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**Aligning needs and
means: On culture, ICT
and knowledge in
development cooperation**

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Aligning needs and means

On culture, ICT and knowledge in development cooperation

Lars T. Soeftestad^{1/}

Abstract. This paper takes an interdisciplinary view on the societal role of Information and Communication Technology (ICT) . The applied research case discussed in building a global online community of practice for people working on community-based natural resource management (CBNRM) . The purpose is to point to some limitations connected with culture and knowledge inherent in the emphasis on ICT in development cooperation . The technological optimism that fuels the ICT side of the argument must be aligned with the humanist side, representing values and cultures . The goal is to present the elements of a broad and result-oriented knowledge management approach . This will enable a more realistic assessment of the incentives and constraints in using ICT in development cooperation, thus aligning the needs at the local level with the ICT means at disposal.

Keywords. Culture, Development cooperation, ICT, Information and communication technology, Knowledge, Means, Needs, Technology

1 Introduction

The topic of ‘knowledge systems’, which is the theme for this workshop, can conveniently be discussed under the headings: knowledge and knowledge management (KM), and techniques to manage this knowledge, specifically Information and Communication Technology (ICT). On the one hand, there is the theory of knowledge, or epistemology (Bhaskar 1994). The new area of ICT has enabled – in fact made necessary – a reassessment of the theory of knowledge and knowledge systems. On the other hand, ICT has, partly in conjunction with philosophy and the comparative social sciences, contributed to the study of knowledge systems. ICT will be understood as a means to realize specific knowledge systems.

The following set of propositions would seem to underlie much of the use of ICT in development cooperation:

- *Proposition 1.* Stakeholders share, by and large, a Western frame of reference in terms of cultural and social background,
- *Proposition 2.* Stakeholders own, or have access to, advanced information technology (IT), and

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- *Proposition 3.* Stakeholders have the training to utilize and/or benefit from IT, or can easily receive it.

In order to understand the constraints and incentives presented by the application of relevant knowledge systems in development cooperation, it is crucial that these propositions be tested, and their implications accepted and acted upon. ICT will have to be tried and assessed against a broad, social science defined and qualitative outlook on culture.

The paper argues that ICT comes out of the Western intellectual and scientific tradition, and cannot be applied as is to non-Western settings. The assumptions underlying these propositions are in important ways incorrect. Based on this, it presents a more realistic position of the contribution of ICT to development.

Framework

Why development is so difficult, and how past experiences with development cooperation can help answer this question, is hotly debated. We do learn, but at the same time the problems appear to grow and change, and recede. The role of technology, including its adoption and diffusion, in development cooperation is, likewise, much discussed. Whether to understand new technology as a means or a goal complicates matters.

A social science – specifically anthropological – stance on these issues is that there is too much of the colonial era approach of ‘we’ vs. ‘them’ built into the way we think about and address problems of development. Development cooperation needs to focus much more on local people and local development. In too many cases it leads to conflicts between traditional and new knowledge systems (Abram and Walden 1998). Against the traditional emphasis on disseminating aid, as it were, in the form of data, funding, and technology, anthropology posits the approach of ‘studying up’, starting with the local level. This is the starting point for assessing needs, and for defining developmental goals and the appropriate means, including technology, to achieve them.

The analytical framework emphasises bio-environmental relationships and consists of: (1) political ecology as the overall theoretical and analytical context, and involves the elements: (2) natural resources, (3) culture and society and (4) communication.

Political ecology

Political ecology is a merging of political economy and ecological analysis, and is an inclusive way of thinking employed to overcome and integrate valuable but disparate approaches and insights (Greenberg and Park 1994).

As the world becomes progressively smaller, as everybody and everything increasingly is brought in touch with each other, as the issues, problems and complexities in human and culture-nature interrelationships grow, the need for common understandings of problems, goals and means become progressively stronger. The lack of interdisciplinary approaches is important. The disparity in the views on the goal-means conundrum is, however, itself fast becoming a problem.

Somewhat simplified, one fault line goes between the social sciences, on the one hand, and the natural and technical sciences, on the other hand. Another fault line goes between the Western and non-Western conception and understanding of science and knowledge. The consequences of this lack

of unity and commonality are serious. The disagreement over the role of ICT in development cooperation is one fall-out. There is a growing need for unity and understanding in order to utilize, among others, the potential in ICT optimally.

In line with the disjuncture between the relevant subject areas, development cooperation is understood as consisting of two parallel discourses on culture and politics. The task of political ecology is to contribute to aligning these discourses.

Natural resources

Natural resources are both absolute and relative. They are relative in as much as nature to a significant extent is socially constructed. That is, how a particular culture defines what constitute a natural resource is a product of that particular culture, and will differ from culture to culture.

It follows that property rights regimes are socially constructed. They constitute the necessary link between resources and human populations, and are institutions (in the sense of rules and values) prescribing how the resources in question are to be utilized.

Culture and society

The fundamental view on cultures and societies underlying the framework is *cultural relativism*. That is, cultures are to be accepted on their own terms. In dealing with other cultures we should strive to understand their particular historical development and worldview. Rationality is subjective and truth is relative.

On a general level, there are a number of important and pervasive differences between Western and non-Western cultures: the organization of work, kinship and community, continuity in life trajectory, continuity in culture, personalized politics and law, and personalized economic and exchange relations (Keesing 1981). These dichotomised variables mask a reality that is truly complex, and point towards marked differences between ‘we’ and ‘them.’

These issues will be addressed: (1) stakeholders, roles, and needs and (2) societal levels. These issues, and the synergies between them, are important for understanding the increasing levels of complexity when it comes to managing local-level activities.

Stakeholders, roles and needs^{2/}

Stakeholders are located in the three main societal categories: civil society, the public sector, and the private commercial sector. These stakeholders can be discerned: the local population, NGOs (several levels), donor and aid organizations, the public sector (several levels), the research-, consultancy-, and evaluation sector (several levels), and the private commercial sector (several levels).

A growing population and a diminishing resource base, together with changes in economics, politics and value systems, contribute to the increasing differentiation in needs and interests. At the same time we are witnessing a move towards decreasing hierarchies, more democratisation and increasing efforts at recognizing and involving local people. This contributes to the increase in the number of stakeholders, with new roles and more specific agendas, through processes of objective and subjective definition of separateness and uniqueness.

^{2/} The material in this section is partly adapted from Soestestad (1994, 2001).

Stakeholders have different needs for information and knowledge. The needs vary over time. Key factors in determining needs within a particular country include: aspirations, culture, degree of development or poverty, economic organization, ethnicity, language, political system, race, social organization, and subsistence adaptation. Stakeholders communicate needs in various ways, directly and indirectly, and verbally, written, and by means of IT.

Societal levels

Stakeholders are located on a number of societal levels, including: village/community, NGOs (local), local government, NGOs (regional), regional government, NGOs (national), bureaucrats and politicians (national), research community, and supra-national organizations and NGOs (international).

Key aspects of this typology are: structure, that is, relations between levels, and content, that is, relations within levels. Levels are differentiated and set apart from each other through a combination of internal and external factors. The number of people covered and complexity are most important. Other relevant factors include social organization, availability and character of resources utilized, and societal ethos and aims.

Levels are characterized by increasing complexity, along various dimensions. They evolve, both internally and in relation to each other. The typology is not linear, nor is it directional. It is, however, relative, as it depends upon point of view. Dynamics and processes internal to each level, as well as in the relationship between them, determine their absolute and relative position.

A focus on levels makes possible an understanding of, among other things: who communicate, to whom, the content, how it is done, through what means, and with what results. Not recognizing the complexity of cultures and societies can lead to serious problems when trying to engage with them (Wolf 1982).

The implication of the above is that the target population, users, and beneficiaries of ICT investments are, first, a much more heterogeneous category than the proponents would like us to believe, and, second, much less ‘Westernized’ than it would appear.

Communication

Communication is, essentially and at its most fundamental, a relationship *between people*. Such communication was traditionally direct, and took place between individuals, or small groups of individuals. They knew each other well, and were similar in most respects. The medium of communication was oral, sometimes also written. The content was complex, rich and many-layered.

Modern communication is also complex, but in different ways. It takes place between many more stakeholders, which often are located on different levels. As a consequence, the number of arenas has multiplied (Long 2000). The medium of communication is more and more written, and increasingly in electronic form. Modern-day communication is often asymmetrical in one-way or another, the content is often instrumental, and increasingly it contains data without a contextual frame of reference.

Communication is understood as a discourse between stakeholders over what development is, with the – sometimes – realized outcome of arriving at an agreed upon definition (Nustad 2000). It is useful to remind us that communication is a potential and not a solution. Thus it becomes important to address how communication is changing, why this is problematic, and what can be done about it (Domatob, Ausmus and Butler 1996). There is a dramatic increase in inter-cultural communication, as

well as communication across levels. The resulting problems in terms of translation of meanings across these multiple and complex webs of communication have yet to be addressed.

Of particular importance in connection with ICT is the extent to which communication includes the traditional function of learning and training. It would appear that modern-day communication technologies excel in communicating data, and that the interpretation and use of those data, as knowledge, is becoming a separate exercise. Depending upon the idiosyncrasies of the stakeholders,^{3/} the separation of communication from interpretation and use as knowledge, where both develop specialized vocabularies and methodologies, complicates the adoption and societal integration of ICT.

The majority of the stakeholders, in terms of societal levels and numbers, do not have access to advanced IT, do not have the training to utilize it, and cannot easily get such training. As a result, they are not likely to benefit from it to a substantial degree.

3 Information and communication technology

ICT as applied to development cooperation represents efforts to scale up traditional means of communication, in terms of numbers of stakeholders involved, as well as the volume, content, and speed of communication. The ‘networked society’ has been touted as the outcome (Castells 2000). At the same time there are the extremely complex and heterogeneous situations that ICT is being applied to, and questions as to the rationale behind this work, and its short- and long-term implications.

There is no disagreement over the point of departure. The poverty gap is increasing, and the differences between the haves and the have-nots are widening. Various analyses refer this situation back to different factors, but many seem to agree on differences in power – whether economic and/or political – between different population segments in any one country, and between countries in the South and the North. Based on this, the old adage that ‘knowledge is power’ is brought to bear on the analysis, and it is argued that ICT can help leverage the situation for disadvantaged poor by delivering the right knowledge at their doorsteps at the right time.

Norway and ICT

There is incipient work in Norway across a broad spectrum of fields and organisational settings on applying ICT to development cooperation.^{4/} The Norwegian Agency for Development Cooperation (NORAD) recently prepared a review of ICT (NORAD 2000). Following a presentation of the main ICT tendencies, the report outlines potential uses of ICT in development: it revolutionizes learning and knowledge management, it supports good governance and democracy through transparency, it provides new opportunities for private sector development, and it facilitates coordination of development efforts.

A brief assessment of this report, addressing some underlying priorities and value orientations, would make the following points:

^{3/} Cf. Section ”Stakeholders, roles and needs” above.

^{4/} For more on this go to www.iktu.org, the homepage for the interest group “ICT in Development” (IKTU).

- A fundamental discussion of the value premises behind NORAD's involvement in ICT is missing,
- There is no reference to, or discussion of, culture as an important variable,
- Given the assertion that the “pervasive ICT development creates digital divides,” the report does not manage to make clear how “mainstreaming” it, that is, applying more of it, will decrease the gap,
- Regarding connectivity, competence and capacity, the report’s stated goal is that “ICT … be harnessed to the benefit of the poor.” Based on what data and insight? How? What role for NGOs and civil society? How will they benefit?,
- To expand connectivity, NORAD’s approach is to “promote and support … connectivity in poor, in particular rural devisers and women.” Based on what premises? How will this be done?,
- In the actions suggested to address the digital divide, as well as in the discussion of actions to address connectivity, competence and capacity, there is no reference to interacting and consulting with civil society,
- The recommendations about monitoring ICT development refer to a host of important stakeholders that needs to be consulted, approached and involved. Civil society in cooperating countries appears not to be on the list,
- The report asserts, correctly, that ICT can revolutionize learning and knowledge management. Under the item of approaches to realize this, NGOs in cooperating countries are included. However, the role assigned to NGOs is primarily one of “transparency & empowerment”, and
- The report gives special attention to the needs for private sector development. A parallel emphasis on the particular needs of civil society and NGOs is lacking.

The general theme running through the report echoes other mainstream, public and private sector reviews of the role of ICT in development cooperation. It would seem that discussions of ICT are prone to focus squarely on the technical side of things, and to overemphasise the potential inherent in ICT. It is often forgotten that both IT and ICT are subjective and value-laden, steeped as they are in a Western ethos and discourse. The report is important partly for what it says, and partly because it presents so clearly NORAD’s position on the cultural, societal, value, and technical contexts for Norway’s application of ICT to development cooperation.

4 Knowledge Management

ICT has to be located within the broad context of knowledge systems and KM. Only in this way is it possible to understand its societal and developmental role. KM is understood as a broad and *applied* context for development cooperation, inter-cultural communication and ICT. KM was developed in large international organizations to manage knowledge through systematic sharing, and has only recently begun to be applied to development cooperation (Soeftestad 2001, World Bank 2000).

To understand what KM is, it is important to realize the meaning ascribed to the term knowledge. *Information* has been described as data arranged in meaningful patterns, whereas *knowledge* meant something that is believed and is true. Barring the implications of recent discussions over the concepts

of truth, reliability, and cultural relativism, the distinction holds, perhaps with the added provision that knowledge is contextual and broad, and often needs translation and interpretation. It is also important to keep in mind that while it is unproblematic to communicate information, it is often difficult to communicate knowledge from one person to another.

There are three key dimensions to KM: (1) sharing knowledge, which is a fundamental human need and activity, (2) the reach of ICT, which gives a new dimension to sharing knowledge, and (3) explicating knowledge, that is, capturing, organizing, and disseminating it. Likewise, key dimensions of knowledge management programs involve decisions about: (1) with whom to share, (2) what to share, (3) how to share and (4) actually deciding to share (World Bank 2000).

The decision of how to share is especially important, as the choice and scale of ICT used depends on it. It involves four further 'how to' questions (World Bank 2000):

- *Balancing connecting and collecting.* The connecting dimension refers to linking people who need to know with those who do know, and through this develop new capabilities for nurturing knowledge. The collecting dimension relates to capturing and disseminating knowledge through ICT, aimed at codifying, storing, and retrieving content,
- *Creating the social process within which knowledge sharing can occur.* So far, experience has shown that *communities of practice* are a key building block. Such communities are typically based on the affinity created by common interests and experience,
- *The use of alliances and partnerships.* As no one organization knows everything, alliances and partnerships are key to achieve the agreed-upon goals. Partnerships are often an extension and continuation of communities of practice that exist within an organization, and
- *Choice of information technology.* This is not a trivial matter. The World Wide Web (WWW) appears to be the preferred choice, and has been a key factor in catalysing the knowledge management movement. Experience has shown, however, that there are problems with relying too heavily on this technology. Experiences from development cooperation are still few and far between, but if anything, the problems are likely to increase. Among the issues that need to be addressed in deciding on IT for KM programs are: (1) responsiveness to user needs, (2) content structure, (3) content quality requirements, (4) integration with existing systems, (5) scalability, (6) hardware-software compatibility and (7) synchronization of technology with the capabilities of the users.

Based on these ideas and principles, a structured approach to identifying, collecting, managing, producing, disseminating, and using appropriate knowledge about development is emerging.

5 Application: CBNRM Net^{5/}

As development cooperation is understood as two parallel cultural and political discourses, so can the sector of natural resource management (Escobar 1998).

^{5/} The material in this section is partly adapted from Soeftestad (2001).

It is cultural because stakeholders at the local level present unique approaches for how to define problems, define goals, and apply means, that is, manage knowledge. It is political because deciding on, for example, priorities, and who are to be involved, is highly contested. In the face of this, particular issues takes on new dimensions, that is, they cannot any more be reduced to a managerial and political issue by dominant elites. By placing these discourses in the context of the political ecology of social movements, the whole logic of how to define, address and resolve these issues changes. The local level becomes the center, as it were. The growth of social movements in developing countries is a key factor to consider when applying the ideas of KM to particular development cooperation projects and issues (Hepsø 2000).

Beyond grand words about the importance of ICT in development cooperation, so far, almost no efforts of constructing specific KM-inspired ICT models and applications have been undertaken (Singh and Nath 2000). One such effort, the Community-Based Natural Resource Management Network (CBNRM Net) and its website, is presented and discussed.

Overview

The task is to construct and implement a KM capability for the global CBNRM community of practice. The problems involved are multiple, and centers on the idiosyncrasies of the stakeholders, including: geographic location, topical interests, culture, language, needs, education, training, aims, values, and financial situation. Participants at an international workshop in Washington D.C. in 1998, organized by the Ford Foundation, the International Development Research Centre, Rockefeller Brothers Fund and the World Bank, defined the needs and recommended that this be done (World Bank 1999). CBNRM Net, and its portal website for the global CBNRM community of practice, is an implementation of these recommendations.^{6/}

Structure

CBNRM Net takes the above framework, the critique of ICT in development cooperation, and key lessons in the evolving concept of KM, as points of departure for its own mission. CBNRM Net organizes all CBNRM knowledge in a detailed, hierachic, and adaptable KM structure.

The single most important feature of the structure is a number of knowledge management elements that are structured hierarchically, namely: Section, Category, Group, Item, and Page. There are a total of 6 sections that all have this structure, in more or less adapted form. While the top tiers of the structure are laid down permanently, at the lower levels there is room for manoeuvre and adaptation. All KM elements in all sections are connected by multiple hyperlinks. As well, there are numerous links to websites that contain specific CBNRM knowledge.

Process

CBNRM Net is an effort to create a joint interface between all stakeholders through the website, and in this way function as a node, and a medium of exchange, of relevant knowledge. The fact of CBNRM stakeholders being located on multiple societal categories and levels represent particular challenges when it comes to KM.

^{6/} CBNRM Net is available at: www.cbnrm.net.

What is more important, CBNRM Net plans to search for new ways of ameliorating the WWW for development purposes, and, as it were, humanize it, and make it accessible through a suite of approaches and means of communication. CBNRM Net aims to produce knowledge through its users submitting knowledge; which is analysed and packaged for uploading. In this way, CBNRM Net users will, at one and the same time, be both *users* and *producers* of knowledge. CBNRM Net will rely strongly on user involvement for its operation, through decentralized Web Teams, and will also involve users in direct day-to-day management responsibilities. As many users, in particular at the local level, face serious connectivity problems, one key element of the KM structure and process will be email. As part of this a CBNRM Net Newsletter has been launched. A correct balance between the emphasis on WWW and, for example, email, needs to be arrived at.

Discussion

This knowledge system application was launched during the spring of 2001, and is in a pilot phase until December 2001. CBNRM Net is likely to evolve given the involvement from its users, that is, CBNRM practitioners.

There are some limitations and obstacles: (1) on the individual user level, (2) as given by the rationality of the WWW and (3) in relation to the emerging global CBNRM community of practice:

- *The individual stakeholder.* The emphasis on the WWW and ICT is an obstacle for many, especially at the local level. The lack of access, training, and the cultural obstacles to interacting with ICT are formidable. New technology and forms of communication should strive to emulate traditional modes of communication, including, training and capacity building and inter-generational modes of transmitting knowledge,
- *The rationality of the WWW.* The frames of the WWW are pretty much given. There are limits as to how one can adapt the technology. As a result, the solution is to adapt oneself and the message to it. This is far from satisfying, but some balance must, of necessity, be struck. The WWW as medium and go-between may or may not be conducive to realizing the parallel goals and processes of use and production of CBNRM knowledge: it will either facilitate the integration of the community of practice or quite the opposite, and
- *The CBNRM community of practice.* There are different views on what KM is, and also what CBNRM is, and for a number of reasons. There is, accordingly, as of yet little group coherence. The application of WWW to CBNRM is problematic, in the sense that it tends to expand beyond the mere technical, and influences and determines the overall agenda, including content provisioning and the specific choice and use of networking capabilities.

There are no definite conclusions available yet. What will happen following the pilot phase is not clear, and will depend on the evaluation of the pilot phase. Clearly, funding to continue this experiment in knowledge management and knowledge sharing, and in global communication and networking, will be critical.

6 Conclusions

The global political and economic system pushes people all over the world into mindless consumption, and uses more and more energy and scarce raw materials. The only rationality the system knows is that it must expand or collapse.

This system depends on the internal stability of its countries, their populations, and, increasingly, on the stability between people in neighbouring countries. Causes of conflicts and differences along these parameters are many and varied, based as they are on disparities in culture, ethnicity, subsistence practices, race, language, politics, and economic situation. Development cooperation's overall mission is, in those parts of the world where it operates, to increase the standard of living. As means towards this a broad suite of activities are taking place. One of these activities has to do with ways and means of connecting people, of establishing and furthering communication and understanding. In an increasingly globalized, interconnected, and interdependent world, culturally informed and sensitive communication is more and more called for.

Globalisation has led to a concern with Global Public Policy (GPP). Based on case studies of a number of global public policy networks, essentially trisectoral alliances between the public sector, civil society, and the private sector, a number of characteristics of these networks are emanating (Reinicke 2001). The role of ICT in furthering such global public goods networks is critical.^{7/}

The societal and developmental role of IT – which, presumably, is what ICT is all about – is to apply it in support of the major agendas of this day and age, including furthering democracy, decentralization, devolution, co-management, and transparency, in the aid of increasing the well-being of the disadvantaged masses in developing countries.

Thus, the challenge of ICT is how to sensitise and humanize it to play a key role in this crucial agenda. The task of scaling ICT to serve various needs within development cooperation, that is, aligning the needs of the various stakeholders with the means at disposal, in this way becomes a humanizing project, addressing both inter-personal and inter-cultural relations (Såmmé 1997). In this project, to aim at connectivity for all, to take an example, is probably both futile and unnecessary, and for a number of reasons. Just as IT stands for both ‘information technology’ and ‘intermediate technology’, the maxim that ‘small is beautiful’ would seem to apply also to ICT.

Although there are huge differences between cultures, the challenge is not as large as may be thought. This has to do with the fact that no cultures today exist in isolation. All of them, to varying degrees, interact with the outside. As a result, they show, for example, mixtures of old and new technology, and production for consumption and trade. Building a new social order with the help of ICT may, in this way, turn out to be somewhat easier than one might think.

For ICT to succeed with its mission in development cooperation, it cannot be ‘we’ that are identifying, planning, investing, training, using, implementing, analysing, monitoring, and evaluating on behalf of ‘them’. For all of us to benefit, we have to do this together, be involved throughout the whole process.

ICT must strive to emulate key elements and values of the countries and cultures in which it is being implemented. At the same time, as ICT is being applied to the area of inter-cultural communication, it must contribute to bridging and aligning the diversity and heterogeneity of cultures. In this way ICT may contribute to engender a cultural pluralism, and a plurality of knowledge systems (Worsley 1997).

^{7/} Comparing these characteristics with CBNRM Net, it can be argued that CBNRM knowledge is a global public good.

Based on the above, the term ‘knowledge system’ would seem to be somewhat narrow and static. It gives little emphasis to the changing and evolving character of the issues under scrutiny. These systems are evolving, and this needs to be taken into account. Thus it would seem more correct and useful to talk about ‘knowledge structures and processes’. The CBNRM Net application addresses the construction and application of KM structures and processes specifically.

There are, however, some short-term and long-term obstacles to realizing relevant applications built around the approach and agenda suggested here. These need to be addressed. In the area of knowledge we need to understand more about specific ICT approaches and applications, and their point of interaction and contact with people and their cultures, administratively as well as socially. In the area of communication there is much to be desired in terms of connecting issues as well as the people who advance and sponsor them. We need to establish informal, applied and operational networks of stakeholders in order to bridge the various disconnects, disparities, and fault lines. For this to happen we need to talk together, and for this ICT certainly is a most suitable means and tool.

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References

- Abram, Simone and Jacqueline Waldren, eds. 1998. *Anthropological perspectives on local development. Knowledge and sentiments in conflict*. London, United Kingdom and New York, United States: Routledge.
- Bhaskar, Roy. 1994. Knowledge, theory of. In: William Outhwaite and Tom Bottomore, eds. *The Blackwell dictionary of twentieth-century social thought*, 311-14. Malden, Massachusetts, United States: Blackwell Publishers.
- Castells, Manuel. 2000. *The rise of the network society*, 2nd edition. Malden, Massachusetts, United States: Blackwell Publishers.
- Domatob, Jerry K., William A. Ausmus and John M. Butler. 1996. New communication technologies in tropical African development. *Development in Practice* 6, no. 3 (August 1996): 228-39.
- Escobar, Arturo. 1998. Whose knowledge, whose nature? Biodiversity, conservation, and the political ecology of social movements, *Journal of Political Ecology* 5: 53-82. [online] URL: www.library.arizona.edu/ej/jpe/vol5.htm
- Greenberg, James B. and Thomas K. Park. 1994. Political ecology, *Journal of Political Ecology* 1: 1-12. [online] URL: www.library.arizona.edu/ej/jpe/vol1.htm
- Hepsø, Vidar. 2000. “The involvement of human and non human stakeholders. Combining actor network theory and action research”. Paper presented at IRIS 23, Uddevalla, Sweden, 2000. [online] URL: www.iris23.hut.se/proceedings/PDF/113final.pdf
- Keesing, Roger M. 1981. *Cultural anthropology. A contemporary perspective*, 2nd edition. New York, United States: Holt, Rinehart and Winston.
- Long, Norman. 2000. Exploring local/global transformations. A view from anthropology. In: Alberto Arce and Norman Long, eds., *Anthropology, development and modernities. Exploring discourses*,

- counter-tendencies and violence*, 184-201. London, United Kingdom and New York, United States: Routledge.
- NORAD. 2000. "Bridging the digital divide. Information & communication technologies. Challenges and opportunities to NORAD and its development partners". Report by the NORAD Working Group on ICT in Development Co-operation. Oslo, Norway: NORAD. [online] URL: www.norad.no
- Nustad, Knut G. 2000. Formell utvikling og uformelle strategier: et post-apartheid utviklingsprosjekt. *Norsk Antropologisk Tidsskrift* 11, no. 3: 212-26.
- Reinicke, Wolfgang. 2001. Walking the walk: Global public policy in action. In: C. G. Gerrard, M. Ferroni and A. Mody, eds., *Global public policy and programs. Implications for financing and evaluation*, Proceedings of a workshop held in Washington D.C., 11-12 July 2000. Washington D.C., United States: Operations Evaluations Department, World Bank. In press.
- Singh, Harjit and Vikas Nath. 2000. "Towards knowledge-based networking systems". Paper presented at the 8th Biennial Conference of the International Association for the Study of Common Property (IASCP), Bloomington, Indiana, USA, 31 May - 4 June 2000. [online] URL: dlc.dlib.indiana.edu
- Soeftestad, Lars T. 1994. "Indigenous communities". Paper presented at the Workshop on Participatory Development, Washington D.C., United States, 17-20 May 1994. Washington D.C., United States: World Bank. [online] URL: www.supras.biz
- Soeftestad, Lars T. 2001. "Community-based natural resource management: knowledge management and knowledge sharing in the age of globalization". Prepared for the Community-Based Natural Resource Management Network (CBNRM Net). *CBNRM Net Papers*, no. 1 (August 2001). [online] URLs: www.cbnrm.net/resources/papers and www.cbnrm.net/about/overview
- Såmmé, Johan. 1997. "Action space and participation. Knowledge creation and organizational development". Paper presented at IRIS 20, Hankoe, Norway, 1997. [online] URL: www.iris.informatik.gu.se/conference/iris20/25.htm
- Wolf, Eric. 1982. *Europe and the people without history*. Berkeley, United States: University of California Press.
- World Bank. 1999. "The international workshop on community-based natural resource management (CBNRM), Washington D.C., United States, 10-14 May 1998, Workshop report". Prepared by Lars T. Soeftestad. Washington D.C., United States: World Bank. [online] URL: www.cbnrm.net/library/documents/May98Workshop_Report.pdf
- World Bank. 2000. "What is knowledge management. A background document to the World Development report". Washington D.C., United States: World Bank. [online] URL: www.worldbank.org/ks/html/pubs_pres_what.html
- Worsley, Peter. 1997. *Knowledges. What different peoples make of the world*. London, United Kingdom: Profile Books.