

From the Front Environment Under Siege



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Thinking Small

Globalization and the Choice of Technology

by **Kumar Venkat**

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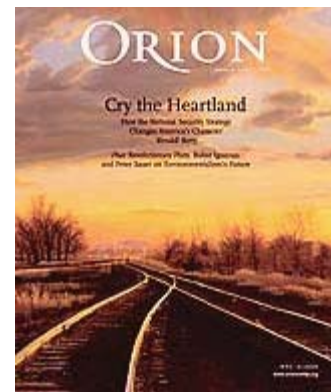
Most economists, government officials, and international development agencies see economic globalization as fundamental to everything from alleviating Third World poverty to protecting the environment. They contend that strong economic growth on a global scale is both necessary and sufficient for addressing most of these problems. Even if there are some painful adjustments to be made in the short term, those in charge are convinced that the long-term benefits will be worth the pain. Why is it, then, that there is so much grass-roots opposition to globalization?

Opponents of globalization see jobs vanishing, the environment deteriorating in most developing nations, and large corporations increasingly dominating all economic activity. They routinely protest the demon of "corporate-driven globalization" at events like World Trade Organization and G-8 summits, but rarely offer a compelling alternate vision.

To be sure, there are a few mainstream critics -- such as Nobel prize-winning economist Joseph Stiglitz, a former chief economist at the World Bank -- who argue that institutions like the International Monetary Fund (IMF) and the WTO have mismanaged the global economy and exacerbated poverty and hunger in developing countries. They note that the IMF's structural adjustment policies and the WTO's trade liberalization rules have left agriculture and

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small businesses -- the two predominating economic sectors in developing countries -- without adequate safety nets. They call for more transparency and accountability in these institutions -- in other words, a more democratically run global economy. But that is where their criticism usually stops.

There is an almost universal belief among policy makers that advanced technology and increased exports are vital for economic development in poor countries. Indeed it is the underlying theme of the globalized economy. For all the protests against globalization, this crucial point has not been vigorously debated yet.

All the recent mind-boggling advances in technology have obscured the need for making real choices about technology. E.F. Schumacher pointed out three decades ago that the choice of technology is perhaps the most critical decision that a developing country must make. In a truly democratic economy, we might reasonably expect that countries and communities would be able to choose technologies that are appropriate for their local conditions. Part of the discomfort of globalization comes from the fact that large corporations have already made this choice for us when we weren't paying attention and imposed a rather uniform standard the world over for technologies that everyone must use -- or perish.

The corporations that dominate the global economy, themselves rich in capital, have always been philosophically committed to capital-intensive technologies. They are constantly looking to increase labor productivity -- the economic output per worker -- and economies of scale through mass production. These goals require increasingly sophisticated technologies and large-scale automation, which in turn require large amounts of capital to develop and deploy. This approach quickly runs into a fundamental conflict with the physical realities of much of the world.

Many parts of the world are burdened with large populations and high rates of unemployment or underemployment. These same regions also have limited supplies of natural resources such as fossil fuels, fresh water, forests, land for housing and agriculture, space for dumping waste, and the capacity of natural systems to absorb and cleanse pollution. The large-scale technologies of today's global economy rapidly convert these finite natural resources into products and services, often at



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rates too fast for the resources to remain healthy or renew themselves, while eliminating human labor wherever possible through automation.

The promise that globalization holds out to developing nations is that they can escape poverty by exporting their products to the vast markets of the rich countries. But even where export markets are actually open to poor countries, this doesn't necessarily work to the advantage of small farmers and manufacturers. Globalization is predicated on the idea that it is advantageous to produce only those things that you can do more cost-effectively than other places in the world and simply trade them for other things that you need. This reinforces the technologies of large-scale farming and manufacture, and tends to work against anything that can be done on a small scale or locally. The immediate beneficiaries of this situation are multinational corporations that are capable of investing in large, centralized production facilities, which are increasingly concentrated in a few places like China where wages are low and regulations are lax.

But it is difficult for small, local manufacturers to compete with mass-produced, low-cost products that are flooding local markets in many developing countries. Unrestricted trade, where every country must open up its domestic markets to every other country, will make it nearly impossible for countries and communities to make choices about technology because imported products inherently bring with them the technologies that were used to create them. Local manufacturers will have little choice but to adopt similar technologies in order to compete, even if those technologies are not the best choices for local conditions.

When new technologies are driven only by market forces, the technologies soon acquire a life of their own and are no longer subordinate to larger social goals. The most recent example of this is how populous Asian countries are rushing to develop and plant genetically modified crops in order to compete in global markets. Proponents of biotechnology are now jumping on the globalization bandwagon to influence regulators and public opinion, arguing predictably that a uniform agricultural technology is essential in a globalized economy.

Countries like India and China are plunging headlong into biotechnology before they have figured out how to feed their large populations using the food they already produce. Biotechnology is being promoted in part as a solution to hunger, but better solutions may lie elsewhere. India, for example, has over 50 million tons of surplus wheat rotting in warehouses, purchased by the government to support farmers. But the poor -- including about 350 million Indians who suffer from hunger -- have no way of getting any of this food. The problem is not shortage of food or inadequacy of technology, but as Nobel prize-winning economist Amartya Sen has

pointed out, a lack of purchasing power on the part of the poor.

The other type of technology that is often pushed as a solution to problems like poverty and illiteracy is information technology. The information technology industry has nearly saturated the market in developed nations and is eager to open up new markets in developing countries. Once again, the efforts of industry are aided by the premise of globalization that advanced technology is an essential part of any development process. But again a closer examination shows that those who are already doing relatively well are likely to benefit the most from information technology.

The United States, with widespread proliferation of technology and more than half the population having access to computers and the Internet, represents the most optimistic scenario for what developing countries might achieve through information technology. But the poverty rate in the United States still hovers around 12 percent -- essentially where it was before the computer revolution in the mid-1970s -- while the income gap between rich and poor has expanded by almost 50 percent over the last quarter century. The "digital divide" eventually reflects and reinforces the underlying economic divide, which suggests that poverty eradication efforts should be aimed at a more fundamental level than just providing access to information technology.



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But the information technology industry is prevailing in developing countries like India that are committing scarce resources to closing the digital divide while hundreds of millions literally go without adequate food, water, and sanitation. Internet connections are being provided to remote villages that don't have passable road connections yet. While the Internet can provide some benefits for rural areas in developing countries -- such as weather forecasts, up-to-date commodity prices, and easier access to government agencies -- these benefits can also be delivered through alternate means without building an expensive infrastructure. Given the low literacy rates in rural areas, older and cheaper technologies like radio broadcasts could be more effective in many cases without consuming critical financial and natural resources.

New technology is almost always created in response to market

pressures, and not the needs of the more than one billion people who survive on less than a dollar a day or even the three billion who live on little more than that. Markets, in turn, are driven by the investments and consumption patterns of the affluent sections of society. In many cases, technologies have been developed to make life ever more comfortable and convenient for those who are not worrying about their next meal or wondering how to get medical care. Much of the recent focus on economic development has been on applying these technologies of convenience to situations where fundamental human needs have yet to be met.

Manuel Castells comments in his book *Internet Galaxy* that while it would have been reasonable and satisfying for countries to consider alternative models of development in a less integrated global economy, it is too late to ponder that possibility once countries have opted to be part of the "global network" of production and distribution. He says it is unlikely that societies around the world would now "engage freely in non-technological forms of development", in part because "the interests and ideology of their elites are deeply rooted in the current model of development". The development trajectories that most countries are on have little to do with the real needs of their peoples.

The widespread discontent with globalization is unlikely in itself to lead us to a more democratic global economy that serves the interests of the vast populations around the world unless it is converted into a workable vision that can challenge the status quo. Our choice is clearly not between using technology and rejecting it entirely. Even if we don't use powerful machines, we will still have to use other tools to get our work done. Any viable alternative to today's globalization must be clear about the technological choices at its core.

If we are going to be concerned about using our natural resources well while also opening up sufficient avenues for human labor, then we are going to have to concern ourselves with the choice of technology. Rather than always eliminating manual labor, it would seem more logical -- at least for resource-limited and populous developing nations -- to adopt smaller-scale technologies that encourage an optimal level of human involvement. These technologies must be designed to help maximize the efficiency of resource use in agricultural and industrial production, while minimizing the need for large amounts of capital.

The current form of the global economy can't exist without the underlying technological base that enables large-scale production and transport of goods. If we want a more benign global economy that allows countries and communities to protect their resources and provide employment for their peoples, then the range of acceptable technologies must be significantly expanded. Technologies must fit the circumstances of a place and its people, rather than forcing

people and communities to adapt to new technologies imposed from the outside.

If we choose technologies of a smaller scale -- for example, the intermediate technology advocated years ago by Schumacher -- we will also be limiting the physical radius within which these technologies can act effectively. Small-scale technologies are always a better fit for small, local businesses serving local populations than for large corporations with far-flung operations. Local businesses, in turn, have the potential to strengthen their communities by employing local people and being sensitive about conserving local resources. The viability of local economies will ultimately depend on the kinds of technologies they choose to use.

For the first time in history, deliberately choosing the right technologies, rather than just the biggest and most powerful technologies available, may hold the key to a livable future.

Kumar Venkat, *who was born and raised in India, works in Silicon Valley's high-tech industry and writes frequently about the social impacts of technology.*

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**Randy Dudley | Consolidated Grain and Barge Terminal,
Utica, NY | oil on canvas | 2002**

Joseph Richards | Sidetrack | oil on linen | 1999

Jay Kelly | Eighteenth Street | watercolor on paper | 1997

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