

Mirages of Development

Science and Technology for
the Third Worlds

Jean-Jacques Salomon & André Lebeau

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Preface

The main title of this book when it was originally published in French was *L'écrivain public et l'ordinateur* (*The Scribe and the Computer*), because we wished to emphasize that, while Third World countries may sometimes benefit from the most advanced technologies—such as the computer of our title—they should not abandon traditional, more labor-intensive methods (the public scribe for example), which still have much to contribute. All too often, experts in both the North and the South assume that the key to development lies in the latest science and technology, despite much evidence to the contrary—hence, our original subtitle, *Mirages of Development*.

Some other minor changes have been made in the English-language edition to update where necessary and possible (some data are now almost a decade old, but unfortunately nothing more recent is available). Clearly, the world has seen enormous changes since the book was completed in 1988, but we have resisted the temptation to indulge in major rewriting. There is one substantial difference from the French edition: We have replaced our original appendix, which sought to illustrate the essential nature of the computer revolution for a French-speaking audience in developing countries, with extracts from the debate on our book published in the journal *Social Science Information*. These extracts include the two most substantial critical reviews, by Christian Comeliau and Amilcar Herrera, and our reply. We hope that the publication of the book in English will now stimulate further discussion.

Finally, we should like to thank Ann Johnston for her careful and readable translation and the French Ministry of Culture for a substantial financial contribution to the costs of translation.

Jean-Jacques Salomon
André Lebeau

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Introduction

In a stall in one of the squares of Aix-en-Provence in the south of France, sitting like a post office clerk at his window, the scribe waits for his customers. He has an ancient black metal typewriter, a far cry from modern electric machines in their brightly colored plastic cases, with memories and liquid crystal displays, equipped with such a vast range of functions, from calculation to drawing, that even the best secretaries can never hope to make full use of them. The scribe's methods are old-fashioned: He makes copies using carbon paper, which leaves smudges on the paper and ink on the fingers. But this does not really matter. He can read, write, and above all hear, and he provides an invaluable service.

This stall does not appear on any of the postcards showing the squares of Aix-en-Provence around 1900, in the 1930s or 1940s, when France was still largely rural, when the telephone, the radio, the gramophone, and the typewriter were luxuries, and all primary school pupils learned to form their letters, chanting them together aloud and writing with dip pens. In the 1980s the stall is there, set up in the square, unprotected from the elements, the scribe working on market days, just as useful today as personal computers, video recorders, compact discs, and videos. And let no one suppose that the scribe's customers are all immigrants from North Africa, Portugal, Turkey, or Yugoslavia, either illiterate or with a poor command of French. Among those who ask his help in drafting an application for a job, a legal document, or a love letter are native French citizens, born in the mountains of Provence or Auvergne or elsewhere. Some of them never learned to write, others have forgotten how, while others lack the courage to do so or else need something typed—"new illiterates" as others are the "new poor."

Astonishing progress in the techniques of information and communication can take place alongside persistent and sometimes growing pockets of illiteracy, as recent surveys have shown in both Europe and the United States. In the age of increasingly powerful silicon chips, telecommunica-

tions via satellite, and ever more user-friendly computers capable of ever more sophisticated tasks, modernity can coexist—even in industrialized countries—with practices linked to traditional and sometimes archaic lifestyles. This dualism was there already before the Information Revolution, and it continues even in the so-called advanced countries, in spite of all the changes that have occurred.

One may even wonder whether the increasing pace of technical change is not exacerbating this dualism. Not everyone who can read a printed page has to be able to use a computer; many, on the contrary, avoid doing so, and their resistance is in no way related to the refusal of schoolteachers in the past to allow ballpoints instead of fountain pens. Underlying the new tool are not simply new ways of writing but a new language and a new culture. Far from eliminating, between one generation and the next, the obvious divide between those who quickly learn to make the most of the latest techniques and those who do not, cannot, or do not want to make use of the new tools and the new knowledge, the galaxy of Edison, Marconi, and von Neumann promises instead to widen the gap.

This is all the more the case in the developing countries. Not only are different sectors of their economies changing at different rates—modern production and distribution methods coexist with preindustrial, if not prehistoric, ones—but in addition Western ways of thinking exist alongside instinctive reactions, attitudes, and institutions that Western thought has constantly rejected.

No one has discussed this dualism more ably than Albert O. Hirschman, one of the pioneers of the economics of development, who has constantly tested his theories against his experience in the field, especially in Latin America. "It is often said that the underdeveloped but developing countries are apt to pass from the mule to the airplane in one generation. But a closer look at most of these countries reveals that they are, and appear to remain for a long time, in a situation where *both the airplane and mule* fulfill essential economic functions."¹ This dualism, which involves attitudes as well as working methods and commercial behavior, is the source of tensions and impatience, yet it is unavoidable and, in some respects, it can in fact have its advantages. If, for example, these countries want to diversify their economies, they would be wise not to set up new plants to make existing products for which the returns will be meager, but instead to invest their scarce capital in industries making new products for which productivity is higher.

It is precisely in those industries and technologies which demand the greatest efficiency (in particular, those requiring careful maintenance) that the underdeveloped countries have the best chances of success. Hirschman first made this point in 1958, and the example of transport consistently proves it: In these countries, the airlines tend to run well, the railroads provide a mediocre service, and the road network is in a shocking

state of disrepair. Consequently, the most modern industries, which cannot tolerate negligence in their operations or falling production standards, can ensure “a comparative advantage in jobs that must be done well if they are to be done at all.”² These forms of capitalistic production not only encourage higher productivity, but also speed up the growth of some industries and make larger areas of the economy more competitive.

On the other hand, as soon as one turns from production to management tasks, low operational standards rarely lead to catastrophe—train derailments or air crashes. The level of care and discipline required is more vague, the margin of tolerance of inefficiency is greater, and progress inevitably remains marginal. Whether this involves problems of organization, of financial management, of relations with staff and clients in private firms, or of public administration in general, the possibilities of success are all the smaller because nobody is very sure about what criteria they should be measured against.

National character and history are usually appealed to in explaining the malfunctioning of the political and administrative processes which stands so often in sharp contrast to real achievements in industrial and agricultural production. Seldom is it realized that these processes are intrinsically harder to master than production jobs. On the contrary, amazement is expressed that a country pretends to set up modern industries when basic problems of public administration have not yet been solved. But this is only one of the many instances where what seems a cart-before-the-horse sequence turns out to be the efficient one in underdeveloped countries.³

Experience shows that choosing “to put the cart before the horse” has indeed led to successes in both the public and the private sectors; it partly explains the increasing strength of the newly industrialized countries. Yet it is impossible to generalize: For one thing, there have also been some outstanding failures; for another, this speeding up of the process of industrialization, whatever the successes, has merely exacerbated the inequalities of the dual society in every instance. As Hirschman himself admitted, more than a quarter century after his first (and convincing) studies, this choice is frequently offset by a very high price: “The major disappointments of the past two decades over Third World developments have occurred in the political realm. While the economic growth record has been far from fair to excellent, at least in terms of aggregate expansion, the political record must be called from barely tolerable to disastrous.”⁴

This assessment also explains why, during the same period, the paradigm of development economics has changed totally. In the past, the emphasis was on growth rates, industrialization, and international aid; now the stress is on income distribution, employment creation, and self-sufficiency. In shifting from one paradigm to the other, we have moved from a concern with economics and production defined in terms of the

double-entry bookkeeping of development plans, to an approach that takes greater account of anthropology, social psychology, and even the wisdom of nations. All in all, the experts have learned a great deal about the limits of their models when applied to the situations of the Third World, as Hirschman notes with a touch of irony: “In that eminently ‘exciting’ era, development economics did much better than the object of its study, the economic development of the poorer regions of the world, located primarily in Asia, Latin America, and Africa.”⁵

Does this mean that people have really become aware of the link that can exist between choosing to put the cart before the horse and the political and social disasters that have occurred, *in spite of* the satisfactory results in terms of growth achieved? This seems far from the case, given the literature that has poured out in recent years describing all the benefits the spread of information technologies must bring to the developing countries. The Information Revolution is presented in these publications as the ultimate weapon for solving all the problems and for catching up.

Among this literature that veers between utopia and myth, there is no more striking example than Jean-Jacques Servan-Schreiber’s *The Global Challenge*. One may read there, for example, that “the revolution of the microprocessor and of telecommunications has provided the means to speed up, in a hitherto inconceivable fashion, a process of development that gives hope of achieving equality, not any longer in 150 years, but perhaps in a single generation.”⁶ Where will the money come from to finance this manna of computers and software designed specifically to meet the needs of the poorest countries? From oil wealth—apparently a philanthropic alliance of Gulf sheikhs and Japanese industrialists will take up this challenge. Thus the Third World will soon be flooded with communications equipment, and everything will become possible, because the machine will truly become the message:

There can be no question of proclaiming that reading and writing will no longer be taught. Rather it is a case of observing that any human being who can hear and speak will be able to communicate with a microcomputer, and therefore will be able to take part in what is going on, relying only on his ability to think, which he shares with the rest of the human race.⁷

Unfortunately for modern prophets, the pace of change—less rapid after all than they had promised—is enough to reveal the lack of substance of their predictions in their own lifetimes. As we shall see, it is not a case of underestimating the contributions the information technologies could make to the development of the Third World. But even if they could do a great deal, they cannot do everything and anything. They are not the key to catching up, and it is wrong to proclaim the contrary *urbi et orbi*. Although they may be revolutionary, they cannot alone trigger or main-

tain the social transformations that shape the possibility of development.

Beyond a certain minimum satisfaction of basic needs, capital accumulation by itself is never a guarantee of growth, and if science and technology can stimulate the development process, the political and social context must be favorable and therefore must be ready for it. Indeed, it is the way the society is organized that determines the area in which scientific knowledge and technical innovations generate growth—and not vice versa. The “computer fairy” can certainly accomplish a lot, but scientific research and technical innovation produce rapid results only where the organization, institutions, and attitudes have previously removed most of the obstacles characteristic of traditional economies and societies. Everywhere else, what happens to these obstacles will be what determines the pace of change—and there is no magic wand to remove them at a stroke.

A word of warning is in order here. Most of the discussion in this book refers to the nation-state. There is little alternative, because most of the quantitative data (especially those provided by the international organizations) are produced on this basis. Yet it is worth stressing the limits and the paradox this involves. In the Third World, the nation-state—a relic of the colonial period—does not mean the same thing as it does in the industrialized countries. The term obscures, sometimes at the cost of bloody conflicts, much older ethnic and tribal divisions and simultaneously prevents the creation of larger units. “Nation-state” is also inadequate to describe properly the social and political complexities of the countries of the Third World, but at the same time it explains why it may be so difficult to bring about cooperation among several of them within a region, even though in the area of science and technology this would be one way of overcoming the shortages of money and skilled labor that hinder the development efforts of all the younger nations.

Even in the case of the industrialized countries, it is obvious that the combination of the trends in the technical-industrial system and international trade leads to the creation of vast structures for research, production, and distribution that are less and less compatible with the strict observance of the principles of sovereignty that underpin the nation-state. The smaller the country, the bigger the fundamental problem: the choice between whether to accept the loss of power to organizations beyond the reach of national sovereignty or instead to risk economic decline. Judged by the number of agreements on scientific and technical cooperation that have been signed—not to mention the afterthoughts, the touchiness, and the difficulties these agreements have encountered—it is clear that European countries have not managed to avoid the contradictions inherent in this choice. In fact, only the continent-sized countries have been less affected by this problem so far.

This brings us to the paradox: For all that the growth of transnational organizations, both public and private, gives concrete expression to this

globalization of the technical-industrial system, the will of the nation-state remains the most decisive stimulant in the attempts by certain countries to compete with the most industrialized nations. What is true of some European countries is even more so of the continent-sized countries of the Third World: Brazil, China, and India. Nevertheless, the statistical data on the scientific and technological potential of each country taken on its own provide an extremely inadequate measure of the pressures and hindrances each must deal with when trying to make the most of this potential.

If the transnational megastructure—from multinational firms to international cooperation agreements—is indeed becoming the characteristic feature of the technical-industrial system, then it is obviously a makeshift solution to analyze current developments in terms of the nation-state, which this phenomenon is weakening or destroying. The choice of these terms of reference does not mean we consider that maintaining the integrity of the nation-state is an aim in itself; national boundaries are merely a constraint to which technical and economic progress is less and less well adapted. This does in any case bring out the narrow room for maneuver available to the developing countries.

This book sets out to be a return to common sense, an approach that has not always guided the debate. While we stress the opportunities created by the information technologies, we try to show that they also involve limits, threats, and traps—for the industrialized countries, let alone for those of the Third World. The book is based on our experience with these problems in certain developing countries and on our involvement in an international program concerned with the impact of the new technologies on developing countries.⁸ Its message in brief is to point out that if the scribe and the computer still exist side by side in our countries, then they are all the more likely to do so for even longer in the Third World. *The shortcut to development is never science and technology in themselves, but is development itself.*

PART 1

THE SETBACKS TO DEVELOPMENT

Research carried on in the rich countries on the
problems of underdeveloped countries . . . tends to
become “diplomatic,” forbearing
and generally overoptimistic.

—*Gunnar Myrdal*

1 No Shortcut to Development After All

Whenever the facts do not fit the theory, it is normal to look for the error in the theory rather than in the facts. This is indeed the essence of all scientific method: not to read the world in terms of theoretical preconceptions but to observe what is actually happening. Facts are stubborn, as Lenin said; yet the people he inspired have been rather too inclined to dismiss any facts that did not fit their theories. Because facts are obstinate, the only way to challenge them is to produce others, created out of thin air if need be, which is how ideology can conjure up fantasies.

The idea that the proletariat in the industrialized countries was inescapably condemned to increasing poverty was one of these fantasies. In France, for example, during the period of rapid growth in the 1950s and 1960s, the more the statistics indicated that everyone was getting richer, the more the Marxist intellectuals, trade unionists, and political activists thundered about the worsening situation of the workers. Although the purchasing power of manual workers' net wages was clearly rising (by 50 percent between 1951 and 1965), they continued to say the exact opposite.¹

Similarly, there was alleged to be a close, and indeed automatic, link between the industrialized countries becoming richer and the developing countries becoming poorer. This process, too, was seen as inevitable and as the direct result of the neocolonial economic imperialism of the rich nations, just as the pauperization of the proletariat was supposed to be the conscious and deliberate action of bourgeois capitalists. In both cases, if the situation deteriorates, it must always be the consequence of malicious intentions: For workers in the industrialized countries, as for the proletarian nations, increasing poverty is deliberately built into the capitalist system, just like a worm in an apple. What then does one do if there are cases where grinding poverty has diminished or if the setbacks to development today are not in the least like the burdens of colonial exploitation? In that case, the statistics must be wrong.

The Ups and Downs of Development

Anyone who travels in the Third World or reads the reports of the international organizations is aware that remarkable progress has been made, yet the results differ so widely that it is unwise to use them to make general predictions about the future. There are still too many places where food production lags behind population growth, even though many more countries than before have managed to increase their level of self-sufficiency thanks to the spread of high-yield crops and of agricultural advisory services.

Neither India nor China, for example, is in the least what it was less than a quarter century ago, when both suffered from frequent famines, epidemics, and natural disasters. The introduction of new varieties of grain and the improvement in farming methods generally in India, Pakistan, and Indonesia have speeded up their transformation into producers of surpluses. In China, after the upheavals of the Cultural Revolution, the stimulus of a moderate dose of private enterprise and competition helped a large section of the rural population to improve its position by at least 50 percent between 1980 and 1984.

These spectacular results derived above all from better irrigation (more efficient pipes and channels, many more pumps installed on wells and riverbanks) and the huge increase in the number of high-yield varieties of wheat and rice. Between 1950 and 1980, the irrigated area in India rose from 50 to 100 million acres and in China from 40 to 80 million. Countries as different as Burma (now Myanmar), South Korea, Pakistan, and the Philippines doubled the area under irrigation. These results also depended upon the quality of the people running the agricultural sector and whether they encouraged the spread of new techniques arising out of agricultural research. Another contribution came from the implementation of a more efficient grain policy based on better management of stocks and some intervention as regards prices and markets (in China this meant in fact a limited reintroduction of free-market mechanisms).

These successes in Asia are in sharp contrast to the equally spectacular failures in Africa. Nevertheless, thirty years ago it was about the desperate food shortages in overcrowded Asia that the experts were raising the alarm, whereas the situation in Africa, where population growth was slower, did not worry them as much. Both the assessment of the current situation and the forecasts made by Edouard Saouma, head of the United Nations Food and Agriculture Organization (FAO), in a report published in 1986 are catastrophic: Although they were virtually self-sufficient 25 years ago, most African countries cannot now feed themselves; unless there is a radical shift in the policies of the countries concerned, along with massive aid from the richer nations, the situation can only get worse by the end of the century. Since 1961, per capita food production has fallen