SOCIAL IMPACT ANALYSIS ON TECHNOLOGY TRANSFER

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As societies and cultures are changed, technology transfer is an integral part of the process of creating a new world order. A primary question is whether technology transfer serves as a force for good or evil. Based on some of the recent history of the United States and the impact of technology transfer upon a small group of tribal people in India, this article discusses the need for a social impact analysis approach to ameliorate the negative effects of rapid changes caused by unregulated technology transfer.

Now that the Cold War is over and a global focus on integrating the Third World into the first world has occasionally been proposed, real problems are going to occur. While dealing with the Soviet menace was difficult, those 40 years pall in comparison to the problems we face in integrating the Third World into a new world order. The recent terrorist attacks in New York City (the World Trade Center as well as the aborted attacks on the United Nations building and Senator D'Amato) are only the tip of a very prickly iceberg.

Some of these terrorist activities are the work of fanatical, fundamentalist religious zealots attacking what they viewed as a corrupt western world. This is, in the case of some Moslem groups, a basic conflict that can trace its origins to the European crusades. But there are all kinds of fanatics with all kinds of histories and agendas. To name a few, the IRA, some Basque groups, the Serbs, the Sudanese, the Libyans, and even the French Government if one wishes to view the bombing of the Greenpeace ship in New Zealand some years back.

In the case of the most recent terrorist activity, it appears that the over-the-counter bomb technology of fuel oil and garden fertilizer (used in the World Trade bombing) had been adopted by this latest terrorist group. Who developed the original technology and who transferred it to the various groups of fanatics who are utilizing it?

In the fall 1990 issue of Technology Transfer, Ralph Segman touched upon the ethical questions involved in transferring technology to despotic regimes such as Saddam Hussein's. The “horrendous potential” of military transfers in the context of the Middle East powder keg are obvious—people die when they are used. Despotic regimes (or terrorists) and the people responsible for supplying such weapons and technologies have blood on their hands. Segman makes the important point that this is wrong and that technology-transfer agents are not mindless. They are capable of “considering and discussing the value and impact of [their] work and work relationships.”

It has been too easy, in the name of expediency and reduced cost to rely upon a social-impact assessment that assumes (paraphrasing a popular bumper sticker against gun control) that “technology doesn’t kill people, people do.” One could try another gun metaphor paraphrase, “when military technology is outlawed only outlaws will have military technology.” Okay, maybe that’s a stretch, but the point is that the conventional wisdom has been that we do not have to worry about the social impact of technology transfer. But what is happening in this country in terms of general chaos, our children’s development, and the institutional-
ization of a growing underclass, seems to be showing us that we are paying a very dear price for not anticipating and controlling the impact of new technologies.

The social impact of the rapid transfer of new technologies can be even more dramatic in Third World countries, and presents similar ethical dilemmas. While the immediate effect (say a cluster bomb sold to Saddam being dropped on American troops) is not so dramatic, the death of a culture in a Third World country because of the disruptive effect of introducing a set of technologies whose impact was not analyzed, projected, and controlled, is as destructive (on a long-term basis) as the short-term effect of a bomb explosion.

The following description of the introduction of large-scale coal-production technology in the Indian State of Bihar will illustrate the ethical dilemma that technology-transfer agents face in Third World development efforts, and further serves as an allegory to what has happened in the United States.

BACKGROUND

The case involves a coal-development project in the Rajmahal district that catapulted from a small, largely manually operated mining enterprise to a multimillion-dollar international endeavor, one of the largest of its kind in the world.

Rajmahal is located in a remote region of Bihar—one of the most backward states of India. Its only claim to recognition in the past was the presence of a small Indian-owned underground and surface coal-mining unit. Coal reserves in the Rajmahal region were plentiful but of poor quality, and this had limited the large-scale exploitation of these reserves. This was the scenario until the mid-eighties when rising coal prices and the establishment of a mega coal-based thermal-power station close by, provided the stimuli to expand operations. The potential demand for Rajmahal coal jumped dramatically and led to corresponding changes in the scale and nature of coal production in the region. The socio-cultural effect on the region and the life of its inhabitants as new technologies were introduced was dramatic, and ultimately destructive.

The Rajmahal area was inhabited mostly by tribals, with high illiteracy and poverty levels, and negligible access to education, industrial-employment opportunities, and medical facilities. Employment was chiefly agrarian augmented with hunting and illegal (manual) mining of coal. The local tribals had only limited familiarity with even the most basic forms of industrial technology and lived in what was considered to be an underdeveloped area in what is a very backward state.

THE CHANGE

In the mid-eighties the National Thermal Corporation (NTPC) decided to construct a super thermal-power station at Farakka, close to Rajmahal. One of the site-selection criteria was the nearby availability of massive, albeit low-quality coal reserves. This development galvanized the corporate headquarters of the local coal company into blue-printing an immediate expansion of its operations at Rajmahal. Project construction and production schedules were synchronized with NTPC's projected demand schedules for coal, and a multimillion-dollar turn-key contract was negotiated with a Canadian company to develop project facilities and upgrade production capabilities. The coal reserves were near the surface and strip mining was the chosen method of extraction. This involved the installation, commissioning, and operation of fleets of heavy earth-moving machinery (HEMM), several high-capacity diesel generation systems, gas turbines, coal-handling machinery, captive railroad systems and their associated maintenance, training, manpower, supply and infrastructure requirements. Massive injections of capital by the outside investor changed the physical dimensions of the locale. Large housing projects sprang up in the midst of wilderness, merchants established businesses in the nearby villages and locals had access to consumer products as diverse as swimming pools and satellite television. Attracted to the availability of consumer goods, inhabitants lined up to sell land for their first real feel of money.

Technology in the form of new machines and production methods created demands for new skills and locals were trained to meet those