

Fear of Offshoring

by

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“President Bush is on an eight-day tour of Asia. He’s visiting American jobs.”
-- David Letterman

“One thing you should never predict is the future.” That is generally sage advice, which I try to live by. Futurology is a loser’s game. Nonetheless, I am going to ignore this wise canon in this essay and throw caution to the wind. Why? Because one aspect of our economic future seems to me so certain, and its implications so far-reaching and yet non-obvious, that serious thinking about it is imperative--and yet very little attention has been devoted to it to date.¹ I refer to the phenomenon that has been clumsily dubbed *offshoring*, meaning the migration of certain jobs (but not the people performing them) from rich countries to poor ones.²

What’s that, you say? Hasn’t an extraordinary amount of attention been paid to offshoring, including an unedifying brouhaha in February 2004 when N. Gregory Mankiw, a Harvard professor then serving as the Chairman of President Bush’s Council of Economic Advisers, indelicately suggested that offshoring is no different from other types of international trade—and thus is clearly beneficial to the United States. According to Mankiw, the offshoring of U.S. service jobs is only "the latest manifestation of the gains from trade that economists have talked about" for centuries. "More things are tradable than were tradable in the past and that's a good thing."³

¹ The most notable exception is Thomas Friedman’s remarkable best seller, *The World is Flat: A Brief History of the Twenty-First Century* (New York: Farrar, Straus, & Giroux), 2005. A few other exceptions are mentioned below.

² I must insist on the awkward word *offshoring* rather than *outsourcing*, which is sometimes used as a synonym. Outsourcing is a common *domestic* phenomenon which has nothing to do with either international trade or globalization. Offshoring means outsourcing the work to firms or subsidiaries employing labor outside the home country.

³ As quoted by Jonathan Weisman, “Bush, Adviser Assailed for Stance on 'Offshoring' Jobs,” *The Washington Post*, February 11, 2004, p. A06.

Mankiw's economics were basically sound; I'll have more to say about that shortly. But his politics were not, and he was immediately excoriated by Democratic and Republican politicians alike. The ensuing media spectacle was light on intellectual content but heavy on political rhetoric.⁴

The furor over Mankiw's remarks was grotesquely out of proportion to the *current* importance of offshoring, which is still largely a *prospective* phenomenon. While we have no reliable national data on the extent of offshoring,⁵ the fragmentary studies that have been done to date have concluded that fewer than a million U.S. service-sector jobs have been lost to offshoring up to now. A million jobs may sound like a lot. But in the gigantic U.S. labor market, with its rapid turnover, a million jobs is less than *two week's* normal gross job losses.⁶

But here's the great irony. Looking to the future, I believe that Mankiw and other economists who interpret offshoring as nothing more than international business as usual are greatly *underestimating* both its importance and its disruptive impact on Western societies. Sometimes quantitative change is so large that it brings about qualitative change. Indeed, I will argue in this paper that we have barely seen the tip of an offshoring iceberg that, as the rest of it is revealed, may prove to be something to behold.

Business as Usual?

There are two ways to think about the offshoring phenomenon: as a *routine extension* of the realm of international trade (as Mankiw suggested), or as a broad, powerful, and

⁴ For an insider's account of the incident, see N. Gregory Mankiw and Phillip Swagel, "The Politics and Economics of Offshore Outsourcing," processed, American Enterprise Institute, November 2005.

⁵ The title of a September 2004 GAO report on the subject was "Current Government Data Provide Limited Insight into Offshoring of Services." See Report GAO-04-932.

⁶ Of course, gross job gains typically run slightly above gross job loss, leaving some net gain in employment.

disruptive historical force that may transform societies. Each view is valid in its own terms. But the latter is far more interesting. Nonetheless, let me start with the former—beginning with the briefest possible primer on the theory of international trade.

Nations trade with one another for the same basic reasons that individuals, businesses, and regions (such as states of the United States) do: to exploit their comparative advantages and thereby to gain from trade. While the analytics would have to await the genius of David Ricardo about a generation later, Adam Smith saw the basic idea pretty clearly in 1776. He wrote in *The Wealth of Nations* that:

It is the maxim of every prudent master of a family, never to attempt to make at home what it will cost him more to make than to buy... If a foreign country can supply us with a commodity cheaper than we ourselves can make it, better buy it of them with some part of the produce of our own industry, employed in a way in which we have some advantage.

Now, what are the roots of comparative advantage? Some of them are “natural” in the literal sense—given by nature. Thus Texas and Saudi Arabia sit atop massive deposits of oil that are entirely lacking in New York and Japan, while nature has conspired to make Hawaii a far more attractive tourist destination than Greenland. There is not much anyone can do about such natural advantages. But nature’s whimsy is far less important in modern economies than it was in the distant past. For example, no one thinks that the concentration of the computer hardware and software industries around Silicon Valley was due to bountiful natural deposits of silicon! It clearly had much more to do with proximity to Stanford University and Xerox’s fabled research center, and to the arrival of two young men named Hewlett and Packard. Under different circumstances, Silicon Valley might have sprouted up elsewhere. The Silicon Valley story illustrates a broader

truth: that, today, much of comparative advantage is created by human effort, not inherited from nature.

One important implication of this modern reality is that, while natural resources are immobile, *patterns of man-made comparative advantage can and do change over time*. Jagdish Bhagwati has labeled this phenomenon “kaleidoscopic” comparative advantage, to indicate that it can move around quite a bit. And this is the first critical point to understand when thinking about the origins of offshoring. Once upon a time, the United Kingdom had a comparative advantage in textile manufacturing. Then it shifted to New England, and in consequence jobs were offshored from the U.K. to the U.S. Then comparative advantage shifted once again—this time, to the Carolinas--and jobs migrated within the United States. Now comparative advantage in textile manufacturing resides in China and other low-wage countries, and what my fellow countrymen are wont to call “American jobs” have been offshored accordingly.

Of course, not everything can be traded across national borders. At any point in time, the available technology--especially transportation and communications technologies--largely determines which goods and services are easy to trade internationally and which are hard or impossible to trade.⁷ Simplifying this underlying reality, economic theorists typically conceptualize the world’s goods and services as falling into one of two bins: “tradable” or “non-tradable.” Traditionally, any item that can be put in a box and shipped (roughly, manufactured goods) was considered tradable, while anything that cannot be put in a box (like services) or was too heavy for shipping (like houses) was thought of as non-tradable. But that is now vestigial thinking.

⁷ Artificial barriers like tariffs and quotas also play an obvious role here. So do other factors such as location or agglomeration externalities.

Because technology is constantly improving, and because transportation seems to grow easier and cheaper over time, the boundary between what is tradable and what is not tradable is constantly shifting--just as patterns of comparative advantage are. But this shift is *not* kaleidoscopic. Rather, it moves inexorably in only one direction: *Over time, more and more items become tradable.*⁸ In particular, boxes aren't what they used to be. The old assumption that, if you can't put it in a box, you can't trade it, is now hopelessly obsolete. And that is the second critical point in understanding the phenomenon of offshoring. Because packets of digitized information can now play the role that boxes used to play, *many services are now tradable and many more will surely become so.*

Indeed, let me make a bold prediction that will set the stage for the second, more historical, way of thinking about offshoring. In the future, and to a great extent already in the present, the key distinction for international trade will no longer be between things that can be put in a box and things that cannot. It will, instead, be between services that can be delivered electronically over long distances with little or no degradation of quality, and those that cannot. The tradability of a vast array of services is, as they say, the New New Thing. And there is little doubt that the fraction of services that can be delivered electronically will grow. Which brings me to the broad historical perspective.

The Next Industrial Revolution

Adam Smith wrote *The Wealth of Nations* at the beginning of the Industrial Revolution—or perhaps I should say at the beginning of the *First* Industrial Revolution, the one that led to an enormous shift from the farm to the factory. 1776 was a good year for visionaries, and Smith's vision was extraordinary. But even he could not have imagined what was to come. As labor in the industrializing countries migrated from farm

⁸ Wars and other artificial barriers set this process back from time to time.

to factory, societies were transformed beyond recognition. How and where people lived, how they educated their children, the organization of business, and the forms and practices of government all changed dramatically in order to accommodate an important new economic reality: Fewer people were earning their livings on farms and more were earning their livings in factories.

The shift off the farm was massive. It has been estimated that in 1810 some 84% of the U.S. workforce was engaged in agriculture, compared to a paltry 3% in manufacturing. By 1960, the manufacturing share had risen to almost one-quarter and the agricultural share had dwindled to just 8%.⁹ (Today it is under 2%.) Thus Hamilton's vision for the young United States of America triumphed over Jefferson's.

Then came the *Second* Industrial Revolution, which is still in progress, and jobs shifted once again—this time away from manufacturing toward services.¹⁰ The shift to services is still viewed with alarm in America and many other rich countries, where people bemoan rather than welcome the resulting losses of manufacturing jobs. But, of course, new service sector jobs have sprouted up in far greater numbers than old manufacturing jobs have disappeared. In round numbers, about 35% of American nonagricultural workers produced goods (principally, manufacturing and construction) in 1960 while 65% produced services. By 2004, only about one-sixth of America's nonagricultural jobs were still in the goods-producing industries while five-sixths produced services.

⁹ See *Historical Statistics of the United States: Colonial Times to 1970*, Part I, p. 139.

¹⁰ Some historians have used the term "Second Industrial Revolution" for the changes brought about by electrification and other remarkable technologies in the late 19th and early 20th centuries. Others call this period the second stage of the First Industrial Revolution. I follow the latter convention, but nothing hinges on the terminology.

This trend is worldwide and continuing. Between 1967 and 2003, according to the OECD, the service sector share of total jobs increased by about 19 percentage points in the U.S., about 21 percentage points in Japan, and 24-25 percentage points in the U.K., France, and Italy. The shift toward services has also led to major changes in our lives—from television to the Internet to the decline of physical labor, to name just a few.

We are now, I believe, in the early stages of a *Third* Industrial Revolution, which has been called the Information Age. The cheap and easy flow of information around the globe has vastly expanded the scope of tradable services. And there is much, much more to come. Like the previous two industrial revolutions, the Information Age will require vast and unsettling adjustments in the way we work, the way we live, the way we educate our children, and so on. Just what those sweeping changes will be is something I'd rather not speculate much on. I *do* after all remember the sage advice. So let me narrow the focus and concentrate on the extent and nature of offshoring.

The Great Divide

A few years ago, we were all being told that “the Internet changes everything.” I am not sure it was true then, or ever will be. But it has certainly changed *some* things. So will the Information Age, more broadly.

Let me start by reining in our imaginations—and our fear of offshoring—with a bit of historical perspective. The First Industrial Revolution did not spell the end of agriculture. We still eat. Indeed, we still grow food in the rich countries. It just takes many fewer Americans working on farms to feed our population because we now produce all this food vastly more efficiently. In fact, by charming historical coincidence, the *number* of Americans working on farms today is not very different from what it was in 1810. (It was

in the neighborhood of 2 million in both cases.) It is agriculture's *share* of employment that fell drastically. And the main driving force was not foreign trade, but soaring farm productivity. More fundamentally, the massive movement of labor off the farms did not lead to mass unemployment, but rather to large-scale reallocation of labor—e.g., toward factories.

Similarly, the Second Industrial Revolution has not spelled and will not spell the end of manufacturing—not even in the United States, which is running ahead of the rest of the world in the shift toward services. Once again, the *share* of the American workforce engaged in manufacturing has shrunk dramatically since 1960, but the *number* of manufacturing workers has declined only modestly.¹¹ The main driving forces in this case have been three. One is rising productivity in the manufacturing sector, which enables us to produce more and more goods with less and less labor. The second is consumer tastes, as reflected in what economists like to call “income elasticities.” It seems that people the world over prefer to spend relatively more of their income on services (e.g., restaurant meals and vacations) and relative less on goods (e.g., clothing and refrigerators) as they get richer. The third is international trade. We now import a much larger share of manufactured goods than we did, say, fifty years ago. All told, the share of manufacturing in U.S. GDP has declined from a peak of 29.5% in 1953 to just 12.7% in 2004.¹² That may be the simplest quantitative indicator of the extent of the Second Industrial Revolution to date. It is a sizable shift already, and it is continuing. But, once again, it has not led to massive unemployment.

¹¹ From 15.4 million in 1960 to 14.4 million in 2004, according to the U.S. Bureau of Labor Statistics.

¹² Data come from the U.S. Bureau of Economic Analysis. Unfortunately, changes in the data collection system make the 1953 and 2004 numbers not quite comparable. A rough adjustment to current concepts would put the 1953 figure around 28%.

The Third Industrial Revolution will play out similarly, I suspect. The job categories that will move offshore as the Information Age progresses will not disappear entirely from the U.S. and other rich countries. But their *shares* of the work forces of industrial countries (now there's a vestigial term!) will shrink dramatically. And this shrinkage will transform our societies in many ways, most of them hard to foresee, as workers in the rich countries find other things to do.

Just as with the first two industrial revolutions, massive offshoring will not produce massive unemployment. Nor should we view it as a long-run threat to our standard of living. The world gained enormously from the first two industrial revolutions, and we are likely to do so from the third as well. My point is that, just like its predecessors, the Third Industrial Revolution will require very large adjustments—both economic and social. And we are not even thinking about them now.

What are some examples? Here I really do need to fall back on the inherent unpredictability of the future. My main answer is: I don't know. That said, I will argue below that our education system may need to change massively. Also, the economic importance of propinquity, which has up to now been devalued by advances in telecommunications, may increase again. But for the most part, I will stick to something that is easier to foresee: the likely patterns of offshoring.

What sorts of jobs are at risk of being offshored? In the old days, when tradable goods were things you could put in a box, the key distinction was roughly between manufacturing and non-manufacturing jobs. Consistent with that, manufacturing workers in the rich countries have grown accustomed to the idea that they compete with foreign labor. They may not like it; after all, none of us relishes competition for our livelihoods.

But U.S. (and Japanese and German...) manufacturing workers understand that competition from low-cost labor in emerging nations is one of the hazards of modern industrial life, just like recessions and bankruptcies. Service workers, however, do not. Thus, as the domain of tradable services expands, more and more workers will have to adapt to a new and not very pleasant reality. It is predictable that they will not like it.

Many people blithely assume that the critical labor force divide in the modern world is and will remain that between highly-educated (or highly-skilled) people, who will flourish under globalization, and less-educated (or less-skilled) people, who will suffer. For example, the jobs of call center operators are clearly at risk, while the jobs of most doctors look safe. The glibly-prescribed remedy for the rich countries is therefore more education and, more generally, an upskilling of the workforce.

I disagree. Not with the idea that more education and greater skills are good things, *other things equal*. They probably are. After all, the productivity of education is higher in more advanced societies (with their superior infrastructures), and more schooling probably makes workers more flexible and adaptable to change—more able to learn new things. But the problem with relying on education as the remedy for potential job loss is that “other things” are not remotely close to equal.

As I indicated earlier, some types of work are easily deliverable down an electronic wire (or via wireless connections) with little or no diminution in quality, and some are not. This unconventional divide, I believe, will prove to be the critical labor market division in the future. The interesting thing is that it does not correspond at all well to traditional distinctions between jobs that require high levels of education and jobs that do

not, nor to the generic distinction that is sometimes made between “good jobs” and “bad jobs.”

A few examples will illustrate just how complex, or rather how untraditional, this distinction is. It seems to me unlikely that the services of either taxi drivers or airline pilots will ever be delivered electronically over long distance. The first is a “bad job” with negligible educational requirements; the second is quite the reverse. On the other hand, typing services (a low-skill job) and security analysis (a high-skill job) are already being delivered electronically from India--albeit on a small scale so far. I could go on and on. Most physicians need not fear that their jobs will be moved offshore, but radiologists are beginning to see this happening already. The work of policemen will not be replaced by electronic delivery, but the work of some security guards will be. (My home burglar alarm is monitored from somewhere in Indiana. Why not from somewhere in India?) Janitors and crane operators are probably immune to foreign competition; accountants and computer programmers are not.

These disparate examples illustrate that the dividing line between the jobs that are suitable for electronic delivery (and are thus threatened by offshoring) and those that are not does *not* correspond to traditional distinctions between high-end and low-end work. And that is why *more* education, full stop, cannot be the answer. Instead, some fundamental rethinking of our educational and training systems is in order. Daniel Pink put it this way in a provocative recent essay, “Want to get ahead today? Forget what your parents told you. Instead, do something foreigners can’t do cheaper. Something computers can’t do faster.”¹³

¹³ Daniel Pink, “Revenge of the Right Brain,” *Wired*, Issue 13.02, February 2005.

A second important implication of the tectonic labor-market shift that is just beginning is much clearer, however. As indicated earlier, the boundary between work that can be delivered electronically and work that cannot will move steadily and in only one direction. The fraction of service jobs in the United States and other rich countries that can potentially be moved offshore is thus certain to rise inexorably as the technology improves and as countries like India and China continue to modernize, prosper, and educate their workforces. Despite all the fuss over offshoring today, that fraction is quite low at present. But it will eventually be much higher. It seems to me extremely likely that the number of service-sector jobs that eventually will be vulnerable to electronic competition from abroad will exceed, say, the total number of manufacturing jobs.¹⁴ Thus coping with foreign competition, which is now on the radar screens of only a minority of workers in the rich countries, may become a major concern of the majority. As I said, we are in for a major transformation--one that may lead to falling real wages in many occupations (and, of course, rising real wages in others).

This is Personal

We do not yet even have a vocabulary, much less any systematic data, to help us get our arms around the coming labor market reality. So let me suggest some nomenclature. Services that cannot be delivered electronically, or that are notably inferior when so delivered, have one essential ingredient in common: an element of personal, face-to-face contact is either imperative or highly desirable. Think of the waiter who serves you dinner, the doctor who gives you your annual physical, or the police officer on the beat.

¹⁴ A similar conclusion is reached by Bradford Jensen and Lori Kletzer, "Tradable Services: Understanding the Scope and Impact of Services Offshoring," Working Paper 05-9, Institute for International Economics, September 2005.

Now think of any of those same tasks being performed by robots controlled from India. Not quite the same.

This face-to-face, human aspect is not essential in the impersonal, electronic relationship you have with the telephone operator who arranges your conference call or the clerk who takes your airline reservation over the phone. He may be in India already. You probably don't care. I make my Amtrak reservations with "Julie," a voice recognition system. I have no idea where the machine generating Julie's cheerful voice comes from. In applications like that, distance does not degrade the quality of service.

Let us call the first group of tasks *personally-delivered services* or simply *personal services* and the second group *impersonally-delivered* or *impersonal services*. The former group of services--our focus here--may be "personal" for any of a variety of reasons. Some literally require face-to-face contact (e.g., child care workers). Others are inherently "high-touch" (e.g., nurses) or involve high levels of personal trust (e.g., psychotherapists). Still others benefit from location-specific attributes that are not easily replicated elsewhere (e.g., lobbyists in Washington and other capitols).

One major point of this essay is that, in the brave new world of globalized electronic commerce, impersonal services have more in common with manufactured goods that can be put in boxes than they do with personal services. Thus, in particular, many impersonal services are now or are destined to become tradable, just like manufactures, and thus potentially subject to offshoring. By contrast, most personal services will not share this fate. Some personal services, of course, are already traded across national borders--tourism being the clearest example. But international trade in face-to-face services requires human beings to travel. Either the consumer must go to the service provider (as

when patients fly to India for cheap surgery) or the service provider must go to the consumer (as when American baseball teams play in Japan). That sort of trade is inherently limited.

But as indicated above, the dividing line between personally-delivered and impersonally-delivered services is sure to move over time. As information technology improves, more and more personal services will migrate over the line and become impersonal services. At this point, we cannot even guess the ultimate dimensions of the migration. But it is likely to be large.

Forrester Research caused a media stir a couple of years ago with a widely-publicized estimate that 3.3 million U.S. service sector jobs will move offshore by 2015, or about *300,000 per year*.¹⁵ That sounds like a lot until you remember that normal gross job losses in the U.S. labor market run over *500,000 per week*! Given the ample possibilities for technological change between now and 2015, the Forrester number strikes me as way too low; were it to come true, service-sector offshoring would not be worth worrying about.

A University of California at Berkeley study of all U.S. occupational categories (in 2001) estimated that about 11% were potentially (not actually) at risk of offshoring, and a recent McKinsey study came to the same conclusion.¹⁶ That number also seems low to me, and one reason may be that the Berkeley study restricted itself to “occupations where at least some [offshore] outsourcing has already taken place or is being planned.”¹⁷ That

¹⁵ See John McCarthy, “Near-Term Growth of Offshoring Accelerating,” Forrester Research, May 2004, for an update.

¹⁶ See Ashok Bardhan and Cynthia Kroll, “The New Wave of Outsourcing,” Research Report, Fisher Center for Real Estate and Urban Economics, University of California, Berkeley, Fall 2003, and McKinsey & Company, *The Emerging Global Labor Market*, June 2005.

¹⁷ Bardhan and Kroll, *op. cit.*, page 6.

restriction limited the researchers to looking only slightly beyond the currently-visible tip of the iceberg. The future, as I have said, will reveal much more.

So let us take a fresh look at some rough numbers and try to peer into the future, albeit through the usual befogged glasses, starting with the easy cases.

- At the end of 2004, there were 14.3 million manufacturing jobs in the United States. The vast majority of these workers produce items that can be put in a box, and so virtually all of their jobs are *potentially* movable offshore. (Remember, this is not to say that all of them *will be* offshored.) This is old hat.
- About 7.6 million Americans worked in the other goods-producing sectors: construction and mining. Even though these people produce goods, not services, their jobs are not in danger of moving offshore. You can't hammer a nail over the Internet, at least not yet.
- At yearend 2004, there were 22.0 million local, state, and federal government jobs—hardly any of which are candidates for offshoring even though many of them provide just the sort of impersonal services that need not be delivered face to face. (When is the last time you saw an employee of the IRS?) In this case, I believe, politics will prevent the offshoring of services that technology would otherwise permit.
- Retail trade employed 15.6 million Americans at the end of 2004. At present, the vast majority of these service jobs are largely or partly delivered in person, or at least require physical presence (e.g., stocking the shelves). That said, Internet retailing is steadily increasing its still-small share of the market. Hence, more retail jobs will be at risk of offshoring in the future.

Those are the easy cases. But the classification so far leaves out the majority of private service jobs—some 73.6 million at the end of 2004, including my job (college teaching) and probably yours. Here’s how this extremely heterogeneous group breaks down:

| | |
|------------------------------------|--------------|
| Educational and health services | 17.3 million |
| Professional and business services | 16.7 million |
| Leisure and hospitality services | 12.3 million |
| Financial services | 8.1 million |
| Wholesale trade | 5.7 million |
| Transportation | 4.3 million |
| Information services | 3.2 million |
| Utilities | 0.6 million |
| Other services | 5.4 million |

It is hard to map such broad job categories into personal versus impersonal services, even under today’s (known) technology. And it is nearly impossible to know what possibilities for long distance electronic delivery the future will bring. But here is my rough stab, reading from top to bottom.

- The health sector is presently about five times as large as the educational sector, and the vast majority of those jobs seem destined to be delivered in person for a very long time (if not forever). But there are exceptions. I have already mentioned the case of radiologists. More generally, laboratory tests of all kinds are already outsourced by most physicians. Why not out of the country rather than just out of town? And with a little imagination, we can envision other medical procedures being performed by doctors who are thousands of miles away. Indeed, some surgery has already been performed (but not on me!) by robots controlled by doctors via fiber-optic links.
- Educational services are also best delivered face to face; but they are becoming increasingly expensive. My guess is that electronic delivery will never replace

personal contact in K-12 education, which is where the vast majority of the educational jobs are. Certainly not in the elementary schools. But college teaching is more vulnerable. As college tuition grows ever more expensive, cheap electronic delivery will start looking more and more sensible—if not imperative. (More on this below.)

- Professional and business services comprise an incredibly heterogeneous lot that defies generalization--ranging from CEOs and architects to typists and janitors. That said, when you scan the list of detailed sub-categories, it is hard to resist the conclusion that lots of these jobs are at least potentially offshorable. For example, future technological developments may dictate how much law and accounting stays onshore and how much comes to be delivered electronically from countries with much lower wages.
- The leisure and hospitality industries seem much safer. If you vacation in Florida, you do not want the beach boy or the maid to be in China. On the other hand, reservation clerks can be (and are) located anywhere. On balance, only a few of these jobs can be moved offshore.
- Financial services, a sector that includes many highly-paid jobs, is another area where the future may look very different from the present. To me, it is one big question mark. Today, the United States probably “onshores” more financial jobs (by selling financial services to foreigners) than it offshores. Probably, that will remain true for years. But improvements in telecommunications and rising educational levels in countries like China and, especially, India (where many people speak English) may change the *status quo* dramatically.

- Wholesale trade seems much like retail trade, albeit with a bit less personal contact, and thus with somewhat greater potential for offshoring. The same holds true for utilities.
- Information services, of course, comprise the quintessential types of jobs that can be delivered electronically with ease. The majority of these jobs are at risk.
- The phrase “other services” is not very informative. But when you look down the detailed list (e.g., repair and maintenance, laundry, etc.), most of this hodge-podge of services seem to require personal delivery.

The overall picture defies generalization; draw your own conclusions. My own very rough guess, based on the preceding numbers, is that the number of current U.S. service-sector jobs that will be susceptible to offshoring in the electronic future is two to three times the total number of manufacturing jobs.¹⁸ That said, large swaths of American employment look to be immune. However, none of us knows what the future will bring. Technology is constantly surprising us.

Electronic offshoring should be viewed as a looming challenge, not as an impending catastrophe. The world as a whole cannot lose from global increases in productivity. The United States and other industrial countries have made comparable adjustments in the past and have benefited from them enormously—though not often, and not without major social and political repercussions. That is really my central point: The shift toward personal services is not just business as usual. It’s a big deal.

¹⁸ This crude estimate is broadly consistent with Jensen and Kletzer, *op. cit.* Note that I emphasize *current* jobs. A major theme of this paper is that the sectoral and occupational compositions of the U.S. workforce are likely to be quite different a generation or two from now. When that future rolls around, only a small minority of U.S. jobs will still be offshorable; the rest will have already moved off shore.

Baumol's disease

One additional piece of economic analysis will complete the story, and in a somewhat worrisome way. It is called the *cost disease of the personal services*, or sometimes just *Baumol's disease*, in honor of its discoverer, William Baumol.

Here is the idea. In many personal services, productivity improvements are either impossible or highly undesirable. In the first category, think about how many musician-hours it took to play one of Mozart's string quartets in 1790 and in 1990, or how many bus drivers it takes to get the children to school today versus a generation ago. In the second category, think about school teachers. Their productivity can in fact be increased rather easily--by raising class size, which squeezes more student output from the same teacher input. But most people view such "productivity improvements" as deteriorations in educational quality--a view that is well supported by research findings. With little room, therefore, for genuine productivity improvements, and with the general level of real wages rising all the time, personal services are condemned to grow ever more expensive (relative to other items) over time. That is the essence of Baumol's disease.

No such problem besets manufacturing. Over the years, automakers around the world, for example, have drastically reduced the number of labor hours it takes to build a car. And car buyers do not perceive these labor-saving productivity improvements as deteriorations in car quality. Here, once again, impersonal services look more like manufactured goods. Thanks to stunning advances in telecommunications technology, for example, your local telephone company now handles many more calls with many fewer human operators than it needed a generation ago. And the quality of telephony has improved, not declined, as its relative price has plummeted.

Thus Baumol's disease predicts that, over the decades, the prices of personal services (like education and concert tickets) should rise relative to the prices of manufactured goods and impersonal services (like automobiles and telephone calls). The prediction is borne out by history. For example, Baumol's disease goes a long way toward explaining why the prices of healthcare and college tuition have risen so much faster than the Consumer Price Index for decades. Specifically, the prices of medical care services rose at a compound annual rate of 6.5% from 1959 to 2004; and from 1978 (when the series starts) to 2004, college tuition increased at an 8.0% annual rate. By comparison, the overall CPI inflation rate was just 4.2% (over either time period). When compounded over many years, differences of that magnitude cumulate into huge changes in relative prices.

Ever-rising relative prices have predictable consequences. Economists normally assume, backed by reams of evidence, that demand curves slope downward—meaning that the demand for an item declines as its relative price rises. Applied in this context, this means that we should expect *decreasing* relative demands for many personal services and *increasing* relative demands for many goods and impersonal services over time. The main exceptions are those personal services that are strong “luxury goods” (meaning that, as people get richer, they want relatively many of them) and those few goods and impersonal services that are what economists call “inferior” (meaning that, as people get richer, they want fewer of them).

It is at this point that Baumol's disease connects to the offshoring problem in a rather disconcerting way. I have argued so far that changing trade patterns will keep most personal service jobs at home while many jobs producing goods and impersonal services

migrate overseas. When you add to that the likelihood that demands for many of the increasingly-costly personal services are destined to shrink relative to demands for ever-cheaper impersonal services and manufactured goods, you realize that the rich countries have some very major readjustments to do. Much of the adjustment will involve reallocating labor from one group of jobs to another. But some will show up in real wages. As more and more rich-country workers seek employment in personal services, real wages for those jobs are likely to decline unless the offset from rising demand is strong enough. Thus the prognosis for real wages is brighter in luxury personal services (ranging from plastic surgeons to chauffeurs) than in ordinary personal services (like barbers and elementary school teachers).

Is forewarned forearmed?

What are we to do about all this? That's a good question, to which I don't have many good answers. Indeed, my main purpose in writing this essay is to get as many smart people as possible thinking creatively about the problem. While it is easy to describe the broad contours of the solution, it is not so easy to translate it into specific policies.

Let's start with what we should *not* do, but will be sorely tempted to try: building protectionist barriers against the threat of offshoring. It is hard enough to build tariff, quota, and other walls against conventional trade in physical goods. Humankind's natural propensity to truck and barter, plus the innate power of comparative advantage, tend to undermine such efforts—which not only end in failure but also cause wide-ranging collateral damage. But it is vastly harder (read: impossible) to stop electronic trade. There are just too many “ports” to monitor. The Coast Guard cannot interdict “shipments” of electronic services delivered via the Internet. The governments of the rich countries

probably can do a great deal of harm *trying* to block such trade. But in the end, they will not succeed in repealing the laws of economics, nor in holding back the forces of history.

What, then, are some more constructive--and promising--approaches?

In the first place, rich countries like the U.S. will have to reorganize the nature of work to exploit their big natural advantage in nontradable services: being close to where the money is. That will mean, in part, specializing more in the delivery of services where personal presence is either imperative or highly beneficial. Thus, I imagine that the workforce of the future will have more divorce lawyers and fewer attorneys who write routine contracts, more internists and surgeons and fewer radiologists, more salespeople and fewer typists.

With characteristic perspicacity, Herbert Simon saw this important labor-market development coming 45 years ago. In an almost-unknown essay (that concentrated on computerization, not international trade), he predicted that:

In the entire occupied population, a larger fraction of members than at present will be engaged in occupations where “personal service” involving face-to-face human interaction is an important part of the job. I am confident of stating this conclusion; far less confident in conjecturing what those occupations will be.¹⁹

The market system is very good at making adjustments like that, even massive ones. It has done so before and will do so again. But it takes time and can move in unpredictable ways (as Simon understood). Furthermore, as observed earlier, massive transformations of the nature of work tend to bring wrenching social changes in their wake.

¹⁹ Herbert A. Simon, “The Corporation: Will It Be Managed by Machines?,” in M.L. Anshen and G.L. Bach (eds.), *Management and the Corporation*, 1985 (New York: McGraw-Hill, 1960), p. 38. I found the quotation in Frank Levy and Richard Murnane, *The New Division of Labor* (New York: Russell Sage, 2004), p. 8.

In the second place, it is clear that the U.S. and other rich nations will have to transform their educational systems so as to produce workers for the jobs that will actually exist in their societies. In part, that means training more workers for personal services and fewer for impersonal services and manufacturing.²⁰ But what does that mean, concretely, for how we educate our children?

As I indicated earlier, simply providing *more* education is probably a good thing on balance, especially if a more educated labor force is a more flexible labor force that can cope more readily with non-routine tasks and occupational change. Frank Levy and Richard Murnane have noted that, in the computer age, “the ability to apply well-understood routines to solve problems is not as valued as it used to be.” But they believe that “rapid job change raises the value of verbal and quantitative literacy,” and so they prescribe more education.²¹ But education is far from a panacea, and the examples given earlier show that the rich countries will be able to retain many jobs that require little education. In the future, *how* we educate our children may prove to be more important than *how much* we educate them, as Simon’s words suggest. But educational specialists have not even begun to think about this problem. They ought to start--right now.

Perhaps, contrary to what we have come to believe in recent years, people skills will become more valuable than computer skills. The geeks may not inherit the earth after all, at least not the highly-paid geeks in the rich countries.²² (Geeks in poor countries should be in great demand.) Certainly, creativity will be prized.²³ Thomas Friedman has rightly

²⁰ It also means training them for tradable goods and services in which we retain (or develop) a comparative advantage.

²¹ Levy and Murnane, *op. cit.* The quotations come from pages 5 and 101.

²² As Pink puts it, we may need more right-brain (emotional, synthetic) thinking and less left-brain (logical, analytical) thinking.

²³ Michael Storper and Anthony Venables, “Buzz: Face-to-face Contact and the Urban Economy,” *Journal of Economic Geography* 2004 emphasize this aspect of services that are delivered face to face.

emphasized the desirability of steering our youth away from tasks that are routine or routinizable into work that requires real imagination. In his colorful words (Friedman (2005), p. 239):

You want constantly to acquire new skills, knowledge, and expertise that enable you constantly to be able to create value—something more than vanilla ice cream. You want to learn how to make the latest chocolate sauce, the whipped cream, or the cherries on top, or deliver it as a belly dancer—in whatever your field of endeavor.

I agree, but there are two big problems. First, creativity and imagination are notoriously difficult to teach in schools—although, in this respect, the United States seems to do have a leg up on, say, Germany or Japan. Second, it is hard (for me at least) to imagine that truly creative jobs will ever constitute anything close to the majority of employment. Never in the history of humankind have belly dancers outnumbered drones. What will everyone else do?²⁴

Other than changes in the educational system, what else can rich countries do to prepare for the future? I suggest that we will have to take a whole new look at the inadequate programs now known in the U.S. as “trade adjustment assistance.” As more and more Americans—and Britons, and Germans, and Japanese...--are faced with the necessity of adjusting to the dislocations caused by offshoring, we may need to make these programs both bigger and better. Unfortunately, the performance record of trade adjustment assistance to date has been less than stellar—and we’ve had it in the U.S. for over forty years. We will need to do better in the future.

Thinking about adjustment assistance more broadly, the United States may have to repair and thicken the tattered safety net that supports workers who fall off the labor-

²⁴ It is true that genuinely creative jobs (scientific research, writing, entertainment, etc.) have historically generated spillovers that lead to other jobs. But not all of these collateral jobs will remain local.

market trapeze. I am referring to programs ranging from unemployment insurance to job retraining, health insurance, pensions, and right down to public assistance. At present, the U.S. has one of the thinnest social safety nets in the industrial world, and there seems to be little if any political force seeking to improve it. But this may change if a larger fraction of our population starts to fall into the safety net more often. The corresponding problem for Western Europe is different. By U.S. standards, the social safety nets there are broad and deep. The question is: Are they affordable, even now? And if so, will they remain affordable if they come to be utilized more heavily?

To repeat, we should not be thinking about a future of mass unemployment but rather of a massive transition that must and will be made. An effective safety net will ease the pain and, in so doing, will speed up the transition. That said, the preceding list of all-too-familiar adjustment policies can be justifiably criticized as pretty thin gruel. New ideas, such as wage insurance, are more than just welcome.²⁵ They may be required.

An offshoring miscellany

Large-scale offshoring of impersonal service jobs from rich countries to poor countries will have numerous other implications, many of which, I am sure, we cannot even imagine now. But here are a few things that come to mind.

- *The U.S. vs. Europe:* As I have hinted already, the U.S. will probably cope with these dramatic workplace and educational changes better than Europe, which has been talking much (but doing little) about so-called structural labor market rigidities for at least two decades. Both history and logic suggest that markets, not governments, will take the lead in effectuating the necessary shift toward

²⁵ For one example of wage insurance, see Lael Brainard, Robert Litan, and Nicholas Warren, “Insuring America’s Workers in a New Era of Offshoring,” Brookings Policy Brief 143, July 2005.

personally-delivered services—and that markets will succeed. But the flexible, fluid American labor market will probably adapt better and faster than European labor markets will. That said, the adjustment will be a challenge on both sides of the Atlantic; and not many Indians speak French or German.

- *China vs. India*: Americans, and residents of other English-speaking countries, probably need to start thinking less about the challenge from China, which is largely about manufactured goods, and more about the challenge from India, which is in services. In today's world, speaking English is already a notable source of comparative advantage when it comes to providing services electronically. And this advantage seems destined to grow in importance as impersonal services account for relatively more international trade and manufactured goods account for relatively less. India, of course, has a strong comparative advantage in English, which it is learning to exploit. It has been argued, correctly, that only a small proportion of Indian workers are well-educated and skilled in English *at present*.²⁶ But the proportion is sure to grow. Bhagwati, Panagariya, and Srinivasan meant to reassure Americans that the problem is manageable when they stated that, “Adding 300 million to the pool of skilled workers in India and China will take some decades.”²⁷ They were probably right. But decades is precisely the time frame I am talking about, the English-speaking pools in both countries are expanding rapidly, and 300 million is a lot of people-- roughly twice the size of the U.S. work force.

²⁶ Jagdish Bhagwati, “A New Vocabulary for Trade,” *The Wall Street Journal*, August 4, 2005, p. A12.

²⁷ Jagdish Bhagwati, Arvind Panagariya, and T.N. Srinivasan, “The Muddles over Outsourcing,” *Journal of Economic Perspectives*, 18:4, p. 108.

- *Political strains:* As I noted earlier, the number of people in the rich countries who will eventually feel threatened by foreign job competition will probably grow enormously over the coming years. It is plausible—I am tempted to say predictable--that they will become a potent political force in each of the impacted countries. In the United States, job market stress up to now has been particularly acute for the uneducated and the unskilled, who are less inclined to exercise their political voice and less adept at doing so. The new cadres of displaced workers, especially those who are drawn from the upper educational reaches, will be neither as passive nor as quiet—and they will be numerous. They will petition their elected representatives for redress. So open trade may be under great strain.
- *Wage Inequality:* Wage disparities between highly-educated and poorly-educated workers have been growing alarmingly in the United States and in some other rich countries (but not in continental Europe) for decades now. This phenomenon is largely blamed on what economists call “skill-biased technical progress” (meaning that jobs in the new economy require increasing levels of skill and education), which is widely expected to continue. But maybe it will not. I have argued here that the rich-country jobs that will be most vulnerable to offshoring, and thus under the greatest wage pressure in the future, are *not* mostly low-end jobs. They are jobs providing impersonal services, some of which now pay very handsome wages and some of which do not.
- *Need for new data:* Sadly, the national data systems in the U.S. and other industrial countries have yet to adapt fully even to the *First* Industrial Revolution. For political not economic reasons, governments still devote vastly more

resources to collecting agricultural data than the size of that industry merits. It can hardly be surprising, then, that our data systems have failed to adapt to the Second Industrial Revolution. Throughout the industrial world, there is far less information on the service sector than on the much smaller manufacturing sector. The Third Industrial Revolution demands not only that we keep better statistical tabs on services, but that we start collecting systematic data on which service jobs are deliverable electronically over long distances and which are not. Needless to say, no one is doing this now. It will be hard even to assess the size and nature of the offshoring problem, much less to do anything constructive about it, in the absence of such data.

- *Job satisfaction:* I close my potpourri on an optimistic note, with a highly-conjectural side-effect of the coming shift from manufacturing and impersonal services toward personal services. In particular, the job shift may lead to precisely the opposite of the phenomena that Charlie Chaplin parodied so effectively in *Modern Times* (which was about the First Industrial Revolution). Human beings are social animals; we enjoy human contact. In many past decades, it looked as if modern economic life was destined to reduce the volume of human contact in the workplace. In future decades, as personal services come to predominate more in the rich countries, that trend may well reverse--possibly leading to less alienation and greater average job satisfaction.

Conclusions

Leaving aside the details and the nuances, the basic argument of this essay is easy to summarize:

- Thanks to electronic communications and globalization, the future is likely to see much more offshoring of jobs in what I have called the *impersonal services*, that is, services that can be delivered electronically over long distance with little or no degradation of quality.
- Despite all the political sound and fury, little of this service-sector offshoring has happened to date. But it may eventually amount to a Third Industrial Revolution. And industrial revolutions have a way of transforming societies.
- Rich countries will need to shift their work forces away from impersonal services and manufacturing and toward personal services. Unfortunately, Baumol's disease (also called the cost disease of the personal services) implies that the relative prices of personal services are destined to rise inexorably, so that the relative size of this sector may shrink over time.
- That said, the "threat" from offshoring should not be exaggerated. Just as the First Industrial Revolution did not banish agriculture from the rich countries, and the Second Industrial Revolution has not banished manufacturing, the Third Industrial Revolution will not drive all impersonal services off shore. Nor will it lead to mass unemployment. But the necessary adjustments will be large, complex, multi-faceted, and difficult.
- The societies of the rich countries seem to be completely unprepared for the coming industrial transformation. Our national data systems, our trade policies, our educational systems, our social welfare programs, our politics, and much more, all must adapt to the fundamental movement from impersonal to personal service jobs. None of this is happening now.

- Protectionism is not the answer. It will at best slow, not stem, the tide. And it will cause much collateral damage in the process.
- Perhaps the most acute need, given the long lead times, is to figure out how to educate our children *now* for the jobs that will actually be available to them ten and twenty years from now. Unfortunately, the distinction between personal service jobs (which are more likely to remain in the rich countries) and impersonal service jobs (which are more likely to go) does not correspond to traditional distinctions between high-skilled and low-skilled work. So simply providing more education is not the answer.
- The more flexible and fluid United States will probably cope with these problems better than Europe and Japan will.