Rethinking Development as Knowledge: Implications for Human Development

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A B S T R A C T

The idea that knowledge is critical for development is neither new nor controversial. However, the full implications of the role of knowledge in development cannot be assessed unless we clarify at least two sets of issues: (a) how exactly knowledge is conceptualised or, what constitutes knowledge; and (b) the conditions under which such knowledge is produced, evaluated and ‘exchanged’ or ‘transferred’. This paper will attempt to provide some tentative answers to these two questions, with the ultimate objective of identifying the conditions under which knowledge can help materialise the goals of human development. In this exercise, the paper draws heavily upon documents produced by the UNDP, the UNRISD and the World Bank. The broad general thesis here is as follows: unless consciously seized upon and harnessed to serve the goals of social and human development, the knowledge paradigm will only aggravate existing levels of exclusion, inequality and disarticulation. In developing this thesis, the paper examines not only at available theoretical approaches but also at relevant examples from the North and the South. The emphasis here will be to identify strategies/conditions under which transfers of knowledge have facilitated human development (and by implication, identifying those under which human development has suffered). Drawing upon these explorations, the paper will attempt to identify training needs for development workers of the future. Indeed, if the knowledge paradigm is to translate into human development, a new genre of development workers - imbued with a new kind of professionalism - would have to be the central agents of that process.
1. **Introduction and Context**

The year 2000 will be an important landmark for two major development-related initiatives. First, it marks five years since the World Summit for Social Development (WSSD) in Copenhagen in 1995, and second, it marks the completion of a decade since the adoption of the Human Development (HD) initiative by the UNDP. The Social Summit focused on three core issues—poverty, unemployment and social exclusion.1 The HD initiative, as conceptualised by its chief architect, Muhbub Haq, concerns the four inter-related issues of equity, sustainability, productivity and empowerment (Haq:1997, 16).2 Obviously, there are large overlaps between the two concepts/approaches, the most fundamental of which comprises the perceived need to go beyond the traditional and economistic notions of development - and integrate, into the very notion of development, social and political aspects of human life. Such an integrated human development model - although acknowledged by many as the more relevant one - is confronted by serious practical/implementational challenges, especially in this neo-liberal era. Broadly speaking, these challenges are twofold: a set of macro structural constraints that emanate from the logic of capital, and a set of micro political/institutional challenges that concern the design of adequately context-sensitive development models that can endorse the objectives of human development.

This international working group (established by the UNOPS office in Italy) has set itself the task of identifying the role of international development co-operation that can respond to these challenges. Its objective is to enable and support development initiatives that are of greater use to marginalised groups both in the developed and the developing world. Specifically, this working group is committed to developing a toolkit that can facilitate a new kind of professionalism conducive to the implementation of human development models.

In line with these commitments towards the identification of strategies for international co-operation, this paper will examine a paradigm of international development co-operation that seems - at this point in time - to have emerged as hegemonic. I refer here to the apparently overwhelming global consensus about the centrality of knowledge and information in the process of development. Accordingly, it is the management and transfer of knowledge that is seen to constitute the primary locus/axis of international co-operation for development. As I see it, there has occurred quite a fundamental rethinking about development within the core international institutions like the World Bank, the OECD, and most significantly perhaps, within the UN family of organisations (in particular, the UNDP and the UNRISD, and the UNSTC). Expressed perhaps best in the World Development Report 1998-99, this rethinking about development is elaborated upon in Box 1.3 I quote here the WDR at some length since it reflects all of the fundamental assumptions underlying this re-thinking of development that are shared by the core international institutions.

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Box 1
Excerpts from World Development Report 1998-99

KNOWLEDGE IS LIKE LIGHT. Weightless and intangible, it can easily travel the world, enlightening the lives of people everywhere. Yet billions of people still live in the darkness of poverty—unnecessarily. Poor countries—and poor people—differ from rich ones not only because they have less capital but because they have less knowledge. Knowledge is often costly to create, and that is why much of it is created in industrial countries. But developing countries can acquire knowledge overseas as well as create their own at home. Forty years ago, Ghana and the Republic of Korea had virtually the same income per capita. By the early 1990s Korea’s income per capita was six times higher than Ghana’s. Some reckon that half of the difference is due to Korea’s greater success in acquiring and using knowledge. Knowledge also illuminates every economic transaction, revealing preferences, giving clarity to exchanges, informing markets. And it is lack of knowledge that causes markets to collapse, or never to come into being.

Poor countries differ from rich in having fewer institutions to certify quality, enforce standards and performance, and gather and disseminate information needed for business transactions. Often this hurts the poor. For example, village moneylenders often charge interest rates as high as 80 percent, because of the difficulty in assessing the creditworthiness of poor borrowers.

There are many types of knowledge. In this Report we focus on two sorts of knowledge and two types of problems that are critical for developing countries: Knowledge about technology, which we also call technical knowledge or simply know-how. Examples are nutrition, birth control, software engineering, and accountancy. Typically, developing countries have less of this know-how than industrial countries, and the poor have less than the nonpoor. We call these unequal distributions across and within countries knowledge gaps.

Knowledge about attributes, such as the quality of a product, the diligence of a worker, or the creditworthiness of a firm—all crucial to effective markets. We call the difficulties posed by incomplete knowledge of attributes information problems. Mechanisms to alleviate information problems, such as product standards, training certificates, and credit reports, are fewer and weaker in developing countries. Information problems and the resulting market failures especially hurt the poor.

As we shall see, considering development from a knowledge perspective reinforces some well-known lessons, such as the value of an open trade regime
and of universal basic education. It also focuses our attention on needs that have sometimes been overlooked: scientific and technical training, local research and development, and the critical importance of institutions to facilitate the flow of information essential for effective markets.

Three key means of facilitating the acquisition of knowledge from abroad are an open trading regime, foreign investment, and technology licensing. In fostering the domestic creation of knowledge, governments have a special role in supporting potentially productive research, while establishing the necessary conditions for the private sector, in response to market forces, apply the new knowledge created. Many developing countries are reforming their public research and development to make it more responsive to the market. Their measures include corporatizing research institutes, improving the pay and recognition of researchers, and offering firms incentives to contract directly with the public labs.

To narrow knowledge gaps, societies must ensure basic education for all and provide opportunities for people to continue to learn throughout their lives. But to sustain economic growth and to compete in the global economy, countries must go beyond basic education, as Korea has done. By 1960 Korea had achieved universal primary education—the basis for a well-educated labor force—which fueled the economy’s needs as it industrialized. Incentives were also put in place for extensive private investment in tertiary education, so that by 1995 more than half of college-age adults were enrolled in a college or university. Of these, more than 80 percent were enrolled in private institutions, and private spending on tertiary education exceeded public spending.

The idea that knowledge is critical for development is neither new nor controversial. However, the full implications of the role of knowledge in development cannot be assessed unless we clarify at least two sets of issues: (a) how exactly knowledge is conceptualised or, what constitutes knowledge and (b) the conditions under which such knowledge is produced, evaluated and ‘exchanged’ or ‘transferred’. This paper will attempt to provide some tentative answers to these two questions, with the ultimate objective of identifying the conditions under which knowledge can help materialise the goals of human development (Section 2). In this exercise, I will draw heavily upon documents produced by the UNDP, the UNRISD and the World Bank. The broad general thesis here is as follows: unless consciously seized upon and harnessed to serve the goals of social and human development, the knowledge paradigm will only aggravate existing levels of exclusion, inequality and disarticulation. In Section 3, I look at the specific implementations of this paradigm for human development. In developing this thesis, I will look not only at available theoretical approaches but also at relevant examples from the North and the South (Section 4). The emphasis here will be to identify strategies/conditions under which transfers of knowledge have facilitated human development (and by implication, identifying those under which human development has suffered). Drawing upon these explorations, I will attempt to identify training needs for development workers of the future (Section 5). Indeed, if the
knowledge paradigm is to translate into human development, a new genre of
development workers - imbued with a new kind of professionalism - would have to be
the central agents of that process.

Section 2: Knowledge and Human Development: The Contradictions
The paper proceeds from the acknowledgement that the basic objectives of development
adopted at the Summit of 1995 remain largely unfulfilled. In fact, as recent research by
organisations like the World Bank and the UNDP suggest, poverty and social exclusion are
on the rise. It is also widely and increasingly acknowledged that the major set of
causes underlying the increase in poverty and exclusion comprises in the neo-liberal
model. Now, there are two theses regarding the relationship of knowledge to the neo-
liberal model. The first, suggested by the core international institutions, argues that these
distressing trends can be reversed by implementing the right kind of knowledge and
information transfers and the development of the necessary knowledge infrastructure.
The second, proffered by sceptics and critical scholars, argue along the following lines:

… if the new global economy reaches out to encompass the entire
planet — if all people and all territories are affected by its workings
— not every place, or every person, is directly included in it. In fact,
most people and most lands are excluded, switched off, either as
producers, or consumers, or both. The flexibility of this global
economy allows the overall system to link up everything that is
valuable according to dominant values and interests, while
disconnecting everything that is not valuable, or becomes devalued.
It is this simultaneous capacity to include and exclude people,
territories and activities, that characterizes the new global economy
as constituted in the information age.

In a sense, the two arguments directly contradict each other. To understand the
contradiction, we need to first clarify the notion of knowledge that is at issue. For the
most part, knowledge in the context of development is referred to as technology and/or
information, i.e. knowledge that is performative and measurable. The collapsing of
knowledge with technology (especially information technology) is, of course, of great
significance - but one that we will accept for now (and reserve some critical comments
for later). It is in the context of our understanding of knowledge-as-technology that one
has to view the central concern - of both developing country representatives as well as
international institutions. The central concern seems to be the idea that there is an on-
going race for knowledge into which developing countries are involuntarily drawn (HDR,
1999). This is a ‘race’ induced not by the designs of the developing country
governments or corporate interests, but by the information revolution, i.e., the
unprecedented, spontaneous and cumulative development of information technology.

5 M. Castells, “Informational Capitalism and Social Exclusion.” Opening address at the UNRISD
This race for knowledge cannot be reversed, nor can it be ignored, or even politically negotiated since the fundamental impetus for the race comes not from human design but from the irreversible and uncontrollable evolution of technology. The proposed solution to this phenomena is three-fold (and is summarized in Box 1):

- Knowledge-management
- Knowledge-sharing
- Knowledge-creation by developing countries.

As the excerpt from WDR 1998-99 also indicates, the mechanisms through which these three are to be achieved are:

- An open trading regime
- Foreign investment
- Technology licensing
- Universal primary education
- Corporatizing research institutes
- Improving the pay and recognition of researchers
- Offering firms incentives to contract directly with public laboratories where research occurs.

The contradictions inherent in some of these measures is perhaps obvious. However, to get at the roots of these contradictions - and their fundamental implications for human development, let us begin by acknowledging that technology always embodies, and is embedded in, a specific social formation and it is this social formation that determines the impact of technology on human lives. Following Castells, the specific social formation associated with information technology may be designated as information capitalism or more generally, the informational mode of development: As Castells explains,

What is specific to the informational mode of development is the action of knowledge upon knowledge itself as the main source of productivity. Information processing is focused on improving the technology of information processing as a source of productivity, in a virtuous cycle of interaction between the knowledge sources of technology and the application of technology to improve knowledge generation and information processing: this is why, rejoining popular fashion, I call this new mode of development informational, constituted by the emergence of a new technological paradigm based on information technology… Each mode of development also has a structurally determined performance principle. Industrialism is oriented towards economic growth, that is towards maximising output; informationalism is oriented towards technological development, that is toward the accumulation of knowledge and towards higher levels of complexity in information processing.7 (Emphasis added.)

Viewing knowledge in the context of a specific social formation, makes two things immediately obvious. First, that while to a large extent the trajectory of technological innovations cannot be controlled, such innovations are products of conscious and material investment in research. Second, the distinctive performance principle of the information economy comprises increasing levels of complexity in information processing. To understand the full implications of this performance principle, one needs to examine the structural factors that cause a particular performance principle to emerge in a particular social formation. Such an examination is however beyond the scope of this paper; for our purposes here, it is more important to recognise that the particular performance principle that Castells associates with the information economy (i.e. increasing levels of technological complexity) has the ability to generate a new kind of social exclusion. This pattern of exclusion is what Castells designates as the phenomenon of structural irrelevance; structural irrelevance, he argues, is a much more threatening condition than dependency, and is revealed in the general perception by the core powers that entire countries/continents/populations have ceased to exist as economically viable entities in the global economy. The structural irrelevance emanates from the following general characteristics of information technology:

- **Labour-Displacement**: the technologies on which informational capitalism is based has the potential to be much more labour-displacing than ever before;

- **The Skill Divide**: the ‘new technology’ creates a sharper divide than ever before between ‘skilled’ and ‘unskilled’ labour, devalourising the latter and rendering a very large pool of workers ‘unemployable’. Further, because of the exceedingly fast pace at which it develops, it makes for a highly stratified structure even within the skilled group, with a large pool of skilled workers threatened with potential unemployment. This is increasingly the case with women workers in the developing world who are ‘trained’ to perform specific routinised tasks which soon after, become obsolete.

- Associated organisational forms: the organisational forms associated with the new technology is embedded also have the potential to be more exclusionary than previous organisational forms. The two organisational forms that have emerged in this era are; (a) networks; and (b) agglomerations, i.e., corporations created through mergers and acquisitions. An essential characteristic of these organisational forms is the absence of a systematic relationship between profitability and productivity of general labour force. Rather, profitability comes to depend on two things (a) the productivity and skills of a very specialised and small segment of the labour force; and (b) rentier incomes which are derived from various institutional sources (e.g., state structures, market imperfections, or specific comparative advantages on low production costs linked to low wages and to the lack of protection of human health and natural resources). Profit strategies based on the last set of factors generate corporate wealth at tremendous developmental cost; moreover they are also unlikely to be effective in the long-run, since technological progress actually undermines the importance of unskilled labour in total production costs. Furthermore, economies
which are structurally dependent on very low wages are unable to develop domestic markets, and must increasingly rely on competition in the world market, a strategy whose success will ultimately depend on keeping up, in relative terms, with the world's technological level.8

- **Legitimation Strategies associated with the new economy**: there appears to have occurred a fundamental shift in the strategies through which states seek legitimation in the neo-liberal era. This has had direct and profound consequences on the understanding of development. Prior to the neo-liberal era, redistributive strategies - especially the direct delivery of certain kinds of goods and services were important aspects of legitimation. This is not so anymore. At the present moment, legitimation is dependent much more on a regime’s ability to develop efficient mechanisms of delivery, optimise returns from delivery, identify ‘correct’ target audiences for delivery, measure performance of delivery mechanisms, and most importantly, *successively minimise its own involvement in redistribution*. In an obvious way, these changes make governments dependent on technologies of a certain kind, and necessitate a re-allocation of resources towards the acquisition of technology that enable the development of specific models of state involvement, the contours of which are dictated mostly by the core international institutions.

In view of this critical analysis, let us return to the claims made by the core international institutions that these traits can be reversed by putting in place the right models of technology/knowledge transfer. We will examine this claim primarily by examining certain empirical examples of knowledge transfer.

**Section 3: Specific Implications for Human Development:**

The implication for human development of this new knowledge-based paradigm are immense and complex. Let me begin by addressing, albeit briefly, the one impact which is perhaps the most crucial and immediate in the developing world. This concerns the reallocation of resources away from the delivery of real goods and services and towards development of technology-intensive methods of delivery, accumulation of technology and technology-related knowledge which can be used for developmental purposes. There are obviously both positive and negative aspects of this occurrence, both equally profound in their implications.

The impetus for such a reallocation emanates directly from the performance principle of the informational mode of development, i.e., *the accumulation of knowledge and the development of higher levels of complexity in information processing*. The reallocation is also compatible with neo-liberal legitimation strategies which seek to minimise the state’s role in the direct distribution of resources and establish the state as a monitoring agency rather than a distributive force. Needless to say, this neo-liberal trait has critical and long-term implications for the people of the developing world.

At a less general level, the implications for human development can be examined by looking at some concrete examples of knowledge/technology transfer. Indeed, recent projects of the World Bank, and similar international organisations like the Canadian International Development Agency (CIDA), the International Development Research Center (IDRC) all speak to the success of knowledge-based development programs in the poorest and least developed regions of the world. The programs span a number of key human/social development issues, namely health, education (especially primary education), employment, and social exclusion. However, effectiveness of these strategies are conceptualised in terms of technical sophistication, global connectivity and knowledge-intensity. For example, the World Bank, under its Poverty Matters: Knowledge is like Light campaign, has established an educational program which links students and teachers around the world with the aid of technologies to improve educational opportunities and build global awareness… In countries where papers, pencils, and textbooks are rare, WorLD provides access to information and ... opportunity. By linking schools across the globe through collaborative projects and educational networks, WorLD enriches the experience of educators and students in industrialized as well as developing countries. Youth gain the knowledge and technological skills they need to succeed in the 21st Century, and to contribute to their country's development as part of a global economy (see Appendix).

Examples like this abound and the advantages that flow from these initiatives are obvious. However, several problems characterise these models:

- **Financing of Technological Education:** If this mode of technology-intensive and technology-oriented education is to be made available to society at large, it will involve substantial initial and on-going investments. The possible sources of this investment are three (a) the state; (b) domestic and foreign corporations; and (c) institutional donors like the Bank. None of these sources are likely to be able/willing to offer steady flows of funding for mass-based technological education over long periods of time; the reasons lie in the absence of suitable incentive structures from the perspective of the donors. This has already been observed by the World Bank, and as the excerpt in the box specifies, the Bank advocates as a solution the largescale privatisation of education.

- **Other Developmental Needs & Constraining Circumstance:** Even if it were possible to secure resources that would enhance access to technology in a non-exclusionary manner, such access cannot be effectively utilised by potential users unless other developmental needs are solved. In other words, before people partake in educational programs, other basic needs like food, health and shelter need to be ensured. This difficulty has been observed by many practitioners of development. Neo-liberalism adds to this difficulty by requiring that the state reduce its role in the provision of basic needs.

- **A Possible New Dependency:** A number of critical social theorists have already discussed, such technology-intensity and technology-orientedness
could engender new forms of dependency (Castells, Carnoy, Cardoso et al). The degrees of dependence can be minimised by focusing on indigenous knowledge structures, although developing appropriate synergies between these and other knowledge structures may be difficult. To this end, organisations like The World Bank and the IDRC have also been specially active in establishing initiatives that promote indigenous knowledge systems (See Appendix).

- Employment, Income and Poverty: As we mentioned above, informational capitalism has thrust upon us a fundamental restructuring of work which continuously displaces labour. In contexts where levels of unemployment are already high, the income-generating aspects of technology would need to be carefully balanced against its labour-displacing effects.

A second set of examples can be drawn from the technology transfer initiatives of the Canadian International Development Agency (CIDA). CIDA’s Industrial Cooperation Program (INC) works in cooperation with the Canadian private sector to facilitate Canadian technology transfer to developing countries. All projects supported by INC should focus on at least one of the six priorities of Canada’s official development assistance program: e.g. basic human needs, integration of women in development, human rights, democracy and good governance, private sector development, and the environment. All projects must, however, include integration of women in development and the environment in their activities. Eligibility for the program is limited to Canadian firms. To be eligible,

- The firm or group must have had annual sales of more than $1 million for at least two consecutive years;
- include a partner or customer in a developing country;
- contain a component involving transfer of technology, knowledge and/or skills;
- bring benefits to the target country, such as improved environmental or social conditions, job creation, gains in production, improved technical skills;
- involve benefits for Canada, such as sales of capital goods, equipment, components, accessories, and raw materials; delivery of professional or technical services; job creation or preservation;
- have probable access to later funding; and
- be designed to increase social and environmental benefits and to minimize adverse social and environmental impacts.

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10 The information used here is drawn from CIDA’s official website.
While on the face of it, it seems a well-designed program, the actual benefits derived from the program accrue asymmetrically to the Canadian firms, rather than the developing country. Consider the following example from CIDA's reports:

With CIDA-INC support for the viability study and training activities, Harris Farinon (now Harris Canada) invested $8 million to establish a joint venture in China with a local telecom company partner and train their employees to produce world-class quality microwave radio equipment. In China, the joint venture employs over 120 persons. In Canada, research and development continues on new and improved products for the overseas market, resulting in an increase of about 35 direct jobs at Harris Canada and about 90 jobs at its suppliers due to the increased sales in China. As a result of the great success of the China project, Harris Canada has reimbursed the full amount of CIDA-INC's contribution to the project. More recently, Harris Canada has bought out its Chinese partner and is now operating its Chinese facility as a subsidiary.

There is of course not enough information here to carry out a full analysis of the project’s impact. However, certain elements are discernible. First, an $8 million investment has created a meagre 120 jobs; this implies a very high capital-intensity of production, a phenomena that may not be entirely compatible with the present structural realities of China. Second, in this case the Chinese unit is eventually bought out by the Canadian unit, thereby creating a transfer of ownership that may not be entirely in China’s interest. In another similar project in Venezuela, an approximate investment of $55 million has created a total of 16 jobs in Canada and 10 jobs in Venezuela. (Of this $55 million, about $15 million was provided by the Venezuelan government through a World Bank loan, the details of which are not made available on the CIDA website). Much of the benefits of this huge investment (in the form of, amongst other things, environmental projects worth $91 million) has accrued to one Canadian corporation.

Most projects under the CIDA-INC program seem to share such characteristics, namely high capital/technology-intensity of production, asymmetric gains, and potential technological dependence. Nevertheless, these are considered successful instances of knowledge transfer. As I will discuss below, a commitment to human development requires a more critical view of such technology transfer programs.

Section 4: A New Professionalism for the Knowledge Era: Training Needs for Development Workers

The contradictions underlying the examples above point towards the need for reassessing human development implications of the knowledge paradigm. The most central of these contradictions, I think, comprises the fact that the transfer of knowledge itself is considered development and the costs associated with such transfer are ignored. More importantly, what is ignored is the question whether the transfer of knowledge actually translates into tangible gains for the most affected communities. As such, the training of development professionals in this knowledge era must begin with an awareness of the limitations of the knowledge paradigm.
Simple as it may sound, this is rather difficult to guarantee as long as the training of the development workers takes place within the knowledge paradigm. As I indicated above, working within the knowledge paradigm necessitates a certain conceptualisation of the problematic of development, which might jeopardise the requirements of human development. A pertinent example can be seen in the analysis of the Green Revolution:

The first steps in the Green Revolution involved narrowing knowledge gaps—research to develop new seeds and techniques, and teaching the new techniques to farmers. But the potential of the Green Revolution could not be unleashed unless poor farmers obtained loans to buy new seeds and fertilizer. As we will see, credit for the poor is a classic information problem. Lack of credit and other information problems turned out to be as important and difficult as the original agricultural research. One study in India found that for a typical family with a small parcel of land, the loss of potential income over five years from slow adoption and inefficient use of high-yielding varieties was nearly four times its annual income before the introduction of the new seeds. As these problems were addressed, through research, agricultural extension services and later through microcredit, the Green Revolution indeed helped the poor. Incomes of small farmers almost doubled and the incomes of landless labourers—the poorest of the poor—more than doubled.11

While the actual results of the green revolution are highly debatable, what is more important for our purposes here are is to note that the problem of low agricultural productivity and incomes is interpreted as a problem of knowledge. Similarly, inadequate access to credit of the poor is seen as a “classic information problem”. This idea, quite in line with some theoretical developments in economics, grossly misrepresents the problem of power that lies at the root of the issue. These misrepresentations of some central problems affecting the poor have found new validation in the knowledge era, and have quite successfully managed to replace the critical political-economy approaches to the problem of development which directly theorise the question of power. As I have argued elsewhere, such a ‘disempowering’ of the problematic of development – both at the theoretical and practical levels – is the key to understanding the general failure of the effective implementation of human development strategies worldwide.12

To my mind, the training of development professionals must begin from this critical premise – that while knowledge and technology can be efficient interlocutors of development, they cannot circumvent the deep-rooted asymmetries of power.

Of course, there are some – albeit few – examples of how access to technology has broken down other social/economic barriers. Grameen of Bangladesh has recently founded a group of organisations which provide internet and telecommunication services

to rural communities. This access to information technology have brought some unprecedented benefits to these rural communities. However, these benefits must be viewed in the context of the ownership structure of the companies involved in these services. Large foreign telecom companies hold about 65 percent stake, with the remaining 35 percent held by Grameen Telecom, which is a member of the Grameen family. Since Grameen’s main objective is to provide credit to rural women, some of the funds generated by the telecom company goes towards the micro-enterprise fund. More importantly, Grameen Telecom also enables rural women to own cellular phones which they can then rent or lease to generate income.

Section 5: Recommendations and Conclusion
In terms of the knowledge/technology paradigm, this breaking down of the barrier between knowledge and access to technology is an important aspect of development. However, a more critical approach to development should seek to examine the structures and processes which are associated with such advances. As I mentioned above, this is all the more difficult to ascertain when education in the developed world is become increasingly technology-intensive. In light of the above considerations, several priorities for training of development workers can be highlighted:

- an awareness of the social and political-economic context of knowledge transfer
- an awareness of the implications of the neo-liberal model as the general context within which knowledge/technology is being transferred and created
- an awareness that the concerns of human and social development (namely, poverty, unemployment and social exclusion, or health, education and longevity) can not be addressed in isolation from the more fundamental problems of inequity
- a commitment to realising developmental objectives under conditions of structural irrelevance (see above)
- a critical attitude towards the extensive benchmarking and performance requirements of international development institutions, as well,
- the development of principles/performance standards with which to evaluate
- an awareness that developing countries should not be looked upon as passive recipients of knowledge transferred from the developed world, but active sights of knowledge development.

By way of conclusion it may be useful to recount the essential features of the human development strategy. Central to the concept of human development is the enrichment of human lives. In terms of the knowledge paradigm, the obvious road to such enrichment must involve the development of a skilled labour force that is able to effectively participate in the knowledge economy. This process should not be geared towards the creation of a small, specialised group, but towards the acquisition of skills

by the majority. Human development, conceptualised in the broadest possible sense, can indeed help foster this process. However, instead of an increasing emphasis on the human development, what one sees today is in fact the reverse: decreasing investments in all forms of human capital - emanating from the belief that development can occur through the acquisition of knowledge irrespective of the social relationships in which such knowledge is embedded. If the objectives of human development are to be realised, this asocial conceptualisation of the role of knowledge will need to be challenged at all levels. This is where development-related work in the knowledge era should commence.
Related Readings

Vikas Nath, Barriers to Knowledge Societies, OneWorld.net, 2000

Vikas Nath, Knowledge Networking for Sustainable Development, Sustainable Development Networking Programme (SDNP), India, 2000


C. Blurton, New Directions of ICT-Use in Education, Learning Without Frontiers (LWF), UNESCO, 1999


G. Farrell, The Development of Virtual Education: A global perspective, Commonwealth of Learning, 1999

New technologies and the global race for knowledge (UNDP) Human Development Report Office (HDRO), UNDP, 1999


R. Heeks, The Tyranny of Participation in Information Systems: Learning from Development Projects, Institute for Development Policy and Management (IDPM), Manchester, 1999

R. Heeks, Information and Communication Technologies, Poverty and Development, Institute for Development Policy and Management (IDPM), Manchester, 1999

T.E. Vittin, Information Technologies and Social Development (INFOTECH) Project, UNRISD, 1998
Annotated Bibliography

1. **Barriers to Knowledge Societies** (Vikas Nath) OneWorld.net, 2000

The knowledge revolution brings with it new opportunities but has also infused new challenges. Developing countries are however at very different starting positions in using ICT infrastructure in the task of building innovative and distinctive knowledge societies. They need to establish effective incentives and management schemes to accelerate the transformation to knowledge societies.

2. **The Role of Information and Communication Technologies in Economic Development – A Partial Survey** (Bedi, A.S.) Global Development Network (GDN) 1999

The diffusion of information and communication technologies (ICTs) and their potential as a development tool have generated a wide array of views. The variety of views suggests that the role and impact of these technologies are still obscure and that the debate regarding them suffers from a lack of unambiguous evidence. Recognizing the need for clarity, this paper attempts to answer three.

3. **Universal Service and Universal Access in Telecommunications in South Africa** (Universal Service Agency) Universal Service Agency (USA), South Africa, [1999]

Discussion paper on providing access for all in South Africa to telecommunications systems, including the Internet. Covers issues such as: Will the amazing advances in telecommunications systems and related information technology only be of benefit to a minority in South Africa, increasing inequity between an information elite and a majority living in information poverty.

4. **Will the networked economy widen or narrow the gap between developing and industrialized countries?** Braga, C. Produced by: Information for Development Program (Infodev) (1999)
Short overview of debate on welfare implications of the information revolution for developing countries. Some believe that information and communications technologies (ICT) can be mechanisms enabling developing countries to “leapfrog” stages of development. Others see the emerging global information infrastructure as contributing to even wider economic divergence between developing and industrialized countries.

Argues that the logic of the networked economy is one of inclusion rather than one of exclusion, but regulatory barriers need to be addressed at the government-level. Most likely outcome, however, is a combination of both scenarios in which a subset of developing countries is able to converge with high-income economies more quickly than ever before while others lag further behind. [author]

5. **Communications and Knowledge-Based Technologies For Sustainable Human Development**

UNDP; d’Orville, H. Produced by: Info 21 / Information and Communications Technologies for Development, UNDP (1997)

Guiding document for developing programme and projects involving multimedia information technologies in the delivery and wider outreach of programmes underpinning sustainable human development, especially to rural areas. It is envisaged that through pilot and other projects their feasibility and effectiveness can be demonstrated.

Chapters cover:

- The information and knowledge revolutions-the advent and impact of generic technologies
- Telecommunications infrastructure: at the root of information poverty
- Multimedia services - the convergence of information technologies
- The Internet: potential implications
- Sectoral multimedia applications - the sustainable human development nexus
- International cooperation for communications development
- Implications for UNDP
- Priorities for immediate action

6. **The Tyranny of Participation in Information Systems: Learning from Development Projects**

Heeks, R. Produced by: Institute for Development Policy and Management (IDPM), Manchester (1999)

It often seems that use of participative approaches in the development of information systems (IS) has reached the status of a new orthodoxy: a 'magic bullet' technique that is always relevant, always beneficial in trying to overcome the high failure rate of information systems. Yet participation is clearly not so magical in practice and is often
beset by problems. This paper sets out to investigate and understand some of these problems. It does so by recognising the parallels between debate on the role and value of participation in information systems development, and debate on the role and value of participation in development projects more generally. These projects aim to deliver development goals and they have frequently involved participation. They therefore provide fertile ground for learning about approaches to information systems development. Participation is seen to fail in such projects because it ignores context; because it is itself ignored; because it ignores reality; and because it ignores other factors. Based on this analysis, a more critical approach to participation in IS projects is suggested, with three critical questions identified that must be answered before participation can be considered. [author]


Manuel Castells’ The Information Age: Economy, Society and Culture (1996, 1997 and 1998) is unrivaled in ambition: to make sense of the global social dynamics as they arise out of a myriad of changes around the world. It is a cross-cultural analysis of the major social, economic and political transformations at the end of this century. It is presented through interrelated empirical case studies whose number and variety are truly enormous—the bibliography alone fills 120 pages—and threatens to overwhelm the reader at times. Nevertheless, the trilogy is prodigious and sets a new standard against which all future meta-accounts of the Information Society will be measured. It will be indispensable reading for anyone interested in a grand narrative of the present.

Castells’ main argument is that a new form of capitalism has emerged at the end of this century: global in its character, hardened in its goals and much more flexible than any of its predecessors. It is challenged around the globe by a multitude of social movements on behalf of cultural singularity and people’s control over their own lives and environment. This tension provides the central dynamic of the Information Age, as "our societies are increasingly structured around the bipolar opposition of the Net and the Self" (1996, p. 3). The Net stands for the new organizational formations based on the pervasive use of networked communication media. Network patterns are characteristic for the most advanced economic sectors, highly competitive corporations as well as for communities and social movements. The Self symbolizes the activities through which people try to reaffirm their identities under the conditions of structural change and instability that go
along with the organization of core social and economic activities into dynamic networks. New social formations emerge around primary identities, which may be sexual, religious, ethnic, territorial or national in focus. These identities are often seen as biologically or socially unchangeable, contrasting with the fast-paced change of social landscapes. In the interplay of the Net and the Self the conditions of human life and experience around the world are deeply reconfigured.

The trilogy concludes more than a decade of research, spanning from new social movements and urban change (Castells, 1983; 1989) to development of the high-tech industries and their organization into technopoles, clusters of high-tech firms and institutions of higher education, such as the Silicon Valley (Castells and Hall, 1994), to comparative analysis of the fastest developing countries in the Asian Pacific Rim (Castells, 1992), to research conducted in Russia before and after the 1991 revolution and the demise of the Soviet Union.

It details the diversity of social change interlinked around the globe which created the Information Age and integrates the often seemingly contradictory trends into a comprehensive analytical framework. The theoretical abstractions are developed through a broad and detailed empirical analysis "as a method of disciplining my theoretical discourse, of making it difficult, if not impossible, to say something that observed collective action rejects in practice" (1997, p. 3). This makes his account highly accessible and richly textured.

Castells’ analysis is driven by the hypothesis of a new society: "A new society emerges when and if a structural transformation can be observed in the relationships of production, in the relationships of power, and in the relationships of experience" (1998, p. 340). The observation of those transformations informs the central structure of the trilogy. The first volume focusses primarily on the changing relationships of production: the global economy, the network enterprise and the changing patterns of labor. The second focusses on the relationships of power and experience, framed as a crisis of the nation-state vis-à-vis global institutions and the related crisis of the political democracy vis-à-vis newly articulated identities. The third volume ties together a number of "loose ends". They are themselves important features of the Information Age, but more as effects of, rather than actors in the analyzed transformations: the demise of the Soviet Union, the growth of the fourth world of excluded regions and social groups and the emergence of a global criminal economy.
Appendix

World Bank Programme in Knowledge and Development

The work of the WorLD Program in participating countries can be divided into five major areas:

- Internet connectivity for secondary schools in developing countries
- Training and educational content to promote economic and social development
- Regional and global partnerships with public, private and non-governmental organizations
- Telecommunications policy advice for the education sector
- Monitoring and evaluation support

Connectivity

- Together with its partner SchoolsOnline, WorLD helps mobilize financing for technical and financial feasibilities studies, leading to the procurement and installation of necessary hardware and software for secondary schools in developing countries.

WorLD Education and Training

Teachers, teacher trainers and students are trained in educational applications of information technology, as well as in the use and maintenance of the technology itself.

Partnerships

Working with WorLD program partners, secondary schools in developing countries are linked to counterpart schools in industrialized countries for collaborative projects and distance learning activities covering a wide range of academic subjects.
Telecommunications Policy Advice

WorLD provides technical assistance to promote telecommunications policies and reforms which lower the operating costs of Internet-based education programs.

Monitoring and Evaluation

WorLD offers systematic tracking and assessment of the effects of its program in its member countries, with a focus on improving learning outcomes and use of information technologies in education in a cost-effective manner.


The World Bank and Independence Knowledge:

A team in the Africa Region, supported by the Bank's Innovation Marketplace, launched the Indigenous Knowledge for Development Initiative to integrate client knowledge into the development process.

The team leader for a Uganda agricultural project learned about the initiative and partnered with the Uganda National Agricultural Research Organization to redesign the project in ways that would identify, document, validate, and eventually use indigenous knowledge in agricultural research and extension. He also got some funds from the Initiative to identify potential uses of indigenous knowledge in the project.

This spurred interest among other civil society groups in Uganda. Responding to a request from the Council for Science and Technology, the Initiative provided seed money to establish a future indigenous knowledge center and prepare for a national workshop to develop a road map for a national indigenous knowledge strategy.

The initiative has sent signals that the Bank is ready to learn from them and to help empower local communities by bringing them into Bank-assisted programs.

Source: The World Bank Website.