



ARIZONA **POLICY** CHOICES

The New Economy: A Guide for Arizona



OCTOBER 1999



What Happened to the Old Economy, Anyway?

It's not that the old economy is dead. Rather, it's fractured into two parallel realities that coexist. One piece keeps plugging away, firmly anchored in the habits, values, and practices of five years ago. It boasts a sense of order and rationality; it celebrates the merits of hard work and professional mastery. Think of the flagship industries of the Industrial Revolution—huge car companies, giant general contractors, coast-to-coast hotel chains, enormous industries employing millions of people—all of which still play by the old rules.

The other piece is driving today's growth. Born of technology, propelled by technology, promising ever more technology, this new economy embraces discontinuities, exploits disconnects, thrives on chaos, creates new connections, and celebrates the secrets of creativity and mystery. It's the part of the economy that's migrated from the labs and the cubicles of a few companies to the front pages of every newspaper and into the living rooms of millions of workers. It's not about a few millionaire software geeks anymore: It's about us, about our future and everyone's future—a future in which a potent concoction of computers, a great idea, a small team, a line to the Web, a sprinkling of capital, and a willingness to take a leap of faith is enough to rewrite the rules of an entire industry. It's about a future in which the boundaries between industries are easily dissolved, where work makes all the difference, and where the cliched advice to “follow your bliss” is only half a cliché—and half a business plan. Call it “irrational exuberance,” but whatever the name, it's more than an inexplicable bounce that's attached itself to the stock market. The new economy today is alive, well, and, courtesy of the Web, changing everything it touches.

*State of the New Economy, **Fast Company**, September 1999*

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Publisher

Rob Melnick, Ph.D.
Morrison Institute for Public Policy

APC Series Editor

John Stuart Hall, Ph.D.
School of Public Affairs

Editors

N. Joseph Cayer, Ph.D.
School of Public Affairs

Nancy Welch
Morrison Institute for Public Policy

Contributors

Mary Jo Waits
Morrison Institute for Public Policy

John Stuart Hall
School of Public Affairs

With Assistance From

Rebecca Gau
Morrison Institute for Public Policy

Ryan Johnson
Morrison Institute for Public Policy

Christina Kinnear
Morrison Institute for Public Policy

Cherylene Schick
Morrison Institute for Public Policy

Karen Leland
Morrison Institute for Public Policy

William Fulton

Tom Rex
Center for Business Research

Karen C. Heard
Chalk Graphic Design

Cover Illustration

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John Nelson is a nationally known artist who lives in Tempe, Arizona. His donation of the cover artwork is appreciated.

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The New Economy: A Guide for Arizona

Table of Contents

Welcome to the New Economy 4
Rob Melnick, Morrison Institute for Public Policy

New Economy Characteristics 6
Mary Jo Waits, Morrison Institute for Public Policy

Technology is a Given 8

Globalism is Here to Stay 12

Knowledge Builds Wealth 14

People Are the Most Important Raw Material 18

There's No Such Thing as a Smooth Ride 22

Competition is Relentless 24

Alliances Are the Way to Get Things Done 26

Place Still Matters—But for Different Reasons 30

Making Public Policy Choices for People and Places 35
Mary Jo Waits, Morrison Institute for Public Policy

Implications for Policy Makers: The Nuts and Bolts of Operating in the New Economy . . 35

Ideas for Supporting People and Places in the New Economy 39
John Stuart Hall, School of Public Affairs
Nancy Welch, Morrison Institute for Public Policy



Welcome to the "New Economy"

Just as the industrial revolution and fundamental changes in work and communication profoundly shaped the economy of the previous century, we have been building up to our current topsy turvy economic and social environment for a while now. Our's just happens to be the 21st century version of a new economy.

And now, we—and especially our children—need ways to describe the new economy and decide how to help the most people get the most benefit from it.

In a sense, that's what this publication is about—describing the changes in the way we do things compared to the recent past. And, while some of these changes may seem to have “snuck up” on us, they are now very apparent. Using computers to send our mail, satellites to conduct our business, and global to describe the community in which we live and work are pretty well accepted these days. Whether or not we realized it at the time, we have been working hard at creating the conditions, standards, and expectations in which we now operate. Now, we need to wake up and smell the coffee **we've** been brewing.

It is an oversimplification to describe the new economy as a technology revolution, something that is mostly driven by and affects business. Clearly, new technologies and business practices are central to the concept of a new economy. However, that's the easy part to understand. The bigger challenge is to grasp—and then develop strategies to take advantage of—how public policies in the new economy can most positively affect people and places. *The New Economy: A Guide for Arizona* is meant to help Arizonans do just that.

The New Economy is the third publication in the **Arizona Policy Choices** series. Strong opinions and significant data marked the previous volumes on state tax cuts and growth. *The New Economy* is no different. Here one of the state's best-known policy analysts, Morrison Institute Acting Director Mary Jo Waits introduces you to the new economy. The descriptions of the new economy's characteristics, the presentation of economic data, and a discussion of implications for policy makers provide a firm foundation from which to consider the new economy's meaning for Arizona. The work of John Stuart Hall, Series Editor for **Arizona Policy Choices** and School of Public Affairs Professor, rounds out this guide with examples of public policies and programs that are relevant responses to the new economy.

The examples were selected because they provide valuable pointers, and represent public decisions that have produced (or have the potential to produce) prosperity for local people and places. The examples provide a starting point from which to think through the kind of public policies that could benefit Arizona's people and places in the new economy. They range from ideas that address the importance of education in a fast-paced, technology-oriented economy to others that recognize the value of making quality of life a way to attract and keep the most talented workers. In some cases, policies and programs were included because they implicitly acknowledge and address the fact that the new economy—if left to its own devices—will produce both “haves” and “have nots.”

The publication's data are intended to answer some of our readers' questions about Arizona and the new economy. It is important to note, however, that the world is just now beginning to determine what the right measures of a new economy are. As both an evolutionary and revolutionary process, the new economy will ultimately produce its own set of buzz words, acronyms, and legitimate comparison measures. For now, we present a combination of descriptive facts and figures that, out of necessity, relate to both the old and the new economies.

Some readers may think that the new economy is not really new at all. People who work in a worldwide business environment, use the latest technology tools, and think the fast lane is the only route have already been experiencing the new economy first hand. But, to the vast majority of people and public decision makers, the circumstances of the new economy are daunting. For better or worse, it really is a new world.

In the case of the new economy, Arizona is—like it or not—in an enormously competitive arena. Arizona leaders have to make tough public policy choices in light of new economic realities. These decisions will lay the economic, education, and social foundations for the future and will in large part determine whether or not our state's people and places prosper. Past volumes of **Arizona Policy Choices** presented choices in the publication that were drawn from the experience and wisdom of experts. **This year, with this topic, it seemed like a good time to change that tradition and involve as many Arizonans as possible in the real work of understanding and suggesting choices.**

Caution: Do not read on unless you are prepared to take some responsibility for Arizona's future! This is not the issue to "sit out." Arizona needs your ideas for public policies that will best take advantage of this historic opportunity.

Morrison Institute for Public Policy and Arizona State University invite you, your friends, and colleagues to get involved in the development of the state's choices. Contact Morrison Institute by telephone, mail, or e-mail for the **Participate in the New Economy** packet. It is hoped that all types of professional organizations, neighborhood associations, schools, and community organizations will suggest visionary policy options for Arizona in the new economy. **Participate in the New Economy** has all of the information you will need to contribute to this wide-open process. Arizonans' ideas on how our people and places can prosper in the new economy will be formally presented to the state's business and political leaders in January 2000 and will be critical to making this new economy of benefit to everyone.



Rob Melnick

Morrison Institute for Public Policy

School of Public Affairs

College of Public Programs

Arizona State University

(480) 965-4525 *voice*

(480) 965-9219 *fax*

(480) 965-6404 The New Economy Response Line

nielle@asu.edu

www.asu.edu/copp/morrison

New Economy Characteristics

There is a joke going around the Internet these days called “13 Ways To Recognize You’ve Had Too Much of the ‘90s.” It is a familiar list to anybody attempting to contend with the peculiar personal habits that have emerged over the last decade as people have tried to run an intimidating new maze of gizmos and possibilities. The list includes laugh-lines like:

- *You try to type your password on your microwave.*
- *You e-mail your son in his bedroom to tell him dinner’s ready and he e-mails you back: “What’s for dinner?”*
- *You speak with a stranger in France every day but you haven’t said hello to your next-door neighbor yet this year.*
- *You arrive in your driveway and use your cell phone to see if anybody is home.*

There is no denying these lines are funny. But one of the reasons they get a laugh is that they show how quickly and how fundamentally daily life is changing because of what has come to be known as “the new economy.” It is a world in which the pace and tone of life have changed dramatically. And it is a world in which the geographical, economic, and cultural relationships that we have known all our lives are being transformed in ways we couldn’t have predicted even a few years ago. In other words, the new economy is defining what life in the 21st Century will be.

What exactly does it mean to be part of the new economy? What are its distinguishing characteristics? Is the new economy about technology or is it about knowledge? Should we be anxious or excited? How do we shift, focus, and rethink public policy to prepare for the future?

The goal of this **Arizona Policy Choices** is to increase the understanding of our citizens and policy makers about the new economy, and to clarify the kinds of choices that must be made to ensure that Arizona’s businesses, residents, and communities participate in and benefit from it. If the changing economy has revealed anything, it is that businesses, people, and places cannot be successful by being what they once were. But with the right focus and right policies, all three can create new ways to compete and prosper.

The Eight Building Blocks of the New Economy

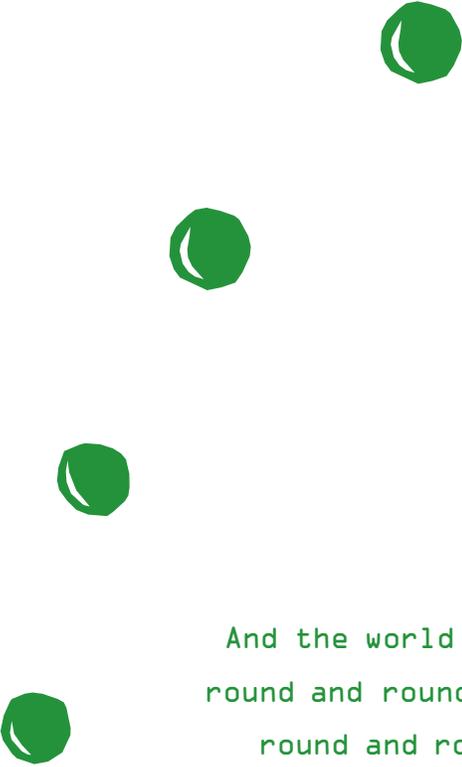
The term “new economy” is a shorthand way of saying that our **economic structure is undergoing** such **fundamental change** that we are entering an entirely new era of economic relationships and economic growth. Global markets, technological advances, organizational innovations, changing competitive relationships—all these factors have altered our economy so much in the last decade or so that somebody “beamed down” to the millennium from 1985 would barely recognize what is going on today.

So fundamental is this change that many leading economic thinkers, such as Massachusetts Institute of Technology economist Lester Thurow, argue that we have not seen this kind of “new economy” for more than a century—since the railroad and the telegraph created the same kind of quantum economic leap. The world has gotten much smaller very quickly. Long-standing barriers to getting things done have fallen away overnight. Wealth has been created at an astonishing rate—and the long-term movement toward more wealth creation shows little sign of slowing down. As Thurow pointed out in *Building Wealth*, in 1982 there were 13 billionaires. Today there are almost 200.¹

But what are the building blocks of this new economy? To lay the foundation for a discussion of policy choices, it is important to review the key characteristics of the new economy. In particular, the new economy has **eight important characteristics** that all of us must bear in mind as we think about how to adjust. These are:

- 1. *Technology is a given*
- 2. *Globalism is here to stay*
- 3. *Knowledge builds wealth*
- 4. *People are the most important raw material*
- 5. *There's no such thing as a smooth ride*
- 6. *Competition is relentless*
- 7. *Alliances are the way to get things done*
- 8. *Place still matters—but for different reasons*

¹ Lester C. Thurow, "Building Wealth," **The Atlantic Monthly**, June 1999.



And the world goes
round and round and
round and round.
And the world goes
round and round.

Fred Ebb

Technology is a Given

Mention the new economy and most of us automatically think of technology. Specifically, we think of ever-fancier and more sophisticated gadgets: laptop computers, cell phones, ATM machines, palm-sized scheduling organizers. And we also think of the fabled companies that manufacture these products and their components—Intel, Motorola, Hewlett Packard—as the foundation of this new economy.

But the new economy is not simply about the creation and sales of new technology. **It's about how we use technology to alter every aspect of our life**—and, especially, how all businesses have been fundamentally changed by it. As Harvard Business School professor Michael Porter says, “Today there is no such thing as a low-tech industry. There are only low-tech companies.” In other words, “any company in any industry,” as Porter puts it, can be more productive and more competitive by using technology well.²

For example, a metal casting firm uses computer-aided manufacturing technology to cut costs, save energy, and reduce waste. A surgeon uses lasers to perform more, better, and cheaper operations. A business consultant uses a laptop and cellular phone to do more work and stay connected to clients while on the road. A bookstore uses the Internet to increase orders from customers around the world. **One success story after another in the world of business teaches us that technology is not an end in itself, but the means to productivity gains, revenue growth, and better connections.**

Just as important in the long run, however, is the way that the Internet and information technology allow us to revolutionize not only the way we manufacture products, but also the way we connect them to the rest of the world. Increasingly, the value of technology—and its ability to change our lives—depends on the way we **use it to connect with one another**. As an example, Kevin Kelly, *Wired* magazine editor and author of “New Rules for the New Economy,” points out that the very first fax machine built in 1965 “was worth nothing. Zero.” Why? There was no one to fax to. But, he adds, “The second fax machine to roll off immediately made the first one worth something. There was someone to fax to.”³ Every subsequent fax machine made all the ones previously manufactured more valuable. This idea is called the **“network effect”—the value of a unit rises with the number of units in use**. Multiply the network effect of fax machines by about a billion, and you begin to understand why the Internet is changing our economy so fundamentally.

It is best, then, to not just think of “technology” in abstract terms, but to consider simultaneously technology advances, technology users, and technology benefits—all of which together are likely to define coming economic eras as the Information Age fades into distant memory.

² Michael E. Porter, “Clusters and the New Economics of Competition,” *Harvard Business Review*, November/December 1998.

³ Kevin Kelly, “New Rules for the New Economy,” *Wired*, September 1997.

SMART THOUGHT

Nobel Prize-winning economist Robert Solow has said that we see computers everywhere except in the productivity statistics. That productivity measures do not seem to show any impact from new computer and information technologies has been labeled the ‘productivity paradox.’ Yet the real reason for the productivity paradox may lie in the fact that the U.S. economy is neither fully in the old mechanized economy nor yet in the new digital economy. The animating force in the old economy was the desire to mechanize goods production and handling. And this effort has paid off handsomely. But now, mechanization has run its course as the predominant driver of productivity. Until recently, it has proven difficult to introduce the kinds of productivity-enhancing technologies in many service industries that are used in manufacturing... Make no mistake, application of information technology does improve productivity. Since the 1970s, productivity has grown about 1.1 percent for sectors that have invested heavily in computers and approximately 0.35 percent for sectors that have invested less heavily.

“Explaining the Productivity Paradox,” *The New Economy Index*, November 1998

Arizona and Technology

- **Arizona ranked 11th among the 50 states— but only sixth among ten western states⁴**— as a “digital economy,” meaning the overall use of technology in the state.⁵
- Arizona had the fourth highest number of commercial Internet domain names (“.com”) per firm. According to the Progressive Policy Institute, the number of domain names indicates the extent to which firms have created an identity for themselves on the World Wide Web, and thus its importance to them.
- **Arizona compared favorably** to other states (14th of 50) on the percentage of adults with Internet access and **in the utilization of digital technologies by government** (13th of 50).⁶

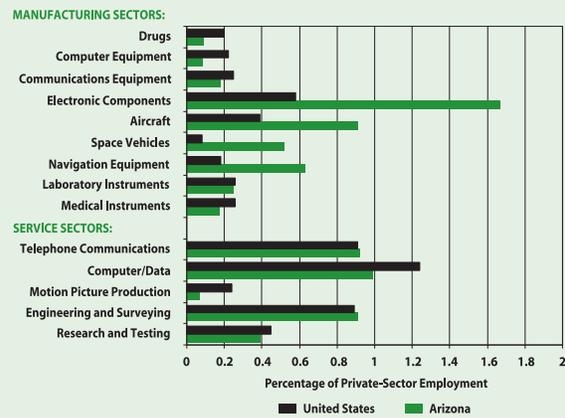
Arizona and High-Tech Jobs

While new technologies are being used in most sectors of the economy, they are basic to some industries. How these “high-technology” industries are defined varies from study to study. In *America’s High-Tech Economy: Growth, Development, and Risks for Metropolitan Areas* published in July 1999, the Milken Institute, a nonpartisan economic research institute, referred to 14 sectors in manufacturing and services as “high-tech.” (See Figure 1)

In 20 years, life will finally live up to our movie-driven fantasies. You’ll talk to your watch to get on the Internet. Your glasses will be able to recognize people’s faces and tell you their names—even when you can’t recall who those people are!

Michio Kaku, *Visions: How Science Will Revolutionize the 21st Century*

FIGURE 1:
High-Technology Sectoral Shares of Private-Sector Employment, 1996



Source: U.S. Department of Commerce, Bureau of the Census.

- **In Arizona, 7.8 percent of private-sector employment was in these 14 sectors** in 1996, compared to **6.2 percent nationally**. Arizona has a much higher concentration of employment than the national average in four high-tech sectors:
 - *electronic components and accessories (mostly semiconductors in Arizona)*
 - *aircraft and parts*
 - *guided missiles, space vehicles, and parts*
 - *search, detection, and navigation instruments and equipment*
- In the ten other high-tech sectors, Arizona’s employment share was the same as or less than the national average. Thus, the **state’s high-technology activities are concentrated in a few manufacturing sectors**.

⁴ Western states include: Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Texas, Utah, and Washington.

⁵ *The State New Economy Index: Benchmarking Economic Transformation in the States*, Progressive Policy Institute, Washington, D.C. July 1999.

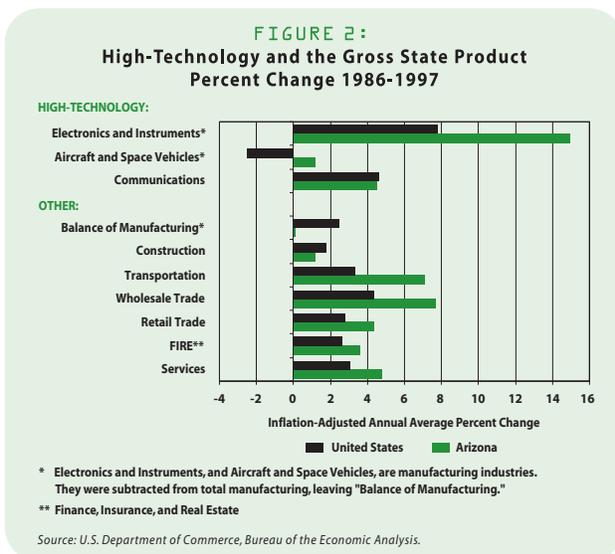
⁶ *Ibid.*

- Between 1991 and 1996, **Arizona employment in the five high-tech service sectors jumped 55 percent**, an increase of **more than 18,500 jobs**. Gains were particularly large in the computer and data processing services sector. At the same time, while employment rose in six of the nine high-tech manufacturing sectors, large employment declines in computer equipment, communications equipment, and aircraft caused **overall high-tech manufacturing employment to fall 8 percent, a decrease of 6,500 jobs**.
- Arizona had the 12th highest proportion of high-technology jobs in the nation (fifth in the West) according to the Progressive Policy Institute's (PPI) slightly different definition of high-technology. PPI counted 5.3 percent of all Arizona jobs in 1997 as high-tech, compared to 4.5 percent nationally.

- From the perspective of the gross state product (GSP—value added in production by the labor and property located in the state), the **electronics and instruments sector led Arizona's growth** between 1986 and 1997⁷ with a 15 percent annual average increase. As seen in Figure 2, no other major industry grew nearly as fast. The annual average increase in total GSP was 4.6 percent.

Three Arizona Metros and High-Tech

- According to the Milken Institute⁸, **Tucson ranked 22nd and Phoenix 30th** among 315 metropolitan areas **in high-tech concentration** (the relative size of high-tech in the local economy compared to the U.S. average, based on 1998 output data). **Flagstaff ranked 20th**, thanks primarily to one major employer. **All three metros placed in the top 25 in high-tech manufacturing concentration, but none were in the top 25 in high-tech services**. The Tucson area had an above average concentration in five of the 14 high-tech sectors, but the Phoenix area was above average only in electronic components.
- Based on **total size of the high-tech industry**, the Milken Institute ranked **Phoenix 13th**, the only Arizona city in the top 50 nationally on this measure.
- **Phoenix ranked 12th and Tucson 40th** when both size and concentration were considered. On this composite measure, the top five metros—San Jose, Dallas, Los Angeles, Boston, and Seattle—scored from two to nine times higher than Phoenix.



⁷ Arizona's economy traditionally has been very cyclical. Thus, growth rates are often far higher than the U.S. average during economic expansions, but during recessions, Arizona suffers as much as the rest of the nation. Because of this cyclical nature, the latest data in this report usually are compared to 1986, a similar point in the prior business cycle. The timing of the business cycle in Arizona is almost the same as the national average.

⁸ **America's High-Tech Economy: Growth, Development, and Risks for Metropolitan Areas** Milken Institute, Santa Monica, California, July 1999.

The Mixed Productivity Message

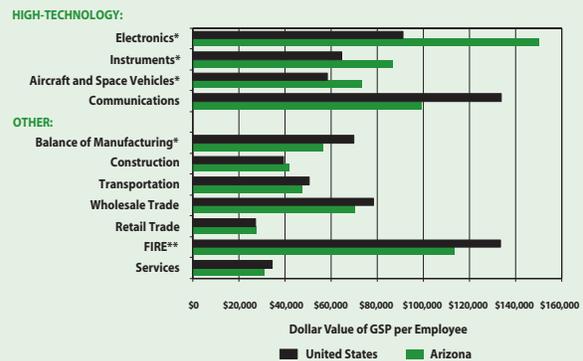
Technology and productivity figure prominently in every discussion of the new economy. But the message about the two is not always clear. For example:

- Between the late 1940s and 1973, U.S. productivity growth averaged 2.8 percent per year. Since then, the annual average gain has been only 1.1 percent. Productivity advances in manufacturing have averaged 2.8 percent per year since 1973, marginally above the average of the prior 25 years. Thus, the markedly lower overall gains result from stagnation in the services industries as a whole (though measurement difficulties may result in an understatement of growth).
- During the past three years, productivity growth in the U.S. has been relatively high, averaging close to 2 percent per year. However, it is too early to state that productivity growth is accelerating and will continue to do so. Stronger periods of growth occurred in the late 1970s and mid-1980s, only to be followed by years of weak gains. As the economy becomes more and more digital, changes may be seen more broadly across the economy.

Productivity in Arizona's High-Tech Sectors

- Productivity (represented by GSP per employee) was higher in 1997 in each of the high-technology sectors than the overall Arizona figure of \$48,500. (See Figure 3)
- **GSP per employee in Arizona's electronics and instruments sector skyrocketed** an inflation-adjusted **500 percent between 1986 and 1997**, considerably above the sizable national gain of 172 percent and far above the Arizona all-industry figure of 12 percent. Increases in the aircraft and space vehicles sector and in the communications sector were close to the all-industry average. Productivity declines occurred in construction, services, and the less technological sectors of the manufacturing industry.

FIGURE 3:
Gross State Product per Employee by Sector, 1997



* Electronics, Instruments, and Aircraft and Space Vehicles, are manufacturing industries. They were subtracted from total manufacturing, leaving "Balance of Manufacturing."
** Finance, Insurance, and Real Estate

Source: U.S. Department of Commerce, Bureau of the Economic Analysis.

The great thing about technology is that it forces us to figure out the world from scratch. In so doing, it gives us a chance to rediscover what's really important. So maybe the 21st century won't turn your world upside down. Maybe it will turn that world right side up.

Tim Bernes-Lee
Fast Company, September 1999

Globalism is Here to Stay

If there is one aspect of the new economy besides technology that most everyone understands, it is globalism. Companies, consumers, and communities can now gain access to capital, goods, information, and technology from around the world, often with the click of a mouse. Just as important, “globalism” finds companies searching worldwide for new markets for products and services, new places to locate facilities, and new sources of workers.

And like technology, globalism is a far more integral part of our economic life than we typically realize. For example, the globalization of the economy isn’t just a matter of shipping *goods* around the world. Services are now a dominant factor in the world as well as the American economy, and the globalization of services is a major economic opportunity.⁹ More than one quarter of U.S. exports are in the service sector. Knowledge-based services, at which the United States excels, are especially important—and the Internet is creating new opportunities that were hard to imagine just a decade ago. For example, online brokerages like E*Trade™ or Charles Schwab are just as accessible from Singapore or South Africa as they are from the United States.

Even companies that don’t target world markets still must contend with globalization. As foreign producers become more efficient, they can sell their products in the United States at a lower price. As U.S. consumers choose the cheaper imports, U.S. companies in the affected sector must either adjust or close down.

Many businesses, workers, and policy makers still see open markets as a threat. They point to closed plants, job losses, and widening wage inequality as evidence for concern. They see workers around the world willing to take on skilled jobs, such as software engineering, for far less pay than middle-class Americans.

There is some truth to these anxieties, of course. Free trade does threaten some established sectors of the American economy. But **arguing about free trade versus protectionism in the new economy is fundamentally pointless.** In an economy based on the constant and instantaneous exchange of information without regard for geography, globalism is a deeply embedded characteristic. The basic question is not whether to accept globalism or not. The question, as Claude Smadja of the World Economic Forum has pointed out, is “how to manage the implications of the globalization process and turn it into a historical opportunity for greater wealth creation and distribution, into a tool for larger integration in the world economic system.”¹⁰

⁹ *The U.S. has a positive trade balance in services (\$83 billion in 1998). But, imports of goods greatly exceed exports (by \$247 billion in 1998).*

¹⁰ *Claude Smadja, “Living Dangerously,” Time, February 22, 1999.*

SMART THOUGHT

Globalization is surely one of the most powerful and pervasive influences on the nation, businesses, workplaces, communities, and lives at the end of the twentieth century. The American century is coming to an end. The world century is beginning. And for American business and communities to prosper in a global economy, the standards to meet and the groups to join are the ‘world class.’ ‘World class’ is a play on words suggesting both the need to meet the highest standards anywhere in order to compete and the growth of a social class defined by its ability to command resources and operate beyond borders and across wide territories.

Rosabeth Moss Kanter, *World Class: Thriving Locally in the Global Economy*

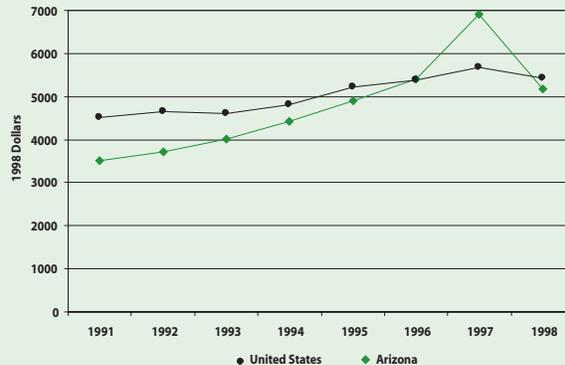
Arizona in the Global Market

- **Arizona experienced a huge increase in inflation-adjusted exports** between **1991 and 1997**. Nearly doubling in six years, exports per employee rose from 22 percent below to 22 percent above the national average (See Figure 4). In 1998, however, the Arizona figure fell 25 percent, compared to a national drop of only four percent, putting Arizona again below the national average.
- **Unfortunately, state trade data report only on goods.** Exports of services are not measured at the state level, but roughly **two-thirds of Arizona's goods exports come from just three sectors**, each of which generally is included in **high-technology** (See Figure 5). The electronics industry alone accounted for more than 40 percent of Arizona's exports in 1998. Nationally, only a little more than one-third of exports of goods come from these three sectors.
- In 1992, **21 percent of Arizona manufacturing jobs were dependent on exports**, ninth in the nation and fifth in the West, according to the Progressive Policy Institute.

Worldwide exports in 1998 were \$6.5 trillion. The U.S. accounted for almost one-sixth of worldwide service exports, and one-eighth of worldwide exports of merchandise.

Clearinghouse on State International Policies, June/July 1999

FIGURE 4:
Value of Exports per Employee in Arizona and the U.S. 1991-1998



Source: U.S. Department of Commerce, International Trade Administration and U.S. Department of Labor, Bureau of Labor Statistics.

FIGURE 5:
High-Technology Exports Share of Total Exports—Arizona



Note: High-tech exports are defined as those from the electric and electronic equipment, transportation equipment, and scientific and measuring instruments sectors.

Source: U.S. Department of Commerce, International Trade Administration.

Knowledge Builds Wealth

In a rapidly changing global economy, **ideas matter more than ever before**. Today wealth is created by research, by discovery, and by innovation. *The New Economy Index*, published by the Progressive Policy Institute in Washington, D.C., reports that “research and technological innovation account for more than two-thirds of per capita economic growth.”¹¹

This kind of success almost always begins with an idea—whether it’s the notion that Americans will pay \$2.50 for a fancy cup of coffee or that they will buy used goods via an online auction house. An **economy driven by knowledge, relationships, and services relies more on intellectual assets** (research, intellectual property, and customer relationships) **and less on the physical assets** (buildings, transportation, and machinery) which were so important to the industrial age.

Some of the hottest and most dynamic companies and industries today have relatively few physical assets. Instead, they draw their market value and business base from “intangibles,” such as great product design, intellectual property, market insight, management know-how, and strong customer relationships. eBay is a good example of how in the new economy “market value accrues fastest for those who travel lightest.” This Internet auction company has almost no physical assets, but when it went public last September, the market valued it at \$1.88 billion—almost double the value of Sotheby’s, the esteemed old-line auction house.¹²

Of course, a good idea and marketing savvy alone cannot assure success in the new economy. Because of its reliance on technology, the new economy also depends more than its predecessors on research and development. The instant billionaires created by the new economy’s stock offerings can

often obscure the fact that these great economic leaps are grounded in technological innovation that has taken years or even decades to ripen. *Wired* editor Kevin Kelly notes that Microsoft’s profits were negligible for ten years, until personal computing began to take off in the mid-1980s. Federal Express and makers of fax machines experienced a similar trajectory, according to Kelly: years of marginal success, then “surging skyward in a blast” sometime during the mid-1980s. And Kelly characterizes the Internet as “a lonely cultural backwater for two decades” before, around 1991, the “global tally of hosts suddenly mushrooms, exponentially arcing up to take over the world.”¹³

The subtle point of these examples is that the **seeds for today’s new economy were planted decades ago**. Experts warn that even as the new economy has emerged, investment in the fundamentals of innovation capacity—research and development—has actually been flat or falling.¹⁴ Ironically, the Internet and the Web browser were both conceived and developed with government dollars. But all federal investments in research shrank at an average annual rate of 2.6 percent in constant dollars between 1987 and 1995.¹⁵

¹¹ Robert D. Atkinson and Randolph H. Court, *The New Economy Index: Understanding America’s Economic Transformation*, Progressive Policy Institute, Washington, D.C. November 1998.

¹² Richard M. Melnicoff, “The Economy: It’s Later Than You Think,” *Outlook*, Andersen Consulting, June 1999.

¹³ *Wired*, *op. cit.*

¹⁴ David Gergen, “No time for complacency,” *U.S. News & World Report*, March 29, 1999.

¹⁵ *The New Economy Index*, *op.cit.*

SMART THOUGHT

The new economy is generating benefits very unequally. While many people in the U.S. are now registering impressive gains, many others are not. One in six central cities has an unemployment rate of 50 percent or more above the national average (of 4.5%), according to the U.S. Department of Housing and Urban Development. And, as economist Frank Levy has explained, the past two decades of economic change have inflicted a heavy blow on less-educated men and women. Their paychecks have suffered the greatest impact, and now they will have to struggle for the educational resources to make sure that their children don’t repeat the cycle. Therefore, those on the wrong side of the educational divide will find it harder and harder to climb from low income to high income.

Research and Development in Arizona

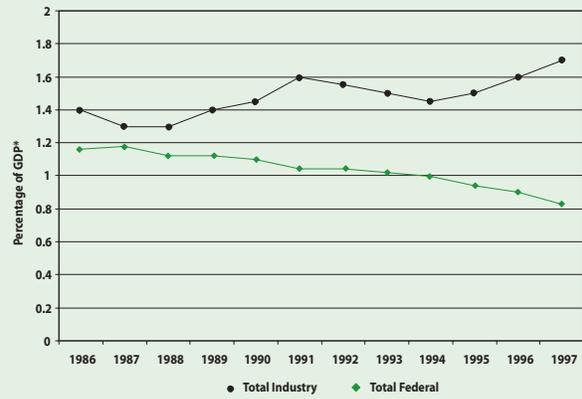
- **Private-sector R&D as a percentage of GDP** was **1.3 percent in Arizona in 1995**, less than the **national average of 1.8 percent**. **Arizona ranked 23rd nationally** and seventh in the West in private R&D, according to the Progressive Policy Institute. Businesses provide more than two-thirds of all R&D funding. Industry R&D expenditures have been rising as a percentage of the gross domestic product. (See Figure 6) The increase has been concentrated on development, with little change in applied and basic research spending. However, industry support of basic and applied research at universities has increased.
- Arizona ranked 15th (sixth in the West) in per capita federal R&D spending in 1995. The **state's rank was 19th** (fifth in the West) **in per capita federal R&D expenditures at doctorate-granting universities**.¹⁶ As noted, federal support for non-defense research and development as a percentage of GDP has been dropping, especially since 1993. (See Figure 6) These declines have mostly been in federal government expenditures for basic and applied research in the private sector. Federal spending at universities for basic and applied research has increased slightly.

Patents in Arizona

The number of patents issued is a common indicator of new product innovation. After generally rising through the 1980s and 1990s, the per capita number of patents issued in the state jumped in 1998.

- The number of **patents per capita in Arizona** has varied over time from 6 percent less to **12 percent more than the national average** since the mid-1980s. (See Figure 7) In 1998, 1,514 patents were granted in Arizona according to the Office for Patent and Trademark Information's April 1999 report, **United States Patent Grants by State, County, and Metropolitan Area**.

FIGURE 6:
Research and Development Expenditures in the U.S.
by Industry and Federal Government, 1986-1997



*Gross domestic product

Source: Progressive Policy Institute, The New Economy Index.

FIGURE 7:
Patents Granted per Capita in Arizona and the U.S.
1986-1998



Source: U.S. Patent and Trademark Office, Technology Assessment and Forecast Program, and U.S. Department of Commerce, Bureau of the Census.

Brawn earns little and brains much. For individuals here are three words of advice: Skills, skills, skills. The economic prospects of those without skills are bleak. What we now see - falling real wages for those without skills - is going to continue.

Lester C. Thurow, *Atlantic Monthly*, June 1999

¹⁶ 1998 Development Report Card for the States, Corporation for Enterprise Development, Washington, D.C. 1998.

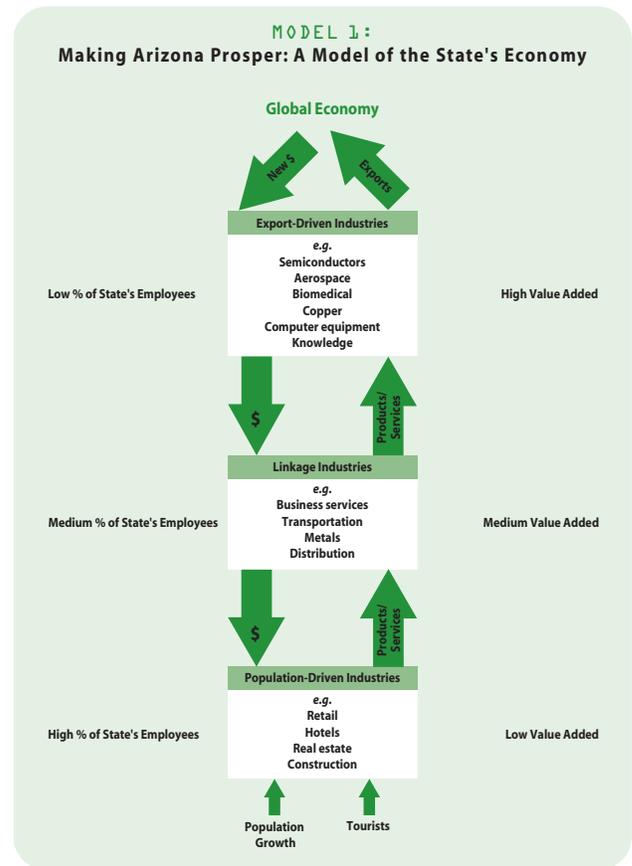
- Based on patents-issued-per-worker, Arizona ranked 16th nationally in 1997. Four western states, California, Colorado, Idaho, and Utah, had higher figures, as reported in *The State New Economy Index*.

Arizona's Capacity for Innovation

- **Arizona** has an **above average capacity for innovation**, ranking 18th nationally, according to the Progressive Policy Institute. However, its **rank in the West was eighth**. To calculate the capacity for innovation, the institute combined 1) the share of jobs in high-tech industries; 2) scientists and engineers as a share of the workforce; 3) the number of patents relative to the size of the workforce; 4) industry R&D as a share of GSP; 5) venture capital invested as a share of GSP.

A Model of Arizona's Economy

Model 1 illustrates why innovation is so important and how various industries' contributions to Arizona's economy differ. **Export-driven industries** sell their products and services primarily to businesses outside of Arizona and individuals who are not state residents. **The value added (measured as earnings per employee) in this group of industries is 45 percent above the state's total and marginally higher than the national average. Export activities represent about 12 percent of Arizona employment and 17 percent of earnings.** With Arizona having a low concentration of all manufacturing industries except for three high-tech sectors, **export-driven industries in Arizona account for about 20 percent less of the overall economy than the national average.**



Linkage industries are those that are intermediate between export-driven and population-driven industries. The value added here is equal to the average for all Arizona industries, but far below the national average for such industries. **This group makes up 26 percent of the overall state economy based on both employment and earnings, a share higher than that nationally.**

Population-driven industries include retail trade, most services, government, construction, real estate, and similar sectors. **These industries' value added is below the all-industry average for the state. This group's share of the state's employment is 62 percent, compared to 57 percent of earnings. Population-driven activities are somewhat more common in Arizona than the national average.**

The "Soft" Side of High-Technology

Knowledge-based industries involve more than technology manufacturers and computer and electronic hardware. Software and communications services, financial services, innovation services (the combination of technical and professional fields such as engineering services and management consulting), and healthcare technology are also part of the knowledge package. Table 1 shows the concentration of employment in five knowledge-industry clusters across 14 states. An employment concentration above 1.1 means that the area's share of the state's jobs is at least 1.1 times higher than the national average and indicates a potential competitive strength for the state. Arizona has just one area of strength, computer/electronics. In contrast, Minnesota's computer/electronics, healthcare technology, and financial services clusters are concentrated at 1.82, 1.39, and 1.13 respectively. Thus, Minnesota has three industry clusters with employment concentrations at least 1.1 times above the national average. Based on this analysis, Arizona's links to the knowledge economy are not as strong as in other leading technology states.

TABLE 1:
Knowledge Industry Employment Concentrations

State	Software/ Communication Services	Computer/ Electronics	Healthcare Technology	Innovation Services	Financial Services	No. of Clusters above 1.1
AZ	0.87	1.96	0.59	0.97	0.79	1
CA	1.32	2.15	1.50	1.21	0.93	4
CO	1.84	1.90	1.22	1.39	0.99	4
FL	0.93	0.75	0.96	0.91	0.96	0
IL	0.89	0.94	1.02	1.01	1.23	1
MA	1.51	2.14	1.97	1.63	1.67	5
MI	0.73	0.24	0.78	1.06	0.74	0
MN	0.90	1.82	1.39	0.65	1.13	3
NC	0.67	0.66	0.99	0.59	0.58	0
NJ	1.61	0.64	2.25	1.13	1.39	4
NY	0.99	0.76	1.12	1.02	1.85	2
PA	0.80	0.65	1.07	1.24	1.10	2
TX	1.12	1.28	0.71	1.11	0.85	3
WA	1.04	0.89	0.76	1.09	0.83	0

Source: Index of the Massachusetts Innovation Economy, 1998.

Some of our best people are those who studied literature and the classics, and who later received business training. These people tend to understand the array of forces at work in organizations, and they approach decisions in a very well-rounded way. My advice to young people is to avoid the urge to focus too early. Learn to appreciate literature, history and art. That kind of knowledge will help you in your career, and it will help you lead a richer life.

Rajat Gupta, McKinsey & Co.

People Are the Most Important Raw Material

For generations, the basis of our industrial economy was raw materials. Our previous technological advances permitted us to extract and manipulate these raw materials to create new products. And our economic system was organized around the geography of these raw materials—where they were found, where they were manipulated, and where the resulting products could be sold.

This system relied far more on brawn than on brains. Of course, researchers, entrepreneurs, and other “knowledge” workers had to devise the systems and the machines that made the industrial economy possible. But most people were employed in actually carrying these ideas out—in mines, on assembly lines, on transportation systems. And because the business systems of the industrial age were based on predictability and replicability, the average worker did not need a high level of skill to get the job done.

Today, all that has changed. **In the new economy, brawn is of secondary importance.** Nowadays only about 20 percent of our workers spend their day making things. The other 80 percent work in other jobs that require them to move things, process or generate information, engage in research and design, or provide services to people. Even workers engaged in manufacturing are becoming “knowledge workers,” because they must understand systems, technology, and sophisticated matters of supplies and markets far more than their assembly line predecessors.

All this means that **individuals are more important than ever before in business success**—especially people who can think creatively about solutions to the problems their companies face in a

fast-changing global marketplace. Many companies are reorganizing themselves from top to bottom—flattening their hierarchies and reversing traditional business concepts to recognize that the brain of every single employee is important in making the company successful.

In this context, it is easy to see how power in business shifts from hierarchical companies to individual employees who have the right skills and education. And it is also easy to see that companies and communities that can create or attract such workers have a long-term competitive advantage. So some people matter more in the new economy. Unfortunately at the same time, the gap between the “knowledge haves” and the “knowledge have-nots” is growing.

Using Santa Clara County, California (home to Silicon Valley) as a surrogate for the new economy, the top ten occupations in terms of job growth fall mainly into two categories: high-wage, high-tech knowledge workers (*e.g.*, computer and electrical engineers) and low-wage, low-skilled service workers (*e.g.*, janitors, waiters, receptionists). **This growth trend in both high- and low-skilled jobs is expected to continue, meaning, without intervention, we are at risk of becoming a two-tiered society:** an over class of highly compensated people versus an under class of dead-ended, dissatisfied people with little chance of advancing.

SMART THOUGHT

Winning companies don't just hustle or out-muscle the competition. They out-think the competition. Business today is about brains, not brawn. It's about how many ideas you generate, not how many factories you own. And ideas come in many shapes and sizes. Every so often, a company will invent a breakthrough. But there's a day-to-day side to competing in ideas: Can your marketing people in Seattle quickly make use of a presentation that wowed a client in Savannah? Can a programmer with a problem in Los Angeles quickly tap the expertise of colleagues in Austin?

Fast Company, September 1999

Leaving Farms and Factories

The new economy is a high-tech, services, and office economy. As seen in Figure 8, jobs of these types have grown in importance throughout the U.S. while factory and farm jobs have declined as a share of total employment.

Arizona's Office Workers

- Approximately **18.5 percent of all Arizona jobs were in offices in 1997**, slightly less than the national average. **Arizona ranked 26th among the states** and sixth in the West, according to the Progressive Policy Institute. **Arizona** was somewhat **below average in the share of managerial, professional, and technical jobs** (24.5% of all jobs). The state ranked 24th nationally and fifth in the West on this measure in *The State New Economy Index*.

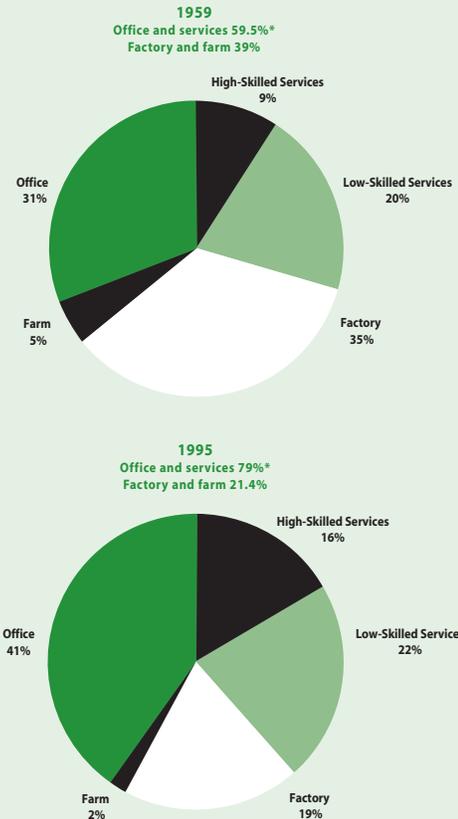
Education and Arizona's Workforce

- **The educational attainment of Arizona's total working-age population is about average compared to the rest of the nation.** However, educational attainment is **below average among young adults** and above average in the pre-retirement and retirement age groups (See Figure 9). For example as shown in Figure 9, Arizonans, ages 20 to 24, are less likely than that age group nationally to have either a high school diploma or a bachelor's degree.
- **Furthermore, the educational attainment of those growing up in Arizona is lower than that among people growing up elsewhere.** The state has a lower-than-desired high school graduation rate of 74.3 percent, as reported in 1996 by the Arizona Department of Education. In contrast, the educational attainment of those migrating to Arizona is relatively high. Non-natives comprise a larger proportion of older age groups, in comparison to younger age groups. This explains the upward trend in educational attainment by age.

Computers don't have ideas...
people do.

Fast Company, September 1999

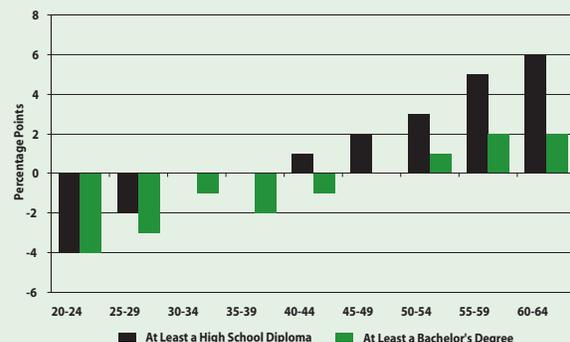
FIGURE 8:
Employment by Type of Job, United States 1959 and 1995



*Figures may not total 100% due to rounding.

Source: Progressive Policy Institute, *The New Economy Index*.

FIGURE 9:
Educational Attainment Difference Between Arizona and the U.S. by Age Group, 1990



The line at zero represents the national average.

Source: U.S. Department of Commerce, Bureau of the Census.

- During April 1999, Arizona students in grades 2-11 took the Stanford 9 achievement test. As reported in *The Arizona Republic*, students scored higher on the test for the second year in a row in each of its three areas, reading, math, and language. However as shown in Table 2 achievement remains just average or below, especially in language, in all areas in virtually all grades.
- Arizona ranked 12th in the nation in 1990¹⁸ (but only sixth among ten western states) on the Progressive Policy Institute's weighted measure of educational attainment, which includes the retirement-age population.

- Many adults in Arizona are working to improve their skills. For example, enrollment in adult basic education, which includes English as a Second Language instruction, grew three times as fast as enrollment nationally between 1990 and 1995, according to the 1997 edition of the U.S. Department of Education's *Digest of Education Statistics*. This rate remains strong even after accounting for Arizona's population growth.

Education for Arizona's New Economy

Few would question education's relationship to success in the new economy. According to *Futurework*, a new study from the U.S. Department of Labor, 20 years ago the average college graduate earned 38 percent more than the average high school graduate. **Now, the college graduate earns 71 percent more.** Real weekly earnings for those with less than a high school diploma fell from \$462 in 1979 to \$337 in 1998. In addition, the three fastest growing occupations, according to the Bureau of Labor Statistics, are all computer-related and require at least a bachelor's degree. And, they all have much higher than average earnings.¹⁹

Many look at the amount of public resources devoted to education as an indicator of a state's commitment to a quality labor force. Figure 10 illustrates spending between the school years 1985-86 and 1995-96, and shows the relationship between Arizona's spending and the U.S. average. One hundred percent represents the U.S. average. In 1985-86 for example, on education Arizona spent about 89 percent as much as the U.S. average.

- **Arizona's per pupil spending** in the elementary and secondary system was **more than 20 percent below the national average** in 1995-96, **nearly 10 percentage points lower than in 1985-86.** The 1995-96 inflation-adjusted figure was the lowest in ten years.
- Using a slightly different definition, **Arizona's 1996-97 per pupil figure was 25 percent less than the national average, ranking 47th nationally** and ninth in the West.

TABLE 2:
Stanford Achievement Test Results
1998-1999 School Year
Presented by Percentile*

Grade	Reading	Math	Language
2	50	51	40
3	47	49	51
4	54	54	49
5	51	54	44
6	54	59	44
7	53	55	54
8	54	54	49
9	43	57	39
10	42	49	44
11	44	52	42

*The percentile compares Arizona students with the rest of the nation. For example, the 50th percentile means that Arizona students performed the same as 50 out of every 100 students who took the test nationally, or at the national average.

Source: *The Arizona Republic*, www.azcentral.com/news/education/schoolscores/

FIGURE 10:
Per Pupil Spending, Primary and Secondary
Schools in Arizona Compared to the U.S.



Source: National Center for Education Statistics, *Digest of Education Statistics 1998*.

¹⁸ Data from the 1990 U.S. Census are used here because of their reliability in comparison to more recent estimates.

¹⁹ *Futurework: Trends and Challenges for Work in the 21st Century*, U.S. Department of Labor, September 1999.

- **Spending per full-time-equivalent pupil in Arizona for higher education was more than 20 percent below the national average** in the 1995-96 school year.

Arizonans Working in Science and Technology

Technological innovation is cited again and again as one of the key drivers of the new economy. A strong engineering and scientific workforce plays an important part in creating new knowledge, products, and services. Scientists and engineers have been a growing percentage of the national workforce as the number of graduates has increased, especially since 1993 (See Figure 11). Still, the demand for such specialties is exceeding the supply.

In the United States, science and engineering majors have held nearly steady for the last 20 years at about 32 to 33 percent, down from nearly 36 percent in the late 1960s. Science and engineering majors as a share of all graduate degrees have held steady since 1990 at 23 percent of master's degrees and 64 percent of doctoral degrees. The number of science and engineering graduate degrees awarded is small compared to bachelor's degrees, with the number of enrolled graduate students dropping in 1995 and 1996.

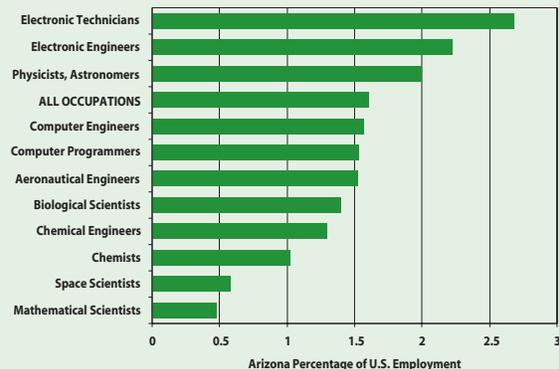
- **Arizona ranked 22nd** among the states in 1996 in the **per capita number of science and engineering graduate students**, according to the Corporation for Enterprise Development. Its rank in the West was fifth.
- **Arizona does not compare favorably on the percentage of scientists and engineers** in the workforce, ranking **30th nationally** and eighth among ten western states in 1995, according to *The State New Economy Index*.
- **Arizona** has a relatively high percentage of the nation's electronic technicians, but it **has a low percentage of chemists, space scientists, and mathematical scientists** (See Figure 12).

FIGURE 11:
Scientists and Engineers as a Percentage of the U.S. Workforce



Source: Progressive Policy Institute, *The New Economy Index*.

FIGURE 12:
High-Technology Employment
Arizona Share of U.S. Employment by Occupation, 1997



Source: U.S. Department of Labor, Bureau of Labor.

For example in 1997, the percentages refer to between 250,000 and 500,000 U.S. workers employed nationally in each of the categories of electronic technicians, electronic engineers, computer engineers, and computer programmers. Employment in each of those categories in Arizona ranged from 4,000-8,000. In contrast, less than 10,000 were employed nationally, and fewer than 200 in Arizona, in each of the categories of physicist and astronomer, space scientist, and mathematical scientist.

There's No Such Thing as a Smooth Ride

In the new economy, competition is constant, change is rapid, and survival depends on resilience. In other words, **turbulence is the norm**. There are no times of stability. Even in good times, there is going to be a lot of “out with the old, in with the new.” To thrive, in other words, companies will need to be in a **never-ending state of transformation, perpetually creating fundamental change**.

Like globalization, constant turbulence creates a sense of uncertainty and increases economic risks facing workers, companies, and even industries. Yet it is a basic tenet of capitalism that such turbulence is good. And as the new economy has emerged, this rule has proven to be true once again.

Years ago, **economist Joseph Schumpeter** warned that progress requires the destruction of the old as well as the creation of the new. He termed this process “**creative destruction**.” **Wired editor Kevin Kelly** simply calls it “**churn**.” “Churn topples the incumbent and creates a platform ideal for more innovation and birth,”²⁰ Kelly says. That is, an economy that embraces dynamism is one in which Intel and Microsoft (and the personal computer) can topple IBM (and the mainframe). It is no accident—as Lester Thurow has pointed out—that of the 25 largest companies in America in 1960, only six remained on that elite list in 1997.²¹ In the U.S., new technologies, new organizations, new processes, and new jobs constantly replace old ones.

Stanford University economist Paul Romer sees this kind of change and growth linked together in the new economy in much the same way that risk and

return are linked in the stock market. Lean-and-mean firms, strong competition, and dynamic markets beget high growth and high incomes, but low job security. Conversely, large organizations with stable employment, stable markets, and stable competition beget higher job security, but lower incomes and fewer consumer choices.

The basic point is that although **some suffer from** this kind of **churning, many more benefit**. Today's unemployment rate of 4.2 percent is the lowest in 29 years.²² And the upsurge in jobs comes mostly from new emerging companies, not Fortune 500 ones. Employment in this latter group actually declined 3.6 percent annually between 1991 and 1995.²³ Even with many jobs in manufacturing and offices being displaced by technology, more jobs are being created than the underlying technology is destroying. Often, the new jobs are also better jobs. For example, despite the loss of 234,000 high-paying manufacturing jobs in 1998, roughly 1.5 million high-paying service jobs were created in industries such as insurance, telecommunications, and computer services.²⁴

²⁰ **Wired**, *op. cit.*

²¹ “*Building Wealth*,” *op. cit.*

²² **The New Economy Index**, *op. cit.*

²³ *Ibid.*

²⁴ John Berlau, “More than just flipping burgers,” **Business Daily**, March 23, 1999.

SMART THOUGHT

Memo to the folks in Silicon Valley: You will have good jobs for 20 more years. By 2020, though, computer chips will be cheaper than bubble-gum wrappers, and PCs will be in museums. Already, we can put tens of millions of transistors in a piece of silicon the size of a fingernail. But the trend toward smaller and smaller transistors can't go on forever. Soon we'll start etching on molecules. A whole new generation of computers will emerge: DNA computers, protein computers, quantum-dot computers. Silicon Valley will become the Rust Belt of the new economy.

Michio Kaku, **Visions: How Science Will Revolutionize the 21st Century**

Job Growth and Churn

The Progressive Policy Institute reports that **gazelles**—companies with annual sales revenue growth of 20 percent or more for four straight years—were responsible for 70 percent of the net new jobs created in the U.S. between 1993 and 1996, even though they accounted for only five percent of all companies.

- Arizona ranked third in 1997 in gazelle share of total employment (17.7%). Five of the top six states nationally were in the West, including Nevada, Oregon, Utah, and California, in addition to Arizona.
- The Progressive Policy Institute created a measure of “**job churn**” by adding the number of business starts and failures and dividing by the number of companies in each state. At 3.3 percent, **Arizona ranked fifth in the U.S.**, with higher figures recorded in three of Arizona’s bordering states. Further, in comparison to the U.S. in 1997 Arizona had more business starts than the national norm. But, business failures also were just slightly above the national average.
- Average establishment size (in number of employees) has climbed more in Arizona than the national average in recent years. The percentage of very small establishments (less than ten employees) has decreased in Arizona, with a rise in the percentage of firms with 10 to 49 employees. Thus, while **Arizona once had a relatively large number of very small businesses, this no longer is the case.**

A Growing Contingent Workforce in Arizona

Another indicator of the new economy’s turbulence is the growing number of workers who previously held permanent positions in a company, but now work on a contract or temporary basis, with their employer being the help-supply agency (See Figure 13). **In 1996, nearly four percent of Arizona’s workers were contract or temporary workers.** In less than a decade, this percentage had more than doubled.

FIGURE 13:
Contract and Temporary Workers in Arizona and the U.S. 1988-1996



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Business executives,
like military generals,
are often chided for always
being well-prepared to
fight the last war.
In the face of new economic
phenomena and trampled
traditions, it will not work
to redouble your efforts,
essentially aiming to do
all the same things you've
always done, but better.

Richard Meinicoff
Andersen Consulting
eCommerce Line of Business

Competition is Relentless

In America's "golden era" after World War II, our nation's economic success depended partly on the fact that huge sectors of our economy, such as aerospace, public utilities, and transportation, were essentially sheltered from true competition. But today there is no immunity from competition. **Globalization, deregulation, and information technology have stripped away economic security from virtually every sector of the economy.**

By reducing the "barriers to entry" in most business sectors, the **new economy** has **completely altered the very nature of competition.** In the past, most American businesses faced a limited number of competitors who were easily identified within their own industries. Today, most businesses are assaulted by a virtually limitless number of competitors coming at them from all over the world.

The numbers alone are striking. In 1965, for example, IBM had 2,500 competitors in all its markets; by 1992, it faced 50,000 competitors.²⁵ More significant than the numbers, however, is the unpredictability of competition. The potent combination of globalization, technology, and deregulation has eliminated all kinds of barriers to competition—financial, geographical, legal. Insurance agents, for example, once viewed competition as a local matter. They battled with each other for local clients. Today, a local insurance agent must compete with foreign companies, banks, and agent-less competitors that do business entirely by virtual means.

For most businesses, the **newest and most aggressive competitors are usually companies that weren't even in the same business just a few years ago.** Telephone companies, Internet companies, and entertainment companies compete head to head for the emerging telecommunications market—often without really knowing what products or services they will be selling if they win the competition. And in the world of e-commerce, business giants are often attacked and even toppled by start-up firms whose success simply couldn't be

anticipated. In plotting out its strategy for the 1990s, did Hallmark foresee the advent of digital greeting cards from Blue Mountain Arts.com? Did Barnes & Noble envision Amazon.com?

These companies become competitive not only by e-commerce, but also by using the Internet to find their customers. Firms now have access to vast amounts of information about markets, products, demographics, tastes, and ideas which makes it easier and quicker for more of them to enter new markets. Just-in-time information also allows firms to tailor products and services they deliver to suit individual customers' interests. The same technology gives more consumers the ability to obtain a great deal of information about the benefits and prices of various products and services. Buyers now have enormous power and buying options that they didn't have before because they can use their new-found information to put pressure on firms to lower costs or boost quality—making it that much easier for them to be fickle.

In competing with each other, companies increasingly find they are racing the clock and even competing with themselves. To stay ahead, more and more companies are setting internal standards or benchmarks that force them to be proactive in evolving technology and shortening time to market. For example, Netscape has a standard of introducing a new product every six months. Starbucks opens 300 new stores a year. 3M dictates that 25% of its revenues every year will come from new products, and Intel adds a new fabrication facility to its operations approximately every nine months.²⁶

²⁵ *The New Economy Index*, *op. cit.*

²⁶ Kathleen M. Eisenhardt and Shona L. Brown, "Time Pacing: Competing in Markets That Won't Stand Still," *Harvard Business Review*, March/April 1998.

SMART THOUGHT

It's a fact. In most industries, newcomers are creating much of the new wealth. Cisco, Amazon.com, Starbucks, Charles Schwab, America Online, The Gap, MCI WorldCom, Dell, Southwest Airlines, SAP—these companies didn't even exist a generation ago. Yet by May 1999, as Gary Hamel reported in his *Harvard Business Review* article "Bringing Silicon Valley Inside," their combined market capitalization had grown to nearly \$800 billion. And they are hardly unique. In industry after industry, unorthodox start ups are challenging complacent incumbents.

Challenges to Continue in Coming Years

William F. Miller is a legendary figure in the development of Silicon Valley, and remains a leading business thinker. His description of competitive challenges in the next decade (See Figure 14) shows that the new economy will not be any easier to master in the next ten years.

Competing for New Economy Investment

Venture capital is particularly important to new economy businesses, spurring growth and supporting competitiveness at critical stages. Nationally, venture capital investments totaled more than \$13 billion in 1997 and are growing. Figure 15 shows where the investments went in the second quarter of 1999.

- In 1997, **Arizona ranked 15th in venture capital investments per worker** and 13th in venture capital invested as a percentage of GSP.²⁷ On both measures, Arizona ranked fifth in the West.
- **The 1999 Arizona Venture Capital Impact Study**, prepared by The Zermatt Group on behalf of a coalition of Arizona universities, public agencies, and leading businesses estimated that **venture capitalists invested about \$122.2 million in the state in 1997**. In the **second quarter of 1999** alone, the PricewaterhouseCoopers Money Tree Survey reported that **\$61 million in venture capital was invested in Arizona firms**.
- Initial public offerings (IPOs) are another source of funds for growing companies. In 1997, **Arizona ranked 23rd** (seventh in the West) **in the value of IPOs** as a percentage of GSP, but the figure was well below the national average, according to the Progressive Policy Institute.

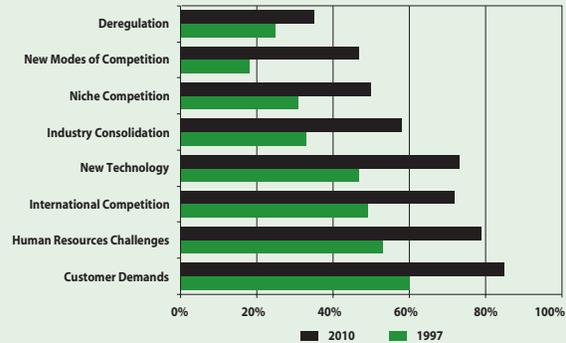
The Dynamics of Business

Figure 16 illustrates the continual changes in business establishments (and thus in employment) in Arizona and the U.S. due to competition and other factors.²⁸ Taken as a whole, the numbers underscore the changes that happen from year to year.

²⁷ **The State New Economy Index**, *op. cit.*

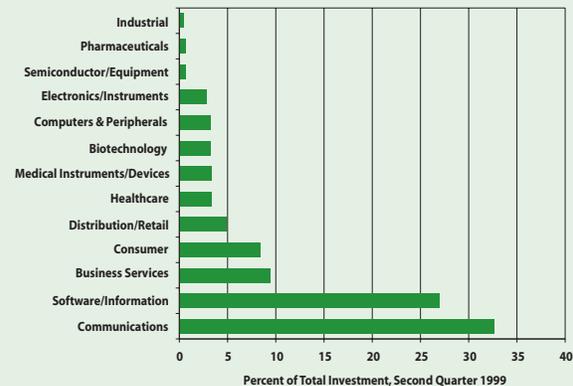
²⁸ *An establishment is a separate physical location at which business is conducted. Some companies, such as grocery chains, have many establishments.*

FIGURE 14:
Competitive Challenges from 1997 to 2010



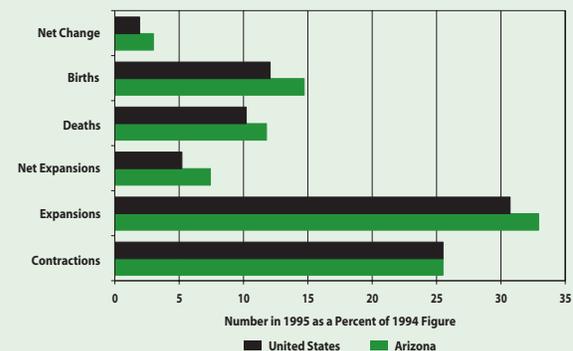
Source: William F. Miller, Stanford Computer Industry Project.

FIGURE 15:
Venture Capital Investments by Industry, U.S.



Source: PricewaterhouseCoopers MoneyTree Survey, September 14, 1999.

FIGURE 16:
Business Establishment Trends in Arizona and the U.S. Comparison of 1995 to 1994



Source: U.S. Department of Commerce, Bureau of the Census.

Alliances Are the Way to Get Things Done

Maybe the most fundamental shift in business thinking—a logical one, given the significance of networking—**is the shift away from self-reliance toward a new model that places more value on alliances.** As Michael Porter says, “extensive vertical integration may once have been appropriate, but companies today must forge close linkages with buyers, suppliers, and other institutions.”²⁹

Amid the melee of new economy transformations, **companies and even communities** are finding they **cannot isolate themselves** by continuing to count on their size, reputation, and integration to win in the global marketplace. At the same time, the rapid advances in information technology, knowledge work, and the “network economy” make such alliances much more likely to succeed than in the past. And alliances permit companies to stay “lean and mean” and respond quickly to new opportunities, while maintaining access to the skills and expertise they need.

Here, the computer industry provides the best example. As analysts Jon Hagel and Marc Singer point out, twenty years ago the computer industry was dominated by huge companies like IBM, Burroughs, and Digital Equipment. All were thought to be unassailable because of their size, reputation, and vertical integration. By the 1990s, the behemoths had been flattened by the likes of Apple, Intel, Microsoft, Sun, and Adobe. None of these companies could match the old giants for size and vertical integration. But they were brilliant at organizing themselves for speed, creativity, flexibility, and especially networking. Together the “new” computer companies created “tightly coordinated webs of specialized companies” that together could quickly produce complementary products and services capable of challenging a big company’s vertical package. It would be impossible to imagine, for

example, either Microsoft or Intel succeeding without the other.³⁰

The big companies which have stayed on top have done so by splitting apart, paring down, and finding their own alliances—in other words, by acting as if they were small and nimble. Some high-tech giants, like Hewlett-Packard for example, are casting off activities/products that are irrelevant to the company’s main business so that executives can focus their energies full time on the company’s core competencies. Thus, they now rely more on outside companies to perform important auxiliary or complementary functions for them.

But **the whole idea of partnerships extends far beyond the idea of simply pairing up with similar or complementary companies. Many companies collaborate with universities in order to foster new ideas and new technology for businesses.** Others ally with suppliers in a way that can help enhance product and service value, unclog bottlenecks, and reduce errors in supply chains. Still others foster close relationships with customers in order to provide early insight into shifts in demand and needs.

And appropriate to the new economy, no alliance is permanent. The best matches are fluid and elastic, changing as new opportunities and pressures arise. The **secret to success**, experts say, is not just **to align once but to do so over and over again to gain competitive advantage.** Indeed, yesterday’s competitor may be the best choice for today’s partner.

²⁹ “Clusters and the New Economics of Competition,” *op. cit.*

³⁰ John Hagel and Marc Singer, “Unbundling the Corporation,” *Harvard Business Review*, March/April 1999.

SMART THOUGHT

Today many large corporations that became prominent in the “old economy” are also forming new alliances for growth and competitive advantages. The headlines of the business press tell the story. AlliedSignal merges with Honeywell, WorldCom buys MCI, Compaq buys Digital. And then, there are the mergers to create “monster” financial institutions. Is there a scenario in which the new century is about “bigness,” huge companies dominating every industry, limiting consumers’ choices to a few banks, car makers, and pizza makers? MIT’s Lester Thurow suggests that, “sooner or later, firms will either be global players or they will be niche players.”

Players, Partners and Relationships

Yesterday's Competitor/ Today's Partner

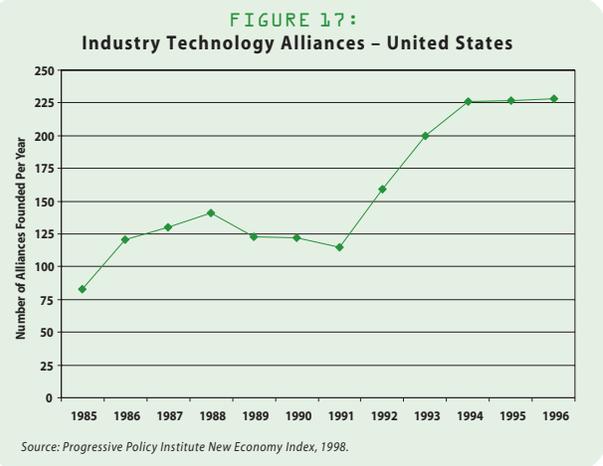
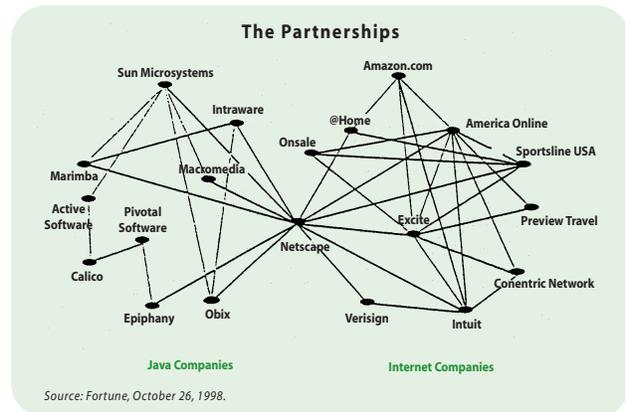
The reality of shifting alliances and relationships is shown in the illustration of the connections among a who's who in technology. This diagram first appeared in the October 26, 1998 issue of *Fortune* magazine. (See The Partnerships)

Collaboration Among Firms

The Progressive Policy Institute's *New Economy Index* provides another indicator that alliances are on the rise. As Figure 17 shows, the number of technology alliances formed in the United States annually has grown dramatically during this decade.

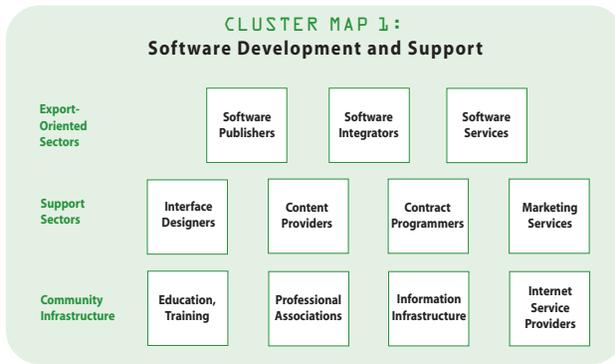
Clusters Foster Collaboration

In 1990, Michael Porter brought the idea of industry clusters into the limelight with his book *Competitive Advantages of Nations*. His work showed: 1) Regions can only be as competitive as their industries; 2) In terms of competition, firms find it advantageous to be close to their suppliers, customers, and other firms that produce similar or related goods and services. This type of location, when it is supported by interaction and networks, gives firms the ability to transact business more cheaply and easily, resolve problems more efficiently, generate a pool of specialized workers and technology, and learn earlier and first-hand about new and best practices. **Companies that are "clustered" are more likely to form alliances and networks among suppliers, competitors, universities, and research institutions.**



In the new world
of business, if you want
to compete aggressively,
you have to collaborate
generously.

Fast Company, September, 1999



**TABLE 3:
Arizona Cluster Organizations and Activities**

Cluster	Affiliate Organization	Co-inform	Co-learn	Co-market	Co-purchase	Co-produce	Co-build foundation
High-technology (aerospace & information)*	Arizona High-Technology Industry Cluster	x	x	x			x
Food, fiber, natural products	Agri-Business Council of Arizona	x	x	x			
Environmental technology	Environmental Technology Industry Cluster (ETIC)	x	x	x		x	x
Minerals & mining	Arizona Mining Association	x			x		x
Software	Arizona Software Association/ Center for Software Excellence	x	x	x			x
Tourism	Arizona Office of Tourism	x	x	x			
Bioindustry	Arizona Bio Industry Cluster	x	x	x			x
Optics	Arizona Optic Industry Association, Inc.	x	x	x		x	x
Transportation	None	x					
Business services	Inactive						
Senior living	Office in Arizona Department of Commerce	x	x	x			x

* Aerospace and information merged into one cluster for organizational purposes.

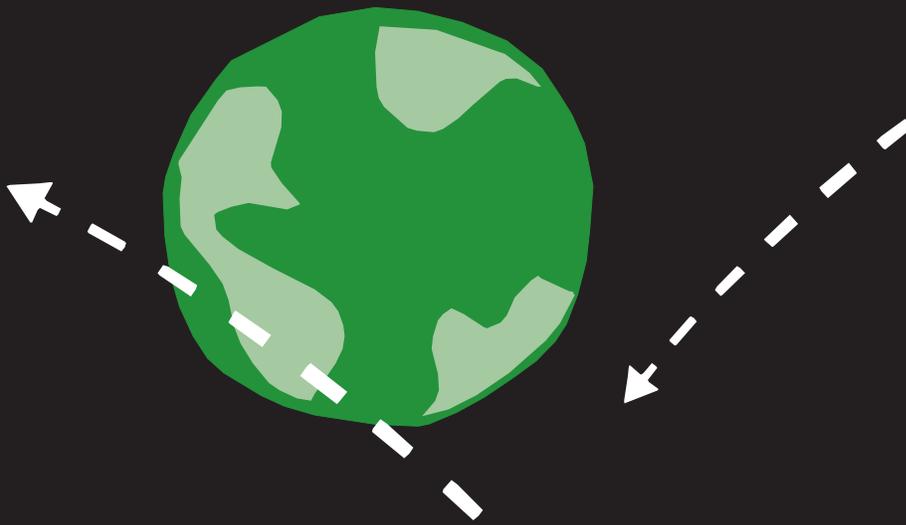
Source: Morrison Institute for Public Policy, June 1998.

Arizona and Clusters

Arizona was one of the first states in the nation to focus on clusters as the centerpiece of its economic development strategy. Industry clusters are best understood as concentrations in one place of competing, complementary, and interdependent firms and industries that create wealth, export, and share needs for common talent, technology, and other resources. Typically, clusters cross over multiple jurisdictions. Cluster Map 1 shows the three key components of a cluster, using the emerging software cluster as an example.

Originally, eight clusters were designated in Arizona. Four more clusters were identified as emerging in importance. A variety of cluster organizations throughout the state encourage firms to interact and conduct business in addition to developing a shared vision and learning from each other.

Table 3 highlights Arizona's clusters and their activities. At one end of the spectrum ("co-inform"), information sharing is the only activity. In the middle of the range of cluster activities, there are sales and purchasing relationships and collective marketing projects. At the spectrum's most developed end, more complex types of relationships exist for joint research and development efforts. Firms work together to build specialized foundations important to the cluster as a whole ("co-build foundation"). For example recently, members of the high-tech cluster successfully worked to change the Arizona Board of Regents' technology transfer policy. No cluster is doing just one activity, but information sharing is the most common.



David doesn't always beat Goliath. The key to success is not so much size as it is speed and flexibility. Survival in this Darwinian world is about the "fast beating the slow" - not the small beating the big - says the CFO of Cisco Systems, a company that sells about 80% of the networking gear that powers the Internet.

Place Still Matters - But for Different Reasons

Because the world is being joined into a single economic unit, where goods, money, technologies, and ideas can be quickly moved from place to place, logic holds that place and proximity should diminish in importance. Yet today, **local factors actually matter more, not less.**

“If location matters less, why, then, is it true that the odds of finding a world-class mutual-fund company in Boston are much higher than in most any other place?” asks Harvard’s Michael Porter. “Why could the same be said of textile-related companies in North Carolina and South Carolina, of high-performance auto companies in southern Germany, or of fashion shoe companies in northern Italy?” His answer: successful firms are frequently concentrated in particular cities and states within a nation because “something about these locations provide a fertile environment for firms in these particular industries.”³¹

Choosing the best place to do business nowadays requires much more than just observing which communities have the best geography and the cheapest costs. In the network economy, **companies must locate the brains of their business in a location that will provide them with a critical mass of competitors, suppliers, and customers; a strong talent pool, unique institutions; and desirable quality of life. Knowing how to create competitive advantage out of these local factors is becoming strategically important for both companies and communities.**

Part of this competitive advantage lies strictly in business-oriented networks. For example, in regions where specific industries concentrate, a competitive advantage can emerge if universities, trade associations, and similar institutions develop

to serve those industries. Proximity to competitors, suppliers, and customers can also provide companies with special access, closer relationships, better information, powerful incentives, and other advantages their rivals elsewhere may not have.³²

And part of the competitive advantage lies in personal preferences. It’s much easier for companies to attract and keep top-notch talent in communities with a high quality of life because highly-sought after workers will choose to live in high-amenity areas. And the notion of “quality of life” is changing as well. As the Starbucks phenomenon reveals, most Americans have a yearning for neighborhood-scale places where they can feel connected to their community. Indeed, many would say that Starbucks is the quintessential Silicon Valley networking place—where members of the “wired society” (entrepreneurs, techies, venture capitalists, and other professionals) gather, exchange information, and close deals.

Architects and urban planners are talking about the same phenomenon in their fields. More and more companies are asking for “accidental” meeting places (coffee bars, parks, recreation rooms) in their facilities. Urban planners are seeing a renewed interest in spaces and mixed-use developments that are conducive to human interaction. There is no doubt that the Internet will improve and accelerate all sorts of relationships. But proximity and face-to-face communication are likely to remain important factors in economic and social systems in the new economy.

³¹ “Clusters and the New Economics of Competition,” *op. cit.*

³² *Ibid.*

SMART THOUGHT

“The best cities are places where businesses and people learn better and develop faster than they otherwise would because they are centers of the three Cs—the key global assets of concepts, competence, and connections. By concentrating on a particular asset, cities can become preeminent in one of three generic ways: as thinkers, makers, or traders,” and thus have a special talent that enables them to play successfully on the world stage, writes Rosabeth Moss Kanter, in her book *World Class*. For example, the Boston area, with its abundance of universities, innovators, and entrepreneurs, excels as a “thinker.” Spartanburg-Greenville, South Carolina, an international manufacturing center with a high rate of foreign investment and a skilled workforce, excels as a “maker.” The Miami area’s success as a “trader” grows from skills in forging alliances to move goods and services in international markets.

A Supportive Environment

Factors important to making places attractive to high-technology, new economy industries are different from those important to more traditional economic activities, which have focused heavily on the costs of doing business. **High-technology companies prefer** to locate close to research institutions, such as **major universities**, and **where a high-tech presence already exists**. They are concerned about the availability of quality education and the community’s quality of life (See Table 4).

- **Arizona** now has a **strong high-tech presence** in a **few sectors** in a **few places**. Overall, however, the state’s high-tech presence is narrow geographically and sectorally. Similarly, both **Arizona State University** and the **University of Arizona** are “**Research I**” institutions. But otherwise, for a state with nearly five million residents, Arizona has relatively few university campuses and other research institutions.

The factors important to high-technology operations change over the life cycle of the companies (See Table 5). The **presence of research institutions and a skilled and educated work force consistently are among the most important factors**. Arizona generally compares favorably on the traditional cost-of-doing-business measures. Because of **climate and the natural environment**, Arizona generally is perceived to have a **positive quality of life**. However, on some **other aspects of quality of life**, **Arizona does not fare as well**.

TABLE 4:
High-Technology Location Factors

- Existing High-Tech Presence**
- Traditional Cost-of-Doing Business Measures**
- Tax Structure
 - Compensation Costs
 - Space Costs
 - Capital Costs
 - Business Climate
- Specific to High-Tech**
- Proximity to Excellent Research Institutions
 - Access to Venture Capital
 - Educated Workforce
 - Network of Suppliers
 - Technology Spillovers
 - Climate and Quality of Life

Source: Milken Institute, America’s High-Tech Economy, 1999.

TABLE 5:
Factors Important to High-Technology Industries By Phase of High-Tech Development

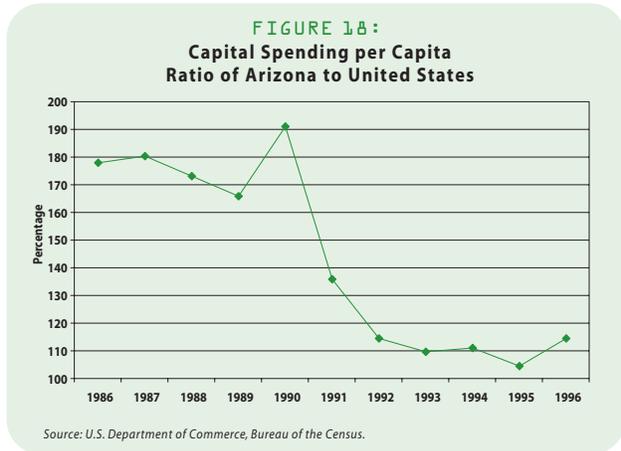
	Inception	Growth	Fortification
Public Policy			
Tax Incentives	3	1	
Public Investment	1		2
Commercialization of Ideas	1	2	2
Comparative Location Benchmarking			
Cost Factors	3		
Research Institutions	3	3	3
Skilled or Educated Labor Force	2	3	3
Transportation Center	1		
Proximity to Supplies & Markets	2	1	1
Social Infrastructure Developments			
Attending Changing Needs		2	3
Re-education & Training Facilities		3	1
Establishing Trade Groups, & Affiliations		3	3
Housing, Zoning, & Quality of Life	2	2	3

3=Critical 2=Very Important 1=Important

Source: Milken Institute, America’s High-Tech Economy, 1999.

Places where entrepreneurs are starting and growing companies have a similar list of resources: 1) universities, 2) skilled labor pool, 3) airports, 4) nice places to live, and 5) positive entrepreneurial climate. However, Anna Lee Saxenian, University of California, Berkeley, says it is not enough to have just the ingredients; the important part is the recipe for how the ingredients fit together. Dynamic regions also have processes that leverage their assets to serve the economy.

Entrepreneurial Hot Spots, *Cognetics*



If the class divide of the industrial economy was between capital and labor or managers and workers, the class divide of the emerging information economy could well be between cosmopolitans and locals. Cosmopolitans are rich in three intangible assets, three Cs that translate into preeminence and power in a global economy: concepts—the best and latest knowledge and ideas; competence—the ability to operate at the highest standards in any place anywhere; and connections—the best relationships, which provide access to the resources of other people and organizations around the world.

Rosabeth Moss Kanter, *World Class: Thriving Locally in the Global Economy*

Infrastructure for People, Places and the New Economy

- To provide the physical infrastructure for a rapidly growing population, **Arizona's per person capital spending has been above the national average.** Figure 18 shows that the state's capital spending has declined from far above average to only moderately above average.
- The Government Information Technology Agency (GITA) is now responsible for telecommunications in state agencies. The agency spearheads everything from creating standards and coordinating purchasing to developing online services in public agencies. GITA has helped Arizona to come a long way quickly in information technology. For example, the state recently won two awards from the National Association of State Information Resource Executives in electronic commerce for its motor-vehicle transactions program and process for information technology investments. GITA's 1999 Strategic Plan set ambitious directions for information technology in education, family health and safety, economic prosperity, quality of life, and good government.
- Arizona is actively pursuing deregulation of telephone service and other regulatory issues that will help to make telecommunications infrastructure more available. At this time, more than 100 Internet Service Providers (ISPs) mean that online access is available in every county. However, access remains uneven.

As described in *The Changing Face of the Software Cluster in Arizona*, business people in the state are anxious for more and better telecommunication services. For example: “The view of local (Phoenix metro) software executives is that telecommunication services are either not available, slowly installed or very expensive relative to competitor regions. This perceived lack of telecommunications infrastructure places Arizona firms at a distinct disadvantage relative to other regions. In fact, according to tests conducted by Keynote Systems, it ‘takes longer to surf the Web from Phoenix than from other parts of the country’ and that ‘Phoenix was at or near the bottom more times than not over the past few months’ (*The Arizona Republic*, 4/5/99). Keynote Systems explains the slowness as a result of growth in Web use outpacing expansion and upgrading of cables and other equipment needed to connect to the Internet. Also, company executives interviewed for this report commented on the slowness of response time to install telecommunication services to their businesses.”³⁴

Technology Infrastructure in Arizona Schools

One indicator of how well students are being prepared for the new economy is the use of technology in schools. The Progressive Policy Institute created a measure based on three factors: 1) the percentage of classrooms wired for the Internet; 2) teachers with technology training; 3) schools with more than 50 percent of teachers having school-based e-mail accounts.

- **Arizona** scored below the national average, **ranking 33rd** and eighth among ten western states **on technology use in schools.**

TABLE 6:
Percentage of Telephone, Computer, and Internet Use in U.S. Households

All Numbers = %	Total	White*	American Indian*	Hispanic	Black*	Asian PI*
Telephone	94.0	95.7	83.4	89.3	87.8	95.6
Computer	42.1	46.6	34.3	25.5	23.2	55.0
Internet Use	26.2	29.8	18.9	12.6	11.2	36.0

*Non-Hispanic

Source: Falling through the Net: Defining the Digital Divide, July 1999. U.S. Department of Commerce, National Telecommunications and Information Administration.

Community Information Infrastructure

Access to technology plays a big part in people’s knowledge of and comfort with it. And places need people with technology skills. As shown in Table 6, telephones are almost universal in the U.S., but computers and Internet access are not, according to the most recent survey of technology use by the National Telecommunications and Information Administration. In addition, residents of urban areas are more than twice as likely as those in rural areas to have Internet access. Those over age 55 and under age 25 are the least likely to own a computer or use the Internet. Of all households, those headed by single females are least likely to use the Internet on a home computer. Those who use the Internet outside their homes tend to use it at work or go to a K-12 or other school, library, or someone else’s house. Also, these users tend to access the Internet for information or to take courses at a higher rate than those who use the network at home. Libraries, schools, and community centers are important access points for those without computers at home or work.³⁵

³⁴ *The Changing Face of the Software Cluster in Arizona*, Collaborative Economics, August 1999.

³⁵ *Falling Through the Net: Defining the Digital Divide*, National Telecommunications and Information Administration, July 1999.

A Smaller, Smarter, Faster, Wealthier World

Boil down the eight building blocks of the new economy, and they reveal that we are building a wholly different kind of world—one that is smaller, smarter, faster, and wealthier.

It is smaller because the world is being joined into a single economic unit, and technology allows vast amounts of information to be shared instantly and inexpensively among many people in many locations.

Small, nimble new companies are transforming the way business is being done, snatching market share from their bigger, established rivals. There is a shift away from mass production and mass markets to niche production and customer relations. Just-in-time inventory has replaced large warehouses full of product and tiny Web sites are replacing large stores. Firms are clustering into hub cities and regions where they can be near their competitors, suppliers, and customers, and where they can easily access specialized talent, institutions, and networks. Many people are leaving big companies and either joining much smaller companies or going into business for themselves as entrepreneurs, contract workers, freelancers, or temps.

It is smarter because we have accumulated a vast amount of technological and scientific knowledge since as recently as the 1960s.

Most of us have received more formal education than our parents and grandparents. More workers than ever before are expected to “think for a living” and the prospects of those who cannot look bleak. Change has become constant. Companies are no longer trying to do everything on their own; instead they are working together and playing to each other’s strengths. A company’s value is increasingly tied to its intellectual capital. Intellectual assets serve to differentiate communities as well; the presence of top-notch government, university, and industry research centers helps attract and develop high-growth industries, entrepreneurs, and venture capital.

It is faster because the pace of technological change is quickening and goods, money, technologies, and ideas can be quickly moved from place to place.

The marketplace is demanding speed. There is constant pressure to shorten the time it takes to create a new product or service, to launch a new business, or to enter a new market. Successful organizations display a healthy discomfort with the status quo. They detect emerging trends quickly, they make intelligent decisions rapidly, and they turn strategy into action much faster than ever before. The Internet business model, with fewer hard assets, a direct pipeline to customers, and flat organizational structure, offers a new level of speed and operational efficiency for those who master it—and huge dislocations for those who do not.

It is wealthier because new technology and nimble new competitors have driven revenue growth, job growth, and higher living standards.

There are more opportunities to become wealthy than ever before. Many workers have reached the point where they enjoy enviable incomes, living, and working conditions, and their ranks can continue to grow. Higher-wage jobs are growing faster than low-wage jobs. Trade boosts both national wealth and job growth. New wealth is coming from the growing dominance of services, too; many service jobs, particularly those found in sectors that have grown the fastest—finance, communications, health, professional services—pay more than many manufacturing jobs.

Making Public Policy Choices for People and Places

People and places play important roles in the new economy. But what does the new economy mean for those same people and places? How can communities, cities, regions, and states meet the challenges posed by the new economy? **What will be required to ensure that both people and places are not left behind in the new economy?**

People matter a great deal in the new economy—but they have to be prepared to be knowledge workers. This means bridging the gaps and creating quality educational opportunities so that all students have the right tools to enter the workforce. It also means making sure young children are ready to start school and that more children stay in school. It means providing flexible ways for adults to continue their education throughout their lifetimes.

Places also matter a great deal—but not in the way they used to. Proximity to raw materials and markets is not as important as it used to be. **What matters far more is creating communities where people want to live and work and where cutting-edge companies want to cluster and can grow.** This means finding ways to provide and protect a good quality of life in all communities. It means making sure transportation, telecommunication, and all other facets of the new economy infrastructure are present. And it means making sure that both “intellectual capital” (venture capitalists, educators, scientists, engineers) and “social capital” (trade associations, informal networks, civic associations) are available in the communities where new economy companies want to locate.

Implications for Policy Makers: The Nuts & Bolts of Operating in the New Economy

Just as a CEO would want for his or her company, policy makers will want their state, region, or city to fit in, be in step, and not be left behind in a smaller, smarter, faster, and wealthier world. Here are ten lessons from the world of business that are vitally important to the public sector in the new economy.

10 Things Business is Learning That Government Needs to Know

1. Be Fast

In the new economy, time is the most important variable—it is what drives everything else. The business world’s notion of “just in time” is giving way to the “zero time” concept, meaning that when something needs to happen, it happens immediately. In the new economy, government must also make changes quickly if it is to be relevant, useful, and powerful. Policy makers who take years haggling over how to fix problems risk making their state or city powerless in the new economy. Higher education institutions that are slow to respond to industry needs risk becoming irrelevant, as industry looks elsewhere. As the argument goes, if you don’t do it and your competition does, you are out in the cold.

2. Get the Best

Ask a large global company about the most serious problem in their industry and a common answer is “the battle for talent.” Government is in the same boat. Just as with business, getting “the best” does not just refer to the rank-and-file employees, but also to top policy makers. But in the new economy, the “best” employee doesn’t just mean a smart one—it also often means a good citizen. Context Integration, a Massachusetts-based web-solutions company, looks for people that fit the SWAN profile: “Smart, hard-Working, Ambitious, and Nice.”³⁶ The first three criteria are easy enough for most organizations, but it is the fourth one that is often overlooked. This can be dangerous in a new economy where competing aggressively also means collaborating generously. So, what does “nice” mean? One manager at Context Integration says: “Nice people don’t just look out for themselves. They don’t try to act like the smartest person in the room. They are team players.”

³⁶ Chuck Salter, “ideas.com,” *Fast Company*, September 1999.

3. Insist on Excellence

You have to be world class to compete with world class. Former McKinsey & Co. consultant Johannes Ziegler thinks the nature of competition in the new economy is like playing chess: “If you have a decent IQ, you can practice and become the champion of your local chess club. But if, all of a sudden you have to compete against a world-class player like Garry Kasparov, you won’t stand a chance.”³⁷ According to Ziegler, this is now happening to a lot of companies—they don’t have the organizational IQ to be world competitors. How can you gauge an organization’s competitiveness IQ in the new economy? For a business, the questions are simple: Is it selling the same old products? Failing to meet deadlines, again? Missing big market opportunities? Remarkably, nearly identical questions can also be asked of governments: Are they selling the same old policies and programs? Are they failing to meet deadlines (mental health, school finance, air quality) again? Are they missing big opportunities (open space preservation, telecommunications infrastructure)?

4. Look to Core Competencies

According to the new economy strategists, “everything we do, we have to do world class, so we can’t do everything. We have to focus.” It is a lesson that applies to cities, regions, and states as well as companies. Every community has a set of assets that affects its economy, quality of life, and sense of community. Government controls some of these assets (public schools, for example), while others are driven primarily by the private sector (*i.e.*, the availability of business finance), and still others are the result of geology and geography (desert environment and warm weather). The question is: what is core and what is not? Communities, like businesses, can learn a lot by engaging their customers (citizens) in the process of identifying core capabilities. However, keep in mind that not all of the ideas about community competencies will mesh. When ideas do not mesh, a community faces choices. Some choices will be made willingly by the political leadership or the voters, while other choices will be forced by inaction. The bottom line, however, is that it is not a good idea to leave too many outcomes to chance. For one thing, sticking with core competencies that fit with the old economy will not help competitiveness in the new economy.

5. Build Up, Don’t Tear-Down

For a long time, it’s been popular to call on government to “be more like business.” But considering how the successful business model has changed in the last ten years, it might be wise to reconsider what this mantra means. For one thing, the era of squeezing corporate profits through slash-and-burn downsizing is largely over. Why? Because companies have learned they cannot escape the crush of competition with one strategy alone. In the new economy, staying competitive requires a mix of strategies, and in that mix are often strategies to build-up quality, value, speed, and talent. Ask recently-named Hewlett-Packard CEO Carly Fiorina what is on her mind as she steps into her chief executive role, and chances are that she is thinking much more about how to “build-up” rather than “tear down” the company, even though she was brought on board largely to make painful amputations. Paring down is the easier part, but it is not the end game. The harder and much more critical part is finding ways to differentiate the organization from competitors on other factors such as concepts, competencies, and connections and gain a new reputation as B-I-W (best in world). This business model sounds like a good one for government to follow—build up capabilities that make a region or state a place where businesses and people can learn better and develop faster than they otherwise would.

³⁷ “How to get smarter,” **Fast Company**, September 1999.

6. Pump Up Technology

Technology has made our world smaller and faster. And while much of the private sector is furiously repositioning itself around technology, the public sector has not been as fast. The public sector's first challenge is to leverage what technology offers in terms of cost-cutting, customer service, information, and connectivity. In Spain, for example, citizens now tap into their unemployment and disability benefits through the Internet. In Singapore, all sorts of government services, including marriage licenses, citizenship applications, and college applications are available on the Web. The technology issue for governments, however, is not just about new service delivery and information or about getting computers in one agency to talk to those in another agency. The significant challenge for government involves how to be strategic with planning, financing, and development of the technology infrastructure so it meets the needs demanded by growth and the expectations of residents and businesses. For example, governments have plenty to gain from "smart highway" technology that analyzes and speeds traffic, but few are willing to pay for it.

7. Customers are the Bottom Line

"Many people believe that we have entered the Age of the Internet. Actually, it's more accurate to say that we're living in the age of the customer," contends Anne Busquet of American Express.³⁸ The ultimate promise of the Web is a once-and-for-all transfer of power: consumers and business customers will have the power to get what they want, when and how they want it, and even at the price they want. And before long, government will have to conform to this relationship model as households accustomed to the Web's service and convenience become intolerant of the off-line services being offered by government. To make matters worse, the public sector will soon be struggling with another problem familiar to businesses: How to anticipate what customers want next. For communities, regions, and states, the big challenge is identifying what the next generation will want in terms of life style, work setting, and community. This means listening closely to the new economy's workers (increasingly Generation X, plus Asian and Latino immigrants) and the new economy's "invisible" companies (those actually driving the economy, not such population-driven areas as real estate).

8. Kick the "Go it Alone" Habit

Collaboration is the new economy way of getting things done—acting alone simply limits what can be accomplished. Business is learning that if it wants to compete aggressively, it has to collaborate generously. City and state governments, educational institutions, and community organizations should be similarly seeking ways to partner to help position the region or state—and in turn, themselves—as a global competitor. The idea of public-private or city-city collaboration is not new, but the problem is, it is not always easy. The barriers seem to be everywhere: political boundaries and fiefdoms, vocabulary, process, long-standing adversarial relations, incivility, lack of time, and churning population. But, there are plenty of examples today of communities that have overcome these and other barriers to respond quickly and effectively to opportunities in the new economy. Places like California's Silicon Valley, Austin, Texas, and Chattanooga, Tennessee, have recognized the power of collaboration and are finding ways to work across business, government, education, and community to form new relationships, information networks, and shared purpose that will increase the region's resilience and role in the global economy.

³⁸ Fast Company, *op.cit.*

9. Know Where the Real Competitive Advantages Are

Specialized suppliers, highly skilled workers, information networks, and responsive government: they're the stuff of regional competitiveness in the new economy, says Michael Porter of the Harvard Business School.³⁹ City and state policy makers who still see companies as desiring locations where they can find low taxes and cheap electricity and labor are thinking in terms of the old economy. In today's services and technology economy, it's getting harder and harder to create competitive advantage by simply providing low-cost business sites. The rules for the new economy, experts say, are really about locating a business strategically to benefit from a critical mass of competitors, suppliers, and customers, a strong talent pool, unique institutions, and regional quality of life. Such local features can be used by firms to their competitive advantage, so long as rivals cannot match them. Thus, knowing how to create competitive advantage out of items such as an R&D base, skilled workers, and presence of suppliers is becoming vitally important for both companies and communities. The key to getting it right for a region, Porter says, is to understand that productivity and innovation, not low wages and low taxes, are the real secrets to competitiveness in the new economy.

10. Rethink the Revenue Base

Regardless of their industry, size, or location, companies today are having to pay attention to revenue growth. During the past decade, most U.S. companies were clearing debris, using downsizing, re-engineering, delaying, and consolidating to increase efficiency and cut costs. But "the gains of such yard work have largely been realized," writes University of Michigan professor Dave Ulrich in **Harvard Business Review**, and "executives are now looking to find profitability through growth."⁴¹ The challenge of revenue growth for the new economy is not confined to business. State and local governments need the fiscal capacity to respond to important new economy challenges. While budget coffers are currently flush, there are some red flags ahead. For one thing, state and local tax systems are geared toward the age of heavy industry. Conceivably, the growth of the new service, knowledge economy could result in a tax structure that gradually taxes a smaller and smaller percentage of all economic activity and over time, rates on this smaller base are forced higher to generate sufficient revenue. Other challenges to the current state-local tax structure include: the rise of e-commerce sales, difficulty in taxing multinational firms that design their products in one country, manufacture in another, and sell in a third; and a growing older population that spends more on services such as healthcare, which are not often taxed.⁴² Sooner or later, governments will have to re-examine every assumption they have about the way they collect revenue for public purposes.

³⁹ Michael Porter, "Clusters and Competition: New Agendas for Companies, Governments, and Institutions," Harvard Business School, Division of Research Working Paper, September 1997.

⁴¹ Dave Ulrich, "A New Mandate for Human Resources," **Harvard Business Review**, January/February 1998.

⁴² Thomas W. Bonnett, **Is the New Global Economy Leaving State-Local Tax Structures Behind?**, National League of Cities, 1998.

Ideas for Supporting People and Places in The New Economy

The new economy characteristics suggest that ensuring prosperity for people and places will require policy responses in many areas. Issues as diverse as a quality environment and strong universities join first-rate telecommunications infrastructure as new economy necessities. The best public policy responses to the new economy will most likely include options that have been under consideration for some time, such as early childhood education, as well as others that are totally new.

The following pages present examples of policies and programs that have been, or are being, implemented across the country. The examples touch on everything from quality pre-school to downtown revitalization to new relationships between universities and businesses to assistance for low-income residents. Arranged under the headings of **People and the New Economy** and **Places and the New Economy**, the examples are categorized by whether they relate to policies and programs relevant to City, Region, or State. Along with the **Basics on Arizona’s People and Places** at the conclusion of this section, there is something for everyone.

The more than 35 policies and programs presented here are thoughtful responses to the new economy, but there are many more ideas out there than could be fit into a few pages. In addition, Arizona is not without programs that are relevant to the new economy. The examples presented below are intended simply to broaden the discussion about policy choices. While looking at the examples, readers are urged to refer back to the new economy characteristics and to think broadly about the potential responses to the new economy. For example since “People are the most important raw material,” great ideas for supporting people might come from any area, be it technology or education or the arts. Preschools, neighborhood networks, and drama can all contribute to making sure people can compete in the new economy. The possibilities are endless.

As shown throughout this publication, Arizona is doing well in some areas and not so well in others. Understanding that is critical to responding to the new economy. **At the heart of the discussion is the question of how to help people and places to be prosperous in the new economy.**

People and the New Economy

Examples of State Policies and Programs

Quality Pre-school Pre-requisite for New Economy Success

Research has shown consistently that **children with quality preschool experiences** tend to **enjoy greater success in school in later years**. Georgia has put these lessons into practice in a big way by enacting a voluntary pre-kindergarten program for all four-year-old residents. Approximately 70 percent of the children targeted—including a high proportion of those “at risk”—are now participating in preschool through either the state-funded program or the federal Head Start program. Funded through the Georgia Lottery for Education, the state is earmarking about \$216 million a year to ensure that every four-year-old has access to a quality pre-school program. Evaluation studies thus far suggest improved social and academic readiness among children and high satisfaction levels among parents and teachers.

www.osr.state.ga.us/prekprogram1.html

HOPE for New Economy Achievement

Georgia is also taking a universal approach to higher education. Georgia’s HOPE (Helping Outstanding Pupils Educationally) scholarships provide financial aid for college for all of the state’s high school graduates who meet basic standards. High school students must graduate with at least a “B” average in core classes. This achievement qualifies them for free tuition, fees, and a book allowance at any public college or university in Georgia. Students must maintain a “B” grade average at college to remain eligible. HOPE also provides some support for private or technical colleges, GED courses, and teacher training. The state spent about \$206 million on HOPE last year from the Georgia Lottery for Education. Early data suggest that students are entering college better prepared; more low-income students are attending college. Also, HOPE students are also more likely to stay in school than other students.

www.gsfc.org/hope/HOPEpage.htm

Equitable Access Puts Everyone in the New Economy

The Washington state legislature recently appropriated \$54.5 million to create the largest educational network in the country, the K-20 Educational Telecommunications Network. The system will eventually connect all public four year colleges and universities, community and technical colleges, K-12 public school districts, regional service districts, independent baccalaureate institutions, libraries, and other community locations with one another, the Internet, and other telecom services. **The purpose is to address disparities between the state’s urban western and rural eastern sections so that all students get the skills needed in the high-tech job market.** The network will be completed in 2000.

www.wa.gov/k20

Identifying and Fixing Skills Gaps

“Knowledge & Know-How” is the name of an initiative by the Ohio Business Roundtable and Ohio Department of Education **to identify and measure systematically the gaps between the knowledge and skills the state’s students possess now and those they will need to perform successfully in the workplace.** The study explored the types and level of skills needed by entry-level workers in high performance workplaces and whether or not students graduating from Ohio’s public schools possess the foundational skills that will allow them to enter, and progress in, the workplace. The Ohio Skills Gap Initiative used the American College Testing’s (ACT) Work Keys system to gather data. The state concluded that there is a significant skills gap. Recommendations for significant changes were targeted to educators, employers, parents and communities, and public officials.

Ensuring Science and Technology Workers

Pennsylvania created the SciTech Scholarship and the GI Bill for the New Economy in the last legislative session to increase the number of science and technology workers in the state. The SciTech Scholarship provides eligible students with up to \$3,000 per academic year for post-secondary science and technology

programs. In exchange, participants must maintain at least a B grade average, complete an internship in a science or technology field, and agree to work in Pennsylvania for one year for every academic year they received assistance. The GI Bill for the New Economy helps those pursuing associates degrees or other approved training. Up to \$1000 per academic year is available to full-time students. In addition, working adults, who have lived in Pennsylvania for at least one year and worked at least a year while attending school part time, are eligible for a 20 percent reduction in tuition and fees.

www.pheaa.org/scitech.htm

Tobacco Settlement Funds Support Research and Scholarships

Michigan's governor and legislature have already made plans for their state's tobacco industry settlement. Governor Engler signed the Michigan Merit Award Scholarship Act in June 1999 which will be funded with dollars from the tobacco settlement. The merit act includes provisions for post-secondary scholarships for students who achieve certain standards in high school. **In addition, Michigan has earmarked \$50 million in tobacco settlement funds for health and aging research. A board which includes the presidents of Michigan State University, University of Michigan, and Wayne State University will distribute the research funds.**

Examples of Regional Policies and Programs

Employers, Unions, and Workers Retooling for the New Economy

In 1991 over 40 firms with 60,000 workers created the largest manufacturing modernization consortium in the country, the Wisconsin Regional Training Partnership (WRTP). **The purpose of WRTP's collaborative efforts is to update companies' operations through training, technical assistance, and inter-firm cooperation.** Membership now includes 50 companies and unions. Private investment in frontline workers surpasses \$20 million a year. Each year over 6,000 workers receive training in on-site learning centers and through technical college courses and tuition reimbursement programs. Employees' needs determine the types of training, which range from basic skills and English as a Second Language to advanced technical skills. As many as 6,000 new manufacturing jobs have been created in the last four years. WRTP has also trained and placed more than 250 low-income central city residents in jobs with average wages of more than \$10 an hour plus benefits.

www.cows.org

Get IT-Got/IT!

Green Thumb Got/IT! provides certified information technology (IT) training to technologically underserved, low-income individuals. Businesses partner with training providers, and offer know-how, internships, and job opportunities. Green Thumb's training matches the learning needs and styles of the trainees and qualifies them for work in the IT industry. Started with workers aged 55 and over in mind, current participants have a range of ages and experience—but they remain low income and previously "left out". Green Thumb services include: assessment, job counseling, training, certification exams, placement, and supportive services. Green Thumb is currently operating in Sacramento, Baltimore, and Austin. The organization is looking to replicate this program in additional areas and to customize it for different businesses, communities, and groups of people.

www.greenthumb.org/IT/index.html

Creating a Career in a New Economy Field

Baltimore City Community College (BCCC) serves primarily African-American students in inner-city Baltimore. **Together the college's faculty, other teachers, and local business owners assessed how ready students were for the area's growing high-tech job market.** They found that preparation for careers in biotech fields was particularly lacking. BCCC now provides associates degrees in biotechnology, and links to high school and university programs to create a seamless transfer for students. BCCC has participated in skills standards projects that ensure graduates' smooth transition from biotech to pharmaceuticals to clinical research as the market changes. A "quality assurance" component allows students to take 12 more credits for free if they do not have a job within 90 days after graduation, or if their employer is not satisfied with their skills.

www.bccc.state.md.us

Hospitality Needs Knowledge Workers Too

The Hospitality, Travel, and Tourism program at the mostly minority South Division High School in Milwaukee, Wisconsin **combines academic, vocational, and entrepreneurial learning. Students learn to understand, and be flexible enough for, a wide variety of industry opportunities, rather than the “old economy” approach of learning just one skill.** School and industry leaders designed the program after an assessment of needs in Wisconsin uncovered the gap. This hospitality program also addresses the often negative image of the industry by showing the community how the program teaches both technical and managerial skills. Internships and shadowing experiences are **focused on hospitality’s managerial and “knowledge worker” positions.** In addition, the district’s program encourages students to be entrepreneurs. For example, students have been involved in such enterprises as setting up a cheesecake company from “scratch”.

<ftp.milwaukee.k12.wi.us/schools/south/index.html>

Examples of City Policies and Programs

Reading Success—Guaranteed!

Milwaukee Public Schools, **a big city K-12 district which serves many disadvantaged kids, has committed to providing free tutors for students if they are not reading at grade level by the end of second grade.** Children enrolling in kindergarten by September 1999 who remain in the district through June 2002 are eligible for the new program, Let’s Read. Students must average 90 percent attendance at school to participate. The one-on-one or group tutoring may take place at after-school reading clinics or appropriate programs at area colleges and universities or nonprofit agencies.

<ftp.milwaukee.k12.wi.us/departments/special/letsread.htm>

Meeting and Mentoring at the Computer Clubhouse

Together, the **Boston Computer Museum and the Massachusetts Institute of Technology Media Lab provide places where kids without access to technology can work with volunteer mentors and become confident IT users.** Going **beyond the typical computer lab’s offerings,** Computer Clubhouse **participants quickly become designers and creators.** They use up-to-date software to create artwork, animations, simulations, multimedia presentations, virtual worlds, musical compositions, and web sites. Volunteers are recruited from colleges and universities, businesses, and retiree groups, and attend training sessions to learn how to be good mentors. Start-up costs for a Computer Clubhouse are about \$100,000 with annual operations at about \$80,000. Some of the nine current locations have been started for less due to corporate grants and equipment donations.

www.computerclubhouse.org/

SmARTS for Prevention and Creativity

Urban SmARTS is an **after-school arts program designed to prevent 11 to 13-year olds from entering the juvenile justice system.** The program provides daily arts instruction; a safe haven for the kids; case management; nutrition; and field trips. About 60 students from seven middle and elementary schools participate each year. Three professional artists work with a teacher and caseworkers at each site. Music, theater, dance, and the visual and literary arts are taught. Urban SmARTS is operated by the City of San Antonio Departments of Arts and Cultural Affairs and Community Initiatives and two school districts.

www.ci.sat.tx.us/comminit/page34.htm

Technology Access for Everyone

Times are changing for technology-starved neighborhoods in Austin, Texas. **The Austin Access Model puts neighborhood networks at its core.** The model features the Austin Learning Academy (ALA), a family-oriented program. In addition, Austin Free-Net, a citywide network of public access computers, maintains workstations, some with fast ISDN lines, at 15 neighborhood sites. Neighborhood Networks sponsors local access centers and media labs, plus community web sites. For example, ALA’s Family Camp researched topics (like Texas’ Buffalo Soldiers) via the Internet and then created web sites to share what they had learned. Learning is just

one reason for the Austin Access Model. One other reason is to link people with each other, their schools, libraries, and workplaces. Besides technology projects, organizers also see the networks as a step toward greater civic participation. The networks and centers provide another place where social networks can form.
www.alaweb.org

Connected for Literacy, Learning, and Work

Washington's D.C. Link and Learn is a 40,000 square foot, state-of-the-art, industry-certified technology training center and micro-enterprise incubator where residents can prepare themselves for the new economy. Opened in November 1998, D.C. Link and Learn offers **programs and services to benefit the entire family**, including child care, a technology play center, K-12 education enrichment classes, SAT test preparation, teacher training classes, technology job skill training, Microsoft certification classes, training for personal use, and others. So far, D.C. Link and learn has provided training to over 400 residents. Partners for D.C. Link and Learn include local and federal agencies, community colleges and universities, and businesses.

Places and the New Economy

Examples of State Policies and Programs

A New Economy Cabinet Post

Virginia's Governor Gilmore established the post of Secretary of Technology in 1998 "to ensure that its policies, education infrastructure, and use of technology encourage continued growth of the Commonwealth's technology base." The Office of the Secretary oversees traditional state information technology functions, such as a blueprint for state government IT planning and VIPNet, a single Internet access point for Virginia government information. The Secretary also manages the Advisory Commission on Electronic Commerce and the Governor's Commission on Information Technology. In addition to infrastructure and an IT-enabled government, the **Secretary is a major player in nontraditional areas such as technology workforce development, state R&D priorities, and IT cluster economic development.**

www.sotech.state.va.us , www.vipnet.org

Rural Places Participate in the New Economy

NET.WORK.VIRGINIA covers the entire state with high-capacity broadband access that costs the same regardless of location. Thus, rural areas are not charged more for access, as is often the case. Subscribers install connections in schools, homes, or businesses for about \$500-\$2000, depending on the quality of the connection for access to voice, video, and data services. The network can accommodate almost any application, multimedia transmission, or communication. The network connects to the Internet, but also to the National Science Foundation's higher capacity network. Every student may have an e-mail account thanks to NET.WORK.VIRGINIA. The state's network is also involved in the Mid-Atlantic Crossroads (MAX) which will link several states through high capacity infrastructure and enhance options for all of the states' residents.
www.networkvirginia.net/

Pennsylvania is PRIME for the New Economy

Government is no stranger to information technology, and states and cities are continuing to move quickly to upgrade their systems and capabilities. For example, Pennsylvania recently unveiled a far-reaching initiative for the new economy. **PRIME—privatize, retain, innovate, modify, and eliminate—is Pennsylvania's answer to giving state government the competitive edge.** PRIME uses online technology to cut red tape and improve customer service. For example, a single application form for assistance from any Department of Community and Economic Development program is online. A consolidated registration form for charities was created and then reduced to just four pages. A toll-free number for parks reservations was installed. Campaign finance reporting went online. In a related move, Pennsylvania has put its state's web address on new license plates to show that technology is truly important to this state.

www.prime.pa.us

Missouri Sows Seeds for New Economy Businesses

The Missouri legislature passed the New Enterprise Creation Act in 1999. **The act authorizes up to four state-funded seed capital funds to support new technology-based companies in Missouri.** Funding will be generated through tax credits estimated at about \$20 million over four years. A Missouri Seed Capital Investment Board must be created before the seed funds can be implemented. However, one exempt fund will be started immediately to assist any of the up to 7,000 Missourians to be laid off by the Boeing Corporation over the next two years. The funds will be administered by venture capital professionals affiliated with Missouri's innovation centers in St. Louis, Kansas City, Columbia, and Rolla/Springfield.

www.senate.state.mo.us

Thinking About Public Revenue in the New Economy

The new economy challenges traditional ways of collecting tax revenues. Governments are beginning to consider different approaches. For example, Massachusetts calls itself an Internet Tax-Free Zone. Maine taxes Internet-related purchases, but computers are exempt, except for the components (like modems) that make them interactive. Maine favors taxing downloaded information or software. Ohio is taxing downloads for businesses, but not residences. **West Virginia has embarked on an overhaul of its tax system and expects to make it compatible with new economy commerce. Nontraditional revenue sources have been proposed, such as a "bit" tax, to tax the revenue-generating uses of the Internet, instead of only taxing transactions.** This would mean a switch from a retail sales model to an information transfer model.

Getting Tax Accounts Online

Maryland's Online Combined Registration web site has made it **faster, easier, and cheaper for companies to arrange all the tax accounts they need.** Online registration is available for withholding accounts, sales and use tax licenses, unemployment insurance accounts, and other regulatory requirements. The online system speeds up the business regulation process and helps the state Comptroller's office to manage accounts digitally, thus eliminating the need to enter data from paper forms into the electronic system.

www.comp.state.md.us/business/cra/cra.asp

Wired? Look at the Technology Atlas

Pennsylvania designed the atlas as part of an assessment of what and where telecommunications and technology infrastructure exists in the state and what needs to be created to benefit education, the economy, and healthcare. The result is an online database that allows businesses and individuals in state or thinking about moving there to customize maps that pinpoint where various services are available, such as fiber optic lines and video conferencing facilities. It also shows hospitals, utilities, libraries, and other public institutions. The atlas has very detailed information and can zoom into very specific locations. The atlas cost \$600,000 to develop, including linking the database to the maps that were already online. It will cost \$150,000 annually to maintain. In addition to the current atlas, a "snapshot" of the previous year is available.

www.state.pa.us/PA_Exec/OIT/techinitiatives/atlas.htm

Make it a Smart Trek

Being stuck in traffic is a thing of the past for those who take advantage of Smart Trek, **the Washington State Department of Transportation's new personalized information service.** Seattle residents can now pay \$60 a year to subscribe to a wireless service that allows them to get traffic information while they are in their cars. The services also are being used to improve the operation of public transportation. Nonsubscribers may get the information for free over the phone, on a cable TV station, or on the Internet before they leave their homes or offices.

www.smarttrek.org, www.wsdot.wa.gov/regions/northwest

Examples of Regional Policies and Programs

Joint Ventures for Solving Problems

In the depths of California's economic downturn in the early 1990s, **20 organizations in the San Jose/Silicon Valley area came together to address regional problems in education, health care, and economic development.** The result was the public/private collaborative called Joint Venture Silicon Valley which involves some of the region's most prominent business leaders along with elected officials and nonprofit executives. Projects that started with Joint Venture include: 21st Century Education Initiative and Smart Valley, an effort to "wire" the region's homes and schools. Smart Valley closed recently after largely accomplishing its tasks. The education initiative has spurred significant private sector involvement in schools.

www.jointventure.org

Regional Cooperation Makes Permitting Smart

Ten cities in Silicon Valley are about to inaugurate a new, regionally-uniform, easy-to-use system of municipal, county, and regional economic development processes, permits, and applications. Building permits are at the heart of the effort. The cooperating cities have developed uniform standards for applications and submissions and common procedures for issuing and tracking permits. All of the functions may be done via the Internet. **The effort is rooted in a desire to make government capable of serving businesses better and faster.**

www.smarz.svi.org/projects/permit/

New Wireless Networks for Remote Areas

A broadband high-speed network, LMDS (local multipoint distribution service) uses transmission sites similar to those for cellular telephones. But, LMDS allows for the rapid transfer of huge amounts of data. LMDS promises faster, better access to the Internet and a wide variety of telecom services, especially for remote areas. Virginia Tech, a long-time telecommunications leader among universities, recently bought LMDS licenses from the Federal Communications Commission on the assumption that commercial entities wouldn't soon be serving rural areas. **Virginia Tech has joined with the Center for Innovative Technology and the Center for Wireless Technology in Virginia to determine how best to make this technology affordable and accessible to rural areas.** The consortium has recruited manufacturer Wavtrace Inc. to donate construction of five sites and a hub in the Blacksburg region in 1999. Negotiations with other firms are under way. Equipment providers, along with federal and private grants, are funding this advanced infrastructure.

www.cwt.vt.edu

An ACE of an Idea for the New Economy

The Appalachian Center for Economic Networks (ACENet) promotes local enterprises in numerous ways. The Food Ventures team has worked with over 100 specialty food firms in developing niches and marketing their products. **Another project connects Ohio entrepreneurs with business owners in other states in an online Web Market. A computer lease program with training and hardware subsidies helps rural, low-tech businesses to get involved in e-commerce.** For example, a West Virginia business leased a computer from ACENet to coordinate shipping and distribution of products from 40 home-based knitters. The firm now sells its custom knitwear via the Internet. A Computer Opportunities Program is targeted to students with little or no computer experience, teaching them how to be computer consultants. Students have ended up tutoring others and pursuing further education in computer fields.

www.seorf.ohiou.edu/~xx001/main.html

Universities and Businesses Go Beyond Cooperation

Since 1982, the nonprofit **Houston Advanced Research Center (HARC)** has leveraged research dollars for ten universities by connecting faculty researchers with companies. The basic research by the university members is turned into marketable products by the partner firms. University partners include: Baylor College of Medicine, Duke University, and the University of Texas at Austin. For example, when Texaco downsized, it donated its geochemistry lab to HARC. Now, Texaco and other firms support the HARC scientists' research on oil and gas exploration and production. After a research project is completed, the companies individually decide how to develop or market new products on their own. In another example, TerraPoint, a terrain mapping firm, used HARC's work with NASA-developed technology to create new high-altitude maps for pipeline surveys and other oil exploration activities. TerraPoint is now considering how to develop and sell a variety of products.

Going to a University for Help with Going Global

More than 20 years after its founding, **IC² Institute, a high-tech consulting and training center at the University of Texas at Austin, is known internationally for its work in trade, technology, training, and innovation.** A place that truly brings business and academia together, IC² works globally to spur technology-based growth in the Austin region. The institute operates a high-tech incubator, a workforce development program for technology companies, an executive education program, and six international programs. Most notable of these is the Global Ventures Program. This effort provides a year's training to executives as they take their firms into global markets. Each company is assigned several mentors and given access to the institute's extensive networks. Consulting and hands-on assistance with marketing and other tasks ensure the participating firms' success. Now IC² is working with foreign partner institutions to form a Global Technology Incubator to provide a U.S. home for foreign high-tech start-up firms.

Wildlife Matters in San Diego

San Diego may be a hot region for the new economy, but eighty-five endangered species also call the area home. **The Multi Species Conservation Program (MSCP) created a regional plan that specifically identifies development and habitat preservation areas.** As a result, builders don't have to do environmental assessments in exchange for avoiding preserves and building at low densities. **A coalition of environmentalists, builders, and utility representatives developed the plan along with local, state, and federal government agencies.** The MSCP area includes 582,000 acres. Land acquisition costs are estimated at between \$750 million and \$1.5 billion with the private sector contributing about one third of the required funds. San Diego policy makers and voters must identify more resources, but acquisition has begun through developers and existing programs. However, the plan's success is unpredictable. Funding is an obstacle, and some environmental groups that participated in its development now oppose it.

Examples of City Policies and Programs

Communicating with the Electronic Town Hall

A GII (Global Information Infrastructure) Award winner for its progress on "e-government," **Indianapolis is striving to have an "Electronic Town Hall."** In 1996, Mayor Stephen Goldsmith created the Internet initiative for this integrated city/county government. The web site allows residents of Indianapolis and Marion County to apply for some permits online, pay parking fines, locate all types of services, chat with all of the elected officials, and balance the budget. The number of functions that can be done through the site is increasing rapidly. Most notably, Indianapolis is going beyond putting administrative functions online and trying to create new ways of communicating with residents. However, services, information, and communication may still be done in person also. www.IndyGov.org

Connect the Valley to Attract New Economy Firms

Technology 2020, an east Tennessee nonprofit organization, **initiated Connect the Valley to attract telecommunications/technology employers to the region. Connect the Valley has many components.** The largest is called **Knoxville's Digital Crossing** which involves helping technology firms to settle in the

city's downtown. The plan is to fully "wire" various downtown locations where e-commerce and Internet firms can co-locate and collaborate. The first project is a building owned by a local utility company, which is ideal because of its location and the minimal cost to update its infrastructure. The city and state are involved in funding Connect the Valley, as are the local utility, a local foundation, and a private corporation, but the organization expects to be self-supporting in three to five years.

www.tech2020.org

Cyber Village is at Home in a Historic District

Lowertown, once St. Paul's derelict waterfront area, is now a desirable place for people and businesses.

An 18-block historic district offers various types of housing, arts, restaurants, and vibrant community life. The nonprofit Lowertown Redevelopment Corporation has guided the area's comeback for more than 20 years.

Lowertown has attracted many new technology, Internet, and media companies as a result of telecommunications infrastructure, a quality environment, and affordable space in many renovated warehouses.

Architectural, design, and advertising and communications firms have also relocated to the area. Cyber Village, a loose affiliation of technology companies in and around Lowertown, is an important part of the area's support system for businesses. The group serves technology businesses directly by helping them find space in the area, among other activities. They also match investors with firms and help individuals with technology careers.

www.lowertown.org, www.cybervillage.org/

Protecting Place Through Standards for "Green" Construction

Austin, Texas' Green Building program includes **130 specifications for environmentally friendly buildings.**

Designed to promote the construction of energy and resource-efficient structures, Austin built on its residential Energy Star Rating Program. **The city wanted to move beyond energy use to include water consumption, use of building materials, and waste production.** Structures in the program receive a rating of one to four stars, indicating the level of compliance with the efficiency guidelines. The local builder's association endorsed the Green Building Guide and has acted as an advisor to the city. Financial and marketing incentives make the program attractive to builders to use.

Making Communities Green and Open

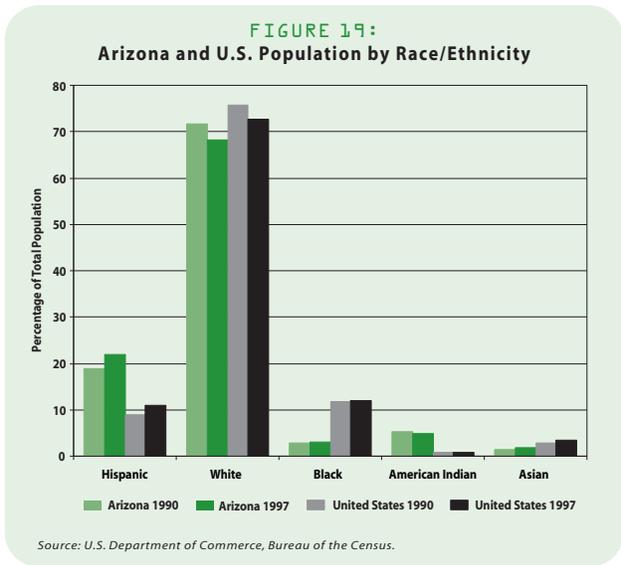
Philadelphia Green has shown that creating attractive community open space for today's residents is a positive way of preserving land for tomorrow's development. A program of the Pennsylvania Horticultural Society, Philadelphia Green was started to establish community gardens. Today over 3,000 community gardens grace the city. Philadelphia Green has added more projects, such as the Public Landscapes program, over time. Public Landscapes volunteers and contractors have replaced a one-mile stretch of industrial eyesores on one of the main routes into Philadelphia with a meadow of native plants. The organization also rehabilitated large areas along I-95 through the city. Most recently, Philadelphia Green has worked with neighborhood community development corporations to incorporate gardens and green open space into their plans for housing and commercial development.

www.libertynet.org/phs

Alliances Turn a City Around

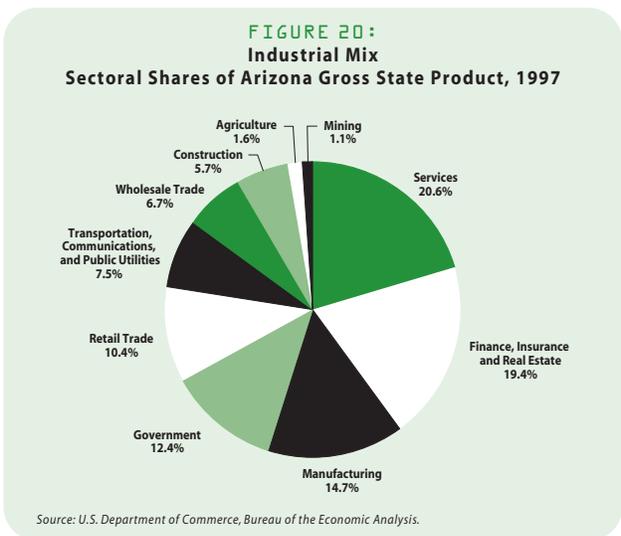
Chattanooga, Tennessee hit hard times in the 1960s and 70s with pollution, social tension, and job losses. By the early 1980s, many shared the feeling that change was critical to the survival of the city. Public meetings helped Chattanooga's "civic entrepreneurs" see the light at the end of the tunnel. Chattanooga Venture's Vision 2000 emerged in 1984 as the residents' plan for the future. People wanted to capitalize on their city's riverfront location, its beauty, and its downtown as the place that everyone had in common. **In 1993, ReVision 2000 was done because 37 out of the 40 original ideas had been partially or wholly completed by 1992. By the mid-1990s, the city's economic strategy focused heavily on sustainable development. The hallmarks of Chattanooga's turnaround, identified by those who have taken part, have been collaboration, planning, and community building.** Chattanooga was named as one of the world's 12 "Best Practices Cities" at the United Nations' Habitat II conference in 1996.

Basics on Arizona's People and Places



Arizona's Population Growth

Arizona's population will reach 4.9 million in late 1999, an increase of 1.2 million since 1990. Non-Hispanic whites still make up more than two-thirds of Arizona's population, but this share is declining, as seen in Figure 19. Since 1993, Arizona has gained between 125,000 and 145,000 new residents every year. Most of the migrants come from elsewhere in the United States; immigration from other countries, mostly Mexico, has accounted for 15 percent of the total net migration, according to the U.S. Bureau of the Census. Most migrants to Arizona are working-age adults, especially younger than age 30.



Economic Reference Points for Arizona

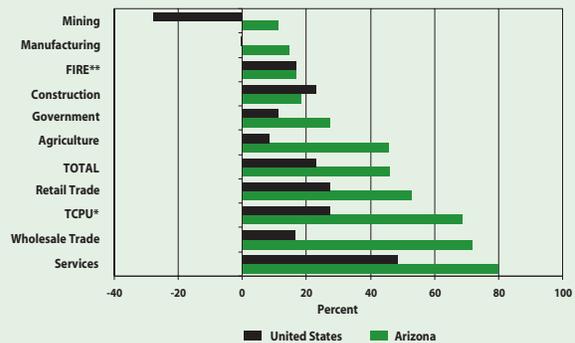
- Services and FIRE (finance, insurance, and real estate) produced 40 percent of Arizona's gross state product (GSP) in 1997 (See Figure 20). Using employment rather than GSP, the industrial mix is noticeably different (See Figure 21). Because of the value of land and buildings, FIRE's sectoral share is much higher based on GSP than on employment. Manufacturing also has a higher GSP share. In contrast, some industries, such as retail trade and services, are labor intensive and thus have a higher sectoral share based on employment than GSP.
- Arizonans usually focus most on aggregate measures, especially employment and GSP, as gauges of economic growth. As is typical of an expansionary period, Arizona's GSP gains since 1992 have outpaced the national average with Arizona ranking near the top of the states. In Arizona, GSP and other aggregate measures primarily are indicators of people and jobs migrating to Arizona.

- The Corporation for Enterprise Development annually produces a rating of economic performance for the states in its **Development Report Card for the States** that is much broader than GSP. As reported in this source, Arizona's performance has been average to below average every year since 1990. While Arizona ranks highly on the aggregate growth indicators included in this rating, the state ranks near the bottom on such measures as poverty rate, income distribution, and rural/urban disparity. Also, Arizona compares poorly on earnings and job quality measures.
- Arizona's overall average wage was eight percent below the national average in 1997 (See Figure 22). Per capita personal income in the state is also low in Arizona relative to the nation. As reported in the 1998 edition of the **Development Report Card for the States**, Arizona ranked 44th nationally and eighth in the West on income disparity.

Urban-Rural Differences

Arizona has four official metropolitan areas, Phoenix, Tucson, Yuma, and Flagstaff. Sixty percent of the state's population lives in Maricopa County, but two-thirds of the economic activity occurs there (See Figure 23). In the rest of the state, the share of economic activity is less than the population share. The Phoenix metro's share of the state's economic activity has been growing especially quickly since 1995. Not only does the Phoenix area increasingly dominate the state's economic activity, it compares favorably to the rest of the state on other economic measures, as seen in Figure 24. Differences in the industrial mix explain some of the geographic variations in average wage. Compared to Maricopa County, the rest of the state is more dependent on government, with fewer of the higher-paying manufacturing, wholesale trade, and FIRE industries.

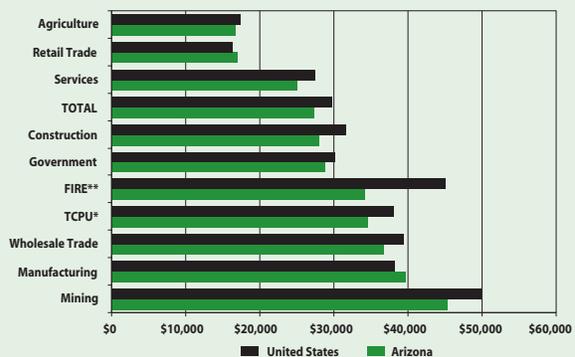
FIGURE 21:
Employment Change by Major Industry, 1986-1997



* Transportation, Communications, and Public Utilities
** Finance, Insurance, and Real Estate

Source: U.S. Department of Commerce, Bureau of the Economic Analysis.

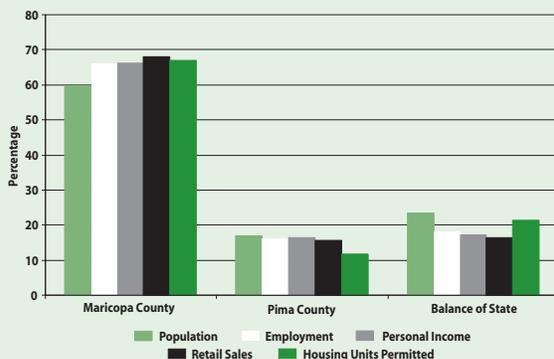
FIGURE 22:
Average Wage by Major Industry, 1997



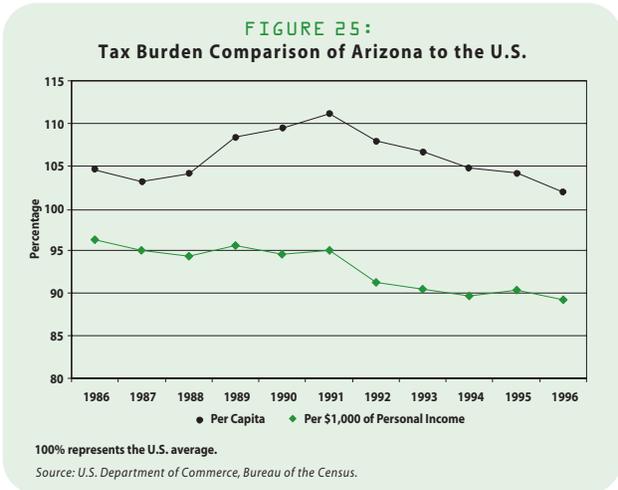
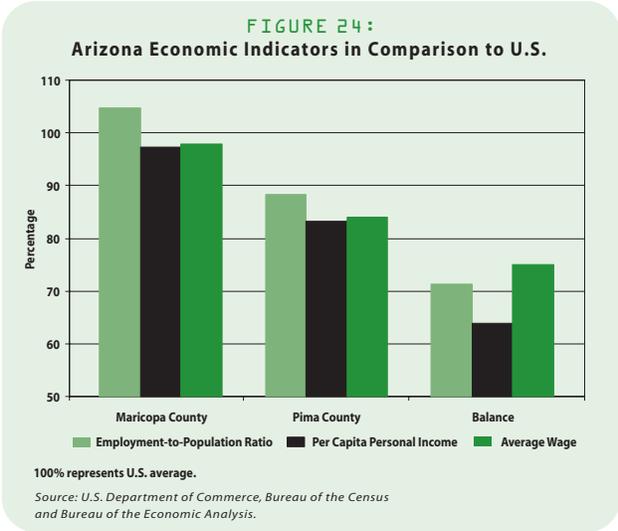
* Transportation, Communications, and Public Utilities

Source: U.S. Department of Commerce, Bureau of the Economic Analysis.

FIGURE 23:
Shares of Economic Activity in Arizona
Maricopa County, Pima County, Balance of State



Source: U.S. Department of Commerce, Bureau of the Census (1998 Population), U.S. Department of Commerce, Bureau of the Economic Analysis (1997 Employment and 1997 Personal Income), Arizona Department of Revenue (1998 Retail Sales), and Arizona State University, Arizona Real Estate Center (1998 Housing Units Permitted).



Arizona's Taxes

- In Arizona, **per capita taxes consistently** have been **below average** while **taxes per \$1,000 of personal income** have been **above average**. Each measure has shortcomings, such that the state's actual tax burden falls roughly halfway between the two lines exhibited in Figure 25.
- Both measures show a **falling tax burden since 1991**, which likely has continued since 1996. Alternative measures, based on calculating major taxes for hypothetical households, indicate that Arizona's tax burden since 1996 has been well below the national average.

The Corporation for Enterprise Development provides another view of public finance through its evaluation of tax and fiscal systems.

- **Arizona** ranks fourth in the nation overall, with **high marks for fiscal stability** over time and balanced revenue among tax sources. Arizona also **compares favorably on tax fairness**—meaning that certain individuals and businesses do not benefit at the expense of others.³³

However, a looming problem for Arizona and many other states is their dependence on the sales tax, applied only to certain goods. The spending of the public has been shifting to untaxed items—primarily services, but also goods purchased over the Internet. State Policy Research, Inc. projects a structural budget shortfall to develop in most states over the next several years. Arizona has one of the largest projected deficits in the nation.

³³ **1998 Development Report Card for the States**, Corporation for Enterprise Development, Washington, D.C. 1998.



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P.O. Box 874405, Tempe, AZ 85287-4405

(480) 965-4525 voice / (480) 965-9219 fax

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