

Global issues for a global research community: a university perspective

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The well-known American palaeontologist and historian of science Stephen Jay Gould once remarked that in many issues, particularly scientific issues, our understanding is hampered not so much by a lack of facts, but far more often by a ‘conceptual lock’. This paper focuses on what we consider an important conceptual lock in development-related research, i.e. the failure to adequately perceive and address the global nature of development problems.

The outstanding issues

Rural and urban areas worldwide are confronted with many issues which cannot be solved on a regional basis only, but call for global thinking and sharing of expertise, information and resources. Some of the most pressing issues today are: population growth and food supply, geopolitical and economic changes, and environmental degradation and global climatic change.

Population growth and food supply. Rapid population growth is a key feature which distinguishes the tropics and subtropics from the rest of the world. The human population is expected to double – to ten or eleven billion people – by the end of the next century, and this increase will occur almost entirely outside the temperate regions. Today, one-third of the population of developing countries lives in poverty, a more than proportional number of them being women. By as early as 2025, 63% of the world population will live in developing economies, most of them situated in the tropics and subtropics, a major exception being temperate China. The African population will have tripled, while Asia will witness the greatest absolute growth of all continents (from 2.6 to 4.4 billion in 2025). In many tropical and subtropical countries, the majority of the labour force is still employed in the agricultural sector, but this may change rapidly. If current trends continue, nearly 60% of the population will live in cities by 2025, which implies a staggering migration from rural areas. Urban development will conflict more and more frequently with agricultural land use, and a relatively declining rural population will have to meet increasing urban food demands. There can be no doubt that this will require dramatic changes in land use systems for which developments in temperate-zone agriculture can hardly serve as a guide.

Geopolitical and economic changes. Political power relations in the world have changed since the collapse of political systems in the Soviet Union and other Eastern European countries. They are accompanied by disruptions of violence. Economic relations are changing due to the emergence of new economic blocks and powers. Consequences of these changes may be observed each day: international and regional migration, protectionist measures, decreasing structural aid to developing countries, international military interventions, a changing role of the United Nations and the Security Council, etc.

Environmental degradation and global climatic change. There is an increasing awareness that the inherent fragility of the earth's resources and the sustainability of agricultural production are closely linked. According to many experts, the world of the 21st century may face a significant temperature increase, an overall increase in precipitation, a possible rise in eustatic sea level as well as a doubling of atmospheric carbon dioxide. The effects of these changes, if they should occur, are still uncertain, but they are likely to affect the higher latitudes more dramatically than the tropics. Furthermore, population growth has increasingly led to the cultivation of marginal areas such as erosion-prone hillsides. Agricultural settlement and commercial exploitation are having disastrous effects on the extent of natural rain forests.

Effects of the changes

These changes do not affect all regions in a similar way. As a result the situation in developing countries is becoming more diverse, and providing conditions that are adequate for people to obtain a livelihood will become increasingly complex. This implies that development-related research has to take into account current and future changes as well as the geographical, ecological and socioeconomic diversity. As a consequence, many issues can be addressed only in an interdisciplinary context; moreover, new scientific approaches will be required. Since systems approaches and mathematical modelling allow us to analyze very complex systems, they can be of considerable help, on the condition that the procedures and results are made transparent.

Furthermore, more theoretical research is required in the areas of political decision making, role of the state, and interaction between state and society. Fundamental changes in economic thinking may be needed. The validity of certain economic 'laws' is to be questioned: are profit maximization and accumulation of wealth the necessary motors of economic behaviour in industrialized countries? Is liberalization of trade the only blueprint for economic development in developing countries? A confrontation with radical new views might be necessary to avoid turning existing theories into dogmas.

In all likelihood, the overall global changes will have their most dramatic effects on population, agricultural production and human health in the tropical and subtropical regions. Although development problems in these regions depend very much on specific local conditions, they also have global dimensions:

- Many of the problems are directly or indirectly influenced by international conditions – such as world market prices, trade barriers, access to capital markets, and labour markets in neighbouring countries.
- In turn, the problems themselves often have an impact at the international level, affecting international trade, migration, climatic change, etc.
- Moreover, for most location-specific issues similar problems exist in other parts of the world, and much is to be gained by a comparative approach to development processes.

The first two points imply that one cannot study problems at one (local) level only, but should aim to understand processes at the various levels at which they affect development. Taken in combination, these three points suggest strongly that if development problems are only studied in a local or (sub)regional context, rather than also from an international, comparative perspective, we are apt to miss the point.

Micro-level and macro-level research

The need for an international and comparative perspective which includes different levels is demonstrated by the example of cereal banks in Burkina Faso. In this country, where a subsistence economy seems to be changing into an economy of survival, food security issues – short-term as well as long-term – are of great concern to policymakers and decision makers on various levels: farmers, village authorities, district planners, extension services and ministries. In facing the agricultural crisis, the farmers take a number of initiatives. These include communal activities of production, water management and prevention of erosion, the setting up of farmers' cooperatives, cooperative cereal banks, etc. Such cereal banks have two objectives: the improved management of communal safety stocks and an increase in the income of farmers. Farmers sell their produce to, and in case of shortage purchase cereals from, the cereal bank at fair prices. They are no longer at the mercy of private traders. Such cooperative initiatives, often supported by non-governmental organizations, deserve close attention from scientific researchers, since indeed the feasibility and long-term perspectives of such initiatives can only be assessed if a number of scientific problems are addressed. For instance, the role of the cereal banks depends very much on the functioning of markets and the behaviour of various marketing agents, including themselves. Difficult issues such as monopolistic behaviour, price formation on imperfect markets, or the influence of interventions by stateowned trade organizations cannot be ignored. The functioning of cereal banks strongly depends on the process of liberalization of agricultural markets and the (reduced) role of stateowned organizations in market intervention. The long-term effects of various interventions are as yet unpredictable.

The unpredictability of socioeconomic measures on both ecological and socioeconomic processes is not unique to Burkina Faso, but is a fundamental feature of both temperate and tropical regions. At the present time, many instruments exist, such as databases and mathematical crop growth models (available on international computer networks), which enable us to make optimal use of experience and knowledge on a global scale. It is indeed a challenge to learn to use these facilities and to facilitate their

convergence into joint approaches. Also, much use can be made of international experience, not least in the historical context – the functioning of markets in pre-industrial Western Europe, for example, or the agro-economic theories of Chayanov in Russia. In all cases, the question of how micro-level and macro-level research can be linked requires a great deal of scientific attention. The fact that policymakers make little use of research results is, to a large extent, due to the great gap which exists between the results of aggregated macro-studies and those of non-aggregated plot and village level studies, usually based on very different approaches, assumptions and perceptions. Even in land use or regional planning, little explicit attention has been given to the aggregation and disaggregation of data.

International cooperation

Although generalization is inappropriate, there are clearly major differences among developing countries with respect to research capacities and priorities. In all likelihood, disparities will increase, leaving some countries with a very limited national research infrastructure, while others may be entirely autonomous. Even so, nearly everywhere there seems to be a rich intellectual potential and a great deal of informed readiness to merge theoretical and applied research.

A considerable proportion of the research, particularly in Africa, has been donor-driven and therefore short-term and dependent on 'donor fashions'. Structural solutions to development problems require the development of a strong national research capability. If donors are seriously committed to such a structural solution, a concerted international effort to institutionalize research capacity in developing countries will be needed. There are good reasons for universities across the world to join forces, irrespective of their geo-political locations. Development-oriented research and training dealing with 'temperate' and 'tropical' or 'subtropical' environments share many underlying disciplines and methods. In agricultural science, for example, the laws sought by disciplines such as crop physiology, ecology and soil science are universal in nature, and the same applies to the medical or engineering sciences. There are also, of course, features that set 'tropical and subtropical' science apart from that practised in temperate environments. For example, the biophysical and ecological determinants of agricultural production, including crop and animal species, are markedly different and much less well characterized.

Taking up the scientific challenge of the 21st century will require a concerted effort, both literally and metaphorically. It asks for cooperation, for a sharing of tasks and results, and for an international research agenda. Just as no scientific institution in the world may claim a monopoly in the study of our galaxy, and astronomers all over the world collaborate for this purpose, no institution should claim the exclusive mandate for the study of development problems in a particular region of the world.¹

Development-oriented research will require the utmost of many of the world's scientists. Scientists from developing countries linguistically and logistically are better placed to tackle the problems of their own countries, but to leave those problems to

them – to exclude other scientists – constitutes a serious mistake. There are, in fact, three dangers in this attitude. The first is that such an approach precludes the possibility of Third World scientists studying problems elsewhere or carrying out theoretical work that has no immediate application to their own countries' needs, effectively isolating them. The second is that it denies the application of new scientific expertise and financial means to urgent development problems. The third is that it leaves no room for the most pressing issue of all: understanding biophysical and socioeconomic processes on supranational, continental and global scales that transcend national boundaries.

In other words, development problems in the less well-endowed regions of the world should be the concern of every university. Therefore, the fact that a university in the West spends time and funds on development problems does not need to be justified; rather, we should be questioning the fact that so many departments still do not address these issues at all. Further, research on international issues should be a shared responsibility. In this respect, it is remarkable that the Dutch Ministries for Development Cooperation and of Education and Science, for example, have not yet been able to formulate a joint policy of development-related research.

Let us conclude by saying that good quality research merits support, independent of the researcher's geographical location, affiliation or nationality. Development problems are too urgent to be left to a handful of understaffed and underfunded departments in a few countries – to do that would be a real example of Gould's 'conceptual lock'.

Note

1. There is a need to emphasize this point because of emerging trends to the contrary, particularly in the academic system of the USA, suffering as it is from 'politically correct' thinking. The statement, for example, that Afro-American literature can only be studied by Afro-Americans, is not so far removed from the thought that health care in the Congo may only be studied by the Congolese.