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Second Lecture on Transportation Held on May 4, 1967 in the West Hall Auditorium, American University of Beirut

TRANSPORTATION, COMMUNICATIONS, AND THE FUTURE

by Wilfred Owen

It would have been a good idea, at the founding of the American University of Beirut a hundred years ago, to have held a symposium like this, on the future of man. If there had been a program on transportation, some clairvoyant professor might have mounted the platform to make predictions about the next hundred years. His audience would not have been prepared for any startling revelations, because this University made its debut at the time of the sailing ship, and ten years before the first telephone.

"In the next hundred years," the nineteenth century prophet would have begun, "I foresee south of AUB, along the shore of the Mediterranean, a jumble of concrete roadways called the Beirut International Airport, where every morning large numbers of men, women, and children, after breakfasting on scrambled eggs and sausages six miles above Iran, will swoop down over the Lebanese Range and come to a screaming halt just five hours after leaving Karachi."

"What is more," the professor would have continued, "the people of Beirut will be sitting at home watching what goes on thousands of miles away, in pictures that flash through the sky and wind up in a little box on the living room table. Hundreds of unruly self-propelled vehicles will hurtle through the streets of Beirut, hunting pedestrians and demanding that they ride instead of walk."

By this time some of the audience would have started for the door, but the professor would just be hitting his stride. "By the mid-1960's," he would go on, "man will be able to fly around the Earth 18 times in one day and stroll in space en route at 300 miles a minute."

Then they would have carried the professor out of the hall and laid him gently on the grass and applied cold compresses, and students would have gathered in little groups, despairing about the future of AUB.

But now that a hundred years have passed, these predictions were not the most incredible truths that might have been told about the times we live in. The most incredible story about us is that despite all these wonders of transport and communications, two thirds of the world's people are bogged down right where they were 2,000 years ago. It is still their backs and heads that bear the commerce of nations. Whatever help they get comes from the same menagerie of bullocks, camels, and elephants on hand at the beginning of recorded history. The incredible thing about the modern world is that it turned out modern for a few, but is still the same old place for everyone else.

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So the central problem of our day is how to narrow the gap between the rich and the poor. Improvements in agriculture, industry, health, and education will all be necessary, but they all depend on transport and communications. The way to a better life is blocked by the barriers imposed by distance. The world is richly endowed with resources that happen to be out of reach. For centuries we got along without them because the population of the Earth was small. Today, however, both knowledge and wealth must be made mobile and accessible to serve our growing numbers and our higher aspirations. The ways to greater mobility have been invented, but we have yet to invent the ways for inventions to be put to work.

The Problem of Food

The farmers of the world know that immobility perpetuates poverty. Most of them earn their bread and pass their lives in isolation. They have little contact with the outside world. Yet the outside world needs them, because getting enough to eat is the most urgent problem we face. And transport is a key to solving this problem. As the supply of new land disappears, the principal way to get more food is to provide the water, fertilizer, improved seed, and other inputs needed to grow more on the land already in use. These inputs involve extensive transport from urban factory to farm, and then the surplus that is produced has to be moved from farm to city. As the population of the world increases, there will be a compelling need for more transport in both directions.

So there will be limited progress in agriculture where roads are impassable, where transport costs are high, and where marketing is uncertain. This is the way things are in much of the world today. In Central India, 36 percent of the rural villages have no road at all. Another third have only the roughest cart tracks to connect them with the nearest town. Without a road, no one markets anything. Fertilizer never gets delivered. Technicians rarely visit the village. Children are unable to get to school. The doctor never comes to see the sick. No one will show the villagers how to dig a well. Without a road there is little chance of getting poles and wires installed for electricity.

Even knowledge and information are unable to move. People communicate by carrrying messages, and if new ideas move at all, they have to make their way through the sand and mud. Information about markets and prices and new techniques may never reach the rural hinterlands. The very concept of economic progress is foreign to those who live beyond the sound barrier.

The possibilities of overcoming these problems through transport and communications have been demonstrated. Earlier this year the villagers of Wazirpur, in Central India, were asked what had happened since their new road had been built. They said that once they earned cash only twice a year at the harvest. Now cash was entering the village daily because the new road permits vegetables to be grown and marketed every day. This shift in the cropping pattern from wheat to vegetables has tripled the returns per acre. It is also possible to sell milk in neighboring towns at good prices, instead of disposing of it locally, for the milk collector, who shunned this village before, is now able to carry twice as much milk on his bicycle over the improved road.

High-school courses are being taught for the first time in the village school because teachers who refused to live in the poverty of the village are able to commute from the nearest town. With an all-weather road, the State has extended bus service to the village. Girls can take the bus to college. A dispensary has been built, and the doctor comes when needed. On the old road transporting bricks by camel cost ten times more than the cost today by truck.

An elderly gentleman standing in a dried-up field of corn was asked, "What do you think is the most important benefit of the new road?" "We are badly in need of rain," he said, "and now the monsoon can reach us. Everything good comes to us by road."

Half a world away, in Bolivia, a new road connects the country's overcrowded highlands with the tropical, underpopulated lowlands. The new highway, combined with investments in sugar mills, rice mills, fertilizer, and colonization schemes, has had a dramatic effect on agricultural production and marketing. A country that previously imported great volumes of sugar and rice is now self-sufficient.[1]

In El Salvador the building of the Littoral Highway has produced a major increase in cotton cultivation, which is now the second largest source of foreign exchange. Good transport was combined with an effective cotton cooperative and with capital and management skills attracted from the city by the greater ease of access. Better transport made it possible to move quickly to spray the cotton after the rain, a key to good production, and the spraying has had the side effect of eliminating the malaria which once affected 70 percent of the population.

In East Pakistan, a rural public works program has provided flood control, irrigation, roads, and other measures to create successful commercial agriculture through local labor.[2]

In three years the East Pakistanis constructed or improved 24,000 miles of village-to-market roads, and as rickshas, bicycles, and bullock carts began to replace headloading, the cost of transport was reduced 80 percent.[3]

Economic Integration Through Increased Mobility

Good transport is also the key to effective regional development. Countries and regions that once were forced to be self-sufficient now can exploit their comparative advantages and exchange products with their neighbors. Today political boundaries have been erased by the speed and economy of modern transport, and the potentials of economic planning on an international scale are being promoted.

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1) Barbara R. Bergmann, "The Cochabamba-Santa Cruz Highway in Bolivia," in George W. Wilson, Barbara R. Bergmann, Leon V. Hirsch and Martin S. Klein, *The Impact of Highway Investment on Development* (Brookings Institution, 1966).

2) Pakistan Academy for Rural Development, *Fourth Annual Report, June* 1962 - *May* 1963 (Comila, East Pakistan, 1963).

3) Richard V. Gilbert, "The Works Programme in East Pakistan," in *Development Digest*, Vol. 3, No. 2 (National Planning Association, July 1965), pp. 19-30.

In Thailand, improved access to fertile lands and quick transit to Bangkok via the Friendship Highway have helped to transform jungle areas into highly productive farms that export corn to Japan. In Southern India the improvement of rail and port facilities for the export of iron ore to Eastern Europe and Japan promises to move 25 million tons a year to boost India's purchasing power abroad. In the Middle East the extension of jet air services has sparked a continuing expansion of foreign exchange earnings from tourist travel. And in South America the opening of transport connections among isolated countries may permit the dream of economic integration to be realized. Because of poor transport, trade among South American neighbors is still only ten percent of their total foreign trade.[4]

Reducing Transport Burdens

Along with increasing the effectiveness of transport, it is important to stop moving what does not have to move. Today on most of the world's railways one-fourth to one-third of total freight traffic is coal. It may pay to reduce this traffic by shifting to oil or gas that moves by pipeline. Or long-distance transmission of electric power from generating plants close to the mines can make it possible to move the coal, in effect, by wire. And in the future the use of nuclear power or solar energy may eliminate the need for transporting fuel altogether.

Other possibilities of reducing unnecessary transport include the processing of agricultural commodities and mineral products close to the source in order to eliminate the movement of waste. Canning, drying, freezing, dehydration, and other preparations can remove a high proportion of the weight from food before it reaches the rails or roads.

The planning of cities provides a means of reducing the volume and cost of transport by new designs for neighborhoods and community facilities, and by limits on the size and density of urban areas.

An important lesson can be learned from countries that have already experienced the urban-industrial revolution. England, France, the United States, and other urbanized countries are now discovering the high costs of congestion resulting from planless urban development and uncontrolled urban sprawl. Deterioration of transport, housing, and public services of all kinds are requiring costly slum clearance and urban redevelopment. The cost of correcting past mistakes is staggering. Vast areas of urban decay will have to be reclaimed and entirely new cities built to provide a more workable urban environment.

Transport facilities can be made to serve as the framework for less congested urban areas, and urban land-use plans can help assure densities and arrangements of housing and work places that will not create unmanageable traffic congestion. And in the new towns the shift from railways to road and air transport introduces new opportunities for a more dispersed pattern of moderate-sized cities.

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4) Robert T. Brown, *Transport and the Economic Integration of South America* (Brookings Institution, 1966).

Using Communications Techniques

The effects of communications as a supplement to transport are beginning to be seen. In Turkey it has been discovered that villages distant from a road but with many radios are much more progressive than villages near a road but lacking radios.

Wherever there were radios, people had more knowledge about their village and were more willing to undertake community projects. Even travel to and from the village was greater with the presence of radio, despite the fact that transport facilities were poor. One of the principal functions of a road is to transport information, and radios can accomplish this part of the development task cheaply and quickly pending completion of the transport net.

Now the spolight is on television, and soon it will be possible through satellite repeater systems to bring all the people of the world into visual relation to modern society. Experiments with television in developing countries have already made available important new techniques for explaining the organization of cooperatives, repair of domestic appliances, family planning, first aid, health and hygiene, kitchen gardening, disposal of waste materials, and observance of traffic regulations. Beirut taxi drivers may yet be televised into yielding the right of way.

Organizing an Attack

If man is to advance toward a higher level of living, a global attack on poor transport and communications will be a prerequisite, and we are not organized to do this. There is no world-wide system of exchanging information, of supporting needed research, or of training people to exploit fully the role of transport and communications. Of all the areas in which world cooperation can promote better conditions of living, this is surely one of the most important.

The gap between the rich countries and the poor is a large one, and there are signs that it is widening. Of the world's ten million miles of surfaced roads, 73 percent are in North America and Europe, where only 26 percent of the Earth's population is living. Of the $25 billion spent per year for roads, 84 percent is spent on these two continents. Of the world's 31 million commercial vehicles, two-thirds are in Europe and North America. The world has 448 million radios and 144 million television receivers, and 80 percent are in North America and Europe. Two countries, the United States and the Soviet Union, account for 73 percent of all the world's railway freight. If Asia, Africa and Latin America had half the standards of transport available to Europe and North America, there would be immediate need for 10 million miles of roads, 35 million trucks and busses, and 300 million radios.

The transport needed to improve conditions in poor countries imposes a heavy economic burden. Every one percent increase in the national output of developing countries is accompanied by at least a 2 to 3 percent increase in freight transport.

As a result, a large proportion of the resources of poor countries is absorbed in getting things moved, often as much as 20 to 30 percent of total public investment. This used to be true of the more developed countries too, but it is no longer the case. As development proceeds, increases in national product involve less than proportionate increases in transport.

The objective of a world drive toward improved transport, then, would be to hasten this evolution by building the transport needed to yield the greatest possible additions to national output per unit of transport investment. There are two ways to do this. One is to use the most appropriate technology (rail, air, road, water, pipeline) and to give priority to the most urgently needed projects. That means viewing transport as a specific input to development targets, such as food production, mineral output, or industrial expansion. The second way is to reduce the transport burden whenever possible through location decisions and scientific innovations that help avoid transport if some other way is better.

One hundred years ago the idea of organizing an American University in Beirut was realized, and this institution was ultimately the means of exerting far-reaching impacts on the economic and cultural affairs of the Middle East. It would seem fitting at this transport symposium one hundred years later to envision another organization that could ultimately exert an impact on the affairs of the entire world. What is called for here today is the establishment of a system of world organizations for transport and development to serve the United Nations. This organizational network should have the same objectives in the field of transport that the Food and Agriculture Organization and its affiliates have for world agriculture, or that the World Health Organization fulfills in the field of health. The notable progress in engineering and technology contributed by such agencies as the International Road Federation, the International Civil Aviation Organization, and the International Telecommunications Union must now be matched by action in economics, finance, administration, and planning, to help complete the total system of activities needed to close the gap between the ancient and the modern worlds. This series of cooperating organizations, the U.N. Institutes for Transport and Economic Development (UNITED) would seek to marshall the knowledge and skills available in the transport field to provide more effective support for agriculture, industrialization, education, and other programs. Primary tasks would be:

1. To reduce rural isolation and help avert world famine.
2. To promote regional and international economic integration.
3. To help create a more satisfactory urban environment.
4. To alleviate unnecessary burdens imposed on the transport system through innovations in science and technology.
5. To supplement transport with telecommunications.

The Next Steps

An organizational breakthrough such as this is a logical move at the present time. We are entering an age of supersonic and hypersonic speeds, a period in which the news of the whole world will be seen everywhere and every day on satellite television, a time when computer information systems will carry us still farther along the road to a single interconnected world community. But in addition to organization, there is urgent need for more capital. Present reliance on a limited volume of loans for individual projects is not going to take us much farther.

What is needed is a global fund out of which transport investments could be financed on a grant basis, with additional support contributed by recipients on a matching basis. These funds, for approved programs of transport development, should be distributed among developing nations or groups of nations, based on population and geography. This aid program might be administered through the new United Nations Capital Development Fund.

Support for the fund might be supplied through contributions of a specific percentage of the gross national product of developed countries, or through internationally agreed-upon tax levies on specific consumer items in large-scale use. For example, a worldwide tax of one-third of a cent per gallon on crude oil production would yield over one billion dollars per year. Such a levy collected by the principal producing countries would be deposited with the United Nations for the transport development program. For producers, the application of the tax to the expansion of world transport would be a guarantee of markets undreamed of before. For consumers, the tax would be an appropriate contribution to underdeveloped countries from those already enjoying the resources that are the common heritage of all.

Projects which can attract financing on commercial credit terms or through World Bank sponsorship would be continued as usual. The new program should benefit from this experience, for it will be necessary to make use of many of the same planning and evaluation techniques. In this work, the U.N. institutes for transport and economic development (UNITED) could assist in marshalling the technical competence of the many international agencies now serving in the transport and communications fields.

Is this kind of global response to overcoming transport inadequacies too idealistic or impractical or harebrained to warrant serious consideration? A negative answer is being forced upon us by the demands of a rapidly shrinking world. Yesterday man was dependent on a patch of nearby ground for his daily ration of bread. Now the transport and communications revolution is creating a single interdependent planet where "each man is coming to demand his daily ration of iron, copper and cotton, of electricity, oil and radium, of discoveries, of the cinema and of international news."[5] In this setting, a familiar warning should be sounded again: "If a free society cannot help the many who are poor it cannot save the few who are rich."[6]

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5) Pierre Teilhard de Chardin, *The Phenomenon of Man*, 1959, p. 245.

6) President John F. Kennedy, Inaugural Address, January 1962.

The prescription for overcoming poverty and misery is complex, but the goal of opening up the continents and providing access to the world's resources offers extraordinary promise. When men gather in Beirut a hundred years from now to commemorate the bicentennial of the American University, we can hope that the promise will have been fulfilled. Surely by that time men will avoid the shame of admitting that while science has produced great wonders, the greatest wonder of all is that two-thirds of the world is just as poor today as it was a hundred years ago.