Commercial Real Estate in a Flat World
The Implications of Corporate Restructuring and Economic Globalization for Industrial, Office and Mixed-Use Property in America

Submitted by: David Pearce Snyder
Consulting Futurist

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Prepared for and Funded by
The National Association
of Industrial and Office Properties
Research Foundation

By
David Pearce Snyder
Consulting Futurist

The Snyder Family Enterprise
Bethesda, MD

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About NAIOP

The National Association of Industrial and Office Properties is the nation's leading trade association for developers, owners, investors and other professionals in industrial, office and mixed-use real estate. Founded in 1967, NAIOP comprises more than 16,500 members in 55 North American chapters and provides networking opportunities, educational programs, research on trends and innovations and strong legislative representation. For more information, visit **www.naiop.org.**

About the NAIOP Research Foundation

The NAIOP Research Foundation was established in 2000 as a 501(c)(3) organization to support the work of individuals and organizations engaged in real estate development, investment and operations. The Foundation's core purpose is to provide these individuals and organizations with the highest level of research information on how real properties, especially office, industrial and mixed-use properties, impact and benefit communities throughout North America. Funding for the Research Foundation's activities comes from the generous support of the Governors, annual gifts from NAIOP members, and underwriting from the National Association of Industrial and Office Properties (NAIOP). For more information, visit **www.naioprf.org**.

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"The future evolves in an orderly manner, out of the realities of the past, filtered and shaped by the decisions of the present."

David Pearce Snyder
Consulting Futurist
1969

The goal of futuring is not to predict the future, but to improve it. We want to anticipate possible or likely future conditions so that we can prepare for them. We especially want to know about opportunities and risks that we should be ready for."

Ed Cornish, Editor
The Futurist
2004

Preface

In his 2005 book, *The World Is Flat**, Thomas Friedman asserts that, over the past 15 years, a sequence of transformative developments in international politics, information technology and organizational practice have combined to alter the basic realities of the business operating environment. In particular, he argues that, by eliminating the tariff trade barriers among nations, and by using the Internet to diminish the physical barriers of time and distance, we have created a single electronic marketplace for the *global village* – a "level playing field" on which all of the world's firms and workers will freely compete from now on. To compete successfully on the new level playing field, Friedman concludes that firms in the mature industrial economies will have to restructure their organizations, redesign their operations and reconceptualize their value-adding marketplace propositions. As a scenario for the 21st Century, *The World Is Flat* raises significant questions for the owners and developers of commercial real estate.

Friedman devotes considerable attention to describing how firms have been adapting to the new realities of globalization and info-mation, including *outsourcing* and *insourcing*, *partnering* and *supply-chaining*, and the replacement of traditional command and control management systems with "connect and collaborate" arrangements. Friedman's anecdotal evidence demonstrates that this transformational process – which he calls "The Great Sorting Out" – is currently under way, but he offers no clear indication of how long he believes it will last, or what the ultimate marketplace consequences are likely to be.

Moreover, although Friedman expresses confidence that America's "uniquely free, imaginative and creative society and economy" will successfully master the substantial challenges and opportunities that lay ahead, his assumptions about a prosperous future for America are quite conventional, and not nearly as convincing as his arguments for "flattening." Specifically, Friedman describes a future high-tech U.S. economy perpetrated by "the usual suspects" – bio-tech, nano-tech, artificial intelligence, robotics, creative inventors, visionary entrepreneurs and venture capitalists– but he offers no evidence to support these assumptions. In fact, he offers no data to support **any** of his arguments.

As a scenario, *The World Is Flat* has the potential to impact the future of the U.S. economy and **commercial property** in much the same way that Hurricane Katrina has impacted the future of New Orleans. If Friedman has accurately described the changing marketplace realities of our times, "flattening" can be expected to dismantle, restructure and consolidate the corporate client base of America's commercial property owners over the next 10 to 15 years, eliminating millions of jobs in the process. After that, high-tech evangelists – including Friedman – assure us that an even more prosperous economy will arise, based on science, engineering and technology, plus an army of creative entrepreneurs and venture capitalists. The disruptive impact of flattening on U.S. enterprise – like the impact of Katrina on New Orleans – will be substantial. But the future of our economy AFTER flattening – like the future of New Orleans after Katrina – while hopeful, is uncertain and not altogether promising.

In light of these considerations, the validity of Friedman's scenario is a matter of considerable legitimate concern to the owners and developers of commercial property. This paper reports the findings and recommendations of research funded by the NAIOP Research Foundation, to validate the assumptions underlying *The World Is Flat*, and to assess the probable impacts of these assumptions on the future markets for commercial property and property development in America.

* *The World Is Flat* was 488 pages long when originally published in 2005. Because the first edition sold out quickly, a second edition was released in 2006. The Second Edition, which Friedman has designated "Release 2.0," is 600 pages long. The 112 added pages include two new chapters and more examples of flattening, but the basic content and conclusions remain the same. When specific references to *The World Is Flat* are made in this Report, page citations will be given for both editions as follows: "*The World Is Flat* (pp 371/457)."

Executive Summary: Introduction

An 18-month scan of the general, business, financial and technical press conducted for this research project makes it clear that Thomas Friedman's *The World Is Flat* mirrors a widely-accepted understanding of long-term forces of political and techno-economic change that are altering the competitive realities confronting all free-market enterprise. A concomitant review of the current management literature also suggests that *The World Is Flat* accurately reports fundamental changes in business organization and operation that are being widely adopted in response to the changing competitive realties of the globalizing electronic marketplace. **Most important of all, 10-year job forecasts from the U.S. Bureau of Labor Statistics (BLS) reflect specific structural impacts of "flattening" throughout U.S. employment, both in the recent past and for the near-term future.**

Executive Summary: Part 1

The World Is Getting Flatter

PART 1 of this Report summarizes the content and conclusions of *The World Is Flat*, and examines the important insights identified by Thomas Friedman as central to understanding what the important new realities of a "flattened" business operating environment mean for the future of enterprise. From the outset, this Report stresses that *The World Is Flat* is primarily about a technologic transformation of business that has global implications, and *not* about free trade. PART 1 opens with an explanation of the sequence of 10 developments which, Friedman argues, "flattened" the business operating environment between 1989 and 2000. This is followed by a description of the three new marketplace realities made possible by these developments. These realities include: [1] universal access to all world markets by all producers (a "level, Web-enable playing field"); [2] the unbundling of today's integrated, self-sufficient businesses into dispersed, interdependent production networks (the "horizontalization of enterprise"); and [3] the challenge of international competition (the "globalization of business").

The Report goes on to examine the principal marketplace consequences of the newly flattened business environment – which Friedman refers to as "The Great Sorting Out." This involves a transformation of U.S. enterprise that will allow them to compete on the level global playing fields of "Planet Flat." The firms that successfully flatten themselves, Friedman believes, will be much "leaner" and more flexible than the rigid bureaucracies they replace, and will thereby able to compete and prosper in the global marketplace. In "The Great Sorting Out," firms that do not transform themselves will be flattened by the firms that do. The downsizing, industry consolidations and business closures produced by Friedman's Great Sorting Out, this Report concludes, will have significant impacts on domestic markets for commercial and industrial space.

The Great Sorting Out will have potent implications for U.S. workers s well as their employers, Friedman observes, and the Report examines the human resource issues raised by *The World Is Flat*. These include Friedman's concerns that growing numbers of U.S. young people do not possess the skills required by a globally competitive high-tech economy, as well as his concerns for the growing number of skilled workers whose careers are being terminated by The Great Sorting Out. The Report concurs that these issues are valid, as is Friedman's even greater concern that America's failure to address these human issues may lead to a political backlash against globalization.

An anti-globalization backlash is one of several potential developments that Friedman worries could "go wrong" as a result of the world's becoming flat. The Report reviews Friedman's list of "what could go wrong" on our way to a prosperous global economy, including cut-throat national competition for scarce resources (especially oil and water), and terrorism. The Report finds that an anti-free trade backlash poses the greatest threat to America's long-term prosperity, because it would isolate us from the rapidly growing economies of the developing nations, which constitute the fastest growing consumer markets in the world. The Report also concurs with Friedman's call for "compassionate" government programs to support those employees who are downsized or whose jobs are off-shored as a consequence of flattening.

PART 1 of the Report also summarizes Friedman's description of the kinds of workers – and employers – who are likely to be unaffected by "flattening" because of the particular functions they perform in the marketplace. The Report concludes that these groups – who Friedman refers to as "untouchables" – will be especially important to the owners and developers of commercial property, since they will represent stable growth markets in a world where many other markets are likely to stagnate or shrink because of flattening.

Having summarized Friedman's principal evidence and arguments, PART 1 concludes by introducing

independent sources of economic analysis and econometric data that address the issues raised by *The World Is Flat*. These benchmarks reveal that Friedman's anecdotal evidence reflects well-grounded economic theory, and that his conclusions are clearly supported by employment trends of the recent past as well as job forecasts for the near-term future. In particular, the workplace efficiencies of *horizontalized* enterprise are clearly borne out by the U.S. Labor Department's productivity and employment data, which show that U.S. economic productivity has risen substantially – **while our overall job creation rates have fallen sharply** – as Friedman's 10 flatteners have become marketplace realities. More to the point for the owners and developers of commercial property, while projected job growth is falling for many large U.S. industries, growth has remained strong for those employers that Friedman has identified as "untouchable."

Executive Summary: Part 2

What's FLAT and What's Not

PART 2 of this Report begins with a review of recent management literature that reflects a remarkable degree of agreement with Friedman. What the *New York Times* journalist calls "flat," James Champy calls "X-Engineering," Henry Chesbrough calls "Open Business," John Seely Brown calls "Spontaneous Collaboration," Grady Means calls "Meta-Capitalism," and Donald Tapscott calls "Wikinomics." Many of the same case studies and exemplary companies are cited by all six authors to prove their points. All agree that most large businesses are evolving into flat networks that are more flexible, more creative and (most important of all) more *efficient*. More efficient enterprises, the Report emphasizes, will need fewer workers – and less workspace – to compete.

The Report also points out that reducing labor requirements will be essential in the decade ahead, in anticipation of the growing shortage of workers that will confront U.S. employers from now on. Comparing current job and workforce forecasts, the Report finds that, although job creation rates are slowing, the U.S. labor pool is growing even more slowly – even counting millions of illegal immigrants – and that there will be a 2.4 million shortfall of employable workers in America by 2014. A looming labor shortage and the fear of a resulting surge in wage inflation, the Report concludes, **will drive employers to reduce their workforce requirements by flattening themselves even faster than recent Labor Department forecasts suggest.**

In addition to the labor and employment forecasts from the Bureau of Labor Statistics (BLS), PART 2 also examines recent projections of local population changes in 307 metropolitan areas, and finds that local demographic trends will be increasingly important to employers as the U.S. labor supply gets tighter. When labor is scarce, demographers argue, employers will concentrate where workers are plentiful. This reality, the Report concludes, will be instrumentally important to property owners and developers, as it will be to the prosperity of the local communities where they do business.

The bulk of PART 2 is devoted to a detailed examination of BLS current 10-year job growth forecasts for the industries, trades and professions that are expected to generate 90 percent of all U.S. employment increases between 2004 and 2014. In particular, the Report spells out the impact that flattening has already had on the growth expectations of each of these employer groups, and assesses the likelihood that they will experience flattening in the future. The Report concludes that the multiple effects of flattening are likely to further reduce BLS projected job growth by at least five percent – 1 million workers – with the biggest declines occurring in "Computer design," "Legal services" and "Financial services." The Report also validates Friedman's definition of the employers who will be "untouched" by flattening, including "Retail stores," "Eating and drinking establishments," Health care" and "Education," all of which can be expected to experience robust employment growth.

PART 2 closes with an analysis of the BLS projections for "Transportation and warehousing," a sector of the economy that has both grown rapidly and changed dramatically as a direct consequence of our flattening world. The analysis finds that future developments in each of the major classes of transportation – air, rail, highway and waterway – have significant implications for the owners and developers of commercial property. Most important of all, the Report concludes that recent trends in "Urban transit" – driven by a combination of demographic, economic and social factors – provide the basis of a broadly applicable strategy for local property developers throughout the country at a time of turbulent change in the nation's economy. As British architect Mark Girouard first demonstrated in his sweeping socio-architectural history, *Cities and People* (1985), "transportation and property development have always been two sides of the same coin."

Executive Summary: Part 3

Property Development on *Planet Flat*

The final segment of this Report opens by examining the unique combination of marketplace factors that ignited the post-World War II suburban housing boom and established the basic pattern of urban growth in America during the second half of the 20th Century. PART 3 goes on to trace the long-term spread of "sprawl urbanization" and the concomitant decline in our metropolitan population densities as key measures of the "American urban meta-trend." Using projections from Virginia Polytechnic Institute (VPI), the Report discusses the implications of continuing the current patterns of suburban sprawl and of the new built environment that will be required to accommodate the projected growth of U.S. population and employment through 2030.

The VPI 30-year forecasts of new residential, commercial/institutional and industrial space requirements strongly suggest that a continuation of sprawl development and falling urban population density will be unsustainably costly to the nation's economy. But the Report also notes that data from the U.S. Census show some signs of reversal in the American urban meta-trend. Specifically, since the mid-1990s, middle and upper income households have been moving back into center cities for the first time in a half century. And the Department of Housing and Urban Development reports that sales of low-density housing as a share of ALL new U.S. housing has fallen by 50 percent since 1997.

While suburban sprawl has not yet reversed itself, it certainly has slowed down. Some of this, the Report suggests, is almost certainly the result of increased local anti-growth/smart-growth initiatives. But the return of the middle class to 22 of our 25 largest cities is, in large measure, the result of initiatives by property developers, who have expediently converted millions of square feet of vacant office high rises into up-scale condominiums since 2001. While it is possible that these and other recent signs of an urban rebound are only temporary phenomena driven by short-term factors, the Report cites evidence to show that there have actually been significant changes in U.S. marketplace expectations and preferences with respect to habitat.

PART 3 presents an extended discussion of the concept of "walkable urbanity" as the emerging model of habitat preference for 30 percent to 50 percent of U.S. households. This correlates with the increasingly successful property development "products" commonly referred to as "new urbanism," "lifestyle retail" and "transit villages." The success of these developments, the Report suggests, reflects a massive pent-up marketplace demand for mixed-use development. The Report concludes that this is the same kind of pent-up marketplace demand that fueled the explosive growth of the suburbs immediately after World War II, and that the immediate marketplace opportunities for property developers in meeting this demand will similarly have potent long-term implications for the future growth of urban America.

Specifically, the Report points out that the VPI 30-year forecasts of new building requirements in America indicate that, **in 2030, one-half of the nation's built environment – 213 billion square feet of space – will have been constructed AFTER 2000!**

In responding to the growing marketplace desire for compact, urbanized lifestyles, America's property developers today have the same opportunity to shape the long term future of the Nation's cities as their predecessors had at the end of World War II. Of course, instead of building on largely open land, property owners and developers from now on will mostly be involved in urban redevelopment and infill, and in the creation of high density walkable urbanities *in the middle of* the built urban environment – not at its edge.

The Report goes on to suggest that America's predictable national shortage of human resources will create an unprecedented opportunity for productive collaboration among a community's employers, its government, and the owner-developers of local commercial property. From now on, communities across America will be competing

with each other – and with communities worldwide – to attract and retain sufficient numbers of scarce, footloose, value-adding workers in order to sustain and grow their local economies. Property developers will necessarily play an increasingly instrumental role in the coming "Place Wars" of the 21st Century, by leading local efforts to create communities that offer livable, dynamic and affordable places to live, work, shop, learn and play.

Just as flattening the marketplace for goods and services is causing transformational changes in the basic organization and operation of business, this Report argues that flattening the marketplace for *habitat* will require transformational changes in the business of property development. Specifically, as local jurisdictions increasingly compete with each other to attract and retain high value EMPLOYEES instead of simply seeking to recruit high value EMPLOYERS, property developers must begin to think in terms of creating COMMUNITIES – *places to live* – instead of commodities – *spaces to fill.* Mixed-use developments (M-UDs) offering the amenities of walkable urbanity are those places.

The Report concludes with an exploration of recent trends which suggest that mixed-use projects have already put the development industry into the "place making" business. The Report further observes that demographics will have a powerful impact on the future character of mixed-use developments. In the first place, our impending labor shortages will force further reductions in the economy's ability to create new jobs, and will eventually reduce today's projected demands for new workplace space. Simultaneously, **the continued rapid growth of our population and the increasing predominance of single and child-free adult households means that it is highly likely that a widening diversity of residential units will make up a steadily growing share of most M-UDs**. The incorporation of appropriately-scaled, workforce-affordable housing in M-UDs will be increasingly important as local civic and business leaders embrace such projects as "weapons" in the place wars competition to attract and retain local human resources.

Mixed-use developments – especially when linked to urban transit – are able to create idealized urban ambience and amenities, whether in suburban, center city or former industrial settings. The Report further concludes that our increasing capacity to revitalize city centers and older suburbs with mixed-use developments in a diversity of settings indicates the future direction of property development on the competitive level playing fields of our flattening world. Over the long-term, the Report also finds that there is every reason to believe that we have entered a new phase in the history of urban America, in which greater urban population density will lead to a higher, more sustainable, quality of urban life. *It is a moment in which property developers will have the opportunity to lead the nation into a half-century of metropolitan convergence, reversing half a century of suburban sprawl.*

Executive Summary: Conclusion

There is no compelling reason to believe that the widely-held expectation of a prosperous high-tech future – embraced by *The World Is Flat* – does not accurately describe a not-too-distant acceleration in our economic expansion and the restoration of a broader prosperity in America. There is, however, little hard evidence to support such an assumption in the current BLS employment forecasts. *At this moment, there is no way of knowing whether the present gloomy prospects for our flattening economy reflect a temporary phenomenon or a permanent down-shifting of American enterprise in response to the globalization of the marketplace.* A small but growing number of economists now accept "a permanent down-shifting" as the most likely scenario for the nation, and Friedman himself concedes that possibility.

One thing we DO know about the future is that **communities that offer dynamic, multi-dimensional places in which to live, work and play will be better able to attract and retain the next generation of scarce, high value-adding employees . . . and their employers.** It is also clear that the demand for people with high value competencies will substantially exceed the projected domestic supply. On the fiercely competitive level playing fields of Thomas Freidman's *Planet Flat,* employers in communities that are unable to maintain adequate pools of competent "untouchables" and the high tech "creative class" will be forced to relocate to communities that do. It has been a century, this Report concludes, since property developers have had such an instrumental role to play in shaping the future of America's cities and towns.

PART 1: The World is FLAT and Getting Flatter

1.00 Introduction

As a journalist, the author of *The World Is Flat* will, it is hoped, accept the foregoing revision of his title as the legitimate clarification of a published newspaper story. In fact, late in the book, Thomas Friedman himself confesses that "he knows the world is not flat," and admits that he had "engaged in literary license" when choosing the title for his book, in order "to draw attention to the reality of flattening and its quickening pace." In this respect, Friedman has certainly been successful.

"Literary license" aside, both Friedman's book and this Report are primarily concerned with the active, ongoing "flattening" of the world of business. The book presents an engaging portrait of a "flattened" world of commerce, compiled from dozens of first-hand vignettes and expert insight/foresight. Critics, however, complain that the book contains essentially no hard data to document its broad assertions, or to measure the pace and scale of the changes it describes. The primary purpose of the research covered by this Report has been to identify independent benchmark data that put meaningful measures on Friedman's vision, in order to assess their actual implications for the future of U.S. business, and ultimately, for commercial property and property development.

In order to meaningfully measure "flattening," it was first necessary to define it.

1.10 Defining "flat"

Free of any context, "flat" is a reasonably unambiguous Old Norse word whose basic meaning is commonly understood. Over the centuries, however, the word has also acquired dozens of specific applied meanings, including a punctured tire, an apartment residence, stage scenery, a type of boat, a class of mail and a below-pitch musical note. Similarly, in Friedman's *The World Is Flat*, the word plays a multiplicity of roles: physical, operational and metaphorical. Friedman's list of "The Ten Forces That Flattened The World" (see FIGURE 1), includes two political developments (*flatteners 1 and 6*), four breakthrough applications of the Internet (*flatteners 2, 3, 9 and 10*), and four innovations in basic business practice made possible by the World Wide Web

FIGURE 1

THE TEN FORCES THAT FLATTENED THE WORLD
from Thomas Friedman's *The World Is Flat*

1. 11/9/89	Berlin Wall Falls! Cold War and Global trade gridlock end
2. 8/9/95	Netscape goes public; the Net becomes the Web!
3. Mid-1900s	Work Flow Software: HTML/HTTP/XML; Interoperability!
4. Late 1990s	Open-Sourcing/Uploading; Collaborative Communities
5. Late 1990s	Outsourcing and "Y2K"
6. 2000	Offshoring; China joins the WTO
7. 2000	Supply-Chaining; "the WalMart Symphony"
8. 2000	Insourcing; UPS/FedEx sell logistic services
9. 2001	In-forming: Google, Yahoo! MSN Web Search
10. 2001	The Steroids: Digital, Mobile, Personal & Virtual = Universal Connectivity

(*flatteners 4, 5, 7 and 8*). All ten flatteners, Friedman argues, have contributed to the "leveling of the competitive marketplace" and the "horizontalization" of business itself.

1.20 Friedman's "Triple Convergence:" Three new facts of economic life on *Planet Flat*

Around the year 2000, Friedman argues, the dynamic adaptive innovations of free enterprise in response to the ten "flatteners" had converged to create three fundamentally new realities in the business operating environment:

1.21 A level, Web-enabled global playing field

Maturing information and communication technology (ICT) has now converged to put all of the world's businesses onto a "new, flatter global playing field;" a single interactive, multi-media electronic marketplace for the entire *global village*, in which a growing share of the world's enterprises and individuals will freely communicate, collaborate and compete. From now on, Friedman asserts, "Wealth and power will increasingly accrue to those countries, companies, individuals, universities and groups that most effectively exploit this new *flat world platform.*"

1.22 Horizontal enterprises

To take fuller advantage of the opportunities afforded by the newly-leveled playing field, businesses and individuals have begun to learn new skills, and to adopt new workplace processes and arrangements – bypassing traditional lines of communication – and rapidly transforming corporate enterprises from single, vertically-integrated value-creating institutions to horizontally-integrated value-creating networks of institutions. This "horizontalization" of our traditional, hierarchical pyramidal Industrial Era corporate bureaucracies into flat, collaborative networks of suppliers and service-providers is Friedman's second *convergence*.

1.23 The globalization of work

Just as businesses were beginning to learn how to take advantage of their flatter operating environment, (to use Friedman's words) "a whole new group of people – several billion, in fact – walked out onto the newly level playing field from China, India and the former Soviet empire." Previously sequestered behind political walls and regulatory barriers, three billion people have become free-market consumers, while 1.5 billion workers have joined the global labor market – effectively doubling the world's workforce. Ten percent of those new workers – 150 million of them – are able to use the new global Web info-structure to become competitive producers of value-adding goods and services. The third *convergence* – the appearance of tens of millions of new competitors in the electronic global marketplace – Friedman argues, has suddenly made our rapid mastery of new *e*-power tools and new flat, value-adding networks a compelling national necessity, not merely a free-market opportunity.

Friedman concludes that:

> *"It is this triple convergence – of new players, on a new playing field, developing new processes and habits for horizontal collaboration – that I believe is the most important force shaping global economics and politics in the early 21st Century. Giving so many people access to all these tools of collaboration, along with the ability – through search engines and the Web – to access billions of pages of raw information, ensures that the next generation of innovation will come from all over Planet Flat. The scale of the global community that is soon going to be able to participate in all sorts of discovery and innovation is something that the world has simply never seen before."*
>
> *The World Is Flat, p.192 (Release 1.0), p. 212 (Release 2.0)*

1.30 Four important features of our flattening world

In the three preceding sentences, Friedman sums up his case for a flat world, and sets out his broad vision for the global economic future. The remaining two-thirds of the book is largely devoted to the author's speculations and prescriptions regarding the long-term implications of flattening, four of which pose significant considerations for the future of commercial property:

1.31 "The Great Sorting Out"

Intensifying competition on the "level global playing field" will force growing numbers of U.S. employers to aggressively adopt productivity-enhancing initiatives in a ruthless pursuit of greater efficiency, both through outsourcing, off-shoring and supply-chaining, and through internal restructuring, info-mation and job redesign, all made possible – and necessary – by our Internet info-structure. These initiatives can be expected to reduce the amount of labor – and the amount of work space – required by a growing range of enterprises.

(NOTE: Friedman's discussion of "The Great Sorting Out" misses a major aspect of the ongoing Web-driven rationalization of the world's competitive markets. Specifically, he fails to note the fact that the dramatically increased size of markets made easily accessible via the Web also increases the competitive advantage enjoyed by large-scale producers. Mergers and acquisitions in pursuit of *greater economies-of-scale* will lead to consolidations across a growing array of industries and services. We can reasonably assume the ongoing *oligopolization* of many segments of the global economy over the next ten years. Eventually, most mass markets worldwide – from automobiles, appliances and processed foods to air travel, healthcare and financial services – will be dominated by a handful of corporate giants. Not only is "The Great Sorting Out" likely to reshape the client base for industrial, office and commercial property in the decade ahead, but mergers and acquisitions within commercial real estate itself can be expected to substantially consolidate the industry (NB: CB Richard Ellis' 2006 purchase of Trammel Crow).

1.32 "The Untouchables"

Throughout *The World Is Flat*, Friedman enthusiastically endorses the commonly-voiced vision of America's long-term future prosperity – based on science, technology and creative entrepreneurship. At the same, time he concedes the fact that – in the near-term – flattening will eliminate millions of U.S. jobs and depress wages throughout all mature industrial economies. However, he is also quick to point out that millions of U.S. jobs will be largely "untouched" by either corporate flattening or global competition. Specifically, Friedman identifies four broad categories of workers whose jobs cannot be mechanized, info-mated or sent off shore. He calls these workers "The Untouchables" (see FIGURE 2). At first glance, the broad generic definitions that Friedman gives his Untouchables appear to make the following list of limited use as a guide to future demands for commercial real estate. However, as the U.S. Bureau of Labor Statistics (BLS) forecasts (reviewed in PART 2 of this Report) reveal, in the decade ahead *America's "untouchables" are likely to play a far more important role in shaping future markets for commercial property development than will any hypothetical high-tech boom.*

FIGURE 2

THOMAS FRIEDMAN'S "UNTOUCHABLES"

Four Categories of American Employees Whose Jobs are Safe from Workplace Flattening

Category of Worker	Types of Work
"Special"	Creative and performing artists, sports stars, inventors and entrepreneurs
"Specialized"	Brain surgeons, patent attorneys, genetic engineers, software architects, forensic accountants, etc.
"Anchored"	Chefs, physicians and healthcare workers, police and fire fighters, teachers, plumbers and electricians
"Adaptable" ("Versatlists" *)	Creators of new occupations, innovative products and services, and cutting edge applications in old fields, etc.

*"Versatlists" – A term invented by IT consultant Gartner, Inc. to describe the growing propensity of firms to recruit employees who possess the mix of skills used by Friedman to characterize workers who are more versatile or adaptable than the more narrowly-focused subject matter specialists that have traditionally been favored by high tech firms.

Adapted from *The World Is Flat*

1.33 "The Quiet Crisis"

Because Friedman – like most U.S. opinion leaders – believes implicitly that a high-tech boom will ultimately create millions of new high value jobs in America, he also shares with his fellow opinion leaders a deep common concern that the nation as a whole is failing to make the necessary commitments and investments to sustain America's global leadership in basic research and applied technology. In particular, he cites diminishing U.S. expenditures on R&D, plus declining numbers of students and graduates in the "STEM" disciplines (i.e. Science, Technology, Engineering and Mathematics); skills that are widely regarded as crucial to our future competitiveness and prosperity. If U.S. employers are unable to "import" sufficient numbers of foreign workers with high-tech skills – an important component of immigration reform – **domestic shortages of STEM skills will force U.S. firms to off-shore those high-value functions which they cannot staff here in the U.S., reducing the demand for facilities in America.**

1.34 "Compassionate Flatism"

Since flattening – a putatively "win-win" development in the long-run – produces millions of losers in the short-run, Friedman argues that free-trade policies should incorporate *safety nets* for people who suffer mid-career job or income loss due to technology-based restructuring or to liberalized trade practices. His "compassionate" free-trade policy proposals include universal single-player health insurance, portable pensions, "wage replacement insurance" and a "G.I. Bill"-type of educational benefit for workers displaced by economic globalization. Friedman makes it clear that his compassionate policy proposals have a very practical purpose: to forestall a political backlash against free trade. U.S. Federal Reserve Chairman Ben Bernanke cited the same concerns when he unexpectedly embraced much of Friedman's *compassionate flatist* agenda in February 2007. [1]

1.40 How flattening could go wrong

In Friedman's scenario for the 21st Century, flattening reflects the purposeful adaptive evolution of our marketplace institutions to new technological capabilities, ultimately leading to an equitable, sustainable prosperity for all. However, this happy outcome, Friedman cautions, is by no means guaranteed. He devotes an entire chapter of *The World Is Flat* to things that "could go wrong," and prevent the world from becoming a family of nations made peaceful by our mutual dependency and collaborative prosperity in an open global marketplace ("The Unflat World," *pp. 371/457*). Friedman's list of potential spoilers includes terrorism, competition for scarce resources, "failed" and "rogue" states, nuclear proliferation and anarchists. We will be better able to manage those challenges, Friedman argues, if we first successfully manage our transition to a flat and open, connected and collaborative, globally-integrated world of commerce.

In this context, much of the second half of *The World Is Flat* reads like a management book, and is devoted to insights and advice for economic policy makers and CEOs, regarding how to best take advantage of our changing – flattening – circumstances. (The chapter on "How Companies Cope" in a flattening world offers seven useful management "rules" *pp. 339/425*). And, because only a widely prosperous *Planet Flat* will be able to deal effectively with such intractable long-term challenges as failed states, sectarian conflicts and sustainable growth, Friedman's greatest worry for the future is that something might happen to stop or reverse either globalization or technology-driven corporate re-structuring.

In Friedman's view, a political backlash against free trade is the most likely threat to our getting to a flatter, better world. With U.S. productivity and corporate profits currently rising twice as fast as average workers' wages, his concern is entirely justified. [2] This explains his earnest promotion of "compassionate" treatment for the economic casualties of flattening.

Friedman also suggests two other possible future scenarios that could lead to a reversal of global economic integration, and to the erection of new trade barriers among the nations of the world: [1] "Too many Toyotas," and [2] "Insecurity." Under the first of these scenarios, the explosive increase in the world's population of middle-class consumers makes access to scarce industrial commodities (especially oil, gas and water) a national political necessity – leading rapidly-growing Third World economies to secure such access through bi-lateral trade agreements rather than relying on marketplace transactions. These agreements could distort – and ultimately thwart – the long-term drive toward open global markets. Geo-politicians call such bilateral arrangements "resource nationalism," and many fear that such a future scenario is increasingly likely. [3]

A third potential counter-flattening force – in addition to a political backlash and "too many Toyotas" – could arise from "insecurity." Friedman worries that further terrorist acts causing mass casualties in the U.S. could lead to a growing desire among Americans to withdraw from global engagement. This would be especially true, he argues, if there were an act of nuclear terrorism, which he refers to as "the mother of all unflatteners." In fact, Friedman writes, "Nuclear terrorism would unflatten the world permanently." Fear would trump all economic considerations, and the major nations of the world would recoil into insular enclaves, "behind rigorously-guarded borders that would put domestic security ahead of the efficient international flow of goods, people, information and capital."

In spite of all that "might go wrong," Friedman remains up-beat about the future. In his final chapter, he recaps the central purpose of *The World Is Flat*: "I have tried to demonstrate that the flattening of the world has presented us with new opportunities, new challenges and new partners, but also, alas, new dangers, particularly as Americans." But, just as he believes that there is a high-tech boom in our future, he also believes in the exceptionability of the American enterprise. More than once, Friedman expresses his confidence that "America's uniquely free, imaginative and creative society and economy" will be able to meet the challenges and exploit the opportunities of the flat, high-tech world ahead.

1.50 Why flatter is better

From a futurist's point of view, *The World Is Flat* makes a two and a half pound "meal out of lunch." This is not to say that the author has not identified and clearly articulated a number of instrumentally important universal realities that will substantially impact America's long-term future. But by focusing his readers' attention on the transformational role played by a particular sequence of incremental innovations – "The 10 forces that flattened the world" – Friedman gives the impression that the outsourcing revolution and economic globalization are the remarkable spontaneous consequences of a chance confluence of events that might never have happened. In fact, the principal dynamics of Friedman's scenario have long histories in the literature of economics, policy research and the management sciences.

For example, although Friedman opens his book by stating that the flattening of the world had taken him by surprise (i.e. "While I was sleeping."), free trade has been a long-term objective of U.S. foreign policy since the end of World War II, when America took the lead in framing the General Agreement on Trade and Tariffs (G.A.T.T. – 1948). [4] Under GATT (which Friedman does not mention in his book), the nations of the world committed themselves to the long-term pursuit of free trade with the specific intention of making mutual economic dependency a barrier to future wars.

The really "surprising" aspect of the current surge in economic globalization has been the accelerating effect that the Internet has had on the growth of international trade, and on the pace of business restructuring. And Friedman's "discovery" that the Web is flattening business organizations had also been widely anticipated, as this author spelled out in his 2004 paper for the NAIOP Research Foundation, *Fixed Assets in Changing Times.* [5]

1.51 Coase's Law: 10 words that are flattening business around the world

Back in 1932, British economist Ronald Coase began to question the marketplace logic of the vertically-integrated organizational structure that characterized the dominant industrial corporations of that era. Following a student internship with General Motors in the U.S., Coase asked, "Since basic economic theory has long demonstrated that specialists consistently out-perform generalists in the competitive marketplace, why are all the great industrial corporations generalists? Specifically, why do they create all of their supplies and components themselves – in-house – rather than purchasing cheaper, better inputs from established outside vendors?" Why, Coase asked, did Ford grow its own rubber trees and make its own tires instead of buying them from Dunlop or Goodyear? And why did Kodak make its own chemicals rather than simply buying them from DuPont?" Professor Coase concluded that the reason for such economically irrational behavior was *inefficient communications*.

If communications were cheap and fast, Coase reasoned, firms would be able to quickly identify qualified potential suppliers, solicit invitations, compare responses and oversee dispersed networks of suppliers efficiently and accurately. But, in 1932,

the primary means by which businesses gathered and shared information – the mail – was slow, inefficient and relatively expensive. Because of this, Professor Coase concluded, firms that were engaged in mass-producing sophisticated goods had no option but to internalize all of their critical inputs to guarantee the timely, orderly, uninterrupted flow of the components required to maintain continuous efficient output. This realization led Professor Coase to postulate his now widely-cited economic law:

> "The cost of gathering information determines the size of organizations." – from *The Nature of the Firm*, Ronald Coase, 1937.

Throughout the 1940s and '50s, Coase continued to theorize that, as telecommunications became cheaper and faster, businesses would begin to outsource their commodity in-house functions to more efficient contract suppliers. [6] In 1991, Coase received the Nobel Prize in Economics for his insights, after which there was a torrent of management books – and a business movement/cult – devoted to outsourcing, distributed organizations and "hollow" corporations. It was 10 years AFTER this – in 2000 (Friedman writes) – that the flattening of enterprise suddenly "took him by surprise."

1.52 Flattening: a multi-purpose metaphor for "institutional transformation"

In *The World Is Flat*, Friedman ascribes his inattention regarding the flattening of the business world to his preoccupation with writing his 1998 book, *The Lexus and the Olive Tree*, and to covering the Middle East for the *New York Times*. In addition – to be entirely fair – journalists are generally not interested in a subject until it is "NEWS!" The decade-old outsourcing movement didn't become "NEWS!" until the 2004 Presidential election, when "off-shoring" white collar jobs became a hot-button topic. (It was then, Friedman tells us, that he started to write *The World Is Flat*).

As a journalist, Friedman has written an engaging, 600-page newspaper article on the information revolution – headlined "*The World Is Flat*" – based on first-hand accounts, interviews with experts and his own personal experiences. But he offers readers no benchmark data to validate the conclusions he draws from his anecdotal evidence, or to give any sense of

FIGURE 3

THE MANY FORMS OF FLATTENING IN FREE-MARKET ECONOMIES

- **Info-mation**
- **Disintermediation**
- **Outsourcing**
- **Supply-chaining**
- **Importing**
- **Competitor Consolidation**
- **Off-shoring**
- **Insourcing**
- **Open sourcing**
- **Home-basing**
- **Self-employment**

FIGURE 4

AVERAGE ANNUAL U.S. PRODUCTIVITY IMPROVEMENT RATES

1974 – 1994	1995 – 1999	2000 – 2005
1.4%	**2.5%**	**3.1%**

SOURCE: U.S. Bureau of Labor Statistics (BLS)

the scale or pace to the changes he describes. The principal difficulty with measuring the actual impacts of Friedman's scenario is that flattening takes so many forms. He refers to at least ten different Web-facilitated productivity-enhancing workplace developments as examples of flattening, each of which predictably reduces labor requirements (see FIGURE 3). The same can be said for the eleventh flattener added by this author: "Competitor Consolidation" (see "Note," SECTION 1.31, "The Great Sorting Out," page 15).

While each of the forms of flattening in FIGURE 3 have been repeatedly shown to increase productivity and reduce labor requirements in dozens of specific real world applications, we have no way of accurately compiling the frequency of adoption or actual impacts of these innovations.

U.S. Bureau of Labor Statistics (BLS) does, however, measure the annual rate of productivity-improvement achieved by the U.S. economy as a whole. These data show that American productivity improvement has leapt dramatically since the mid-1990s, when the Internet first became a broadly useful business working tool (*Friedman's flatteners 2 and 3*, FIGURE 1). As FIGURE 4 shows, annual productivity-improvement rates for the U.S. since 2000 have been more than double what they were during the 20 years prior to 1995! These improved productivity-improvement rates have now, in turn, been built into BLS long-range employment projections.

1.60 How flat is flat?

While *The World Is Flat* clearly achieves its author's expressed purpose of "drawing attention to the reality of flattening and its quickening pace," Friedman offers essentially no quantitative measures of the scale, pace or duration of flattening. This has led some critics to characterize "flattening" as a purely intellectual contrivance, in much the same way that early critics once characterized the concept of "global warming." Fortunately, BLS provides us with concrete evidence of BOTH "the reality" AND "the quickening pace" of flattening throughout the American economy

1.61 The BLS biennial employment forecasts

Every two years, the BLS makes 10-year projections of probable changes in the numbers of workers employed by each of the 380 Industry Groups covered by the U.S. Business Census. These forecasts are

FIGURE 5

COMPARATIVE 10-YEAR PROJECTIONS FOR U.S. POPULATION AND JOB GROWTH
2000 to 2010, 2002 to 2012 and 2004 to 2014

Projected Years	Projected Pupulation Growth	Growth %	Projected Job Numbers	Growth %	Job Creation Rate
2000 to 2010	28.1 million	10%	22.2 million	15.2%	100:79
2002 to 2012	28.8 million	10%	21.3 million	14.8%	100:74
2004 to 2014	29.4 million	10%	18.9 million	13.0%	100:64

SOURCE: U.S. Bureau of Labor Statistics (BLS)

based on the marketplace demand for goods and services that will be generated by the projected growth of the U.S. population, modified by trends in employment and productivity by industry. For decades, BLS employment projections have proven to be consistently reliable estimates of future economic growth. FIGURE 5 compares the 10-year U.S. population and job growth projections for each of the three most recent BLS 10-year forecasts.

U.S. population has increased an average of one percent per year since 1990, and demographers expect it to continue growing at that rate during the decades ahead. For the three 10-year population forecasts covered by FIGURE 5, this constant growth rate has resulted in projections of steadily increasing numbers of new Americans-per-decade. Strikingly, the BLS forecasts also suggest that – **over time – our growing population can be expected to generate fewer and fewer new American jobs.** In 2000, BLS expected the U.S. economy to create 79 new jobs for every 100 additional Americans. Just four years later, BLS 10-year employment projections reflected a 16.4 percent lower job-creation rate: 64 new jobs for every 100 added U.S. residents.

If the 29.4 million new U.S. residents forecast for the 2004-2014 decade were to generate new jobs at the rate assumed just four years earlier (2000-2010), BLS 2004 projections would show the U.S. economy creating 23.2 million new jobs, not 18.9 million. The 4.3 million fewer new jobs that BLS projected based on 2004 job-creation rates can largely be attributed to the job-eliminating effects of Friedman's flattening between 2000 and 2004. FIGURE 5 also shows that the effects of flattening are increasing over time. It should be noted that the U.S. job-creation rate fell more sharply between 2002 and 2004 than it did between 2000 and 2002.

1.62 Things will get flatter before they get better

Comparison of the two most recent sets of BLS 10-year employment projections show that the impacts of flattening vary substantially from industry to industry. TABLE 1 compares the 2002 and 2004 projected job increases for the 15 industries that are expected to experience the largest employment growth. Together, these 15 industries are projected to create 80 percent of all new jobs in America between 2004 and 2014. While the list of 15 high growth industries remained the same for the 2002 AND 2004 forecasts, the projected job growth of 10 of the industry groups **fell** between the two 10-year forecasts – eight of them significantly. The five remaining industries (shaded on TABLE 1), are primarily employers of Friedman's "untouchables." **These five industries are expected to grow in spite of flattening, and to generate 37 percent of all new U.S. jobs during the forecast decade!**

It turns out that Friedman is right about a lot of things, including the open-ended nature of flattening. He was also wise enough not to offer a prescriptive vision of what work and life will be like on *Planet Flat.* Even the *professional futurists* are sharply divided over the long-term prospects for America in the globalized economy. However, as PART 2 of this Report demonstrates, a closer examination of the measurable effects of flattening on employment across the major components of our economy not only provides many useful insights for property owners and developers, but also offers early indications of the long-term adaptations of our "uniquely free, imaginative and creative society and economy," as America re-invents itself for the 21st Century on Planet Flat.

TABLE 1

THE CHANGING AMERICAN WORKPLACE

15 U.S. Industries with Largest Projected Employment Growth
2002 to 2012 and 2004 to 2014 - comparative projections

Industry	Projected Growth 2002 to 2012		Projected Growth 2004 to 2014		Change in Projected Growth 2012 vs 2014	
	(1,000s)	% rate	(1,000s)	% rate	(1,000s)	% rate
Ambulatory health services	1,898	41.0%	2,085	42.1%	**187**	**9.8%**
Professional, scientific and technical services	1,864	27.8%	1,922	28.4%	**58**	**3.1%**
Retail stores	1,983	13.6%	1,587	10.9%	**-396**	**-20.0%**
Employment services	1,763	54.3%	1,580	45.5%	**-183**	**-10.4%**
Eating and drinking establishments	1,337	15.9%	1,451	16.4%	**114**	**8.5%**
Administrative and business support services	956	23.8%	794	19.2%	**-162**	**-16.9%**
Construction	1,013	15.1%	792	11.4%	**-221**	**-21.8%**
K-12 public education	795	19.0%	781	18.3%	**-14**	**-1.8%**
Nursing and residential care	942	34.3%	782	27.8%	**-160**	**-17.0%**
State and local government (non-med/non-ed)	759	9.7%	763	13.9%	**4**	**1.5%**
Financial, insurance and real estate	963	12.3%	754	10.2%	**-209**	**-21.7%**
Social assistance services	913	45.6%	740	34.7%	**-173**	**-18.8%**
Hospitals (private)	661	12.8%	688	16.0%	**27**	**4.1%**
Transportation and warehousing	915	21.7%	506	11.9%	**-409**	**-44.7%**
Private post-secondary education	678	36.4%	503	34.4%	**-175**	**-25.8%**

SOURCE: U.S. Bureau of Labor Statistics (BLS) ©David Pearce Snyder

PART 2: What's Flat and What's Not

2.00 Introduction

Thomas Friedman describes the flattened world of business as a place characterized by the increasingly horizontal movement of information, capital, goods and services among individuals, organizations and nations. The business and financial press amply document Friedman's' "horizontalization" of international commerce. Some of these measures are rigorously quantified – e.g. the international movement of goods, labor and capital. On the other hand, there are no official measures for the international movement of services, information, credit or jobs. We have even fewer concrete measures of the *domestic* horizontalization of enterprise.

PART 2 of this Report reviews independent observations that corroborate Friedman's sweeping generalizations, and examines objective data that benchmark actual changes in specific U.S. industries, giving evidence of the pace and scale of flattening, and its future implications for the American workplace.

2.10 The rise of flat enterprise

Around 2000, about the time Friedman tells us that his 10 flatteners "converged" to create a level global playing field, America's management gurus stopped talking about "outsourcing" and began to write about a **paradigm shift** in the organization of all enterprise, from the pyramidal, hierarchical, self-servicing monoliths of the industrial era to flat, continuously-evolving connect-and-collaborate networks. The evolution of our vertically-integrated industrial bureaucracies into virtually-integrated network enterprises is described in detail in this author's 2004 paper for the NAIOP Research Foundation, *Fixed Assets in Changing Times: The Strategic Context of Industrial and Office Property in America.* Recent books describing the new paradigm of business organization include:

- *X-Engineering the Corporation*, James Champy, Warner Business books, 2005.
- *The Only Sustainable Edge*, John Hagel III and John Seely Brown, Harvard Business Press, 2005.
- *Open Business Models: How to Thrive in the New Innovation Landscape*, Henry Chesbrough, Harvard Business School Press; December, 2006.
- *Wikinomics: How Mass Collaboration Changes Everything*, Donald Tapscott and Anthony D. Williams, Portfolio Press, 2006.

The first three of these books corroborate Friedman's concepts by describing their own characterizations of the same phenomena, offering case studies of successful "horizontalization" across a wide range of industries. The most recent – and most provocative – of these books, Don Tapscott's *Wikinomics*, summarizes a number of the most innovative examples of actual Internet-driven organizational flattening – many cited by Friedman and the others – and envisions the generalization of such arrangements throughout all information work. Under Tapscott's scenario, in the not-to-distant future, growing numbers of firms won't just become flatter: they'll become *wafer thin*. There is a very real possibility – spelled out by Tapscott and others – that a growing share of knowledge work will be outsourced to pools of independent scholars and scientists, and to free-lance professionals and consulting techsperts – including many retirees – in both the U.S. and around the world. In particular, *Wikinomics* describes a half-dozen websites that offer the services of tens of thousands of experts who are providing on-demand consultative problem-solving and creative design services for firms like Boeing, Dow, DuPont and Proctor & Gamble. [1]

Some components of Tapscott's exuberant vision of "mass collaboration" are, in fact, likely to be realized, particularly in fields that are confronted with critical shortages of technically knowledgeable personnel. (The potential effects of such extreme e-flattening on specific service industries and property markets are examined in Section 2.45 of this Report, "High Growth Services in a Flat World.") For most firms in most industries, the effects of "flattening" will be less extreme than Don Tapscott's scenarios, but will nonetheless be tangible, increasing productivity and reducing labor requirements throughout much of the economy. Moreover, our widely-anticipated labor shortage will confront most of the nation's

employers with even more compelling reasons to flatten themselves.

2.20 A flatter supply of labor

Since 1990, U.S. population has grown at an average rate of one percent per year. Of that growth, 55 percent has been native born Americans, while 45 percent have been immigrants, an estimated 17-18 percent of whom the Census classifies as "unauthorized" (illegal). Today, approximately 42 million of America's 300 million population are foreign-born, between 10 and 12 million of whom are unauthorized. At current "intake rates," the Census Bureau projects that half of all U.S. population growth between now and 2050 will be immigrants and their offspring.

Demographers like to point out that America is the only mature industrial country with robust population growth. While Russia and Japan are already losing population, and all of Europe will have fewer citizens in 2025 than it does today, the U.S. Census Bureau has projected that America's population will DOUBLE during the 21st Century. In the face of such dramatic long-term growth, current expectations of a near-term labor shortage may seem improbable. But, as TABLE 2 makes clear, our coming labor shortfall has its roots in the past.

TABLE 2

THE CHANGING AMERICAN WORKFORCE

U.S. Civilian labor force by age, sex, race and origin

Group	Levels of Employment (1,000s)		Change (1,000s)		Percent of Total	
	2004	2014	Numbers	Percent	2004	2014
TOTAL – 16 YEARS AND OLDER	**147,401**	**162,100**	**14,699**	**10.0%**	**100%**	**100%**
age 16 to 24	22,268	22,158	-110	-0.5%	15.1%	13.7%
age 25 to 54	102,122	105,627	3,505	3.4%	69.3%	65.2%
over age 55	23,011	34,315	11,304	49.1%	15.6%	21.2%
Men	78,980	86,194	7,214	9.1%	53.6%	53.2%
Women	68,421	75,906	7,485	10.9%	46.4%	46.8%
White (non-Hispanic)	103,202	106,373	3,171	3.1%	70.0%	65.6%
Black	16,638	19,493	2,795	16.8%	11.3%	12.0%
Hispanic origin	19,272	25,760	6,488	33.7%	13.1%	15.9%
Asian	6,271	8,304	2,033	32.4%	4.3%	5.1%
All Others	3,406	4,427	1,021	30.0%	2.3%	2.7%

SOURCE: U.S. Bureau of Labor Statistics (BLS)

Based on long-term trends in population growth and composition, plus immigration and changing labor market participation rates, the BLS expects the U.S. workforce to grow by 14.7 million employees between 2004 and 2014. But, during those same 10 years, the number of entry-level workers in America (16 to 24 year olds) will actually decline! In the decade ahead, America's young adults will be members of the "Baby Bust" generation, born during the low birth years between the original Baby Boom (1946 to 1964) and the Baby Boom "Echo" (1988 to 2004). There will simply be insufficient numbers of Baby Busters to replace the Boomers when they retire. The scale of the projected labor short-fall is reflected in FIGURE 6, which compares the BLS workforce and employment projections for 2004-14. In this context, the eventual disposition of the estimated five percent (7.4 million) of our current workforce who are "undocumented aliens" acquires an even greater importance. If all illegal employees were deported today, we would immediately be faced with a 5.6 million worker short-fall, which would balloon to 10 million by 2014. These numbers make it clear that non-punitive immigration reform will be essential for the near-term future of the U.S. economy.

Fortunately, the average age at retirement in the U.S. has risen from 58 to over 61 since 1985, and is expected to continue rising to age 67 by 2020. *More than three-quarters of America's workforce growth in the decade ahead will be made up of employees who – 20 years ago – would have retired!* (see TABLE 2). The decision by the great majority of the Baby Boom age cohort to delay retirement can be expected to postpone our projected labor short-fall by five to seven years, but it will not forestall it indefinitely. The probable impacts of the Labor Department's projected 2.4 million worker shortfall on the future employment – and space requirements – of specific industries are discussed in Section 2.40 of this Report: "Peaks and valleys in future U.S. employment growth."

Meanwhile, the decision of millions of Baby Boomers to age-on-the-job will have multiple ripple effects throughout the job and housing markets, and on retailing, for the foreseeable future. The consequences of those effects for commercial property and property development are examined in PART 3 of this Report, "Property Development on *Planet Flat.*"

FIGURE 6

JOB GROWTH TO OUTPACE LABOR SUPPLY
2004 – 2014

	Numbers (1000s) 2004	2014	Projected Change Numbers	%
Total- All Jobs	145,612	164,540	18,928	+13%
Total- All Workers	147,401	162,100	14,699	+10%
Labor Surplus/ Shortage	**+1,789**	**-2,450**		

2.30 Fat cities and flat cities

Urban demographers at the University of Pennsylvania's Wharton School have projected population trends for 307 U.S. Metropolitan Statistical Areas (MSAs) through the year 2020, based on a 26-factor mathematical model of the statistical factors correlated with local growth in America between 1970 and 2000. [2] In their April 2006, working paper, "Forecasting 2020: U.S. County and MSA Populations," Professors Peter Linneman and Albert Saiz at the Wharton School's Real Estate Department projected dramatic disparities in the future growth of the nation's cities. While our 50 largest MSAs are currently home to half of all Americans, those same cities are expected to add 42.3 million residents – nearly 80 percent of the total U.S. population growth between 2000 and 2020! Simultaneously, 47 of America's MSAs are projected to *lose* a total of nearly two million people during the same time frame.

The full text of the Wharton paper, including population forecasts for all of America's 307 MSAs, AND for each of their 804 constituent counties, is available at http://knowledge.wharton.upenn.edu. In their research, Professors Linneman and Saiz found that "recent past growth, the presence of immigrants, the fraction of the population who are between 25 and 65, low sales taxes and good weather are all positively associated with local population growth." Not surprisingly, they also found that their collective local forecasts produced a map of America's future, in which "most population growth and real estate development will occur in the West, the Sunbelt and along the Southern I-85 route." The Linneman-Saiz forecasts also revealed a 250-mile swath of cities and counties to the West of the Appalachian-Allegheny-Adirondack mountains – from upstate New York, through Western Pennsylvania and down the Ohio Valley and the lower Mississippi River – where the great bulk of urban population **loss** in the U.S. is expected to occur during the next 15 years.

Linneman and Saiz are quick to point out that their model, while rigorously derived, only explains about 75 percent of the variance in local growth in America between 1970 and 2000, with the other 25 percent in variance explained by "surprise events." As a consequence, the authors conclude, "Many unexpected places will be winners or losers in the game of future local real estate development" between now and 2020. This also suggests that local leadership – and local developers – can intervene to change the future of their communities.

2.40 Peaks and valleys in future U.S. employment

The methodology by which the U.S. Bureau of Labor Statistics (BLS) develops its biennial 10-year projections of U.S. employment were discussed at length in Section 1.61 of this Report. A summary of current BLS projections for 2004 to 2014 appears in TABLE 3. The complete detailed forecasts for 380 individual industries, trades and professions are available on-line at http://www.bls.gov/emp/optd/optdtabv_1.pdf; file "Table V–1. Employment and output by industry, 1994, 2004, and projected 2014." BLS will release the next update of its projections in April 2008, covering the forecast years 2006 to 2016.

Metaphorically, the future of American employment will be dominated by one towering "peak" – SERVICES – flanked by two deep "valleys" – MANUFACTURING and AGRICULTURE. During the 2004-14 decade, the BLS expects the Service sector to create over 95 percent of all new jobs, while employment in Manufacturing and Agriculture is expected to decline by 5.4 percent and 10.7 percent respectively. The only increase in non-Service sector salaried employment during the 2004-14 decade will be in Construction.

2.41 Employment in Construction – 2004 Workforce: 6,965,000 Projected 10-Year Growth in Employment: 792,000 jobs Projected 2004-14 Rate of Growth: 11.4 percent

Construction is, in effect, the production arm of the property development industry. Projected employment in Construction should, therefore, be regarded as a significant indicator for the future of property development. As has already been noted, construction is one of the nation's 15 high growth industries, whose projected 10-year employment increase dropped significantly between 2002 and 2004. (See TABLE 1). Inasmuch as Friedman identified the building trades as being among the American jobs that would be "untouched" by flattening, the decline in projected construction employment growth merits a more detailed examination.

TABLE 3

ALL U.S. EMPLOYMENT BY MAJOR INDUSTRY DIVISION
1994, 2004 & 2014 (projected)

Employment Industry Division	Numberic Changes 1,000s			Percentage Change %			Share of U.S. Employment %		
	1994	2004	2014	1994- 2004	2004-2014	1994-2004	2004-2014	2004	2014
TOTALS	**129,246**	**145,612**	**164,540**	**16,366**	**18,928**	**12.70%**	**13.00%**	**100%**	**100%**
Goods-producing (non-agricultural)	**22,692**	**21,817**	**21,787**	**-875**	**-30**	**-3.9%**	**-0.1%**	15.0%	13.2%
Mining	577	523	477	-54	-46	-9.2%	-8.8%	0.4%	0.3%
Construction	5,095	6,965	7,757	1,870	792	36.7%	11.4%	4.8%	4.7%
Manufacturing	17,020	14,330	13,553	-2,690	-777	-15.8%	-5.4%	9.8%	8.2%
Service-producing	**92,292**	**110,374**	**129,090**	**18,082**	**18,716**	**19.6%**	**17.0%**	**75.8%**	**78.5%**
Utilities	689	570	563	-119	-7	-17.3%	-1.3%	0.4%	0.3%
Wholesale trade	5,247	5,655	6,131	408	476	7.8%	8.4%	3.9%	3.7%
Retail trade	13,491	15,034	16,683	1,543	1,649	11.4%	11.0%	10.3%	10.1%
Transportation and warehousing	3,701	4,250	4,756	549	506	14.8%	11.9%	2.9%	2.9%
Information: publishing, tele-com and broadcast	2,739	3,138	3,502	399	364	14.6%	11.6%	2.2%	2.1%
Financial activities	6,867	8,052	8,901	1,185	849	17.3%	10.5%	5.5%	5.4%
Professional and managerial services	6,510	8,480	10,584	1,970	2,104	30.3%	24.8%	5.8%	6.4%
Education and health services	12,807	16,954	22,147	4,147	5,193	32.4%	30.6%	11.6%	13.5%
Leisure and hospitality	10,100	12,479	14,694	2,379	2,215	23.6%	17.7%	8.6%	8.9%
Other services	5,463	6,535	7,356	1,027	821	19.6%	12.6%	4.5%	4.5%
Admin. and business support services	5,404	7,609	9,983	2,205	2,374	40.8%	31.2%	5.2%	6.1%
Federal government	3,018	2,728	2,771	-290	43	-9.6%	1.6%	1.9%	1.7%
State and local government	16,257	1,891	21,019	2,634	2,128	16.2%	11.3%	13.0%	12.8%
Agriculture (incl. forestry, fishing and hunting)	**2,890**	**2,140**	**1,910**	**-750**	**-230**	**-26.0%**	**-10.7%**	**1.5%**	**1.2%**
Self-employed (primary and secondary)	**11,372**	**11,281**	**11,753**	**472**	**-0.8%**	**4.2%**	**7.7%**	**7.1%**	

SOURCE: U.S. Bureau of Labor Statistics (BLS)

FIGURE 7

PROJECTED GROWTH IN CONSTRUCTION EMPLOYMENT

2002 to 2012 and 2004 to 2014 projections compared

Industry and selected segments	PROJECTED EMPLOYMENT GROWTH			
	2002 to 2012		2004 to 2014	
	1,000s	% rate	1,000s	% rate
TOTAL - All construction	**1,013**	**15.1%**	**792**	**11.4%**
Heavy/Civil Engineering	62	6.7%	65	7.2%
Construction of buildings	123	7.8%	65	10.5%
Residential building construction	88	4.5%	59	6.6%
Non-residential building construction	35	4.5%	112	15.2%
SPECIALTY TRADE - ALL CONTRACTORS	830	19.7%	557	12.6%
Selected building trades				
Carpenters	122	10.1%	186	13.8%
Electricians	154	23.7%	79	11.7%
Plumbers	92	18.6%	78	15.6%

SOURCE: U.S. Bureau of Labor Statistics

FIGURE 7 compares summary data from BLS detailed 10-year projections of growth in Construction employment for 2002-12 and 2004-14. While the BLS projections of total 10-year U.S. job growth fell 11 percent from 2002 to 2004 (see FIGURE 5), projected job growth in Construction fell 21.8 percent during the same time-frame, by an estimated 221,000 positions. However, as FIGURE 7 reveals, not all components of the construction industry are expected to experience declining employment growth. "Heavy construction and civil engineering," for example, reflects a modest increase in both numbers of jobs created and the job creation rate, although its projected rate of employment growth remains around half of the total U.S. job creation rate. "Construction of buildings" reflects an even bigger jump in 10-year employment growth, increasing 40 percent from 123,000 jobs in 2002 to 171,000 jobs in 2004. Within the "Construction of buildings" component, however, there was a dramatic reversal of expectations. In the 2002 BLS projections, three-fourths of forecast employment growth in "Construction of buildings" was for "Residential structures" and only one-quarter was expected to be for the construction of "Non-residential structures." In BLS 2004 projections, however, two-thirds of new job growth in the industry is expected to be in "Non-residential building construction," while only one-third is projected to be in "Residential building construction."

In fact, only one segment of the Construction industry experienced a decline in projected employment growth between the two BLS biennial forecasts: "Specialty trade contractors," whose employees make up 60 percent of the entire Construction industry's workforce. Their projected 10-year employment increase dropped by one-third between 2002 and 2004, from 830,000 new jobs to 557,000 new jobs. According to BLS 10-year *Occupational* forecasts, the 273,000 reduction in new job creation by "Specialty trade contractors" is almost entirely due to 30 percent to 40 percent declines in the projected increase in electricians, plumbers and other building trades. While definitive objective research is not yet available, trade journals and vendor-sponsored studies corroborate anecdotal reports of sharp increases in productivity throughout the building trades over the past five to 10 years, due to multiple innovations in electrical connectors, plumbing hardware, wood fasteners, and concrete forming systems, etc., along with the growing use of factory-built structural components.

Recent productivity increases among the building trades have been welcomed by economists, who have long criticized the entire Construction industry for its low productivity improvement rates. Even with its increasing productivity however, Construction is expected to remain a labor-intensive enterprise, as

BLS current 10-year occupational forecasts make clear. (BLS 10-year forecasts of the employment outlook for 800 individual occupations can be found online at: http://www.bls.gov/emp/optd/optdtabiv_1.pdf; Table IV-1. "Occupational employment and job openings data, 2004-14, and worker characteristics.") Jobs for the differing building trade skills are expected to increase by 12.5 percent to 17.5 percent over the 2004-14 decade, while the overall supply of labor is expected to increase by only 10 percent.

While projected job growth in "Construction" did fall 21 percent between the 2002 and 2004 BLS forecasts, the marketplace demand for skilled construction workers that will arise from a combination of continued industry growth and Baby Boom retirements assures that job opportunities for the building trades will indeed be "untouched" by flattening. In fact, shortages of skilled construction workers are widely expected to worsen in the years ahead, sustaining the pressure for further improvements in productivity among the building trades. The growing scarcity of skilled labor can also be expected to accelerate the use of prefabricated components and modular building systems that require less skilled labor. In the following section of this Report, factory produced housing and housing components are cited as one of the few bright spots in the future of manufacturing employment in America.

2.42 Employment in Manufacturing – 2004 Workforce: 14,330,000 Projected 10-Year Loss of Employment: -777,000 jobs Projected 2004-14 Rate of Loss: -5.4 percent

In 2004, the total number of U.S. jobs in manufacturing fell below 10 percent of the American workforce for the first time since we declared our independence from Great Britain (see TABLE 3). Between 2004 and 2014, BLS expects U.S. manufacturers to shed 777,000 jobs, dropping manufacturing's share of the American workforce to just 8.2 percent. While this will still represent 13.5 million workers, it is a far cry from the 1950s, when nearly 40 percent of the U.S. workforce was in Manufacturing, and tens of millions of Americans worked in our factories, foundries and mills. As FIGURE 8 shows, BLS current 10-year projections (derived from 1994-2004 base-line data) reflect a much more rapid decline in Manufacturing employment than did the previous BLS projections – which were

FIGURE 8

EMPLOYMENT LOSSES IN U.S. MANUFACTURING
BLS Base-line Date and Projections
1992 to 2012 and 1994 to 2014

Time Period	Numbers (1,000s)	Rate (%)	Time Period	Numbers (1,000s)	Rate (%)
1994 to 2004	-2,690	-15.8%	2004 to 2014	-777	-5.4%
1992 to 2002	-1,492	-8.9%	2002 to 2012	-158	-1.1%
Change in Jobs Lost	**+1,198**	**+80.3%**		**+619**	**+391.8%**

FIGURE 9

10 MANUFACTURING INDUSTRIES WITH GREATEST JOB LOSS
2004 to 2014 (projected)

Manufacturing Industry	Number of Jobs Lost (1000s)	Rate of Job Loss (%)
Apparel manufacturing	-170	-60.1%
Textile mills	-150	-45.6%
Machinery manufacturing	-147	-12.9%
Computer and electronic equipment manufacturing	-94	-7.1%
Primary metals manufacturing	-86	-18.5%
Electrical equipment manufacturing	-84	-18.8%
Plastics and rubber manufacturing	-74	-9.2%
Printing	-65	-9.8%
Basic chemical manufacturing	-46	-29.5%
Fabricated metal products manufacturing	-28	-1.9%

TOTAL PROJECTED MANUFACTURING JOB LOSS: – 944,000

extrapolated from 1992-2002 base-line trends. The 619,000 increase in projected Manufacturing job-loss during the 2004-14 forecast decade primarily reflects a one million drop in actual manufacturing employment between the last year of the 1992 to 2002 base-line data set (15.3 million) and the last year of the 1994-2004 base-line data (14.3 million). The 2002-2004 timeframe was also marked by a reversal of America's long-term growth in goods exports, and by a sharp increase in the nation's imports and trade deficit.

The BLS makes 10-year employment projections for 85 different manufacturing industries. While the bulk of these industries are expected to experience little employment change over the forecast decade, ten classes of Manufacturers are expected to see significant workplace shrinkage (see FIGURE 9). Far and away the greatest losses will be experienced by "Textile mills" and "Apparel manufacturers," both of which lost their last tariff protections in 2001. Except for "Specialty textiles," both of these industries can be expected to essentially disappear from the U.S. altogether by 2025. Together, the industries in FIGURE 9 will shed nearly one million jobs between 2004 and 2014.

To the degree that the weakness in U.S. manufacturing during the 2002-2004 period was the temporary consequence of the 2001 recession, the 2004-14 BLS projection may overstate the long-term decline in U.S. manufacturing employment. (U.S. export growth, for example, resumed in 2004.) However, BLS historic data show that U.S. manufacturing shed just 432,000 jobs between 1990 and 2000 – a 2.5 percent decline in 10 years. Between 2000 and 2004, by comparison, U.S. manufacturing lost nearly three million jobs, shrinking 17 percent in just four years! This would appear to support Friedman's assertion that the flattening of enterprise began in earnest around 2000, when the cumulative effect of his "10 flatteners" converged to create the new "level global playing field."

Roughly one-third of manufacturing job losses will be offset by increased employment in the handful of U.S. manufacturing industries that are projected to experience increased employment during the forecast decade. Those industries are shown in FIGURE 10. But projected job creation, even in these high growth industries, has been severely diminished by the effects of flattening. In the 2002-12 BLS forecasts, employment in the 10 high-growth manufacturing

FIGURE 10

10 MANUFACTURING INDUSTRIES WITH GREATEST JOB GROWTH
2004 to 2014 (projected)

Manufacturing Industry	Number of Jobs Gained (1000s)	Rate of Job Growth (%)
Pharmaceutical manufacturing	+75	+26.1%
Animal slaughter/meat packing	+65	+12.9%
Other wood product manufacturing	+53	+16.9%
Motor vehicle parts manufacturing	+43	+6.2%
Aero-space products and parts manufacturing	+36	+8.1%
Machine shops	+20	+8.3%
Clay, glass and concrete products manufacturing	+20	+4.0%
Electronic navigation, medical & control instrument manufacturing	+18	+4.2%
Wood kitchen cabinets manufacturing	+18	+11.2%
Motor vehicle body & trailer manufacturing	+13	+7.9%

TOTAL PROJECTED MANUFACTURING JOB INCREASE: + 362,000

industries was expected to increase at an average rate of 17.9 percent – faster than the overall economy's jobs creation rate of 14.8 percent – and to generate 602,000 new jobs during the forecast decade. In BLS 2004-14 forecasts, employment among the 10 highest growth manufacturing industries is only expected to rise at an average annual rate of just 7.9 percent – much less than the economy's overall 13.0 percent job growth rate – and to generate only 362,000 new jobs in 10 years; a 40 percent decline in job creation.

Only four specific industries appear on the 2004 list of 10 high growth manufacturers that also appeared in the 2002 high growth list: "Pharmaceutical manufacturing," "Animal slaughtering/meat packing," "Clay, glass and concrete products manufacturing" and "Other wood product manufacturing." Strikingly, two industries that topped the list of high growth manufacturers in 2002 – "Plastics and rubber manufacturing" (+138,000 projected new jobs), and "Machinery manufacturing" (+51,000 new jobs) – *now* appear on the BLS list of 10 industries with the greatest job loss (FIGURE 9), with these two industries projected to lose 74,000 and 147,000 jobs respectively during the forecast decade. Such dramatic reversals in long-term outlook – especially among producers of hard goods – are unlikely to be the result of internal improvements in U.S. worker productivity, and must be regarded as a flattening consequence of economic globalization.

In 2002, job creation in *each* of the 10 high growth industries was projected to outpace job creation for the economy as a whole (+14.8 percent). By comparison, employment growth by the overall economy in the 2004 projections will outstrip job creation in eight of the 10 high growth manufacturing industries (FIGURE 10). Only employment in "Pharmaceutical manufacturing" and "Other wood product manufacturing" is currently expected to increase at a faster rate than the overall economy's job creation rate of 13.0 percent. The robust 26 percent projected employment increase in "Pharmaceutical manufacturing" is concomitant with both the ongoing rapid expansion of "Health care" as America's largest employer and strong projected export demand. The sustained double-digit employment growth expected for "Other wood product manufacturing," on the other hand, can be attributed in part to the increased production of factory-built housing and housing components.

Finally, just as two industries that were projected to grow rapidly in 2002 are NOW expected to experience significant job loss in the 2004 forecast decade, three classes of manufacturing employment that were each expected to shed tens of thousands of jobs in 2002 are now collectively projected to generate nearly 100,000 new jobs during the 2004-14 timeframe. The turn-around in "Motor vehicle parts manufacturing" (+53,000 new jobs), "Aerospace products and parts manufacturing" (+36,000 new jobs) and "Electronic navigation, medical control and instrument manufacturing" (+18,000 new jobs) can largely be attributed to increased defense and security procurement associated "homeland security" and the wars in Iraq and Afghanistan.

As is discussed at length in PART 3 of this Report, the recycling of property no longer required by the nation's shrinking industrial enterprises has become a central thrust of property development in America over the past decade. In both Europe and North America, the conversion of abandoned textile mills and auto plants into commercial, residential and mixed-use properties is now common practice. Even the re-use of *environmentally tainted* manufacturing properties – e.g. tanneries, smelters, chemical plants, etc. – is being routinized, as measures for detoxifying industrial sites have become better understood.

In some respects, finding sites for the modest projected growth in manufacturing (FIGURE 10) may pose a greater challenge to property developers than dealing with vacancies created by the massive decline of most U.S. industry. Throughout the nation, local zoning and land-use master plans (and planners) are seeking to expunge industrial operations from America's communities, by incorporating a new kind of NIMBYism into public policy: No Industrial Manufacturing In My Back Yard (NIMIMBY). While suburban jurisdictions have always sought to isolate blue collar operations at their outer edges, cities are now doing the same thing in order to attract middle class residents and white collar employers downtown. In some cases, the new zoning codes are so stringent that even essential local industrial operations – e.g. motor vehicle repair and body work, commercial laundries and cleaners, scrap recyclers, machine shops, etc. – are unable to locate in the communities they serve.

Unlike steel mills and auto assembly plants, local fabricators and industrial operators are typically small businesses with little political leverage to influence local land-use policies. As industrial cities recycle themselves into more livable, sustainable communities, property developers will have to speak for the local industrial operators to assure that their critical functions are not ignored or overlooked, as communities re-invent themselves for the future.

2.43 Employment in Services – 2004 Workforce: 1,1037,000 Projected 10-Year Growth in Employmeny: 18,716,000 jobs Projected 2004-04 Rate of Growth: 17.0 percent

With the exception of the roughly three-quarter million increase in "Construction" jobs, plus the one-third million new jobs created by a few manufacturing industries, all projected growth in U.S. salaried employment between 2004 and 2014 – 18.7 million new positions – will occur in the Service Sector. As TABLE 3 makes clear, the Service Sector covers a wide diversity of marketplace and public sector enterprises. Of the 380 different classes of workplace establishments covered by the BLS projections, 235 types of enterprise are in the Service Sector. The 15 Service Sector industries that are expected to experience the greatest employment growth during 2004-14 are listed in TABLE 4. Together, these 15 classes of Service enterprise are expected to generate nearly 85 percent of ALL new jobs – *and the bulk of increased demand for new office and commercial space* – during the forecast decade.

Industrial economists have long understood that, in a world served by an efficient global transportation network, the elimination of tariffs and other artificial trade barriers would lead the mass-production of manufactured goods to migrate to countries with the lowest- cost skilled industrial labor. Service work, by comparison, has typically been characterized by economists as requiring physical proximity between the service provider and the consumer, making such work "unexportable." Friedman makes the same assumption about service work in defining his "untouchable" classes of employment (FIGURE 2), whose work-place functions, he argues, will insulate them from the detrimental consequences of "flattening,"

Specifically, Friedman observes that service employees are "anchored" to their places of work. Healthcare practitioners, short-order cooks, police officers and firefighters, land surveyors, auto mechanics, plumbers and electricians, etc., must all be physically present to perform their tasks, and are unlikely to either be outsourced to remote low-cost providers, or to be automated out of existence. On initial consideration, most of the 15 high-growth Service Sector industries in TABLE 4 would appear to be firmly "anchored" to their places of work. But, our tightening supply of skilled workers is commonly expected to force all employers to pursue labor-saving initiatives. This will be especially true for labor-intensive information-based services, which – because of the communications efficiency of our Internet info-structure – can now be performed at a great distance from their end users, in job markets where information workers are plentiful and cheap. The twin impending realities of scarce, expensive domestic labor and increasingly productive info-com technology will predictably combine to flatten employment in several of the high growth Service industries, either through "info-mation" or off-shoring.

2.44 Sizing the low-cost off-shore workforce

Since the 2004 presidential elections, the off-shoring of U.S. white collar work has provoked a number of alarming forecasts, most prominently from the former vice-chairman of the Federal Reserve Board, Alan Blinder, who pronounced that "off-shoring may be the biggest political issue in economics for a generation. As the technology improves and the quality and experience of off-shore workforces improve, the capacity to deliver services electronically will rise, threatening tens of millions of American workers." In May 2007, the Peterson Institute for International Economics published a review of the principal studies of off-shoring, several of which suggested that "up to 20 percent of all U.S. jobs could theoretically be moved abroad." The Peterson review concluded, however, that "the heated public and political debate regarding overseas outsourcing had been vastly overblown." [3]

The most rigorous of the studies reviewed by Peterson – "Sizing the Emerging Global Labor Market" – was published by the McKinsey Global Institute (MGI), in the fall of 2005. MGI – the

TABLE 4

THE 15 U.S. SERVICE INDUSTRIES WITH LARGEST PROJECTED EMPLOYMENT GROWTH
1994, 2004 and 2014 (projected)

Employment Industry Division	Employment 1,000s			Change 1,000s		Percent Change		% of all Employees	
	1994	2004	2014	1994- 2004	2004-2014	1994-2004	2004-2014	2004	2014
Professional, scientific and technical services	4,844	6,762	8,694	1,918	1,922	39.6%	28.4%	4.6%	5.3%
Retail stores	13,07	14,61	16,19	1,540	1,587	11.8%	10.9	10.0	9.8%
Employment services	2,227	3,470	5,050	1,244	1,580	55.9%	45.5%	2.4%	3.1%
Eating and drinking establishments	7,109	8,850	10,30	1,741	1,451	24.4%	16.4	6.1%	6.3%
Offices of health practitioners	2,430	3,337	4,561	807	1,224	33.2%	36.7%	2.3%	2.8%
Admin and business operations support and services	3,177	4,139	4,933	962	794	30.3%	19.2%	2.8%	3.0%
K-12 public education	6,329	7,763	8,546	1,433	783	22.6%	10.1%	5.3%	5.2%
Nursing and residential care facilities	2,227	2,815	3,597	588	782	26.4%	27.8%	1.9%	2.2%
Local government (non- edu. or health-related)	4,679	5,486	6,249	807	763	17.2%	13.9%	4.1%	4.1%
Finance, insurance and real estate	6,318	7,383	8,137	1,065	754	16.9%	10.2%	5.1%	4.9%
Social assistance services	1,382	2,132	2,872	751	740	54.3%	34.7%	1.5%	1.7%
Hospitals (private)	3,724	4,294	4,982	570	688	15.3%	16.0%	2.9%	3.0%
Home health care services	553	773	1,310	220	537	39.8%	41.0%	0.5%	0.8%
Transportation and warehousing	3,701	4,250	4,756	549	506	14.8%	11.9%	2.9%	2.9%
Private, post-secondary education	1,074	1,462	1,965	388	503	36.1%	34.4%	1.1%	1.3%

SOURCE: U.S. Bureau of Labor Statistics (BLS)

research arm of consultancy McKinsey & Company – found that there are 33 million university-educated young professionals in the 28 low-wage countries that they surveyed. However, only 3.9 million of them currently possess the "suitable" combination of skills, experience and Internet access sufficient to perform off-shore work assignments. Since McKinsey and others estimate that, by 2008, the total number of jobs outsourced to low-wage countries by high-wage countries will be 4.0 to 4.5 million, many international labor experts expect global demand to quickly outstrip the supply of "suitable" overseas workers, and drive up the salaries of high tech employees in low-wage countries, so that further off-shoring would cease to be economically attractive. [4]

MGI's director, Diana Farrell, has acknowledged that wages and turnover are currently rising in most off-shore hot-spots – including Moscow, Prague, Bangalore and Hyderabad. But she also points out that "more than 90 percent of the suitable young professionals in low-wage countries we studied live outside the current hot spots." Other low-wage areas in India and Malaysia, China, Hungary, Slovakia and the Philippines are already investing in more robust information infrastructure – "info-structure" – to give their young university-trained professionals full access to the global electronic marketplace. MGI's data suggest that these on-going info-structure improvements can be expected to increase the number of Web-accessible, suitably-skilled low-cost professionals from 3.9 million to 6.4 million over the next three to five years. While it is not possible to forecast how many additional high-wage American jobs will actually be exported to low-wage countries, the MGI report projects that the supply of qualified recruits will grow 5.5 times faster in low-wage economies than in high-wage economies. "Despite the current talent hot spots," MGI concluded, "the huge supply of suitable Third World young professionals available for hire worldwide means that the average wage for these workers will not rise above 30 percent of U.S. levels." [5]

In a 2006 research study, The Hackett Group, an Atlanta-based business consultancy, assumed that the persistent overseas wage rate for skilled workers would be 40 percent of comparable U.S. employees. The resulting 60 percent labor arbitrage savings rate, they concluded, will constitute a competitive

FIGURE 11

ESTIMATED AVERAGE *POTENTIAL* SAVINGS per *FORTUNE 500* COMPANY

From "Business Process Outsourcing to Low-Cost Countries"

Business Process Function	Estimated annual savins ($ million)	Estimated number of staff Impacted (1,000s)
IT	$58.5	1,223
Finance	$32.1	1,045
Human Resources	$15.6	390
Procurement	$9.9	275
TOTAL SAVINGS PER FIRM	$116.1	2,933

SOURCE: The Hackett Group (2006)

opportunity that most labor-intensive firms will be unable to ignore. Based on currently-available off-shore capacities for specific back-office functions, The Hackett Group found that the average *Fortune 500* company could eliminate nearly 3,000 jobs by off-shoring, realizing an overall annual savings of over $116 million (see FIGURE 11).

If every *Fortune 500* company were to fully exploit the opportunities offered by off-shoring their back-office operations, Hackett calculates that the collective annual savings to those companies would be $58 billion, and that 1.47 million U.S. white collar employees would be directly affected. [6] (In a companion study, The Hackett Group found that the *Top 500* European companies could save 48 billion Euros, and directly impact the employment of 1.3 million of their workers.) [7]

2.45 High growth services in a FLAT world

The following assessment of the future employment prospects for the 15 high-growth U.S. Service sector industries (TABLE 4) incorporates the assumption of a continuously expanding off-shore supply of qualified, experienced, electronically accessible professional workers whose salaries will remain 30 percent to 40 percent of their American counterparts. This assessment also accepts the assumption of a continuing 60 percent to 70 percent arbitrage labor savings from off-shoring that will pose a growing incentive for large U.S. processors of information to export a growing number of jobs.

- **Professional, scientific and technical services** –
  2004 Workforce: 6,762,000
  Projected 10-Year Growth in Employment: 1,922,000 jobs
  Projected 2004-14 Rate of Growth: 28.4 percent

The current BLS forecasts mark the first time that a purely information-based segment of the U.S. economy has been projected to experience the greatest 10-year employment growth. (In 2002, the greatest employment growth was in "Ambulatory healthcare," and in 2000, it was in "Employment services.") "Professional, scientific and technical services" is also one of the five industries whose employment is projected to grow faster during 2004-14 than had been projected in 2002-12. As FIGURE 12 reveals, however, not all of the components of this segment of the U.S. economy have escaped the affects of flattening. Specifically, there were significant drops in projected employment increases for "Computer systems design" and "Legal services."

Computer systems design and related services –
2004 Workforce: 1,147,000
Projected 10-Year Growth in Employment: 453,000 jobs
Projected 2004-14 Rate of Growth: 39.5 percent

Between the 2002 and 2004 BLS forecasts, projected job growth in "Computer systems design and related services" fell 28.7 percent, by 182,000 positions (see FIGURE 12). In December, 2005, MGI published a comprehensive assessment of "job tradability" in the worldwide workplace. [8] McKinsey projected that 1.4 million U.S. jobs would be off-shored between 2004 and 2008 – averaging 280,000 jobs lost per year – totaling one percent of all American jobs. The MGI Study also documented the degree to which each major class of Service sector work was actually "tradable" with overseas labor. Overall, the study concluded that only 11 percent of all U.S. service jobs could "theoretically be performed off-shore, ranging from three percent of retail sales work, four percent of food preparation, and eight percent of healthcare, to 100 percent of all computer and mathematical occupations." Practical considerations, McKinsey concluded, especially the uneven quality of Third World education, would limit the maximum actual off-shoring of IT jobs to about 18 percent of their total number – about 750,000 positions – between 2004 and 2008. This would represent a substantial portion of America's 4.5 million IT workers.

While the off-shoring of high tech jobs first became a fractious political issue during the 2004 Presidential election, there are still no official government estimates of how many of these positions have actually migrated from the U.S. to low labor cost countries. Rough estimates, inferred from published government data, suggest that Europe and the U.S. each lost 50-60,000 jobs per year to off-shoring in 2004 and 2005. [9] These estimates, however, are incommensurate with the most recent data from India's National Association of Software and Service Companies (NASSCOM), which reported in January 2007, that their information services industry added 320,000 workers during 2006 alone. [10] The U.S. Software and Information Industry Association (SIIA) offers evidence to explain the incongruence in the estimates of U.S. IT jobs exported and new Indian IT jobs created. A 2006 SIIA survey of U.S. software

firms found that "off-shoring is used almost entirely as a form of expansion, not as a replacement." [11]

Of the 114 software houses surveyed by SIIA, 68 had off-shore operations, 84 percent of whom reported that the growth of their domestic operations could not be accommodated in the U.S. because of "a shortage of American engineers and insufficient numbers of H-1B visas" to bring foreign engineers state-side. Among the software firms that have off-shored work, three-fourths reported that the arrangement had increased their profits, while two-thirds indicated that "the quality of the overseas work has been above-average, compared with that of on-shore staff." The survey also found that 57 percent of off-shoring firms had significantly increased their overseas operations in the preceding 18 months, and that most planned to continue doing so in the future. Conversely, most of the software shops that had not yet engaged in exporting operations reported that they had no plans to do so in the future, 91 percent citing "loss of control" as the primary reason for not sending their computer system and software development work overseas.

A similar schism between off-shorers and non-off-shorers was reflected in a 2005 study of U.S. high-tech start-ups created from 1999 to 2004. The study, conducted by *USA Today* and PricewaterhouseCoopers, found that - among new software firms underwritten by venture capitalists (VCs) – while 61 percent had no off-shore workers, nearly half of the employees of the remaining start-ups – over 1,000 new jobs – were created overseas. [12] In most cases, those firms reported that off-shoring was required as a condition for their receiving their VC's financial backing. Venture capitalists interviewed as a part of the *USA Today*/PWC survey indicated that off-shoring enabled them to "leverage their capital investments." IT professional salaries are 30 percent lower in Canada than in America, 70 percent lower in Eastern Europe, and 80 percent lower in Asia. Moreover, investors argue that, by requiring their new ventures to establish overseas production capacities from the out-set, successful new firms will be able to scale-up their operations much faster than start-ups that are solely dependent on the skills-short U.S. labor pool.

While the BLS projects that "Computer system design services" will generate 45,300 new jobs between 2004 and 2014, annual new enrollment in North American undergraduate computer science and engineering programs fell from 23,446 in 2000 to 15,950 in 2005. [13] At current enrollment rates, the domestic supply of qualified recruits will only be able to satisfy one-third of the industry's projected employment growth. Moreover, as many as one-third of the industry's existing skilled workforce can be expected to retire between now and 2015. The nation's ability to make up at least some of this

FIGURE 12

PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES
Projected Employment – 2002 to 2012 vs. 2004 to 2014

Type of Enterprise	Projected Growth 2002 to 2012		Projected Growth 2004 to 2014		Change in Projected Growth 2012 vs 2014	
	1,000s	% rate	1,000s	% rate	1,000s	% rate
Management, scientific & technical consulting services	406	+55.5%	471	+60.5%	+65	+16.0%
Computer system design	635	+54.6%	453	+39.5%	-182	-28.7%
Accounting services	215	+24.8%	284	+34.8%	+69	+32.1%
Architects/engineers	54	+4.3%	199	+15.8%	145	+268.5%
Legal services	218	+19.6%	178	+15.3%	-40	-18.3%
Advertising services	84	+19.0%	95	+22.3%	+11	+13.1%
Scientific & technical R&D services	36	+6.7%	65	+11.9%	+29	+80.6%
Other professional, scientific and technical services	216	+27.4%	177	+28.4%	+61	+28.2%
TOTALS	**1,864**	**+27.8%**	**1,922**	**+28.4%**	**+58**	**+3.1%**

SOURCE: http://www.bls.gov/emp/optd/optdtabv_1.pdf David Pearce Snyder

impending employee shortfall by importing skilled IT workers is currently a political "football." [14] Whatever the outcome of the H-1B visa debate, imported "techies" can be expected to make up no more than one-half of the looming shortage.

In the face of a certain massive shortfall of skilled human resources, the "Computer systems design services" industry will have to substantially increase its labor productivity or off-shore up to 150,000 positions. In May 2007, McKinsey & Company published a research paper proposing the application of standard "lean-manufacturing" process re-engineering to computer systems development and maintenance. [15] McKinsey's analysis concludes that the industry could use "lean operations to cut its costs – and staffing requirements – by 20 percent to 40 percent." Whether these jobs are off-shored or info-mated out of existence, they are likely to flatten the projected employment growth in the industry by one-third, to around 300,000 for the forecast decade.

Legal services –

2004 Workforce: 1,162,000
Projected 10-YEAR Growth in Employment: 178,000 jobs
Projected 2004-14 Rate of Growth: 15.3 percent

In his 2001 book, *Transforming the Law*, the legal profession's principal technologist, Professor Richard Susskind, observed that "while high value, socially significant and complex legal work will not be fundamentally changed by IT, the same cannot be said for the numerous other categories of legal work today." [16] Of the 1,162,000 Americans employed in "Legal services" today, one-third are "legal support workers" – paralegals, clerks, abstractors and file searchers. In a survey of 20 percent of the country's large law firms, the accountancy Grant Thornton found "a clear correlation between investments in electronic document management systems and lowered ratios of clerical workers to fee-earners."[17]

In spite of such incentives, the legal profession has not been particularly aggressive – or eager – about adopting IT, but their corporate clients and the courts where they practice have begun to migrate to cyberspace, and they are forcing lawyers to come with them. After 10 years of pilot tests and demonstration projects, the first Federal courts began to go "all electronic" in 2003, and most courts are expected to have embraced digital document management for civil law cases within a decade. [18] Using an online system called Pacer, all parties to civil law suits can already file, examine and retrieve court documents on the Internet. (NOTE: Privacy issues prevent the use of such open, online systems for criminal cases.) [19]

Because lawyers are licensed by individual states, law firms are barred from offering professional advice over the Internet, since online clients may be located in jurisdictions where the practitioner is not admitted to the bar. However, growing numbers of online legal services are offering purely informational guidance and assistance in preparing wills and filing for divorce, in transactions where they give "no advice regarding legal rights, remedies or options." [20] At the same time, legal journals and law reviews are increasingly being published electronically, permitting practitioners to directly search their contents and retrieve citations without involving clerical personnel. (A form of flattening that Friedman calls "In-forming.") And, as a high-tech service to their clientele, law firms that handle mergers and acquisitions are establishing "virtual deal rooms," where firms can negotiate with each other securely, online, and where orderly electronic records replace the complex, overlapping paper trails that such transactions typically generate. [17]

Since 2000, expanding applications of IT to routine administrative services have been reducing overhead paperwork – and paper workers – in "Legal services," just as such applications have been doing for most other employers. Simultaneously, insurance companies (major users of law firms) have begun to demand that their corporate clients be able to handle their product liability and class action suits electronically. To comply with this new requirement, growing numbers of large employers will be forced to digitize and index decades of paper records. In the past, such paralegal work has been contracted out to large law firms, usually in conjunction with a specific suit or court case.

Law firms have historically generated much of their revenue by performing such paralegal work for their clients, for which they currently charge up to $150 per hour. But "paralegal document searches" do not legally require the actual involvement of a licensed lawyer, and such services are now being offered by off-shore providers for only $30 per hour.

[21] This has lured corporate giants like DuPont to contract with a Philippines based subsidiary of R.R.Donnelly to make indexed digital images of all of the chemical firm's archived memos, pay and medical records, engineering specs and other documents that might be used in any future legal actions. DuPont expects digitalization of its paper corporate records to reduce the annual costs of its legal documentation by by 40 to 60 percent, saving the company $6 million a year.

The off-shoring of paralegal work is just one of several classes of "back-office" operations that have begun to follow customer call centers and computer code writers overseas (see discussion of the employment outlook for "Administrative and business operations support services"). Legal consultancy Hildebrandt International has established that U.S. firms will be able to save 25 percent to 35 percent of such costs by farming out their legal (document) work to Asia. [21] Such savings would constitute a substantial loss of business for the U.S. law firms that would have otherwise performed that work. Some large American law firms are planning to establish their own overseas paralegal operations in order to provide low-cost support services to their domestic clients, but those jobs will be lost to the U.S. workplace – and the office market.

The combined effects of Friedman's "In-forming" and "Off-shoring" can be expected to flatten the current BLS 10-year employment forecasts for "Legal services" by about 20 percent, from 178,000 to 140,000.

Management, scientific and technical consulting services –

2004 Workforce: 779,000
Projected 10-Year Growth in Employment: 471,000 jobs
Projected 2004-14 Rate of Growth: 60.5 percent

Consulting is currently the nation's fastest-growing class of "Professional, scientific and technical" employment and, unlike "Computer systems design" and "Legal services," BLS projected the Consulting industry to grow faster in 2004 than was projected in 2002. Recent marketplace trends and developments suggest that "Consulting services" will almost certainly grow even more rapidly that the BLS 2004 forecasts. This robust growth will primarily be driven by the demand from business and government for expert and experienced guidance in adapting to the

FIGURE 13

FRIEDMAN'S "NEW MIDDLERS"

- Synthesizers
- Explainers
- Leveragers
- Adapters
- Personalizers
- Localizers
- Collaborators/Orchestrators

operational realities of *Planet Flat*. Now that there are numerous role-models for all types of successful organizational flattening the marketplace, growing numbers of firms and government agencies are eager to emulate those successes. In *The World Is Flat*, Thomas Friedman envisions the emergence of a new class of practitioners, who will specialize in helping institutions and individuals innovate effectively. Friedman also suggests that those new specialists – whom he includes in his list of workers whose jobs will be "untouched" by flattening – will replace some the middle-income jobs that are being lost to flattening. Friedman even refers to these change-facilitating workers as "The New Middlers" (FIGURE 13).

The prosaic titles that Friedman gives to his "New Middlers" obscures the fact that he is actually describing the basic functions of consulting — an industry that is literally growing fat by helping everybody else get flat. Ironically, because the specific high-level skills and experiences required by current consulting practice are in short supply, the industry will be increasingly dependent on hiring the displaced employees of its newly flattened clients to meet its own expanding human resource requirements. But the continuously-shifting focus and episodic nature of contract consulting discourages the industry from creating tens of thousands of permanent new salaried positions. Instead, America's "Management, scientific and technical consulting services" have begun to transform themselves into the nation's first truly flat industry by outsourcing much of its new growth to self-employed contractors and contractor "collectives." [22]

For decades, futurists (including this author) have routinely assumed that, as the marketplace value of knowledge rose, there would be a corresponding increase in self-employment, as individual scientists, subject matter experts and experienced technical practitioners fled salaried "wage-slavery" for the self-actualization of "free agentry." As it turned out, self-employment in the U.S. actually *fell* throughout the dot.com boom. As the "bubble's" irrational expectations drove up the *demand* – and wages – for all kinds of high tech skills, thousands of scientists and technology experts abandoned self-employment for the promise of inflated salaries and potential stock-option fortunes.

Not surprisingly, self-employment rebounded after the 2001 recession (self-employment always rises immediately after a recession). Surprisingly, self-employment has exploded to a post-Depression high of 10.5 million. Moreover, self-employment is continuing to increase five times faster than salaried employment – six years after the recession! This sustained growth has led the labor economists to conclude that the boom in free agentry "has gone on way too long to be temporary. We have to treat it as a realistic transformation of the economy." [23]

Even more startling than the growth in self-employment has been the remarkable increase in the numbers of *microbusinesses* in America. The IRS and the Small Business Administration (SBA) define microbusinesses as non-incorporated firms reporting taxable earned income, but having NO employees. The number of such firms has risen 30 percent from 15.4 million in 1997 (the first year the Census Bureau began to publish data on microbusinesses) to 20 million in 2006. [24] During the same period of time, the number of businesses with one or more paid employee has only grown from 6.9 million to 7.2 million (+4 percent). While the annual revenue of firms *with* employees ($27 trillion) vastly exceeds the revenues of firms *without* employees ($1 trillion), average revenue growth of firms with no employees exceeds that of firms with employees – 5.1 percent growth per year, compared to 4.4 percent per year). An SBA survey of microbusiness populations commissioned by *USA Today* found that most are service providers, primarily in retailing, accounting, public relations and consulting. [25]

Microbusinesses are truly *virtual* enterprises. To minimize overhead costs, most organize themselves on the model of independent Hollywood film producers, who typically assemble temporary teams of writers, designers, actors and technicians for each motion picture they turn out. Microbusiness owners (often salaried employees themselves) use the Internet to identify potential projects, mobilize collaborators and employ *groupware* - largely available free online - to develop proposals and execute work commitments, frequently in conjunction with contributors they have never met, often living in countries where they have never been. Such transitory enterprises are ideally suited to a wide range of consulting projects. Microbusinesses also commonly engage in developing and marketing software, designing board

games and even producing short-run manufactured goods. The primary characteristic of microbusinesses, according to consultancy Working Solo, is that "they come together, do the work and then disperse."

It would be easy to discount the accelerating growth of microbusinesses as a temporary phenomenon that will recede once the novelty of groupware has worn off. But, it is the utility and efficiency of groupware that has boosted micro-entrepreneurship, *not* its novelty. And that utility will not "wear off" over time; it will only increase as predictably cheaper IT services and more powerful collaboration tools – Web 2.0 – become available. In the past 24 months, for example, Google has begun to offer its office/documents management software suite free online, and both Oracle and Amazon began to offer on-demand computing services at mass-market commodity prices. Amazon is charging $.15 per gigabyte of data storage per month, plus data gathering (at $.10 per thousand messages) and $.10 per virtual server hour for virtually unlimited computing capacity. [26] Oracle reports that its on-demand software services have already garnered 1.7 million users. Salesforce.com, Netsuite Inc. and RightNow Technologies also offer on-demand software services for special market applications. [27]

Many IT experts believe that the recent initiatives to rent software and computing capacity over the Internet point to a future in which most firms will routinely purchase their computing services from giant information utilities (IBM and Oracle) or from system conglomerators (Amazon and Google), permitting individual firms to eliminate their own in-house IT staff and computing facilities. [28] The looming shortage of skilled IT personnel will certainly encourage such a development, but most corporate IT executives argue that a company's computer system is too intrinsically important a strategic asset to be outsourced. [29] Whether or not the on-demand availability of cheap-but-powerful information services will eliminate corporate IT departments, observers like *Wikinomics*' Don Tapscott (and Friedman) believe that the truly revolutionary implications of these new IT services – and of the plunging telecommunications costs associated with the current on-going integration of the Internet with the telephone (VoIP, Skype, etc.) – must be thought of in terms of their relationship to *Coase's Law.* Specifically, under the fundamental principal of *Coase's Law* – "The cost of gathering information determines the size of organizations" – *as the cost of gathering information falls to zero, the optimal size of enterprise theoretically falls to one person.*

If Coase's Law accurately characterizes commercial marketplace behavior, the numbers of self-employed and microbusinesses will continue to grow faster than will the numbers of traditional firms. [30] In recognition of this fact, major employers are creating electronic "hiring halls" online, where free agents can find corporate requests for expert input. InnoCentive, for example, was originally created by drug maker Eli Lilly to augment its in-house research capacity. This online network now serves a number of major firms, and is routinely used by 90,000 independent consultants looking for problems they can solve or questions they can answer, often for fees of $10,000 or more! [31, 32] This *open sourcing* of intellectual services – one of Friedman's 10 flatteners – is likely to keep the numbers of actual salaried positions created by "Management, scientific, technical consulting services" *below* the BLS estimate of 471,000. Microbusinesses are also likely to reduce the numbers of new jobs created by several other high-growth Service sector industries.

Accounting services –
2004 Workforce: 816,000
Projected 10-Year Growth in Employment: 284,000 jobs
Projected 2004-14 Rate of Growth: 4.8 percent

Unlike its sister profession, "Legal services," "Accounting services" is projected to grow one-third faster during the 2004-14 forecast decade than it was for 2002-12. Part of this disparity is attributable to post-Enron reforms enacted by Congress, which established more complex accounting rules for all publicly traded companies, and assigned new roles in corporate governance to accountants. These measures have provoked explosive hiring increases by large and mid-sized accounting firms. While the business and investment communities are continuing to pressure Congress and the SEC to roll back the more stringent features of the Sarbanes-Oxley reforms, the consensus of the financial press is that most of the new accounting requirements will remain unchanged unless pro-business interests

take control of both the White House and the Congress. [33]

Meanwhile, the future promises continuing turbulence and growth in the practice of accountancy. Over the next several years, there will be ongoing international negotiations to rationalize the differences between "rules based" U.S. accounting practices and the "principles based" accounting standards use by Europe and most of the rest of the world. The resulting compromises, whatever they turn out to be, will require changes by U.S. corporations and generate more business for the nation's CPAs. [34] Simultaneously, America's accountants can look forward to acquiring new assignments in the near future, with the growing likelihood that Congress will establish either carbon trading markets or an outright tax on carbon emissions as a part of the nation's commitment to combat global warming. In addition, growing numbers of publicly traded U.S. firms are expected to adopt "triple bottom line" accounting, under which they will publish annual reports covering not only their financial performance, but also on their progress toward meeting specific corporate social and environmental sustainability goals – including energy use. [35, 36]

Finally, accountants will be increasingly involved in the "knowledge management" efforts of the high tech and science-based firms that are attempting to measure and account for the value of their "intellectual capital" – patents, copyrights and other intangible assets. Over time, as IT systems expand to record most transactions, interactions and data flows, the orderly accounting of that information will be essential for effective management, especially at a time of rapid innovation and change. Investors and regulators will also demand greater disclosure of information regarding corporate decisions that affect financial performance. Since IT systems have already eliminated most of the para-professional work from "Accounting services" (e.g. bookkeeping, tax accounting, etc.), the industry can be expected to generate new employment in a widening array of specialty accounting applications *at a faster rate than BLS expects*, if they can find sufficient numbers of qualified recruits. Half of all new jobs in Accounting, however, will be serving the rapidly growing numbers of self-employed and microbusinesses. They are likely to be self-employed themselves, and the great majority will work from their homes. In this respect, the prospective potential office requirements of rapid employment growth in Accounting will be significantly reduced by Friedman's e-flatteners and Coase's Law.

Architects and engineers –

2004 Workforce: 1,261,000
Projected 10-Year Growth in Emplyoment: 199,000 jobs
Projected 2004-14 Rate of Growth: 15.8 percent

Just as "Construction" can be regarded as the 'production arm' of the property development industry, "Architectural, engineering and related services" may be characterized as the industry's 'planning and design' component. But, while projected job growth in "Construction" fell between 2002-12 and 2004-14 (see FIGURE 7), projected new employment in "Architectural and engineering services" rose sharply between 2002-12 and 2004-14 BLS forecasts (see FIGURE 12). This anomaly in expectations may be explained by the changing projected mix in "Construction" work between the two sets of 10-year forecasts, including the renewed growth in "Heavy construction and civil engineering" and the dramatic reversal in the projected make-up of new "Building construction" employment from three-fourths residential in 2002-12 to two-thirds nonresidential in 2004-14, as reflected in FIGURE 7.

The principal major components of this Service sector industry, "Architecture, landscape architecture, engineering design and inspection, and testing laboratories," can all be expected to experience the flattening effects of productivity-enhancing IT applications – CAD&E, laser transits, GPS, etc. – and from an off-shoring of para-professional work that is already underway. [37] But much of the basic work in these businesses – surveying, mapping, site selection and preparation, building inspection, etc. – will continue to involve direct physical engagement at the local level, and such jobs, as Friedman suggests, will be among the "untouchables."

Advertising services; Scientific and technical R&D services; Other professional, scientific and technical services, including Photographic and Market research services –

2004 Workforce: 1,411,000
Projected 10-Year Growth in Employment: 337,000 jobs
Projected 2004-14 Rate of Growth: 23.8 percent

While the BLS projects strong job growth in these smaller components of the "Professional, scientific and technical services" sector, most of these businesses are currently being transformed by a combination of Friedman's "e-flatteners" and off-shoring. On Madison Avenue, for example, "consumer generated advertising" is now the "hot buzz." As marketing money flees the print media for cable television and the Internet, firms like MasterCard and Converse have begun to by-pass advertising agencies to solicit consumer-produced video ads over the Internet. [38] Major vendors are directly involving consumers in their market research. Firms like Sears, Home Depot and CompUSA are posting online customer reviews of the products they sell, including summaries of consumer evaluations. [39] In the pop music business, for example, cyber-consultant Gartner forecasts that peer reviews and customer play-lists will drive one-fourth of all online music sales by 2010. Although it seems unlikely that direct consumer input and feedback will entirely eliminate the need for traditional "Advertising and marketing services," it is clear that truly transformational changes are underway among these businesses, the outcomes of which are not predictable

While American corporate spending on research and development (R&D) is growing a healthy 3.4 percent per year, the bulk of that expansion is occurring overseas, paralleling the *off-shoring of growth* in "Computer systems and design services." [40] During a single week in December 2005, Intel, Microsoft and JPMorgan Chase separately announced plans to create more than 7,500 new jobs in research, analysis and product development – all in INDIA! [41] Meanwhile, Bell Labs - once the crown jewel of American corporate R&D (and the source of six Nobel prizes) – is now a division of French electronics giant Alcatel-Lucent, with a staff of 1,500 researchers, down from 25,000 in the 1960s. In 2002, Xerox spun off its famed PARC research facility to become an independent commercial consultancy. [42]

Corporate America has changed its domestic R&D agenda from basic research to applied research, focusing particularly on "where technology touches people." Such research, according to current corporate wisdom, is better done "closer to the brutal reality of the market" rather than in the "sterile bubble" of a laboratory. As a result, U.S. firms across the board are outsourcing a growing share of their applied research work to the open market. Organizations like P&G, 3M, GE and NASA now routinely post their research needs and proposals online, where they are eliciting purposeful responses from individual info-preneurs, contractor collectives and microbusinesses. [43, 44] While BLS projections of the new jobs created by these specialty information services may be entirely accurate, it is clear that a significant number of these new positions will not be in the U.S., and that many of the jobs created within the U.S. are unlikely to be full-time salaried positions that will require traditional office space and work stations.

- **Retail stores** –

  2004 Workforce: 14,610,000
  Projected 10-Year Growth in Employment: 1,587,000 jobs
  Projected 2004-14 Rate of Growth: 45.5 percent

In spite of the fact that projected employment growth for "Retail stores" fell by 20 percent (-396,000 jobs) between the 2002-12 to the 2004-14 BLS forecasts, a quick review of the comparative workforce projections for major classes of retail outlets (FIGURE 14), suggests that *e*tailing was not a major contributor to flatter employment growth in the sector. In fact, the projected employment growth for "Electronic shopping and mail order houses" fell more sharply from 2002 to 2004 than did projected employment for "Retail stores."

The annual increase in online retail sales peaked along with the dot.com boom, leaping 51 percent in a single year (2002 to 2003). [45] Since then, the annual growth in online sales has fallen to less than 20 percent per year, and Jupiter Research forecasts that the yearly increases in etailing are likely to drop to seven percent to eight percent per year by 2011. At $116 billion in 2006, annual *e*tailing revenues amounted to five percent of all retail sales; at current growth rates, industry analysts estimate that etailing should account for around seven percent of all retail sales by 2011. [46] It is not at all clear that this growth will come at the expense of retail stores. To the contrary, retailing experts believe that there is a productive symbiotic relationship between "clicks" and "bricks," and that cyber-shopping actually

drives in-store sales in much the same way that advertising once did. According to an executive vice-president of retailer Fred Meyer, "Two years ago, online sales were seen as a threat to stores; now we're seeing customers come in with print-outs from our Website, with the items they want to buy." [47]

Consumer surveys show that two-thirds of shoppers research major purchases online before they buy, but that two-thirds of people who shop online actually make their purchases at "real" stores. [48] Sears reports that 20 percent of their in-store appliance sales are actually pre-selected online. Forrester Research has found that customers who use multiple modes of shopping – Web, stores and catalogues – spend two to four times as much money in stores than do single-mode shoppers. [47] As a consequence, retailers of all types are attempting to better integrate the "click" and the "brick" aspects of their operations.

Growing numbers of retailers are installing Web-linked kiosks in their stores to permit their customers to ask questions about merchandise, and even to make in-store purchases online when they don't have time to wait for a sales clerk to be available. [49] In fact, the growing shortage of qualified sales staff has already led 95 percent of all supermarket chains to install some degree of self-checkout capability. [50] Because one employee can oversee four self-checkout lanes, DIY transaction technology will be crucial for staffing night shift operations for those grocery and convenience stores that remain open 24-hours a day. [51] By 2015, *The Trend Letter* reports, "only high-end retailers that sell *the personal touch* along with their products and services will offer full-service shopping options; most others will rely on technology to complete transactions." [52]

While electronic transaction technology is already reducing the sales staff in a growing range of retail outlets, "smart" bar codes are beginning to cut the labor required for retail logistics – stocking, inventory, distribution and warehousing. Over the next 10 years, as Radio Frequency Identification chips (RFID) are increasingly affixed to every retail product, and as display shelves are equipped with RFID sensors, all retailing will be able to benefit from the efficiency of "supply chaining," another of Friedman's flatteners. [53, 54]

"Just-in-time" supply chaining will not only reduce the labor associated with merchandise management, but will also cut the amount of space required by most retail outlets. By and large, the flatter BLS staffing projections for "retail stores" does not reflect a reduction in the number of retail establishments nearly so much as it reflects the declining labor-intensity in retailing. In this context, the decline in projected retail employment growth is only partially due to competition from etailing. The principal cause of flatter retail staffing growth is the increased capital investment supporting rank and file retail workers, and the resulting increase in worker productivity. This is, basically, the labor-saving story of industrial automation applied to retailing, and it is likely to continue for another 15 years.

- **Employment services** –
  2004 Workforce: 3,470,000
  Projected 10-Year Growth in Employment: 1,580,000 jobs
  Projected 2004-14 Growth: 45.5 percent

While "Employment services" was projected to grow more slowly in 2004 than in 2002 (see TABLE 1), it will remain the fastest growing large employer in the U.S., adding over 1.5 million new workers during the 2004-14 decade. The implications of this robust growth for the suppliers of workspace are impossible to gauge. While some employment agencies supply workers to only one market – chefs, musicians, etc. – most major agencies provide workers for a cross-section of industrial and service-sector employment. Kelly Services for example – which started as "Kelly Girls" to provide temporary office workers – now has six divisions, including Kelly Staff Leasing, Kelly Scientific Resources, Kelly Management Services, the Kelly Law Registry and Kelly Assisted Living.

To the degree that the "Employment services" industry supplies temporary and part-time workers to most of the nation's major employers, it would be reasonable to expect job creation by employment agencies to closely mirror that for the economy as a whole. In fact, the BLS forecasts for total U.S. employment growth in 2004 were 11.3 percent lower than in 2002, while the decline in projected job growth for "Employment services " was only 10.4 percent. As a consequence, a growing share of the total workforce will be composed of temporary, part-time and leased employees in the future – rising from 2.4 percent in 2004 to 3.1 percent in 2014 (see TABLE 4). The net effect of this growth on the future of

FIGURE 14

RETAIL STORES

Comparative Growth in Projected Employment – 2002 to 2012 vs. 2004 to 2014

Class of Store	Projected Growth 2002 to 2012		Projected Growth 2004 to 2014		Change in Projected Growth 2012 vs 2014	
	1,000s	% rate	1,000s	% rate	1,000s	% rate
TOTAL - ALL RETAIL STORES	**1,983**	**13.6%**	**1,587**	**10.9%**	**-396**	**-20.0%**
Motor vehicles and parts	245	13.0%	223	11.7%	-22	-9.0%
Furniture and furnishings	122	22.6%	81	14.5%	-41	-33.6%
Electronics and appliances	202	38.2%	94	18.3%	-108	-53.5%
Building materials, garden equipment and supplies	256	21.7%	179	14.6%	-77	-30.1%
Food and beverage stores	174	6.1%	195	6.9%	+21	+12.1%
Health and personal care	133	14.0%	154	16.3%	+21	+15.8%
Gasoline stations	47	5.2%	-22	-2.5%	-69	-146.8%
Clothing and accessories, shoes and jewelry	-4	-0.3%	129	9.5%	+133	+325.0%
Sporting goods, hobbies, books and music stores	160	24.2%	100	15.6%	-60	-37.5%
Office supplies/gift shops	128	29.4%	44	10.8%	-84	-65.6%
Department stores	309	18.1%	158	9.8%	-151	-48.9%
Other general merch. stores	39	3.5%	136	11.0%	+97	+248.7%
Misc. store retailers	173	32.8%	250	10.3%	+77	+44.5%
Electronic shopping and mail-order houses	102	45.5%	66	30.0%	-36	-35.4%
Other non-store retailers	-8	-4.9%	-5	-3.3%	+33	+37.5%

SOURCE: http://www.bls.gov/emp/optd/optdtabv_1.pdf David Pearce Snyder

commercial and office space is not forecastable, since many of these workers will simply serve as replacements for employees on leave, while others will add to an employer's workforce for temporary periods.

- **Food services and drinking places** –
  2004 Workforce: 8,850,000
  Projected Rate of Gowth in Employment: 1,451,000 jobs
  Projected 2004-14 Growth: 16.4 percent

BLS current forecasts show that about one out of 12 workers entering the U.S. labor market during the 2004-14 decade will be hired by "Food services and drinking places." Food service workers are also at the top of Friedman's list of untouchables, whose employment will be unaffected by flattening. Food service jobs cannot be purposefully off-shored, and the productivity of cooks and servers has so far proven difficult to improve by applications of information technology. Meanwhile, the growing marketplace demand for food services appears unlikely to diminish, being propelled by ongoing changes in the nation's demographics and in our socio-economic agenda. America has experienced two seismic social shifts during the past 50 years, and the dramatic rise in restaurant dining is a reflection of those changes.

In 1960, adults living alone made up 15 percent of all U.S. households, and most of them were over age 60. Today, 32 percent of all U.S. households are single persons, half of whom are under 35. [55] Simultaneously, married couples who both work outside the home has risen from less than 25 percent of families in 1960 to 75 percent today. These two fundamental changes, by themselves, have changed society's time economy and the utility of purchased meals. Today, only 17 percent of the meals consumed in America are actually prepared and eaten at home. The remainder are either eaten away from home, or are prepared "out" and eaten in the home. Without a spouse or parent at home to prepare meals, most

FIGURE 15

FOOD SERVICES AND DRINKING PLACES

Comparative Growth in Projected Employment – 2002 to 2012 vs. 2004 to 2014

Type of Establishment	Projected Growth 2002 to 2012		Projected Growth 2004 to 2014		% of total industry employment 2012 vs 2014	
	1,000s	% rate	1,000s	% rate		
TOTAL - ALL FOOD SERVICES and DRINKING PLACES	**1,337**	**15.9%**	**1,451**	**16.4%**	**100%**	**100%**
Full-service restaurants	641	16.1%	701	16.6%	47.5%	47.8%
Limited-service eating places ("fast food")	518	14.7%	592	15.9%	41.5%	41.9%
Special food services*	109	21.5%	123	23.5%	6.5%	6.3%
Drinking places	52	13.4%	35	9.4%	4.5%	4.0%

*Institutional food services: office cafeterias, schools, prisons, senior citizens centers, etc.

Americans have either insufficient time – or ability – to prepare their own meals. **Restaurant food has become a utility of daily life in America, as crucial to the livability of a community as electricity or water.**

"Fast food" has been the restaurant business's highly successful response to society's changing requirements, and now represents 42 percent of the industry's total employment (FIGURE 15). The fast food chains have achieved this growth by minimizing their labor costs, limiting service, standardizing menus and increasing the productivity of their food preparers. However, because food preparation remains a labor-intensive process, both fast food and full service establishments will be challenged by the impending shortage of qualified recruits. Fast food chains are already pilot testing kiosks like those used by airline ticketing, as a means of reducing the labor involved in both ordering and paying for meals. [56]

Full service restaurants will have greater difficultly cutting staff, because their marketplace appeal is largely based on their ability to offer personal attention and a wide range of food choices – both of which are labor-intensive. Such establishments are, however, likely to be able to pass on any higher labor costs to their customers, since most of their regular clientele are either on expense accounts or are members of two middle or high wage-earner households, whose discretionary income makes their demands for full-service restaurant dining relatively price-elastic. On balance, both fast food and full service restaurants are likely to grow faster than the economy as a whole throughout the 2004-14 forecast decade.

- **Health care** –
  Total 2004 Workforce: 11,229,000

  - **Offices of health practitioners** –
    2004 Workforce: 3,337,000
    Projected 10-Year Growth in Employment: 1,224,000 jobs
    Projected 2004-14 Rate of Growth: 36.7 percent

  - **Nursing and residential care facilities** –
    2004 Workforce: 2,815,000
    Projected 10-Year Growth in Employment: 482,000 jobs
    Projected 2004-14 Rate of Growth: 27.8 percent

  - **Hospitals (private)** –
    2004 Workforce: 4,294,000
    Projected 10-Year Growth in Employment: 688,000 jobs
    Projected 2004-14 Rate of Growth: 16.0 percent

  - **Home health care services** –
    2004 Workforce: 773,000
    Projected 10-Year Growth in Employment: 537,000 jobs
    Projected 2004-14 Rate of Growth: 41.0 percent

"Health care" is America's largest industry, currently accounting for 16.5 percent of the nation's GDP and 15.5 percent of all U.S. employment. BLS expects "Health care" to employ 18.6 percent of all U.S. workers by 2014, and the National Center for Medicare and Medicaid Services estimates that "Health care" will generate 20 percent of our GDP by 2015. [57] Three out

of 10 new U.S. workers between now and 2015 will be hired somewhere in health care or medicine, including four of the 15 high growth service industries in TABLE 4 (see FIGURE 16). The robust continuing growth of health care is widely regarded as inevitable, a direct consequence of the aging population. And Friedman cites health care as a primary source of "untouchable" jobs that are unlikely to be either off-shored or made redundant by technology.

Ironically, economists and policy-makers see the projected rise in health care costs and employment as a *crisis* that will only get worse in the future. U.S. health care spending over the past 10 years has risen two to four times faster than overall inflation [58], and labor economists fear that the demand for health workers will substantially exceed the supply, causing an untenable shortage of care givers – including a projected deficit of one million nurses in 10 years. Such shortages would not only compromise the quality of American health care, but labor economists estimate that the resulting wage inflation among caregivers would cause annual health spending increases to double from 7.7 percent in 2006 to 15 percent per year – or more – by 2020. [58] Policy makers further point out that U.S. health care is already so costly that one-sixth of all Americans – 46.6 million, including 8.3 million children – can afford neither health insurance or medical care. [60]

In fact, the soaring costs of U.S. drugs and health services have led growing numbers of Americans to look abroad for affordable medicine, dental work and even surgery. During 2007, an estimated 180,000 Americans who have no health insurance will travel to a foreign country for major surgical procedures. This medical "off-shoring," however, is unlikely to put pressure on domestic surgical pricing, or cut the demand for the more than 25 million major operations performed in the U.S. each year. A more promising approach to flattening U.S. health care costs and labor requirements involves proposals to create an electronic medical records system (EMRS), which proponents argue would cut the costs of health care administration by 20 percent, while reducing medical errors by 50 percent or more. [61] In 2005, President Bush announced a Federal initiative to complete a nationwide EMRS by 2014. [62]

President Bush had good reason to promote EMRS. Over the preceding decade, the U.S. Veterans' Administration (VA) had installed EMRS as part of a 10-year modernization of its 1,400 hospitals, clinics and nursing homes. As a consequence of the modernization, the VA has been able to double the number of patients it treats each year (from 2.5 million to 5.3 million), while maintaining an average annual per-patient cost of $5,000. During the same period, the cost of comparable private care rose 40 percent to $6,500 per patient. Not only was the VA able to reduce staffing by 13 percent (10,000 employees), but its over-65 year old patients have a 40 percent lower risk of death than do over-65 Medicare patients in private facilities. [63]

In spite of its proven benefits, there is widespread opposition to EMRS throughout the medical profession and health care industry in general. Most practitioners refuse to accept the standard forms and definitions required by an automated system, [64] while privacy advocates fear compromising patients' medical records, and pharmaceutical companies are concerned (justifiably) that a single nationwide data base of patient records would reveal the side-effects

FIGURE 16

FOUR HIGH GROWTH HEALTH CARE INDUSTRIES

Comparative Growth in Projected Employment – 2002 to 2012 vs. 2004 to 2014

Type of Health Service	Projected Growth 2002 to 2012		Projected Growth 2004 to 2014		Change in Projected Growth 2012 vs 2014	
	1,000s	% rate	1,000s	% rate	1,000s	% rate
Offices of health practitioners	1,229	38.5%	1,224	36.7%	-5	-0.4%
Nursing and residential care	942	34.3%	782	27.8%	-180	-17.0%
Hospitals (private)	661	12.8%	688	16.0%	+27	+4.1%
Home health care services	377	55.9%	537	69.5%	+160	+42%

and relative effectiveness – or ineffectiveness – of their medications. In fact, some policy makers worry that more accurate data on the nation's health would reveal shortcomings in the current system that would ultimately require even more expenditures on medical treatment. Overarching this debate is the fact that no source of funding has been identified to underwrite the billions of dollars that EMRS would cost.

Health experts agree that there is no chance of completing a national EMRS by 2014. While roughly one out of four doctors currently use some form of electronic record keeping, and an estimated one out of 10 hospitals have installed some type of computerized drug management system, most of these systems are not interoperable. [65] An EMRS that would actually curtail projected growth in health care costs and employment is at least 10 to 15 years off. Even more significantly, in April 2007, the Population Aging Research Center at the University of Pennsylvania released a report concluding that, contrary to long-held assumptions, the Baby Boomers at age 55 are actually *less* healthy than their parents were at that age – largely due to the fact that two-thirds of Boomers are overweight and one-third are obese. [66] Actuaries expect these findings to mean that aging Boomers will place even greater demands on the health care system than first anticipated!

While the prognosis for U.S. health care clearly portends ongoing robust employment growth, FIGURE 16 reveals shifting dynamics within the industry itself. In particular, comparison between BLS 2002-12 and 2004-14 projections indicate a sharp decline in the forecast employment growth by "Nursing and residential care" facilities, which is off-set by a concomitant increase in "Home health care services." The principal clientele for both of these segments of healthcare are the elderly – those aged 75 years and over. Because Americans have been staying healthier longer, a declining share of elderly are requiring institutional care until late in life. [67] However, because the average U.S. life span is continuing to increase, growing numbers of Americans are finding that the high cost of institutional elder-care often consumes their retirement savings long before they die. These twin realities are leading a growing share of elderly people and their principal care providers – their children – to opt for aging at home. And, because home care costs are considerably less than those for institutional care, state and federal funders of elder care have altered their policies to underwrite home care for the elderly – in response to both popular public demand and mounting political pressure. [68]

The movement to care for chronically ill and elderly at home has been accelerating since the Internet has made possible the remote monitoring of patients by doctors and hospitals. In 2000, Medicare and Medicaid changed their funding criteria to cover the costs of "telemedicine" services and its associated technology. Major IT firms Honeywell and Philips Electronics have each introduced a line of home health monitors, while Intel is developing specialty microchips for use in telemedicine. [69, 70] Early assessments of telemedicine clearly show that it reduces both the cost and staffing of comparable institutional care, while generally improving patient outcomes. [71, 72] Over the coming decade, costly institutional care will increasingly be reserved for the critically ill, and for patients undergoing major surgery, while the care of convalescent and chronically ill people will largely take place in the home. [73] The widespread adoption of home care is unlikely to eliminate "Nursing and residential care," but this segment of the health industry can be expected to grow less rapidly than the current BLS forecasts indicate.

The increasing numbers of elderly in the patient population is clearly reflected in the outlook for the health industry's highest growth employer: "Offices of health practitioners" (see FIGURE 16). However, as people age, they become less mobile, and their caregivers will have to see patients where they live, not in the practitioners' offices. The accelerating growth in "Home health care services" is a significant contributor to the decelerating growth in "Offices of health practitioners." Since 2000, the medical press has reported an increase in the numbers of doctors making house calls, primarily to elderly patients. [74, 75] In the decade ahead, thousands of practitioners can be expected to move from commercial office space to full-time delivery of care to patients in their homes, or in nursing homes and hospitals.

"Hospital" usage also increases with patient age. Over 75-year-olds make up only 6.2 percent of the

population, but they account for 25 percent of all hospital admissions. [76] In fact, over three-fourths of all medical expenditures occur during the last five years of life. As our population has begun to age at an accelerating rate, hospital admissions have risen sharply in the past 10 years, provoking a $100 billion building boom in new hospitals nationwide since 2000. [77] Annual spending on hospital construction rose from $12 billion in 2000 to $23.7 billion in 2005. It is worth noting that this construction boom has not added to the nation's inventory of hospital beds, which shrank by two percent (-18,000 beds) during the first five years of this decade. The hospital industry is "converting" from small, semi-private rooms to large private rooms. Up-scale hospitals are either under construction or being planned in nearly every major metropolitan area in America, and in many regional population centers as well. [78]

The majority of these new hospitals are being built in suburban areas by institutions abandoning center city locations, and are promoted by the industry as high-tech replacements for preceding generations of aging, obsolete facilities. Critics characterize this mass exodus of hospital beds out of center cities as a purely market-driven pursuit of affluent, well-insured suburbanites who will be able to afford high-cost/high profit procedures. [79] Hospital administrators argue that they must move their operations to more "stylish" suburban facilities in order to compete with hundreds of new suburban *outpatient surgical centers* that have been capturing a growing share of profitable, high volume procedures that do not require overnight hospital stays. [80] With their low overhead costs, convenient suburban locations, and an increasing capacity to use telemedicine to provide patients with post-operative care in their homes, outpatient surgical centers do, in fact, pose a serious long-term competitive threat to full-service hospitals. [81] Over the long term, however, the two types of surgical providers will eventually co-exist in the marketplace, each serving its own patient populations most effectively.

Some medical diagnostics and clerical work – as well as surgery – will be off-shored to modernizing Third World nations. In 2004, *The Wall Street Journal* reported that in 2003, 600,000 patients from developed nations traveled to South Asian and Middle Eastern countries for low-cost operations. [82] However, the real flattening of U.S. health care will be the "outsourcing" of chronic and convalescent care to patients' homes. Telemedicine constitutes a perfect example of organizational flattening made possible by computers and the Internet, and it will permit hospitals, nursing homes and individual practitioners to serve many more patients at one time throughout a community. This increased capacity will soon be essential. Given the overwhelming public demand for healthcare financing reform, it is highly likely that the 46.5 million Americans without health care insurance today will gain access to the system within five years – immediately increasing the marketplace demand for all U.S. health providers, and for most classes of health care related space. [83]

- **Administrative and business operations support services –**

  2004 Workforce: 4,139,000
  Projected 10-Year Growth in Employment: 794,000 jobs
  Projected 2004-14 Rate of Growth: 19.2 percent

This employer group is a catch-all collection of routine but essential workplace functions. The comparison of BLS 2002 and 2004 employment for the "Administrative and business operations support services" (ABOSS), reflects a nearly 20 percent decline in job creation – 162,000 jobs – suggesting some vulnerability to flattening (see TABLE 1). Although roughly 60 percent of the 4.1 million workers in this group of employees are "anchored" to their places of employment (i.e. janitorial, landscaping and facilities support services), the remaining 40 percent are already feeling the effects of doing business on *Planet Flat*. Two components of this group are projected to actually lose employment during the forecast decade, both notable early victims of flattening: "Travel agencies" and Telephone call centers." As online ticketing has grown to become the largest source of etail sales, the BLS reports that employment at travel agencies has fallen by 30 percent since the advent of the Web, and is projected to fall another 10 percent by 2014.

"Telephone call center" employment, on the other hand, will continue to be flattened by off-shoring during the forecast decade (2004-14), although not by very much. BLS expects staffing at U.S. call centers to fall just 2.2 percent (8,000 jobs). The good news is that, from now on, the vast majority of call center employees will remain in the U.S. The bad news (for commercial

property owners) is that, according to a 2005 survey by the Yankee Group, **24 percent of U.S. call center employees are currently working out of their homes.** Instead of off-shoring their call centers, firms like Office Depot, Jet Blue, Wyndham Hotels and Sears are "home-basing" those jobs. IT researcher IDC predicts that the home-basing of call centers will grow 24 percent per year through 2010. If that forecast is accurate, the number of call center employees in commercial space will fall from 300,000 today, to 120,000 by 2010! [84]

Another component of the ABOSS employer group is "Investigation and security services," whose projected employment growth fell a surprising 50 percent between the 2002 and the 2004 BLS forecasts – from 339,000 to 170,000 new jobs. Society's accelerating abandonment of cash and checks for retail transactions has sharply cut projected employment in "Armored car services," while electronic surveillance and security systems have resulted in slower growth projections for "Security guards."

The largest share of ABOSS jobs is in "Services to buildings and dwellings," which employs 41 percent of all ABOSS workers, and is projected to experience 45 percent job growth – 356,000 new workers – during the forecast decade. These new jobs, including 150,000 in "Landscaping services" and 189,000 in "Janitorial and other services to buildings and residences," represent the epitome of Friedman's anchored, untouchable workers.

The final major employer in the group of ABOSS enterprises is "Administrative and facilities support services," whose projected employment growth jumped from 30 percent (117,000 jobs) to 42.5 percent (185,000 jobs) between BLS 2002 and 2004 forecasts. One-third of this rapid increase – 54,000 jobs – will be in "Facilities support services," which, like "Landscaping" and "Janitorial support services" are neither off-shorable nor automatable. But, many of the 131,000 new jobs to be created in "Office administrative services" are likely to be flattened by out-sourcing, open sourcing or off-shoring. Firms that once hired their own in-house photographers increasingly fill their needs by buying images from amateurs who sell photos and video clips on iStockphoto's Web site. Publishers and law offices now routinely get their proofreading services from 24/7 online collectives of home based proof readers, like ProofreadNOW.com. .[85]

In addition to domestic outsourcing and open sourcing online, some of the back-office operations included in "Office administrative services" can also be expected to be off-shored. Back-office business is India's second largest source of off-shored employment, after IT contract work. This includes a wide range of commodity information work; tracking down credit card defaulters for GE Capital Company, reviewing American Express accounting, processing insurance claims, and data mining customer service records. [86] The 40 percent of "Administrative and business operations support services" jobs that are not anchored to their places of employment will be increasingly subject to outsourcing, open sourcing, home-basing and off-shoring, reducing the growth of office-based workers in this ABOSS employer group by up to 50,000 jobs.

- **Education** –

  2004 Workforce: 13,079,000
  Projected 10-Year Growth in Employment: 2,075,000 jobs
  Projected 2004-14 Rate of Growth: 20.0 percent

"Education" is America's second largest employer after "Health care," employing nearly 10 percent of all U.S. workers and representing nearly 11 percent of our GDP. Two components of "Education" – "K-12 Public Schools" and "Private Post-Secondary Education" – are among the 15 high-growth Service sector employers in the BLS 2004-14 projections (see TABLE 4). In combination with other components of Education, including "School administrators" and "Employee training," the entire Education group is projected to add 11.1 percent of all new jobs between 2004 and 2014 (see FIGURE 17).

The robust growth projected for all components of Education largely reflect two long-term inertial forces: demography and flattening. Demographically, the oldest members of the Baby Boom Echo (*bigger* than the original Baby Boom!) have only recently entered college, while the youngest Echo boomers haven't even enrolled in pre-school. This assures that the entire education pipeline will remain full for the foreseeable future. [87] Meanwhile, as the effects of workforce flattening continue to force growing numbers of U.S. workers into "sequential careers," millions of adults are going back to school to learn new skills. Over-35-year-olds already make up over half of all post-secondary students in the nation. Adults are

the specific demographic group that has fueled the unusually rapid growth of "Private post-secondary schools," which have targeted their curriculum content specifically on teaching specific job-related skills to students who are employed.

The expansion of the private sector into both K-12 and post-secondary education over the past decade has presented property developers and the owners of existing commercial space with some growth markets. Public education, on the other hand, has traditionally been housed in public facilities. But, as changing national priorities have increasingly constrained the growth of public school spending in the face of ongoing growth in student populations, there will be growing opportunities for public-private partnerships in public education. The New York City Schools Sub-Code, permitting the use of non-purpose-built spaces for public schools, has allowed classes of New York's K-12 students to be placed in a converted department store, a former sausage plant and high-rise office space. While only a few other school districts have yet to follow New York City's example, continuing local austerity can be expected to lead more jurisdictions to do so – particularly in older urban communities.

The basic physical structure associated with education – the classroom – has remained largely unchanged since the ancient Sumerians and Chinese first began building schools – around 2,500 BCE. It would, therefore, not be unreasonable to assume that the projected addition of 781,000 new public school teachers will more or less require the construction of 781,000 new classrooms between 2004 and 2014. But public policy experts warn that, in an aging society, where fewer than one-third of all households have minor children, it will be increasingly difficult to mobilize the political support for continuing increases in public school funding. And, at the same time, workforce demographers project that a continued growth in enrollment, along with the imminent retirement of 30 percent of the current K-12 faculty, will inevitably leave the nation with a 1,000,000 shortage of qualified teachers by 2017. [88]

Because of the dramatic growth in adult college enrollments, the post-secondary component of education began to encounter a serious shortage of qualified faculty in the late 1990s. To overcome this shortfall, all components of higher education have

FIGURE 17

PROJECTED GROWTH IN PRINCIPAL EDUCATION EMPLOYERS
2004 to 2014

Education Group Employer	Projected Job Growth 2004 - 14 1000s	Project Rate of Growth 2004 - 14 %
K-12 (Public)	781	+18.3%
K-12 (Private)	221	+26.6%
Post-secondary (Public)	442	+19.6%
Post-secondary (Private)	503	+34.4%
Education administration	73	+16.5%
Employee training	55	+21.7%
Total	**2,075**	**+20.0%**

SOURCE: U.S. Bureau of Labor Statistics (BLS)

been increasingly dependent on adjunct (part-time) faculty in order to staff their rapidly growing numbers of classrooms. Most adjunct faculty are full-time employees in non-academic jobs that are typically related to the instructor's academic subject. These part-time faculty members typically have no office space "on campus," and share a "hot" classroom with a half-dozen or more other adjunct instructors over the course of a 12 to 14-hour, three-shift school day. According to the National Center for Education Statistics, part-time instructors currently make up 40 to 45 percent of the faculty at America's four-year colleges, 50 percent to 60 percent of the faculty at public two-year colleges, and 60 percent to 95 percent of the instructors at private post-secondary schools.

While the widespread use of part-time instructors by post-secondary schools is changing the traditional ratio of ONE teacher to ONE classroom, the maximum acceptable ratio between teachers and students *within* the classroom has remained fairly constant over the past century, between one to 20 and one to 30. The projected 20 percent shortage of qualified teachers by 2014 will make it impossible for the nation's K-12 schools to maintain traditional teacher-student ratios, and it is unlikely that public schools will be permitted to adopt the post-secondary expedient of hiring several hundred thousand uncertified part-time faculty. However, recent developments in IT-based employee training almost certainly indicates the direction of the future of K-12. Although 20 years of experimentation with computers in education has failed to improve teacher productivity *or* student achievement, recent breakthroughs in *e*Learning by the education industry's smallest component, "Employee training and development," have proven remarkably successful.

Using *e*Learning, individual employees, are able to access interactive instructional modules on the Internet whenever they need to learn a new skill or refresh an old one. These self-paced online instructional programs are supplemented by real-time access to live subject-matter experts, who both assist learners and continuously refine the effectiveness of electronic instructional materials, based on user feedback. Employers like Black & Decker, Home Depot, McDonalds and British Telecom report that eLearning has cut their training times by 50 percent, while reducing training costs by 40 percent and improving the accurate recall of course content by 30 percent. [89, 90] Employee development experts expect that the superior performance of *e*Learning over classroom instruction will lead most organizations to shift all worker training to the Internet in less that 10 years. [91]

Over 90 percent of all public post-secondary schools already offer some form of online, for-credit instruction, and over 20 percent of all college students report taking at least one online course in 2005. [91] Over eight percent of all college students are enrolled in an online degree program today, and that is expected to jump to 11.5 percent in 2008. [93] While online retailing is now growing at a *diminishing* rate, online education is growing at an *accelerating* rate. Classroom enrollment for all post-secondary educational institutions rose just two percent in 2006, but online enrollments rose 25 percent. Under mounting public and political pressure to reduce the soaring costs of higher education, the nation's colleges and universities will be quick to adopt the efficient eLearning technology already perfected by workforce trainers. Leaders of the distance learning movement widely expect that **over half of all college credits will be earned online within 10 years**. And, while most school administrators do not expect eLearning to completely eliminate their classrooms and lecture halls, there is a growing debate throughout academia today about the future role of the campus in higher learning.

Like retailing, banking and healthcare, higher education has begun to develop a "bricks and clicks" strategy for its future that will enable it to teach more students with fewer faculty, at a lower cost than the present system. **While the final outcome of this transformation is not yet predictable, it will clearly involve building fewer college classrooms and dormitories than the current BLS projections would suggest.** Meanwhile, a brick and click solution will almost certainly be found for K-12 education as well as for higher education, but its ultimate configuration is even less clear, since public schools are controlled by local populist politics. Over 700,000 of the nation's 48 million K-12 students are enrolled today in "distance learning" programs. [94]

It is clear that the demand for education throughout our society will continue to grow for the foreseeable future. However, in the decade ahead, a shortage of

teachers and funding, plus our rapidly changing socio-technical environment and the growing need to master an increasingly sophisticated post-industrial curriculum will force transformational changes on all forms of education. **The quality of a community's adult education system will become as important as the quality of local public schools as a benchmark of "a good place to live."** From now on, owners and developers of commercial property will need to pay particularly close attention to the transformation of education in their local communities, not only because the long-term prospects of communities will depend upon the successful re-invention of their schools, but also because commercial property owners and developers will necessarily have an increasingly important role to play in providing the "bricks" for tomorrow's brick and click schools.

- **State and local government (non-education or health related) –**
  2004 Workforce: 5,486,000
  Projected 10-Year Growth in Employment: 763,000 jobs
  Projected 2004-14 Rate of Growth: 13.9 percent

State and local public services and infrastructure are so closely coupled to everyday social, economic and physical realities that the size of state and local government operations is highly correlated to the size of the populations they serve. In this respect, the Wharton forecasts of MSA and county growth discussed in Section 2.30 of this Report ("Fat cities and flat cities") will provide a reasonable indicator of the future employment growth of specific local governments. While state and local governments are unlikely to off-shore any of their operations, eGovernment systems offered as "turnkey" programs by private vendors, are beginning to cut labor costs and improve services in some local government operations. [95]

There continues to be a growing trend toward outsourcing – or "privatizing" – some state and local government operations, including state park concessions, prisons, toll roads, sewer and water systems, etc. [96] While the great bulk of "State and local government" operations will clearly remain in public hands, there is a growing openness to public-private collaboration on a wide range of infrastructure and economic development projects. This will be increasingly the case as the ongoing forces of flattening continue to transform – and frequently erode – the Industrial Era economic bases of cities, towns and suburbs across the nation. Like the private sector, local government will also be confronted by the increasing scarcity of qualified recruits and the growing public service needs of our aging electorate. Local communities that are unable to respond effectively to these basic, universal challenges will be less able to attract or retain today's high-value employers or scarce footloose workers than will those communities whose public and private leaders are able to jointly create more livable places through innovative partnerships. (PART 3 of this Report, "Property Development on *Planet Flat*," discusses the growing importance of public-private-non-profit coalitions for local communities and their economic development.)

- **Finance, insurance and real estate –**
  2004 Workforce: 7,383,000
  Projected 10-Year Growth in Employment: 754,000 jobs
  Projected 2004-14 Rate of Growth: 10.2 percent

In *The World Is Flat*, Thomas Friedman is primarily concerned with describing the topological effects of info-com technology on the operations of enterprises, and on the efficiencies rising from the horizontalization of business. Investors, on the other hand, are less concerned with the restructuring of business than they are with the soaring stock values of companies whose IT-based products and services have permitted the flattening of enterprise. Economists, by comparison, are most impressed by the sustained increases in productivity improvement caused by flattening, and the dramatic fall in worldwide inflation rates that the global rise in productivity has fostered (FIGURE 18). [97]

Economists and bankers readily acknowledge that low inflation has been instrumental in driving down the cost of capital, since roughly three-fourths of average marketplace interest rates are attributable to what bankers refer to as the "inflation risk premium," which rises and falls in consonance with inflation rates. [98] Low inflation rates have also increased society's propensity to save, especially in the developing world, where stabilized prices of consumer goods have spurred a sharp upturn in consumer saving, producing an unexpected increase in the supply of investment capital. [99]

In fact, flattening the business world has produced multiple surges in the global supply of capital. To

begin with, the doubling of the nation's productivity improvement rates has been the primary cause of the long-term boom in corporate profits, which businesses have used to pay down debt, buy back stock and acquire other firms, while retaining over $1.3 trillion in liquid assets on their books. Sustained corporate profits have also buoyed investors' confidence, fueling the 10-year bull market. While roughly 40 percent of the long bull market's gain were lost during the 2001 recession, most of the gain was preserved, including tens of billions earned by venture capitalists (VCs), most of whom liquidated their investments before the dot.com bubble burst. The more successful VCs, in turn, evolved into private equity firms whose leveraged buyouts of under-performing companies totaled $1 trillion in 2006, and may reach $2 trillion in 2007. To capture a share of the expanding supply of investment capital for themselves, banks have used sophisticated computer programs to create over 9,000 hedge funds – virtually non-existent in 1990 – which are currently worth more than $1 trillion. [100] Even America's households have contributed to the pool of new capital by extracting $1 trillion in equity from their homes *each year* from 2001 to 2006. [101]

Headlines announcing "Huge flood of capital to invest," and "The world is awash in equity," have become commonplace in the world's business press, and a cover story in a July 2005, *Business Week* flatly proclaimed that there is "Too much money!" [102] The glut of capital has clearly fueled global economic growth, but critics argue that it has also encouraged banks and investment houses to create complex, high risk, equity issues in order to offer better returns on investment (ROI) than the low interest rates available in traditional markets. A growing number of macro-economists – and some central bankers – are expressing concerns that excess capital at a time of low interest rates poses a "moral hazard," under which investors will buy into increasingly risky derivative issues, including sub-prime mortgage-backed bonds, hedge funds and collateralized debt obligations (CDOs). *Today, three-fourths of the world's liquidity is invested in some form of high-risk derivatives. [103]*

Excess capital earning too little ROI also helps explain the continuing construction boom in branch bank building at a time when the use of online banking is growing exponentially. [104] The one-

FIGURE 18

INTERNATIONAL CONSUMER PRICE INFLATION

Average annual percentage

	1990-1994	1995-1999	2000-2004
World	30.4%	8.4%	3.9%
Industrial economies	3.8%	2.0%	1.8%
Developing countries	53.2%	13.1%	5.6%

SOURCE: IMF World Economic Outlook

third of U.S. households who currently bank online are primarily young adults – under 35 years old – who are entirely comfortable with the protocols of "click" banking, but who typically have few liquid assets to deposit. [105] Older depositors – including Baby Boomers – who have the assets and financial service needs to make them profitable bank customers, are much more comfortable dealing with real people in a "brick" bank, rather than with an avatar teller in click space. To compete for profitable depositors, banks must have branches on the ground, near **both** their depositors' places of employment **and** their places of residence. [106]

According to the Federal Deposit Insurance Corporation (FDIC), between 1995 and 2004, mergers and acquisitions eliminated 50 percent of all U.S. banks, consolidating the industry from 10,000 to 5,000 companies. During the same timeframe, the number of branch banks in America rose almost 15 percent, from 82,302 to 94,599. [107] While further consolidation, plus competition from foreign banks, can be expected to further reduce the number of U.S. banks by another 1,000 to 2,000 institutions over the next 10 years, the outlook for a continuing boom in branch banking is not clear. From now on, a growing share of all financial service customers will be "digital natives," who may prefer to do all of their banking online, even after they have become prosperous. Simultaneously, a new generation of "super ATMs" have begun to enter the marketplace, and are offering remote access to live bank staff. This may actually replace the need for many low-traffic branch outlets. [108] Meanwhile, pure play online banks, which have no "brick" facilities at *all*, have recently begun to gain traction with young consumers. [109] Moreover, the nation's largest retailers, WalMart, J.C. Penney, and Home Depot, are moving toward instituting their own consumer banking operations in their stores. [110, 111]

Whether or not the number of branch banks rises or falls in the decade ahead, the BLS expects the Banking industry as a whole to lose 31,000 jobs (see FIGURE 19). IT and off-shoring are both measurably reducing the labor-intensity of U.S. banking's back-office operations. [112, 113] By comparison, the BLS projects that the three other components of America's Financial services sector – "Securities," "Insurance" and "Real estate" – will continue to experience employment growth during the 2004-14 forecast decade. But the IT and Internet applications in "Banking" are far more well developed than those used by other U.S. financial services. As more powerful, mature technologic applications become available, it is highly likely that they will flatten projected job growth in "Securities," "Insurance" and "Real estate" as well, by reducing employment in their back-office operations. [114]

While a significant share of the 7.4 million employees in "Finance, insurance and real estate" will remain firmly anchored to their places of business (especially in "Real estate"), it is also clear that mergers and acquisitions, back-office off-shoring and paperwork automation have enormous potential to flatten the

FIGURE 19

EMPLOYMENT IN FINANCE, INSURANCE AND REAL ESTATE

Comparative Growth in Projected Employment – 2002 to 2012 vs. 2004 to 2014

Industry Component	Projected Growth 2002 to 2012		Projected Growth 2004 to 2014		Change in Projected Growth 2012 vs 2014	
	1,000s	% rate	1,000s	% rate	1,000s	% rate
Banking	112	6.4%	-31	-1.7%	-143	-127.7%
Securities	124	15.5%	121	15.7%	-3	-2.4%
Insurance	168	7.6%	215	9.5%	+47	+28.0%
Real estate*	165	12.2%	258	18.2%	+93	+56.49%
Federal/State regulation of Finance, Insurance, & Real Estate	394	13.9%	201	7.0%	-193	-48.9%

*BLS does not publish separate data for commercial and residential real estate operations.

payrolls of all four components of this sector. The BLS 2004-14 forecast employment growth for "Finance, insurance and real estate" is almost certainly far too high, and is likely to be closer to 500,000 than the 754,000 currently projected!

- **Social assistance services** –
  2004 Employment: 2,132,000
  Projected 10-Year Growth in Employment: 740,000 jobs
  Projected 2004-14 Rate of Growth: 34.7 percent

The workers in this group of employers are firmly anchored in their communities. Their services – to families and children, the elderly, disabled and injured workers – require personal contacts with their clientele. What's more, our aging society and our sustained high birth rates, by themselves, assure a growing demand for these services (vocational rehabilitation, family counseling, child day care, etc.) which utilize a wide variety of office and commercial space. While these services are provided by independent practitioners and private sector organizations, much of their funding comes from government and non-profit sources. Many experts in public administration and policy analysis believe that such public-private hybrids will be responsible for more "Social assistance services" in the future. Recent examples include day labor hiring centers being set up by suburban communities around the country, and the counseling and assistance programs being established by a growing number of cities in response to the sub-prime mortgage foreclosure crisis. [115]

While the current BLS forecasts anticipate a robust 34.7 percent employment increase in this sector, its projected employment growth fell by 173,000 jobs between the 2002 and 2004 forecasts. The lowered growth expectation for these service providers largely reflects post-recession declines in government funding for these programs. But the underlying inertial growth in demand for these services argues that the 2002 BLS projections more accurately reflect the long-term growth of employment in "Social assistance services" than do the 2004 projections.

Many "social assistance services" rely heavily on volunteers to perform much of their work. A 2004 survey of 20 nations found that there is a long-term trend in mature industrial economies – including the U.S. – toward the "demonetization of work." [116] As increasing productivity reduces the amount of labor required for the production of marketplace goods and services, a growing share of the population engages in un-paid volunteer work for civic and charitable institutions, not-for-profit corporations, and "non-governmental organizations" ("NGOs"). The expansion of such employment will be encouraged by the growing numbers of retirees – who make up the majority of America's volunteer workforce.

FIGURE 20

TRANSPORTATION AND WAREHOUSING

Comparative Growth in Projected Employment – 2002 to 2012 vs. 2004 to 2014

Industry Component	Projected Growth 2002 to 2012		Projected Growth 2004 to 2014		Change in Projected Growth 2012 vs 2014	
	1,000s	% rate	1,000s	% rate	1,000s	% rate
INDUSTRY TOTAL	**915**	**21.8%**	**506**	**11.9%**	**-409**	**-44.7%**
Air Transportation	67	12.0%	45	8.7%	-22	-32.8%
Rail Transportation	-21	-9.6%	-9	-4.0%	+12	+57.1%
Water Transportation	-1	-0.2%	1	0.2%	2	+200.0%
Truck Transportation	275	20.5%	129	9.5%	-146	-53.1%
Couriers and messengers	232	41.6%	40	7.1%	-192	-82.6%
Pipeline transportation	0	0.0%	-2	-5.1%	-2	NC
Transportation support activities	96	18.2%	64	11.9%	-32	-33.3%
Warehousing and storage	147	28.6%	138	24.8%	-9	-6.1%
Urban transit	18	47.4%	14	35.0%	-4	-22.2%
Other passenger ground Transportation	102	28.3%	84	22.5%	-18	-17.6%

SOURCE: http://www.bls.gov/emp/optd/optdtabv_1.pdf

- **Transportation and warehousing** –
  2004 Workforce: 4,250,000
  Projected 10-Year Growth in Employment: 506,000 jobs
  Projected 2004-14 Rate of Growth: 11.9 percent

Transportation is a highly leveraged component of the economy. While it employs a modest 3.2 percent of our total workforce, it is instrumental to the production and distribution of essentially all goods, and its services are a daily necessity for millions of American commuters. Transportation also accounts for 27 percent of the nation's energy consumption, which means that its costs are highly sensitive to changes in petroleum prices, where variations are quickly reflected in the sector's charges to both businesses and consumers.

While "Transportation and warehousing" does pose some significant requirements for property and facilities, transportation has also been instrumental in determining the value – and the "developability"– of real estate since the beginning of recorded history. For this reason, the dramatic decline in employment growth for "Transportation and warehousing" between the 2002 and 2004 BLS projections almost certainly have important implications for the owners and developers of commercial property. Among the economy's 15 highest job-growth employers, "Transportation and warehousing" experienced the sharpest drop in projected employment increases between BLS 2002 and 2004 forecasts, falling 44.1 percent, from 915,000 new jobs projected in 2002, to only 506,000 new jobs in the 2004 BLS data (see TABLE 1).

As shown in FIGURE 20, projected employment growth declined for all but one component of the transport industry. Strikingly, these losses occurred among employees who are clearly "anchored" to their jobs, and thus, according to Friedman, "untouchable." A closer examination of the dynamics affecting employment in each different branch of the transportation industry reveals multiple modes of flattening at work.

– Air transportation

Even before it was deregulated in 1978, the airline industry has been a famously "boom and bust" business. Since deregulation, these cycles have only gotten more extreme, eliminating many legacy carriers, and consolidating the industry around three dominant airlines, whose cut-throat competition with low cost start-ups drove down industry profits, eventually leading to the bankruptcy of five of the nation's six largest carriers. [117, 118] To escape bankruptcy, the industry has laid off 170,000 of its 570,000 employees – which largely explains the 32.8 percent drop in BLS projected 10-year job growth for "Air transportation" (FIGURE 20). As a consequence of cutting one-third of its workforce, America's airlines are returning to profitability, but the quality and capacity of scheduled U.S. air service has seriously deteriorated.

In line with the industry's traditional boom and bust cycles, most travel experts expect the current "rough spot" in U.S. air passenger service to be temporary. [119] Industry analysts anticipate that further airline consolidation – plus a new generation of commercial aircraft – will restore coherence and quality to U.S. air travel some time around 2010. The Federal Aviation Administration expects U.S. air passenger traffic to double by 2020, and similar forecasts are being made about air travel world wide. At the same time, U.S. and European aircraft manufacturers are developing competing families of low-cost, four-to-eight passenger micro-jet "mini-liners" to permit scheduled air services to be extended to exurban and rural communities within the next two to three years. [120]

Significantly, a growing share of air traffic is carrying freight, a clear result of the growth of global supply-chaining. Over 40 percent of world trade (by value) already moves by air. The growing importance of air freight has been emphasized by the construction of a new generation of mega-airports throughout Asia, each with its own, brand-new, planned satellite community, including industrial and warehouse parks, commercial and office districts and housing. [121] America's transportation planners have embraced these Asian "aerotropolises" as a model for a new generation of "airport cities" to accommodate the projected explosive growth in passenger and freight service by U.S. "Air transportation." [122]

A growing number of critics, however, argue persuasively that several long-term realities simply make the air travel industry's commonly-assumed five percent annual growth rate unsustainable. Not only are the nation's airports operating at capacity, so too are the nation's air traffic control system and

the radio frequencies used by pilots and controllers. [123, 124, 125] What's more, there are insufficient numbers of new pilots in the education/Air Force pipeline to replace retiring Baby Boomers. None of these limiting factors can be overcome quickly or cheaply, and the necessary costs will ultimately be reflected in the rising price of average passenger air fares. Neither will airlines be able to overcome the increasing jet fuel costs, to which some form of "carbon tax" will almost certainly be added. [126] The inevitable long-term rise in the costs of air travel – and air freight – can be expected to reduce the "Air transportation" industry's projected rate of growth.

While the long-term evolution of air travel is currently a matter of earnest debate, the near-term evolution of the industry has become a shouting match, with a costly "Airline Passengers' Bill of Rights" a distinct possibility. But, as air service has become *less reliable*, travelers whose jobs require reliability – sales representatives, business executives, consultants and trainees – have been adopting online alternatives to travel, including cyber-sales software, video-conferences, Webinars, etc. [128] Moreover, growing numbers of business and personal travelers are driving in lieu of flying for trips of less than 400 miles, adding to the traffic on an Interstate Highway system that is already at or near capacity in many places. [129] The increasing costs of all forms of travel – in terms of money, reliability and time – can be expected to accelerate the use of "virtual travel" over the Internet, further reducing society's economic need for actual air travel.

The long-term future of air transportation and airports today, like the long-term future of higher education and college campuses, cannot be forecast with certainty. Both enterprises are at a transformational crossroads with the Internet. Air travel, like college education, will clearly continue to be essential to society, but the exact size and functions of future airports, like the future size and functions of college campuses, are not at all clear. As the cost of airline tickets rises and the Internet becomes an increasingly effective, easy-to-use multimedia telecommunications system, it is entirely possible that many airports will eventually handle more freight than people – as air shipments become more profitable than airline passengers. Even as globalization increases the *demand* for air transportation, Thomas Friedman's eflatteners are reducing the *need* to travel.

– Rail transportation

Over the past 20 years, a combination of railroad consolidations and advanced IT applications has enabled America's railways to cut their workforces from 450,000 to 200,000, even as their freight volumes have doubled. Satellite tracking and remote sensing technology have permitted long-haul freight train crews to be reduced from four to two persons. Track-laying machinery has replaced hundreds of "rights-of-way" maintainers. In rail switching yards, a growing number of shunting engines are crewless –operated remotely from control towers. Trackside lasers now identify equipment flaws before they can cause breakdowns or accidents. And, new electronic braking systems have cut average stopping distances by 40 percent, permitting trains to run at 20 percent higher speeds. [130]

Because of the prohibitive costs of acquiring new rail rights-of-way, over the past decade the nation's railroad companies have concentrated their capital investments on acquiring additional rolling stock and on upgrading the existing rail system. As a result, since 2002, as the U.S. trucking industry has struggled with rising fuel costs, worsening road congestion and a growing shortage of drivers, railroads have been able to increase their freight volumes by 25 percent while reducing staff and earning record profits. [131] In anticipation of continuing growth in demand, the major railroad companies are planning to install GPS-based telematic technology that permits real-time oversight and control of individual trains from a system-wide operations center. Over the next 10 years, the new remote electronic oversight systems are expected to permit the railways to further cut long-haul freight crews from two persons to one, while allowing trains to run more closely together, so that the carrying capacity of existing trackage will be increased by up to 20 percent. [132]

Rising fuel costs have so improved the competitive position of freight rail services over truck transportation that dozens of previously discontinued short-line railroads have gone back into operation, renewing service to hundreds of localities. Freight trains are already three times more fuel efficient than trucks, and the major railroads have begun to convert their diesel engines to hybrid power. Unless there is a substantial (and unexpected) decline in petroleum prices, railroads

will continue to increase their share of the surface freight transportation market. [133] After closing over 50,000 miles of track over the past 25 years, both large and small railroads have begun to reactivate abandoned rail lines, expand old railway tunnels and even lay new tracks across the countryside. [134] But even with these expansions, the Association of American Railroads has publicly warned that the nation's entire surface transportation infrastructure is operating at capacity, and that projected growth in freight traffic will predictably lead to a "long-term gridlock" in American transport. [135]

In particular, America's principal seaports have inadequate rail access. [136] This is choking the flow of goods in and out of the country, and causing costly shipping back-ups in U.S. harbors, especially on the West Coast, where cargo ship turn-around times have doubled from two to five days up to seven to 10 days. [137] One of the great local infrastructure challenges of the coming decade will be punching efficient new rail corridors through the dense built environment that surrounds our major seaports. [138] (Congress eliminated funding for such "intermodal" port improvements – and for the initial deployments of GPS rail monitoring – from the Transportation Equity Act in 2005, although the new Democratic majority has promised to restore these programs.) The civic disruption caused by such port improvement projects guarantees that they will involve extended public-political debate, as will the current proposals to build entirely new port facilities on both coasts (see "Water transportation"). These projects will clearly not come to fruition overnight. On the other hand, unless the nation reverses its current commitment to free trade – a plausible but improbable turn of events – there will be an increasingly compelling economic rationale for better connecting our internal freight transportation networks to our major seaports.

Whether or not railroads are able to overcome the bottlenecks that are restricting freight flow through the nation's ports, the growing energy and labor efficiency of America's rail transport industry – plus the renewed expansion of the nation's rail system – assure that freight trains will continue to carry a greater share of the nation's goods and materials in the future. This can be expected to increase the marketplace value of rail-side real estate. In particular, as IT makes trains faster and their delivery times more predictable, rail freight service will increasingly be able to serve as in integral component of "just-in-time" supply-chaining (one of Friedman's 10 e-flatteners"). This, in turn, will require the creation of new container trans-shipment facilities throughout the U.S. rail system; it is also likely to reduce the need for new trans-shipment warehousing.

– Water transportation

America's inland waterways – navigable rivers, canals and the Great Lakes – currently carry just 13.2 percent of the nation's inter-city freight – primarily commodity cargos, including grain, coal and petro-chemicals. [139] Unlike our highways, air lanes and rail networks, which are all operating at or near maximum capacity, our inland waterways are underutilized – in spite of the fact that waterborne freight is six times more fuel efficient than trucking and twice as fuel efficient as freight rail service. The energy efficiency of water transport is offset by its slow speed and limited access. While long haul freight trains average 25 mph and trucks average 40 mph, river traffic averages four to eight mph. Moreover, the nation's fleet of barges and push-tows is restricted to 26,000 miles of navigable rivers serving 24 states, while trains and trucks serve all 50 states via 120,000 miles of trackage and one million miles of highway respectively. [140]

Because of its slow speed and restricted accessibility, only a limited number of bulk shippers have been able to take advantage of water transport's low costs until recently. In particular, only one to two percent of U.S. internal container shipping moves by water. In Europe, by comparison, an estimated 40 percent of inland containerized freight moves over their rivers and canals. In 2004, Osprey Shipping Lines of Houston, Texas, began to install container handling facilities at major ports on the Mississippi-Missouri-Ohio River system, in order to emulate the successful European waterborne container traffic. In the face of rising fuel costs and increasing highway congestion, the Port of New Orleans reports that shippers are already beginning to use the Mississippi River and its tributaries as a reliable low-cost alternative to trucks and trains. [141]

Transportation industry experts continue to assert, as they have for decades, that river shipping will always be a "marginal component" of America's

transportation mix because of its limited speed and flexibility. But logistics managers argue that, as advanced info-com technology has made the management of "goods in transit" more predictable, shippers will be increasingly inclined to select modes of transport on the basis of cost/performance criteria, rather than paying an unnecessary premium for speed when speed is not required. Now that logistics professionals have begun to take over the management of corporate transportation, as the price of fuel continues to rise faster than inflation, growing numbers of shippers can be expected to switch to river transport for its low costs and small "carbon footprint." [128] The return of general freight traffic to our navigable inland waterways will pose potential economic benefits to the riverside cities that prospered before the coming of the railways, when rivers were our only interstate transportation system.

While the volume of freight traffic on the nation's inland waterways has increased by about one percent per year over the past 15 years, the tonnage of imports handled by America's seaports has increased three-fold – 20 percent per year – during the same period, while the volume of exports has doubled! [142] Existing U.S. ports have increased their speed and efficiency with new container handling facilities and computerized port management systems. But, because of local politics – complicated by resistance from environmentalists and affected property owners – port expansion in the U.S. has lagged far behind the actual growth of international trade. (The new port facility now under construction for Charleston, South Carolina, for example, is scheduled to off-load its first container in 2011, 22 years and three site relocations after the project was first proposed.) Overall, the nation's East Coast and Gulf ports have largely managed to keep up with the growth in shipping volumes, but West Coast ports remain over-capacity, and Asian exporters have begun diverting ships through the Panama Canal to less crowded East Coast ports. [143]

Just as the air travel industry's expected five percent annual growth rates will predictably exceed the capacity of the nation's airports over the next decade, a continued 20 percent annual growth of international trade will clearly overwhelm America's seaports and their transportation infrastructure. China, alone, has nearly 100 new container ship loading berths under construction, primarily to serve the American market, while only five new container ship berths are currently planned for the entire U.S. West Coast. And, the new generation of mega-containerships now coming into service have 50 percent greater capacity than current vessels, but they have such deep drafts that only three East Coast harbors – New York, Baltimore and Halifax, Nova Scotia – can actually accommodate the 1,000 foot ships. [144] Meanwhile, ship builders are developing a new class of shallow draft, high-speed container ships able to use all major U.S. ports, and capable of cruising at speeds of 50 mph. These ships will be able to cross the Atlantic in three days (one-half the normal time) [145] and had been, until recently, expected to breath new economic life into smaller, under-used port cities. But, the recent rise in fuel costs has made these ships prohibitively expensive to operate, and their scheduled 2010 introduction has been postponed indefinitely.

The volume of shipping generated by Friedman's "level global playing field" is clearly straining the capacity of the nation's seaports, just as the travel generated by globalization is overloading much of our air and rail transportation infrastructure. Concomitantly, the worldwide economic growth sparked by falling trade barriers and high-speed telecommunications has driven up the demand for – and price of – the fuel required by all transport, thereby causing logistics costs to rise as a share of the price of retail goods. In addition, the falling reliability of import delivery schedules is now threatening the viability of the "just-in-time" supply-chaining processes that firms like Dell and WalMart have famously used to keep their costs – and prices – low. [137] Unless there is a significant improvement in transportation performance, economists warn that the marketplace will solve the problem; rising prices will inevitably depress consumer demand, which will drive the flow of imports down to a more manageable volume.

Transportation executives and logistics experts agree that shipping costs will continue to rise and reliability will continue to get worse for the near-term future. The capital improvements needed to make America's transport systems fully capable to meet the operational requirements of a flat global marketplace will cost billions of dollars – and take at least a decade to implement. [146]

– Truck transportation

Trucking is the largest component of America's freight transportation system, carrying over three-fourths of the nation's goods and materials, and employing just over one-third of the industry's workforce. Since trucks are free to move anywhere on the country's 3.9 million mile network of streets and highways, trucking companies have been much quicker to install GPS locators and remote monitors than have the railroads, whose freight trains are restricted to 120,000 miles of heavily monitored tracks. These "telematic" management systems, offered by a number of vendors, were first widely installed by large U.S. and European trucking firms in 2001-02, and quickly paid for themselves by optimizing fleet assignments, reducing thefts and eliminating driver abuses. [147, 148] This improved efficiency was immediately reflected in overall industry performance, and – in combination with increased containerization – is largely responsible for the 53.1 percent decline in projected trucking employment between the 2002 and 2004 BLS forecasts (FIGURE 20).

Ironically, the increased electronic oversight has stirred considerable resentment among truck drivers on both sides of the Atlantic, and has made driver recruitment and retention in today's tightening labor markets even more difficult. (Drivers counter that trucking firms are using the systems to micro-manage work assignments to minimize driver compensation.) Driver recruitment is only one of the serious problems faced by the trucking industry during the decade ahead. While the American Association of State Highway and Transportation Officials (AASHTO) has projected that domestic freight tonnage in the U.S. will increase 57 percent by 2020, the Interstate Highway system is already heavily congested, and Congressional transportation experts estimate that current federal funding for maintenance and expansion of the Interstate System is insufficient to sustain even the current levels of performance. [137] The share of U.S. urban areas reporting "serious highway congestion" has risen from 23 percent in 1990 to 60 percent in 2006 [141], and the annual estimated economic costs of traffic congestion have risen from $40 billion to $78 billion in the past eight years. [149]

The combination of driver shortages and traffic delays has pushed complaints of missed trucking pick-ups and delivery appointments as high as 30 percent in some parts of the country. According to the director of U.S. marketing at courier DHL, "The model of just-in-time supply chains that has helped power economic growth through much of the 1990s is unwinding." [137] This implies a reversal of one of Friedman's ten original flatteners. The precise coordination of shipping and assembly processes has no commercial value if the transportation system cannot predictably "deliver the goods" on time; and the prospects for America's freight trucking infrastructure are not promising. Federal Highway Administration data show that all traffic on the Interstate System will increase 48 percent during the next 20 years, including a 54 percent increase in trucking. [150] The number of long-haul freight trucks in the U.S. is projected to double between now and 2020, from 2.6 million to 5.2 million rigs. [151] In spite of this, *there are currently no plans to significantly expand the capacity of the Federal Highway System itself.*

The 2005 renewal of the Transportation Equity Act did not include a significant increase in highway funding, but it did permit states to authorize private firms to issue up to $15 billion in tax exempt bonds to underwrite the construction of new toll roads that would be operated by the builders. Using this law, several states have begun to launch their own private toll road initiatives. [96] By far the most ambitious of these is the Trans-Texas Corridor (TTC), a quarter-mile wide transportation through-way up the middle of the state, from Mexico to Oklahoma. In its 12,000 foot wide right-of-way, the TTC will carry six car lanes, four truck lanes and six rail lines, plus pipelines for oil, natural gas and water, and clearways for electric power and fiber optics. Once the North-South corridor has been completed, a series of East-West corridors will be built to link all of Texas' major cities with the TTC. The project is expected to take 50 years and cost up to $185 billion, mostly private money. [152] In a remarkable demonstration of global flattening, the contract to build the first 300 miles of the proposed 4,000 mile TTC system has been awarded to a consortium headed by a Spanish firm that will finance and construct the highway and charge tolls for up to 50 years. Wide-spread opposition from farmers and environmentalists, and from the local communities that will be by-passed by the new roadway, make the TTC's long-term prospects uncertain.

While the Texas Farm Bureau and local Chambers of Commerce protest the potential loss of farmland and business, environmentalists are challenging the assumptions underlying the TTC. The Sierra Club argues that "the age of cheap oil is over. Expensive fuel will mean fewer vehicle trips, as travelers find cheaper alternatives. If they turned the TTC into just rails, the Sierra Club would stand up and cheer." The controversy over the TTC mirrors similar debates (on a smaller scale) in states across the country. While developers typically support the enlargement of local highways, most urban planners are now eager to constrain suburban sprawl and to encourage building more compact, sustainable communities. [153] Simultaneously, urban traffic managers are lobbying Congress to shift some of the already inadequate Federal highway funding to mass transit. [154] While rapid transit will save energy and improve urban livability by reducing traffic and air pollution, it will not improve the nation's capacity to handle a 54 percent increase in highway trucking.

The recent rapid growth of urban mass transit (UMT) has set off an intense competition for Federal infrastructure funding between the mass movers of people and the mass movers of freight. As an aging population drives less and the next generation increasingly chooses to adopt "car-free" living, the competition among air, water, road and rail for limited federal infrastructure funds will become ferocious. The results of this competition will set the direction for a substantially altered future transportation mix for the nation that will be more suitable to the realities of life and work in our labor-short, post-cheap energy flattened world. [155] The long-term future of the U.S. trucking industry, and the highway infrastructure upon which it depends, is currently open to a divergent array of possible outcomes.

– Couriers and messengers

At one point in *The World Is Flat*, the author refers to people whose jobs are "outsourced to the past." One day, these jobs exist, and the next day they are "a thing of the past," no longer necessary because of contemporary technology. Elevator operators and residential meter readers are frequently cited examples. The stunning 82.6 percent drop in projected employment by "Couriers and messengers" represents just such a phenomenon (FIGURE 20). This special class of high cost, high performance transportation experienced a 50 percent growth during the "irrational exuberance" of the dot.com boom, when "money was no object." But, as the bubble burst, the recession set in and financial markets contracted, the use of "Couriers and messengers" declined dramatically, due both to the fall in marketplace demand and to the increased use of electronic document transmission. The 2008 BLS employment projections will almost certainly reflect an actual job reduction for "Couriers and messengers." From now on, like toll booth attendants and super market checkout clerks, these jobs will increasingly be "outsourced to the past."

– Pipeline transportation

The 38,000 employees of the nation's pipeline companies move 16.5 percent of the nearly four trillion ton-miles of freight and material transported in the U.S. each year. In comparison, the nation's waterways only move 13.2 percent of all ton-miles transported, while employing a workforce of 54,000. [139] Pipelines are a highly-efficient, essential component of our transportation infrastructure, one that is likely to become even more important in the future.

Today, there are 20 percent fewer miles of oil pipelines in America than there were in 1988, as domestic **oil** fields have dried up and a growing share of our crude oil has come from abroad. (In 1980, pipelines accounted for 23.4 percent of all ton-miles of material transported in the U.S.) During the same 25 years, the nation's **gas** pipelines have increased by 50 percent, reflecting both the continuing discovery of new domestic gas reserves and the growing marketplace demand for natural gas as an environmentally clean form of energy. [140] Because natural gas can be used directly by residential, commercial and industrial consumers, access to adequate supplies of gas will be increasingly important to local economic development. In fact, some gas industry executives and energy experts have begun to call for the creation of a national gas transmission grid to inter-link the current patchwork of regional and point-to-point pipeline systems. Such a network will almost certainly be essential if the nation actually commits to a hydrogen-based energy strategy. [156]

There are also high-profile proposals to build new long-distance oil and gas pipelines from Canada into the U.S. And long-range planners on both sides of the border are advancing proposals to construct a

fresh-water pipeline from Northern Canada to the U.S., where domestic supplies of water will eventually be insufficient the meet the needs of our expanding population. These plausible, farsighted mega-projects are politically and environmentally controversial, and will each cost tens of billions of dollars. None of these pipeline projects is in anybody's "pipeline" yet (so to speak). For the near term future, "Pipeline transportation" is likely to continue evolving from oil to gas, while growing steadily. The 2008 BLS forecasts for the industry will project a 10-year rise in employment.

– Transportation support activities

The half-million workers employed in "Transportation support activities" range from airport ground staff and airline caterers to railroad freight agents, river lock keepers and highway toll booth attendants. The 33 percent decline between BLS 2002 and 2004 growth projections for this group of employers corresponds to the reduced employment prospects of the transportation industries they serve. The sharpest reductions (not surprisingly) are projected to occur in support activities for "Air transportation," paralleling the dramatic cut-back in employment by the air travel industry itself. The other major reason for the lowered job creation expectations in "Transportation support activities" has been the automation of back-office operations, including online passenger ticketing and electronic weigh bills and other shipping paperwork. Reassuringly, the BLS expects employment in "Transportation support activities" to increase at the same rate between 2004 and 2014 as that for the transportation industry as a whole: 11.9 percent.

– Warehousing and storage

During the 2004-14 forecast decade, BLS expects employment in "Warehousing and storage" to increase 24.8 percent, roughly the same annualized growth rate the industry experienced during the first half of the 1990s (see TABLE 20). As Friedman's flatteners fostered more outsourcing, off-shoring and supply chaining, however, the demand for more – and larger – warehouses and distribution centers rose sharply during the second half of the 1990s, and employment growth in the industry doubled. [157] Even more impressive than the employment growth has been the increase in average project size. During the early 1990s, new warehouses seldom exceeded 100,000 square feet, while today, it is not unusual for a single retailer to seek 500,000 to one-million square feet of space. [158]

Following the 2001 recession, the industry's growth rates fell back to 1995 levels. Since 2004, however, growth has returned to pre-recession levels, driven as much by long-range logistic strategies as by immediate marketplace realities. If we accept the assumption that outsourcing, off-shoring and supply-chaining will be standard operating procedures on *Planet Flat*, sprawling distribution centers and warehouse parks will become common visible symbols of the service economy, just as the smoke-belching chimneys of 20th Century factories came to symbolize industrial enterprise. [159] (A 25-acre warehouse would, in fact, be a remarkably apt symbol for a flat economy.) The realization of this supply-chain-based economy, however, will be entirely dependent upon the timely, cost-effective performance of the nation's freight carriers.

As earlier discussions of air, water, rail and truck transportation have spelled out, our principal freight transportation systems are operating at capacity, and the performance of trucking appears to be deteriorating. FedEx and UPS both report that more customers are switching to air cargo for their more time-sensitive shipments because of increasing ground congestion. A director at UPS reports that shippers are adopting a "direct-to-the-customer" model of distribution, sending things "in smaller packages direct from the manufacturer to the buyer, rather than shipping large quantities of goods for subsequent distribution via freight." [137] And, in a more systematic approach to the problem, a growing number of retailers and consumer goods manufacturers are off-shoring their logistics operations out of the U.S. to China.

Goods made in China are now being sorted, packaged, labeled and even placed into store displays for direct shipment to American retailers. This service, called "distribution center bypass" (DCB), eliminates the need for any intermediate handling in the U.S. Retailers using the service report such high satisfaction with DCB that industry observers believe supply-chain logistics will be the next major class of employment to move off shore *en masse*. [160] It is important to note that the timely, accurate overseas packing of specific quantities and mixes of products for shipment to

individual retail stores is only possible because of the Internet and its capacity to communicate detailed information and graphics quickly and cheaply. The off-shoring of supply-chain logistics reflects the basic insight of Coase's law, which means that this activity is likely to move to China as a natural consequence of enterprise flattening, whether or not the U.S. freight transport system improves its current performance.

American manufacturers are, of course, unlikely to send their products to China for retail packaging and distribution back to the U.S., although they may send some of their output to Mexico, especially if immigration reform does not permit an adequate flow of legal workers to supplement the tightening U.S. labor supply. A growing shortage of workers on the West Coast, in particular, would accelerate the off-shoring of logistics for Asian manufactured goods. Overall, the new flat model of enterprise will almost certainly continue to sustain growth in "Warehousing and storage," but the distribution center building boom of the late 1990s may have been the zenith of the industry's expansion. The logistics analysts who have taken charge of managing corporate shipping are now abandoning the "one (huge) size fits all" strategy, and using increasingly powerful computer algorithms to fine-tune their distribution systems to reflect on-going changes in fuel costs, labor supplies and on-time performance. [161] The future market for warehousing and distribution space is likely to become more diversified as the science of logistics becomes more sophisticated.

– Urban transit

Until the end of World War II, mass transit dominated commuting in America; ridership peaked in 1946 at 23.4 billion trips per year (TPY). But, in the post-war prosperity, as millions of Americans purchased cars and suburban homes, transit use fell to 10 billion TPY in 1957. Encouraged by cheap gasoline and the growth of urban freeways, U.S. commuters increasingly drove to work until 1972, when the number of public transit passengers dropped to just 6.5 billion TPY. Meanwhile, the number of cars on America's roads grew five-fold, from 50 million in 1950 to 250 million today. [162] With the 1973 OPEC oil embargo and a 500 percent increase in the price of gasoline, the use of public transit stopped falling, and a handful of U.S. cities – notably San Francisco and Washington, D.C. – began to build new subway systems as a long-term response to the end of cheap fuel. [163]

America's primary response to the rising price of gasoline, however, was not a general return to mass transit, but the adoption of carpools and van pools. By the early 1980s, 17 percent of U.S. commuters were driving to work with pools of co-workers. During the 1980s, however, world oil production began to rise, while conservation efforts lowered energy consumption throughout the industrial world which caused the price of gasoline – and the use of carpools – to fall, while mass transit ridership remained low. But, as Friedman has spelled out, globalization of the world's economy was jump-started by the fall of the Berlin Wall (1989) and the end of the Cold War. As freer trade fueled the rapid growth of the world's developing nations, the global demand for energy surged. The 1990 Gulf War caused world oil prices to spike and the use of public transportation began to rise. Since 1990, mass transit ridership has grown at an increasingly faster rate than the number of miles driven in private vehicles.

As the use of mass transit has risen faster than auto use, so too has the mass transit infrastructure. During the 1990s, the number of miles of streets and highways in the U.S. increased by 2.1 percent, while the miles of commuter rail increased 77.8 percent. At the same time, subway and rapid transit mileage rose 16.4 percent, and the miles of light rail track increased 145.8 percent! [140] In 2006, mass transit trips exceeded 10 billion TPY for the first time in 50 years. [164] As mass transit ridership has boomed, long-standing conventional wisdom regarding the desirability of public transportation has changed dramatically. At the outset of the 1990s, city planners (and big city political leadership) typically regarded proposals to create new urban transit systems as impractical academic pipedreams. With a few notable exceptions – New York, Boston and Chicago – public transit systems were characteristically under-utilized, money-losing operations. Today, however, some form of new public transit is incorporated as a crucial component of most urban improvement plans, and 35 U.S. cities are constructing or planning new light rail or streetcar systems or major system expansions. [165]

While currently popular light rail and street car projects are widely promoted as a means of reducing

traffic congestion, there is little evidence to show that mass transit actually affects highway use. Many early light rail projects generated such disappointingly low ridership that, in 1998, the British Minister of Transport declared them to be "expensive white elephants." Based on a review of a number of U.S. projects, a St. Louis transportation consultant concluded that, even when they generate high ridership levels, "streetcar and subway systems make so little impact on road traffic that it is almost negligible." [166] The director of transport studies at California's Reason Public Policy Institute argues that, "Because U.S. cities are so car-oriented, none of these new [light rail] systems looks like a good transportation investment, since they can serve such a small fraction of the auto trips that people need to make." Even with its current rapid growth, mass transit still carries just five percent of all commuters, while 88 percent of all employees still travel to work by car. [167] And, in a May 2007 Gallup Poll, while 25 percent of respondents said they "would use mass transit as their main source of transportation if gasoline topped $10 per gallon," 64 percent replied that they "would never use mass transit, no matter how high gas prices go." [168]

The recent growth of mass transit appears to be driven by a variety of factors for different groups of users under differing circumstances. Commuter rail service generally runs on tracks that it shares with freight traffic or Amtrak. Most of the 77.8 percent increase in commuter rail service over the past 15 years has simply required adding new rolling stock to existing railway infrastructure. [169] Commuter rail typically serves outer-suburban and exurban communities and travels at 40 to 60 mph. Whether it reduces road congestion or not, commuting by rail permits passengers to by-pass any congestion, *saving the riders time*. [170] The 145.8 percent increase in light rail and streetcar service, by comparison, is less easily explained. Light rail systems require their own new-built infrastructure, and they generally serve inner suburbs and center cities – typically traveling at 10 to 25 mph. Many cities have not been able to qualify for federal funding to support the creation of new light rail systems because they are unable to demonstrate that commuters using their proposed system would actually save time (a basic Federal Transit Administration requirement). [171] In spite of their modest speed, however, most light rail projects have attracted substantial ridership since 2000.

In fact, the most successful light rail projects since 2000 have been streetcar lines less than five miles in length. And, while some of their ridership has clearly included commuters, the principal function of street cars has been to connect urban neighborhoods with each other, and to provide a convenient, low-cost alternative to taxis, driving or walking for non-commuting purposes. In Tampa, Florida, for example, a 2.5 mile streetcar line – opened in 2002 – connects the city's central business district with the historic Ybor City neighborhood and a recently revitalized waterfront development of fashionable lofts and entertainment venues. Over five years, restaurants, stores and housing have located along the streetcar line. In January6 2007, the vice-president of the Tampa Historic Streetcar Line announced that, "We spent $55 million on the streetcar, and it attracted over $1 billion in private investment." Similarly, Portland, Oregon's 3.5 mile long city streetcar line, also opened in 2002, has attracted over 100 projects worth $2.3 billion, all within two blocks of the line – including more than 7,000 residential housing units and 4.6 million square feet of office and retail space. Ridership on the Portland streetcar is more than triple original projections. [165]

Although streetcars are clearly ill-suited for transporting high volumes of commuters over long distances, as all other forms of public transit gain ridership, streetcars are proving to be valuable extensions of heavier forms of mass transportation. More importantly, streetcars extend the walkable reach of pedestrians within an urban setting. According to the CEO of Reconnecting America (a national nonprofit group promoting development around transit stops), "Streetcars have become so appealing that some developers are helping to pay for the systems." The director of transportation for Kenosha, Wisconsin, agrees. Kenosha – midway between Chicago and Milwaukee – opened a 1.9 mile streetcar line in 2000, connecting its downtown commuter rail station with a new lake-front museum, park and marina complex built on 70 acres of reclaimed industrial land. Over a dozen condominiums have sprung up along the streetcar line, which are filled with thousands of commuters who have moved to Kenosha to escape the high housing costs of the two nearby cities. Commenting on the success of the combined reclamation-transit project, Kenosha's transportation director observed that, "Streetcars resonate with folks, but developers won't write checks to pay for buses." [165]

Just as commuter rail service was instrumental to the creation of the first suburban developments during the early years of the 20th Century, America's increasing reliance on mass transit will clearly pose significant opportunities for property developers during the early decades of the 21st Century. There are roughly 3,000 transit-rail stations throughout the U.S., and transit-oriented projects have been built at about 300 of them. [172] Developers should regard streetcars as more than simply a mode of transportation. They are amenities that help to revitalize old neighborhoods and to nurture new developments by making both more livable. Of all the modes of public transportation, the shortest and oldest appears to hold the greatest potential for both communities and developers.

– Other passenger ground transportation

The 250,000 people who work in this segment of the "Transportation" industry are employed by taxi and limousine companies, inter-city and charter bus services, and – the largest group – school bus operators. While BLS job growth estimates for these employers did shrink 17.6 percent between the 2002 and 2004 projections, this decline appears to have no connection with Friedman's flatteners. The primary cause for the reduced employment forecasts among this group is cost-cutting and high school consolidations in rural school districts. Shrinking small-town school enrollments are symptomatic of the continuing out-migration of population from rural counties across the country.

PART 3 – Property Development on *Planet Flat*

Reshaping Built America for 21st Century Realities

In 1945, most of the world's industrial nations had been physically and financially *flattened* by five years of war. Untouched by the destruction, America was generating nearly one-half of the world's gross economic product and held two-thirds of all international debt.

After a decade of Depression-forced austerity, Americans had spent five years at full, war-time employment, but had been barred by rationing from buying new cars and building new homes. The nation emerged from World War II with 15 years of pent-up consumer demand and only 11 percent of all bank deposits loaned out. The economy quickly shifted its war-time manufacturing and construction capacity to mass-produce homes for under $5,000, cars for less than $1,000, and gas for $.10 a gallon. The suburban housing boom fueled by this simple formula not only provided homes for most of the post-war "Baby Boom," it also set the basic pattern of property development for urban growth in America during the second half of the 20th Century.

Densely-dwelling urban populations migrated to modest homes in the new, close-in suburbs. Upwardly-mobile families subsequently migrated to larger homes in more distant suburbs, and urban-center retailing re-located to suburban shopping malls. Succeeding generations of upwardly-mobile households move on to ever larger residences on bigger lots even further from the center city.

The density-diminishing sprawl implicit in this growth algorithm is reflected by the long-term data. America's urbanized population grew 80 percent between 1960 and 2000, while the area of urbanized land increased by 130 percent! As a result, U.S. urban population density fell from 3,100 persons per square mile to 2,400. Over 40 percent of the 19 million new homes built in America between 1985 and 2001 were constructed on lots of one or more acres! Based on data from the U.S. Census Bureau's 2001 American Housing Survey, land use expert Arthur Nelson at Virginia Polytechnic Institute (VPI) has estimated that, if the U.S. were to continue to put 40 percent of its projected population growth into low-density residences (one plus acre-per-household) through 2030, it would require the development of land equal to the entire state of Colorado [1] (or ALL of the Mid-Atlantic States combined!)

Not only does low-density development require the most costly infrastructure support, it is also the most energy-intensive land use pattern in terms of transportation needs. While the urbanized share of the U.S. population increased by 20 percent between 1985 and 2001, urban vehicle-miles-traveled rose by more than 50 percent. What's more, a recently-released study by the Texas Transportation Institute (TTI) found that the average urban driver spent 38 hours "stuck" in traffic in 2005, up from 14 hours in 1985, and 27 hours in 2004. The number of hours spent in gridlock rose an average of 6.6 percent per year from 1985 to 2004, but jumped 40 percent between 2004 and 2005! Traffic congestion in America's cities is now increasing exponentially! The 2007 TTI study estimated that gridlock costs the nation $78 billion annually in lost production time and wasted fuel, averaging $710 lost per urban driver per year. The Institute also found that only 53 percent of study respondents reported having access to any form of public transportation. [2]

It is now clear that the continued extrapolation of our post-WWII urban development meta-trend will give rise to a growing array of insupportable social, economic and environmental costs that were simply not future considerations back in 1945. The current literature on land use policy, urban planning and local development all reflect a broad (and remarkable) consensus that new socio-economic and techno-ecologic realities require us to frame a new agenda for the future evolution of metropolitan America, in order to assure the long-term livability, affordability and sustainability of our built environment.

The current policy consensus on the need to rethink the future of our cities has long roots back to the

macro-modelers of The Club of Rome and the early environmentalists. By comparison, the grass-roots, anti-sprawl "smart growth" movement that sprang up spontaneously in communities across the country during the mid-1990s is a recent phenomenon. [3] Since 2000, however, the academics have begun to recruit the local anti-sprawl activists as allies and political advocates to promote broader smart growth initiatives, including mass transit, in-fill development, transferable development rights (TDRs) and zoning reforms. The property development community initially had significant reservations about the original "smart growth" movement. However, now that smart growth has been expanded to embrace a more comprehensive reassessment of all dimensions of our future urban habitat, developers appear to be largely in agreement with the emerging agenda for reshaping the urbanized communities that 80 percent of us call home. [4]

In fact, a number of recent trends suggest that both the marketplace – and the development industry – have already begun to move in the direction of a new vision for metropolitan America. To begin with, almost all of the central cities that lost population since the 1950s began to grow again during the 1990s. [5] Significantly, even among those urban centers that continue to lose overall population, the vast majority of older U.S. center cities has been experiencing an influx of upper and middle-income households. [6] Simultaneously, many large American cities have seen their high-poverty populations shrink by one-third to three-fourths since 1990, as low-income households – including immigrants – have migrated to older suburbs in search of better employment and housing opportunities. [7] Both the low-income urban exodus and the middle-class convergence on downtown appear to have accelerated since 2000. In Boston, for example, while overall population fell 3.4 percent between 2000 and 2004, the city's per-capita income rose 11.3 percent; in St. Louis, the population declined 1.4 percent, while per capita income jumped 14.1 percent during the same time-frame. Among the nation's 22 largest cities, only Detroit and Philadelphia continue to experience **both** declining populations **and** falling per-capita income. [6] Meanwhile, data from the Census Bureau's most recent American Community Survey revealed that, in 2005, the number of suburban poor exceeded the number of urban poor for the first time. [8]

Property developers must almost certainly be credited with contributing to this remarkably rapid change in the economic profile of our urban populations. In response to a persisting glut of office space following the 2001 recession, property owners and developers in cities across the country converted millions of square feet of both old and new office high rises into luxury condominiums. [9, 10, 11] While surveys of home-buyer preferences by the National Association of Realtors (NAR) and others had been reflecting a growing desire for urbanized living and higher-density owner-occupied housing since 2000, it is unlikely that developers would have so aggressively targeted that putative market had they not been faced with a compelling need to fill a lot of empty space. [12] Ironically, the flattening of business employment "jump-started" the nation's shift to high-rise urban living.

The initial success in rolling-out the luxury conversions led to speculative price inflation of center city condominiums, and a collapse of sales – in spite of high demand. As a consequence, many downtown condominium projects have been put on "indefinite hold." [13] Most developers, however, remain confident that demand will reappear once pricing has returned to less volatile levels. [14] Meanwhile, in another expedient adaptation to changing marketplace realities, property owners have begun to convert their surplus urban condominiums to rental units. In doing so, realtors report that they are tapping yet another underserved market demand – for quality downtown rental residences. [15] This, too, is encouraging the return of middle income households to center cities.

In addition to the socio-economic changes occurring in center cities, data from the Department of Housing and Urban Development suggest that there are also changes occurring at the outer fringes of urban sprawl. While 50 percent of all new homes were built on lots of one-acre or more between 1985 and 1997, the market share of such low-density homes fell to 27 percent between 1997 and 2001 – in spite of the dramatic rise in U.S. disposable income and soaring second home purchases during those years. It is entirely possible that the drop in new low-density housing has been, at least in part, the result of "smart growth/anti-sprawl" activism. Developers in almost all parts of the country agree that the development

environment at the edge of the suburbs – once a straight forward proposition – has become much more "difficult" during the past five years.

Of course, recent reversals of the long-term urban meta-trend – like the return of middle-income households to center cities, and the dramatic increase in mass transit ridership – could still prove to be temporary phenomena, driven by short-term factors. But surveys by realtors and architects suggest that these recent trends reflect fundamental changes in both public sensibilities and consumer utilities. Moreover, current projections of the nation's future requirements for the new built environment suggest that, by responding to our changing marketplace expectations, the development industry will have a real opportunity to dramatically reshape America's cities during the next 25 years.

In a 2004 Discussion Paper prepared for the Brookings Institution Metropolitan Policy Program, VPI's Arthur Nelson projected America's building requirements through the year 2030. This paper, "Toward A New Metropolis: The Opportunity To Rebuild America," draws on baseline data from the 1999 American Housing Survey and the 2000 U.S. Census. [1] While using historically reliable population forecasts to estimate 30-year residential space requirements can be expected to produce reasonably accurate results, using more volatile 30-year workforce forecasts to generate estimates of future commercial and industrial space will almost certainly result in less reliable projections. (The BLS won't even publish 30-year job forecasts.) Even more risky (as Professor Nelson concedes) are the historically-derived estimates he uses to project "loss rates" for existing space – which assume a 170-year service life for residential structures, 75 years for commercial and institutional buildings, and 50 years for industrial facilities. Nelson's paper spells out the basis and limitations of these assumptions, and he argues that, in spite of the uncertainties involved, the resulting projections should be regarded as reasonable, conservative "order-of-magnitude" estimates of the building growth that America will experience between 2000 and 2030.

The U.S. started the 21st Century with an estimated 300 billion square feet of built space, and the VPI/Brookings projections indicate that, by 2030, the nation will require 427 billion square feet. In addition to building

FIGURE 21

PROJECTED NEW U.S. CONSTRUCTION
2000 to 2030

Class of Space	Total New Construction	Total New Construction	Total New Construction
Residential	108 billion SF	71 billion SF	37 billion SF
Commercial/ Institutional	96 billion SF	52 billion SF	44 billion SF
Industrial	8 billion SF	1 billion SF	7 billion SF
TOTAL	**213 billion SF***	**124 billion SF**	**88 billion SF**

SOURCE: "Toward A New Metropolis: The Opportunity to Rebuild America" The Brookings Institution Metropolitan Policy Program (2004)

* Total does not add, due to rounding

131 billion square feet of new space to accommodate projected residential, business and governmental growth, the VPI analysis also anticipates the need to build an additional 82 billion square feet of space to replace existing structures lost to the passage of time. If these forecasts accurately approximate the order-of-magnitude growth and replacement requirements of the nation's built environment through 2030, the implications for property developers are startling. **In 2030, one-half of all space in America will have been built AFTER 2000!**

America's property owners and developers will have the same leveraged opportunity to shape the future of urban America during the next 25 years as they had during the quarter-century following World War II. Of course, as the author of the VPI analysis points out, today's developers will scarcely be working with open land. Professor Nelson estimates that only 25 percent to 50 percent of new development between now and 2030 is likely to take the form of conventional sprawl. The real challenge confronting developers from now on will be to reshape *existing* urbanized properties in consonance with new realities and imperatives that did not concern the planners and developers of the 1940s – especially sustainability.

Of the 213 billion square feet of newly built space projected by the VPI/Brookings 30-year forecast, 108 billion square feet (51 percent) will be residential, 96 billion square feet (45 percent) will be commercial or industrial, and 8 billion square feet (four percent) will be industrial (see Figure 21).

The full VPI report – available at www.brookings.edu – contains individual forecasts for each of the states, plus the 50 largest MSAs, broken down by class of space. While local developers will find Professor Nelson's detailed projections of considerable interest, it is the aggregate data that offers the most provocative insight for the development industry as a whole. *If one-half of the nation's inventory of structures will be newly built between 2000 and 2030, we should already be making conscious choices either to make the infrastructure investments needed to continue the 1950s American urban paradigm, or to purposefully alter that paradigm in specific ways that will make our cities more livable, affordable and sustainable for the long-term future.*

2007 – A Benchmark Year for People And Cities

Archeologists tell us that it has been 11,000 years since the world's nomadic herdsmen and hunter-gatherers first began to create permanent communities. And demographers tell us that, in 2008, for the first time in history, half of all humans will be living in cities. [16] Economists stress that 10 millennia of human migration to urban areas from rural areas reflects much more than simple life style preferences. Cities are demonstrably humankind's principal engines of economic production, facilitators of commerce, storehouses of knowledge and incubators of creativity. In short, historians assure us, *urban development is synonymous with human development.*

If cities are, in fact, humanity's most productive invention, the conversion of half of the planet's population to urbanites – up from 13 percent in 1900 – should be regarded as a great achievement. Instead of celebrating, however, the world's policy makers are increasingly troubled by the negative implications of continued urbanization for the long-term future. Specifically, while cities are undoubtedly productive, they are also resource-intensive. As the world's population becomes increasingly urbanized, the global costs of living – in terms of amounts of energy, materials and non-renewable resources consumed per person per day – will predictably rise to exceed available supplies within the foreseeable future. In the developing world, urban populations already exceed available resources, and tens of millions of people live in slums with no basic services – water, electricity, sanitation, paved streets or law enforcement. In countries like Ethiopia, Malawi and Uganda, over 90 percent of the urban population live in such slums. [17]

The burgeoning cities of the developing nations are also home to the world's fastest growing middle-class populations, who are prospering from the accelerated economic globalization made possible by what Friedman calls the "leveling" of the international playing field. The new urbanites of the Third World are moving to cities for the same reasons that people have always moved to cities: economic opportunity. The United Nations projects that city dwellers will grow from 50 percent of the world's population to 60 percent by 2030. [16] As a consequence, the global demand for resources can be expected to rise dramatically, both in terms of new urban infrastructure requirements and *per capita* consumption. There is wide-spread agreement among macro-economists that we are entering an era of increasing resource scarcity, affecting the availability and costs of most basic commodities, including energy, water, bulk crops and many fabrication materials.

The mature cities of the industrialized nations are, of course, faced with many of the same problems that confront the cities of the developing world – transportation, pollution, infrastructure, land use, energy, poverty, etc. – but on a much smaller order of magnitude, and with considerably more resources at their disposal. Many U.S. cities – especially our largest metropolitan areas – are also faced with the challenge of managing robust growth. The urban share of the U.S. population is projected to grow from 80 percent today to 85 percent by 2030. But many American cities are struggling with **both** population decline **and** the shrinkage of their economic bases, largely due to the effects of "flattening" (see SECTION 2.30 – Fat cities and flat cities). And there is certain to be more flattening ahead. Faced with a growing shortage of workers (see SECTION 2.20 – A flatter supply of labor), U.S. employers will be forced to cut their workforces, either by eliminating jobs through productivity improvement or by off-shoring.

"Demography is Destiny" for Developers

The Bureau of Labor Statistics (BLS) projects that the numbers of new jobs in America will grow 1.3 percent per year during the decade ahead, while our labor supply will grow just 1.0 percent per year. The number of young people entering the workplace in the next 10 years will actually decline by 0.5 percent! (see TABLE 2, page 27). Combined with the approaching wave of Baby Boomer retirements, our shrinking entry-level labor pool guarantees that there will be an increasingly severe nationwide shortage of skilled workers for a decade or more. And, while we hear a lot in the news about a "looming shortfall" of software engineers and bio-tech scientists, the fact is that there will soon be serious shortages of all types of formally skilled workers in every sector of the economy – from plumbers to pediatricians.

The size of our workforce effectively "caps" the number of jobs the workplace can create. While the BLS projects that the U.S. economy will generate 154.5 million jobs by 2014, they also forecast that the U.S. labor pool in 2014 will total just 162.1 million workers (see FIGURE 6, page 28). This projected 2.4 million shortfall will occur even if current rates of immigration continue and 30 percent of Baby Boomers delay retirement! Economists warn that tight job markets predictably generate rapid wage increases, as competing employers bid up the prices for scarce workplace skills. Rising wages, in turn, will provide employers with growing incentives to automate their jobs . . . or to off-shore them. Such initiatives will quicken the pace of workplace flattening, further reducing the demand for labor – and the demand for work space.

Whether a job is *info-mated* out of existence, shifted to a home-based employee, or sent off-shore, the net loss to the market for workspace will be the same. With a 2.4 million shortfall in the labor pool as a "forcing factor," **it is highly probable that the actual number of new jobs created by the U.S. economy between 2004 and 2014 will be closer to 17 million, instead of the 18.9 million projected by BLS** (see TABLE 3, page 30).

Some jobs, as has been discussed, can neither be automated or off-shored. In *The World Is Flat*, Friedman identifies such workers as "untouchables" (see FIGURE 2, page 16). Most of these jobs are in personal services that are "anchored" to their places of work by the need to directly interact with customers or their immediate physical circumstances. Untouchable jobs range from emergency room technicians to surveyors, divorce lawyers to short-order cooks, consulting engineers and first responders. Friedman's "untouchables" also include workers with "specialized" skills or talents – the equivalent of Richard Florida's "creative class." [18] A lot of these workers will not only be untouched by flattening, they will also be crucial to the performance of every local economy. And they will all be in increasingly short supply!

A national shortage of molecular biologists or computer chip designers will affect the growth prospects of a handful of industries and local economies. But a projected national shortage of one million nurses or one million teachers has implications for the growth of *every* local economy. Communities that cannot fully staff their hospitals, schools and basic public services will become less livable and thus, less able to attract *or* retain either high value employers or high value employees. More importantly, labor experts tell us that today's workers are increasingly *footloose*. All workers – whether they are computer engineers or carpenters – can freely relocate to wherever their skills will earn them the best quality of life. [19] This means that, from now on, local communities will be competing with each other to attract and retain increasingly scarce skilled workers of every kind. What's more, local owners and developers of commercial property will have a crucial role to play in winning that competition.

In 1993, marketing guru Philip Kotter wrote in *The Futurist* magazine: "Communities must begin to think more like businesses if they hope to win in the coming place wars – the growing world-wide competition for companies, tenants, sports teams and conventions." [20] In the face of a growing labor shortage, it turns out that t**he real competition among communities during the decade ahead will be for skilled workers!**

Mixed-use developments (M-UDs) are the means by which property developers can help communities improve their competitive edge in the "place wars" of the 21st Century. [21] M-UDs – variously called "life-style retailing," "transit villages" and "new urbanism" – have been springing up everywhere at an increasing pace since 2000. [22, 23] These urbanized developments – incorporating retailing, recreation and residences with office space in a single walkable location – first gained success in the suburbs, but they are now appearing in central cities like Kansas City, Atlanta and Pittsburgh. [23, 24] M-UDs have proven highly scalable, with projects ranging in size from 30 acres to 300 acres – or more. [26, 27]

The general success of M-UDs to date appears to have at least as much to do with pent-up market demand as it does with specific project design. Several national consumer surveys report that 30 percent to 50 percent of U.S. households would like to live in – or have easy access to – a "walkable urbanity." [28] These startling responses make much greater sense when we realize that single people now make up one-third of all U.S. households, while childless adults make up another one-third, and only one-third of our households include minor children. [29] The housing stock of most U.S. communities simply has not evolved to reflect our changing demographic profile. M-UDs can be instrumental in correcting imbalances in local housing markets by offering appropriately configured residential spaces that will appeal to broad swaths of home buyers who are currently ill-served, including upwardly mobile young singles (the *creative class*), empty nesters and active retirees eager to down-size their homes while not moving away from their life-time communities.

Even more important to local livability than *appropriate* housing is *affordable* housing. One recent survey for the National Association of Realtors found that "affordable housing" is regarded as a more important problem than "terrorism," "pollution" or "crime;" only "affordable health care" and "job security" ranked higher. [30] In 57 of the nation's 379 metropolitan areas, families earning a median income in 2005 could not afford a median priced home in their community. [31] This suggests that communities offering affordable housing will be able to successfully compete for skilled workers with communities offering top salaries and no affordable housing. *The urban and land policy research*

An "Entertaining" Note

In Table 3 of this REPORT – "All U.S. Employment by Major Industry Division" (see page 30) – three Industry Divisions are expected to experience faster job growth than the 13 percent job-creation rate forecast for the economy as a whole. Two of these groups – "Professional, technical and managerial services" (+24.8 percent growth) and "Education and health services" (+30.6 percent growth) – have been discussed at length earlier in this Report. The third high-growth employment group – "Leisure and hospitality" (+17.7 percent growth) – merits special reference with respect to mixed-use developments. Nearly three-fourths of the 12.5 million employees of "Leisure and hospitality" work in "Food services and drinking places" (see page 55). The remaining 3.5 million jobs in this industry group are evenly divided between "Accommodations" and "Entertainment."

BLS projects that employment by the nation's "Hotels, motels, RV parks and campgrounds" will grow by 340 K (+16.9 percent) between 2004 and 2014, while the providers of "Arts, entertainment and recreation" will increase their payrolls by 460 K (+25.1 percent). Projected job-creation rates within arts and entertainment include: "Performing arts" (+17.0 percent), "Museums and galleries" (+19.7 percent), "Spectator sports (+20.0 percent), "fitness and recreational sports centers" (+26.6 percent), "Amusement parks and arcades" (+35.1 percent) and "Gambling" (+37.9 percent). The BLS extrapolations suggest that, while the recent boom in hotel construction will continue at a more moderate rate, the growth of employment by all forms of recreation and entertainment will continue to accelerate – making such venues desirable components for M-UDs seeking to create a cosmopolitan habitat that will both appeal to its residents AND resonate with its surrounding community.

communities are in adamant agreement that smart growth must increase the supply of workforce-affordable housing. It is also apparent to the development community that it is politically much easier to place large numbers of affordable housing units in urban centers than in the suburbs. [28]

As discussed earlier in this report (see "Urban Transit," page 58), many of today's M-UDs are being built at or near commuter rail stations, where local walkability and public transit can combine to permit residents to live a "car-free" life. In an age of global warming and soaring gas prices, car-free lifestyles will have growing ethical and economic appeal as models for sustainable communities. [32] Car-free lifestyles will also have increasing appeal for the fastest-growing segment of our population – the over 65-year-old Baby Boomers – an increasing number of whom will eschew driving (or be banned from doing so by their state). [33,34]

Community planners and local economic development authorities must begin to think of M-UDs as modular components of their long-term strategy to compete for scarce skilled human resources and high-value employers. Moreover, at the time when technology-driven flattening will continue to shrink the payrolls of millions of businesses, it is worth noting that there is a growing body of literature suggesting that higher density development – like M-UDs – improve a community's prospects for economic growth (Cerro, 2005; Nelson & Peterman, 2000; Moro & Puentes, 2004). [1] These findings offer a concrete basis for closer collaboration between developers of M-UDs and local economic developers.

Finally (and perhaps, most importantly), as the flattening of enterprise runs its course, M-UDs, with their *form-based zoning* [28], will be much more easily adapted to the new realities of life and work on *Planet Flat* than will single-asset projects with their characteristic *use-based zoning.* **When today's circumstances can lead to multiple possible outcomes, today's property development must be able to accommodate multiple uses – both now and in the future.**

Mixed-Use Development and Smart Growth

The policy papers on achieving *smart growth* often conclude with a "9-step process" or a "12-point plan" for institutionalizing smart growth throughout a community. [1, 28, 35] Such plans typically involve: "inventories of base-line data," "community visioning and goal-setting," "zoning and building code reform," creating new "umbrella development agencies," etc. The authors of these proposals make it clear that the adoption of such measures will be politically difficult, take years to accomplish, and may never be fully achieved.

Mixed-use developments (M-UDs), on the other hand, characteristically incorporate the central policies of smart growth – including high-density land use, transportation efficiency, energy conservation, green building techniques, form-based zoning and walkable urbanity. Almost by definition, mixed-use development IS smart growth! As the same time, by creating *walkable urban areas*, M-UDs provide communities with an increased ability to attract and retain scarce human resources. M-UDs are, in effect, the property development industry's practical marketplace response to the public's desire – and the community's need – for smart growth, without having to wait for the creation of a city-wide consensus definition of "smart growth, or the adoption of a smart growth regulatory structure and the creation of a smart growth enforcement bureaucracy. Like the suburban tract developers of the 1950s, today's mixed-use developers can direct and shape the future of America's cities simply by responding to the changing make-up and preferences of the marketplace.

Of course, mixed-use developments typically require the engagement of multiple government agencies and building broad coalitions of stakeholders and underwriters. But mixed-use development will be a smart growth strategy for property owners and developers. As has been discussed throughout this Report, the technology-driven forces of flattening and the demography-driven force of our impending labor shortfall can be expected to slow job growth in America, while the U.S. population will continue to grow robustly. In light of the growing unmet marketplace demand for appropriate and affordable housing, residential space will almost certainly make up an even larger share of the new built environment in the decades ahead than is suggested in the VPI/Brookings forecasts (see FIGURE 21, page 90). M-UDs will enable property owners and developers to respond to the market's immediate demand for habitat as well as for the rapidly evolving long-term needs of the nation's workplace.

ADDENDA

Quotations From Research Sources

The central purpose of the research covered by this Report has been to validate the propositions advanced by Thomas Friedman in *The World Is Flat*. To achieve this purpose, we mobilized a diverse body of statistically rigorous demographic and econometric data, which are detailed in PARTS 1 and 2 of this Report. In PART 3, "Property Development on *Planet Flat*," the conclusions drawn from that data have been compared with research in urban land use, and with the judgments of experts in the property development field. This input has been subsumed into the content of PART 3, largely without attribution.

The following addenda presents a selection of specific expert comments and propositions that were incorporated into the conclusions and recommendations of this Report.

These citations are organized into six topics:

1. Defining "Walkable Urbanity"
2. Property Development and Urban Transit
3. Healthcare, Higher Education and Mixed-Use Development
4. Current Trends in Property Development
5. Policy Statements
6. Competing for Scarce Human Resources

1. Defining "Walkable Urbanity"

"The appeal of traditional downtowns – and the defining characteristic that sets those that are successful apart from their suburban counterparts – is largely based on what can be summarized as *walkable urbanity.* Since the rise of cities 8,000 years ago, humans have only been willing to walk about 1,500 feet until they begin to look for an alternative means of transport: a horse, a trolley, a bicycle or car. This distance translates into about 160 acres – roughly the size of a regional super mall with its parking lot – and of most other major downtowns in America."

"Numerous consumer surveys by national research firms – including Robert Charles Lesser, Zimmerman-Volk and Real Estate Research Co. – have shown that between 30 percent and 50 percent of all households in the communities surveyed want walkable urbanity. The recent success of many new urbanist communities and traditional-looking lifestyle retail projects is on-the-ground evidence of pent-up demand."

"Turning Around Downtown: 12 Steps to Revitalization"
Christopher B. Leinberger
The Bookings Institution *Metropolitan Policy Program*
2005

"Walkable urbanity implies demographic diversity and round-the-clock activity in public streets, squares and parks. It implies an environment where walking is not only enabled, but is also a stimulating and enjoyable experience."

Roger K. Lewis
Professor Emeritus, Architecture
University of Maryland
2007

2. Property Development and Urban Transit

"The market is changing much more quickly than our government policy makers are responding. There is a real pent-up demand for transit-oriented development all over the country, but these communities are all getting built by the private sector."

Shelly Poticha, CEO
Reconnecting America
2007

"Only two developers applied for public funding in conjunction with a transit-oriented development project four years ago. More than 50 applied last year."

Peer Chacko, Assistant Director
Long Range Planning
Dallas, Texas
October 4, 2007

"Transit-oriented developments are so popular with residents who crave the opportunity to live in a walkable community that at least a dozen cities and suburbs across the U.S.A. are embracing the concept – even if they don't have rail. I call it 'transit-ready' development."

Robert Long, Director
Metropolitan Institute
Virginia Technical University
author, *Boomburbs*
Brookings Institution Press, 2007

"A recent market study found that nearly 15 million households will demand housing near transit by 2025, double the demand that exists today."

Center for Transit-Oriented Development
2004

3. Healthcare, Higher Education & Mixed-Use Development

"As info-mation and globalization suppress overall job creation, property developers are co-locating mixed-use projects with our fastest growing employers – medical centers and college campuses – to tap related retail, residential and commercial markets. Ed/Med-based developments will become central to local urban revitalization nationwide within five years."

David Pearce Snyder
Consulting futurist
Keynote address – Annual Joint Conference
National Association of Higher Education Facilities Authorities
National Council of Health Facilities Financial Authorities
September 27, 2007

The *New York Times* reports that mixed-use developments are being built at "about a dozen" institutions of higher learning nationwide, including the University of Connecticut (Storrs), Notre Dame and Furman.

Alan Finder
"Rural Colleges Seek New Edge and Urbanize"
NYT, page A-1
February 7, 2007

"A big growth area will be in providing new housing for Baby Boomers aged 65 to 85. They'll trade in the tulip bed for a chance to walk to a restaurant and see a movie, and for the convenience of being close to their *doctors and medical services*. These are people who want to be independent, but at the same time are less confident about their mobility."

Mark Dotzour
Chief Economist
Real Estate Center
Texas A & M University
2006

" In the Midwest, we're more oriented to population growth, with retail, entertainment, hospitality and medical offices as drivers. Our Southeast and Southwest markets are more jobs-driven, with the focus on industrial, office and medical."

Dan Walsh
Vice President of Development
Ryan Companies
2006

4. Current Trends in Property Development

"With respect to the lending market, there is a larger field of lenders willing to lend on mixed-use projects in comparison to several years ago. Single-asset condominium developments will continue to be problematic."

Whitaker Johnson
Senior Managing Director
Holliday Fenoglio Fowler
2006

"In residential components, we're seeing a trend to smaller unit size – one bedroom instead of two, what used to be 1,000 feet or a little larger is now 1,000 feet or a little smaller."

Jon Peterson
Senior Vice President for Commercial Development
The Peterson Companies
2006

"We're seeing only a few high-rise office buildings today, but dozens and dozens of high-rise residential, mostly condos"

Ron Klemencic, Chairman
Council on Tall Buildings and Urban Habitat
2005

"Real estate tracking services advise investors to focus on centrally-located, mixed-use opportunities with multi-modal access to realize the best returns."

Urban Land Institute
2004

5. Policy Statements

"Relatively little development activity will involve converting open land into subdivisions. From now on, growth policy must manage the transformation of older communities into vital and varied urban centers, plus the conservation existing neighborhoods and the conversion of a mobility system centered on cars into one that favors public transportation, biking and walking."

Royce Hanson
Chairman
Montgomery County (MD) Planning Board
The Chairman's Blog
2007
mncppc.typepad.com/chairman

"Environmental responsibility is the future of real estate – the choice is not whether, but when."

Douglas Durst
The Durst Organization
2006

"Smart growth needs to address the spatial distribution of affordable housing. A smart growth agenda needs to expand housing opportunities for middle class families in the city and close-in suburbs while creating more affordable housing near job centers."

Bruce Katz
Smart Growth: The Future of the American Metropolis?
Center for Analysis of Social Exclusion
London School of Economics
Comparative Urban Analysis Series
2002
http://sticerd.lse.ac.uk/dps/case/cp/CASEpaper58.pdf

6. Competing for Scarce Human Resources

"If Albuquerque does not have a vibrant, hip downtown, I won't have a chance of recruiting or retaining the twenty-something software engineers that are the life's blood of this laboratory."

Director, Human Resources,
Sandia National Laboratories
(Local leader of 1998-2003 redevelopment of downtown Albuquerque)

"If 30 percent to 50 percent of the market wants access to a walkable urbanity, why would they move to – or stay in – a place without that lifestyle option when Austin, Boston and Seattle beckon? A purely suburban, car-dominated metropolitan area is at a competitive disadvantage for economic growth."

Christopher B. Leinberger
Managing Director
Robert Charles Lesser & Co.

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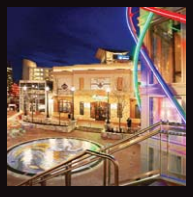


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