



Baumol's Disease: Is There a Cure?



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In October of 2004, Bill Hackos wrote an article for the Best Practices newsletter, titled "The Information Developers Dilemma." He gave a presentation on the subject at the 2004 Best Practices Conference in the same month. The thesis of the article and the presentation was to demonstrate that principles brought forth in Clayton Christensen's book *The Innovator's Dilemma* on "disruptive innovation" apply to our own technical-writing discipline as well as with competition among high-tech companies. Bill showed how companies are beginning to use new technology, in this case the internet, to do programming, engineering, and documentation in third world countries that have either a natural English language or people educated in the English language. We refer to this innovation as offshoring. Offshoring is feared by American technical writers as a threat to their jobs. In fact, most of us know colleagues who have lost jobs that were transferred to India or elsewhere.

Following the conference last year, Charles Dowdell made the discovery of a 1967 paper by William J. Baumol called "Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis," in the *American Economic Review*, about the effects of automation on the US economy.

We've been astounded by the similarity of the processes described by Baumol and Christensen. It's as if the Christensen book is an update of how the late 20th century technological revolution has added to the woes predicted by Baumol 30 years before.

JUST WHAT IS BAUMOL'S DISEASE?

For those of you born in the 60s, 70s, or 80s, here's a little history lesson. After World War II, a revolution of factory automation occurred in the United States. Manufacturers could automate parts of their manufacturing processes and drastically increase their productivity. We define productivity here as the cost of manufacturing a product unit divided by the labor cost required.

Productivity increased when products could be manufactured through automation with less labor. The result in the 50s and 60s was a great displacement of manufacturing workers along with a decrease in the cost of manufactured goods.

Baumol addresses the economics of this displacement with a model he calls the Unbalanced Expansion Model. He notes that at any time there are two kinds of activity sectors.

The progressive sector consists of activities such as manufacturing in which productivity is increasing rapidly due to innovations such as automation. The other is the non-progressive sector containing activities that are not becoming more productive, such as most service activities. These include education, health services, governmental services, and many others. In 2005 we might add programming and information development to this list. Many activities performed by educated professionals cannot be automated. Baumol points out that a string quintet composed by Mozart still needs five musicians for a performance, the same as in 1787.

The two sectors have experienced very different rates of productivity growth and are therefore unbalanced. The consequences are great. Many people who work in the progressive sector lose their jobs to automation. Those remaining can be paid more because the automation has saved their organization enough money to raise salaries.

The non-progressive sector cannot increase its productivity but its wages go up nevertheless because of rising wages in the progressive sector. Service workers have the option to move to higher paying progressive-sector jobs. The non-productive sector's services, therefore, become more and more expensive because the increasing labor costs are not offset by innovation and automation. Because fewer workers are needed in the progressive sector, the number of people in the non-progressive sector grows. We have seen this dramatic change in the United States since the end of World War II when most workers were involved in manufacturing. Now the majority of workers are in service industries. Baumol's model has often been referred to as "Baumol's disease" because the increasing costs in the nonprogressive sector due to innovation and automation in the progressive sector seem inevitable.

As a result of innovation and automation, the costs of manufactured products have stayed the same or even fallen. At the same time services have become ever more expensive. Services that are considered essential have become the most expensive. These include education and health services that the public is willing to buy at any price. Non-essential services have either gone away because they are considered unaffordable or have become luxury items. The division between the two sectors has become so extreme that we can now buy a watch for less than it costs to hire a teenager to mow our lawn!

So we see that Christensen in many ways is a modern Baumol. In the 60s when Baumol was writing, computers had not yet left the research lab. Companies were very stable with fewer startups and fewer large company failures. Companies still tried to make a profit, to make money rather than to increase their stock price. Long distance phone service and airplane travel were still very expensive and the internet did not yet exist. The cell phone existed only in comic strips. Offshoring was not yet a word or an idea.

In 1997, Christensen replaced the difference between Baumol's progressive and non-progressive sectors with a difference between organizations that are making disruptive innovations and those that are making only sustaining innovations. Sustaining innovations are continuously being made by all successful organizations. Organizations try to increase efficiency to squeeze out a little more profit from their revenues.

Christensen defines disruptive innovations as radical innovations in process or product that can be disruptive to the revenue of more traditional organizations. An example is the new technology of the cell phone. Cell phones are quickly putting the traditional phone companies out of business. New cell phone companies are replacing the traditional wireline companies for voice service. The traditional companies have not been very successful at creating their own cell phone business, partly because of their investment in wireline expertise and equipment.

Bill pointed out in his 2004 article that the technical writing discipline in the United States is under pressure from a disruptive

innovation. High-tech companies are using the new technology of the internet to hire low-paid workers from third-world countries to do programming and technical writing for products marketed in the United States.

In Baumol's terms, we can say that programming and technical writing are becoming more and more expensive to companies that manufacture hardware and software because these functions cannot be automated. Baumol states in his 1967 article "... the very progress of technologically progressive sectors inevitably adds to the cost of technologically unchanging sectors of the economy, unless somehow the labor market in these areas can be sealed off and wages held absolutely constant."

Baumol would never have expected in 1967 that a technological innovation like the internet would make it possible to create a sealed-off labor force in a third-world country. High-tech employers are fully aware of the need to keep their low-paid workers isolated. While they promote globalism for trade and support with the internet and offshoring, they also support isolationism in terms of permanent immigration and US citizenship for third-world workers. Isolating inexpensive labor pools is not new to Americans. We used another, more draconian, but equally effective method to get isolated cheap labor for our agricultural needs prior to the Civil War.

High-tech employers have found a way to cure Baumol's disease. But is the cure worse than the disease? 