com/pub/majordomo/

• World Wide Web publishing how-to information

http://www.digiweb.com/tkarp/webtips.html

http://fox.nstn.ca/~tmonk/weaver/weaver.html

http://www.sun.com/sun-on-net/uidesign/

http://www.best.com/~dsiegel/tips/tips_home.html

http://www.earthlink.net/~lyndaw/tips.html

- Interactive web discussion systems

  HyperNews:
  http://union.ncsa.uiuc.edu/HyperNews/get/hypernews/about.html

Portions of Appendix E also appear in *New Community Networks: Wired for Change* by Doug Schuler (Reading, Mass.: Addison-Wesley, forthcoming).

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