Knowledge, Development and Technology: Internet use among voluntary-sector AIDS organisations in KwaZulu-Natal

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Abstract

Knowledge is frequently invoked as an explanatory factor in the relationship between technology and development, yet seldom with reference to an explicit conception of knowledge and almost never with reference to contemporary epistemology. The result is a multiplicity of different and in some cases contradictory 'knowledge-based' approaches. At the same time, epistemology is undergoing significant developments that suggest promising directions of enquiry and collaboration with the social and natural sciences. Of particular interest are naturalistic and externalist perspectives in analytic epistemology, where an emerging programme can be discerned aimed at bridging the gap between philosophical and empirical study of the way in which we come to know the world.

This project can be seen as part of such a programme, applying naturalistic epistemology to the field of development and technology as the basis of a more grounded and general theory with a range of empirical applications. It begins with a discussion of the philosophical position, identifying three core dimensions of knowledge, their normative features and the potential of technology to support and extend functioning on each dimension. This theory is shown to have close affinities with the capability approach developed by Amartya Sen and Martha Nussbaum, leading to the articulation of a generic theory of 'knowledge capability'.

The second half of the project applies the general theory to a case study of Internet use among AIDS NGOs in the province of KwaZulu-Natal in South Africa, where HIV prevalence rates of 37.5% have been recorded and where response to the epidemic has been left largely to civil society. The knowledge dimensions of NGO AIDS work are explored and conclusions drawn about the interactions between technology use, existing capabilities and wider environmental factors in determining the degree to which technology can in this case be considered a knowledge tool.

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Acknowledgements

Abbreviations

AIDS	acquired immunodeficiency syndrome
ANC	(i) African National Congress
	(ii) antenatal clinic
ARV	antiretroviral medication
CINDI	Children in Distress Network
CR	critical realism
FBO	faith-based organisation
HBC	home-based care
HIV	human immunodeficiency virus
HST	Health Systems Trust
IBRD	International Bank of Reconstruction and Development
ICT	information and communications technology
IEC	information, education and communication
IS	Information Systems
KC	knowledge capability
M&E	monitoring and evaluation
MTCT	mother-to-child transmission
NGO	non-governmental organisation
NSM	new social movement
OVC	orphans and vulnerable children
PAAU	Provincial AIDS Action Unit
Pmb	Pietermatitzburg
PWA	person with AIDS
STD/STI	sexually transmitted disease/infection
TAC	Treatment Action Campaign
UN	United Nations
UN IRIN	United Nations Integrated Regional Information Networks
UNAIDS	United Nations AIDS Programme
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
VSE	veritistic social epistemology
VTC	voluntary testing and counselling
WB	World Bank
WDR	*World Development Report 1998-9*
WHO	World Health Organization

1. Introduction

Everyone by nature desires to know. (Aristotle, *Metaphysics*)

By no means everyone has benefited from the overall trend of increased life expectancy, however, or from that of increased knowledge and its communicability. This gap goes beyond the notion of the 'digital divide'. It is a 'knowledge divide', in which large sections of humanity are cut off not just from the information that could help but from any learning system or community that fosters problem-solving. (Bailey 2003)

Knowledge matters – for life expectancy, for development, for life itself. It matters more than information and more than technology; arguably it is the reason why information and information technologies matter. Aristotle 2500 years ago believed a desire for knowledge to be part of human nature. For contemporary philosophers such as John Finnis and Martha Nussbaum, knowledge remains intimately connected with notions of human flourishing and development, a value that stands alongside other 'self-evident goods' such as health, sociability, life itself. Nor is this a singularly Western preoccupation. All human societies distinguish truth from error, and have ways of recognising, passing on and developing expertise. One of the earliest recorded works of African philosophy, the Egyptian manuscript known as 'The Moral Teachings of Ptah-hotep', dating from c 2400BCE, affirms 37 principles of moral behaviour, including the pursuit and communication of truth (Hallen 2002). Contemporary philosophers have seen African village dialogue as a knowledge exercise, a way to 'move a community from injustice to justice, from wrong to right, from brokenness to wholeness, from ignorance to truth' (Bell 1989:373)

Knowledge is also the topic of this thesis. Despite its being such an ancient and universal human concern, knowledge is often presented to us as the basis of a new type of society, the 'knowledge society' in which the future lies with 'knowledge work' in a 'knowledge economy'. Developing countries are exhorted to promote 'knowledge industries', to establish 'learning regions' and to acquire 'knowledge for development'. Companies, government departments and increasingly non-

governmental agencies are investing in 'knowledge management' and 'knowledge networking'. Such rhetoric is allied to visions of the future rather than the past and seldom refers to the long tradition of philosophical enquiry into knowledge. Instead, it is tied to the proliferation of computers and particularly the use of computers within communications and networking contexts. It is this three-cornered relationship between knowledge, development and technology, that forms the subject matter of this research project.

1.1 BACKGROUND TO THE PROJECT

Knowledge is increasingly invoked in academic and strategic literature on information and communication technology (ICT) and development (see for instance World Bank 1998, Castells 2000, UNDP 2001), and where international agencies have put significant resources into initiatives with a heavy emphasis on ICT. These include both those with a general focus, such as the Global Knowledge Partnership, the Global Development Gateway, the G-8 Digital Opportunity Task Force (DOTForce) and the World Summit on the Information Society (WSIS), and those aimed at specific domains such as health, science, education, democracy and the environment. At the same time, knowledge and learning paradigms are becoming increasingly prevalent in regional, community and organisational development. Mansell and Wehn (1998), for example, chose the title *Knowledge Societies* for their influential survey of ICT in developing regions. Technology-based knowledge and information management practices are being adopted not just in developing-world public administration and commercial enterprises, but increasingly also in civil society aid and development organisations (Powell 1999, Madon 2000, Hunt 2000). One researcher detects a '. . . powerful consensus . . . within the development communities of the South regarding the centrality of knowledge creation and diffusion, especially as mediated by ICT' (Mukherjee Reed 2001).

For all the talk of knowledge in development and ICT literature there has, however, been very little attempt to explicate or theorise knowledge, and very little reference made to any specific conceptions of knowledge. Nonaka and Takeuchi (1995), who did much to introduce knowledge into management and organisational discourse,

invoked the traditional definition of 'justified true belief' but did not interrogate this conception or refer to any of the work which has since the 1960s undermined it. Castells opts for Bell's formulation 'a set of organized statements of facts or ideas, presenting a reasoned judgement or an experimental result, which is transmitted to others through some communication medium in some systematic form' (Castells 2000:17). Such a definition may serve the purpose for an economic analysis but has major conceptual flaws in excluding such basic forms of knowledge as knowing that you are sitting down, knowing how to perform a practical task such as caring for a child, or indeed knowing anything that is not articulated as a set of logically connected statements. To assume that only the latter could be relevant to development is something that would need to be established and that cannot form the starting point of such enquiry.

The use of philosophy is nothing new in social theory, however, especially in policy and economic disciplines. Justice rests on ethics, and theories such as utilitarianism and liberalism are based on philosophically derived notions of the good. Development theory is inherently normative; indeed perhaps the only aspect of development that everyone agrees on is that it involves some type of 'good change' (Chambers 1997). Until recently few development theorists attempted to ground the 'good' of development in philosophy to the same extent that political theorists did with justice, but the work of writers such as Amartya Sen and Martha Nussbaum has been highly influential in establishing a strong philosophical foundation in at least some strands of development thinking.

The situation with knowledge is very different. A vast applied literature invoking the concept of knowledge exists, cutting across disciplines from economics to management to information systems, and including an important outpost in development studies. This work produces theories *about* knowledge but without engaging with theories *of* knowledge – the philosophical domain of epistemology. One reason that is sometimes given is that philosophers have been worrying away at the nature of knowledge for some time without coming up with an agreed theory – the 'twenty-five hundred years of unresolved epistemological debate' referred to by Brown and Duguid (2000:119). Where applied literature has tended to treat knowledge as unproblematic, epistemology problematises intuitive and natural

notions, often raising questions it cannot satisfactorily answer. For this reason it is perhaps not surprising that writers on knowledge in applied settings have avoided looking to epistemology for conceptual foundations. Yet theories of ethics or justice are scarcely more 'resolved', and political theory is flourishing.

Furthermore, lack of a 'resolution' to the question of knowledge – whatever would constitute that – does not equate to lack of progress. Few would deny that epistemology has had lengthy periods of stagnation, but recent decades have seen a burst of activity resulting in the emergence of a powerful new strand of naturalistic thinking in analytic philosophy[1] generally and epistemology in particular. Naturalistic views emphasise continuities between philosophy and the natural and social sciences, and have shifted the focus away from traditional epistemological concerns such as logical structures of belief onto more descriptive and process-based accounts emphasising the activity of know*ing* over the architecture of know*ledge*. Alongside logical relations these views insist that knowledge needs to be understood in terms of processes – biological, psychological and social – and that epistemology has as much to gain from as to contribute to empirical studies. Such views have opened the way for more fruitful interactions with applied disciplines, and work has already been done in fields such as democracy, education and technology, notably by the American philosopher Alvin Goldman.

It is against this background that the current project took shape as an attempt to investigate whether and how the emerging strand of naturalism in analytic epistemology could help in the construction of a more grounded approach to knowledge, development and technology. Held (1994) argues that any normative social theory – which both development and technology are, being both concerned with judgements about human action – needs a philosophical as well as an empirical component. Debates about principles abstracted from the conditions for realising them are abstract and incomplete; empirical investigation of social and political

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[1] Analytic philosophy is a historical term used for a style of philosophy emphasising conceptual clarity and cogency of argument. It started out as a project to break down complex concepts into simpler ones but there is no longer any such collective project or method (Martinich 2005). It is nevertheless a relatively clearly demarcated field. In general, the unqualified term 'epistemology' refers in philosophical circles to theorising about knowledge in the analytic style (see for example Dancy 1985; Sturgeon 1995; Audi 2003; Morton 2003), with other approaches described in terms of qualifiers such as 'Continental', 'feminist' and so on.

arrangements without normative philosophy leaves us able to describe but not to pass judgement or plan improvements. The critical realist Andrew Sayer (2000) calls for the development of philosophically grounded normative social theory. Both authors have in mind ethical norms regarding the nature of the good and of justice, but the arguments apply equally to the other great normative philosophical tradition, epistemology. As with politics and justice, if we leave philosophy out of the picture we have no basis on which to judge our institutions, practices, systems and structures – and our technology – in terms of knowledge.

Theory in applied fields, however, has to prove itself empirically useful, and this project therefore has a second aim of investigating the knowledge and technology dynamics of a particular development context. Knowledge, as suggested in the quotations which began this chapter, is not a theoretical game for philosophers but is a central part of human existence and wellbeing. However, as Bailey (above) observes while ICT-based initiatives have been multiplying, development problems have continued to beset many parts of the world. UNICEF (2004b) estimates more than 1 billion children – one in every two children in the world – to be suffering extreme deprivation as a result of war, poverty and HIV/AIDS. Among them are 300 million who lack access to vital information and 140 million who have never been to school. Across the world 850 million people are malnourished (World Hunger Education Service 2004). More than 40 million are infected with HIV and just 12% of those who urgently need treatment receive it (World Health Organization 2005).

One area of particular concern is sub-Saharan Africa. While there are signs that poverty is decreasing globally, this region, already the world's poorest, is falling even farther behind, with declining life expectancy and living standards in many countries badly affected by AIDS. The World Bank recently issued a warning that sub-Saharan Africa was in danger of failing to meet every one of the millennium development goals (IBRD/World Bank 2005). It is therefore in this area and on the crippling AIDS epidemic that the project has chosen to focus its empirical component. The specific decision to study the activity of non-governmental organisations (NGOs) dealing with AIDS in the KwaZulu-Natal province of South Africa was made on several grounds. Firstly, AIDS is recognised as a global development challenge and one of the most severe problems facing southern Africa, threatening to undermine every measure of

development, from life expectancy to long-term economic and social stability (Whiteside and Sunter 2000; Barnett and Whiteside 2002). AIDS is causing untold suffering to individuals, families and communities, and is overwhelming the health-care, education and welfare provision of poor countries. It is also a particularly complex problem since it requires medium and long-term planning to deal with social and demographic change, as well as immediate interventions in terms of prevention, treatment and impact mitigation. AIDS interventions need to be multisectoral, involving the whole of society, and they need to operate on many different levels from the micro level of transmission reduction, through treating STIs and supplying condoms, to structural changes such as women's empowerment and human rights' promotion (Barnett and Whiteside 2002).

The AIDS epidemic in South Africa has been particularly severe. Prevalence rates vary among regions but the country as a whole has the world's highest absolute number of cases (5.3 million). On the standard measure of anonymous unlinked testing of women attending antenatal clinics, KwaZulu-Natal is consistently the worst-affected province, with more than one-third of the adult population thought to be HIV+. At the same time South Africa is a large, relatively well-educated, mobile and wealthy country; with significant natural assets, high levels of foreign investment and a strategic geographical position. It is also a newly democratic state, undergoing rapid processes of change since the ending of apartheid in 1994. The province of KwaZulu-Natal exemplifies many of the challenges faced by the country as a whole: it is the largest and most populous province, with many natural and human resources but also with significant problems of poverty, rural underdevelopment, rapid urbanisation, poor infrastructure and high unemployment.

Non-governmental organisations (NGOs)[2] have been important participants in managing the processes of change and democratic 'transformation'.[3] They are of

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[2] The term 'nongovernmental organisation' has been the subject of much discussion, with a variety of different definitions being proposed. Salamon and Anheier (1992) take NGOs to be development focused nonprofit organisations (NPOs). This project follows Vakil's (1997) slightly more liberal definition of NGOs as self-governing, private, not-for-profit organisations that have the aim of improving the quality of life of disadvantaged people.
[3] The Health Systems Trust, for example, is an internationally funded NGO set up after the change of government in 1994 with the specific aim of assisting the democratisation of health care in South Africa.

historical importance in South Africa where the apartheid government did little to address black poverty, leaving welfare and development work largely to private and charitable institutions. In the democratic state, NGOs continue to play a vital role in areas such as community development, women's empowerment, children's rights, rural development, poverty alleviation and specifically in HIV/AIDS. In both the West and in developing countries the initial response to AIDS has frequently come from NGOs, since governments have avoided the association with stigmatised groups such as homosexuals, drug users and prostitutes. This tendency has been exacerbated in South Africa by government denialism, leaving AIDS provision largely in the hands of NGOs, often the smallest and most grassroots groups.

Despite its much publicised policy and implementation failures in the field of AIDS, South Africa is a political and economic leader in Africa, playing a key economic and ideological role in continental initiatives such as NEPAD (New Partnership for African Development) and the African Renaissance movement (Alexander 2003). Moral and intellectual influence should not be understated either. Statesmen such as Jan Smuts and Albert Lithuli have been internationally acknowledged for intellectual and ethical leadership in public life, while Nelson Mandela occupies a unique position as a global moral icon. South Africa's Truth and Reconciliation Commission has had far-reaching influence in other post-conflict situations around the world, and President Thabo Mbeki appears to seek a role of thought leadership among African nations. For all these reasons, the way in which South Africa deals with development challenges is of interest and influence far beyond the country's borders.

South Africa is also a technological leader in Africa and is at the forefront of Internet connectivity (Jensen 2002). The Internet has been acclaimed as genuinely revolutionary technology, in particular through the speed and reach of electronic communication, the strength and flexibility of non-hierarchical and decentred network structure, the enabling of local-global linkages, and the potential for remote access to computer applications and data (see for example Bonchek 1997). Even those who see the Internet as essentially 'amplifying' or accelerating existing processes rather than enabling new ones (Agre 2002; Brants 2002), are not in doubt about its importance.

The Internet has furthermore been claimed to hold specific advantages for developing countries, increasing access to information and expertise, and opening up channels of communication that can aid development. Even before the emergence of the Internet and web in their current commercialised form, NGOs were networking internationally through computers (Kidd 2003). Jensen, cited in Okoth (2003) suggests that South African NGOs are among the most active users of ICT on the continent. Literature on the knowledge benefits of the Internet is ambiguous, however. On the one hand there is no doubt that vast amounts of information are now available to anyone with a connection, but on the other there are doubts about the quality of many sources, and the searchability and organisation of information (Goldman 1999). Findings on the emergence of the anticipated virtual public sphere in South Africa are at best mixed (Wasserman 2005 forthcoming-a). This is therefore an area in which research is needed and where there are interesting questions to be asked.

All of this adds up to a case study that is both important in its own right and relevant to some wider development issues. It also raises the particularly challenging and difficult question as to why South Africa, with its wealth and apparent technological and knowledge advantages, remains seemingly unable to mount a clear and unambiguous response to what has been called the worst development crisis since colonial conquest. Speaking at the 15th World AIDS Conference Stephen Lewis, UN special envoy on HIV/AIDS in Africa, commented on the:

> 'extraordinary series of delays and interruptions which the world has watched with bewilderment... Everyone in the international community wants this country, at the economic heart of the continent, to lead in the AIDS response … It is ironic that those who survived the cancer of apartheid are at risk of dying by a communicable disease.' (Health & Development Networks 2004)

For all these reasons, AIDS in South Africa represents something of a critical case for a thesis about knowledge, development and technology. There is in addition a personal factor involved in the choice. The researcher was born and grew up in South Africa, and wanted if at all possible to choose a topic that would in some way give something back to the country, and particularly to KwaZulu-Natal.

1.2 RESEARCH QUESTIONS

The framing of suitable research questions is considered central to successful research projects (Yin 1994; Berg 1995; Flick 1998; Blaikie 2000). Research questions are intimately related to the aims and problems that a project addresses (Cresswell 1998), and to research design (Yin 1994). Mason (1996) locates research questions within the overall context of the 'intellectual puzzle' the researcher is interested in, a way of moving from the general area the researcher is interested in to the definition of a particular research project.

As described above, this research project grows out of two concerns, one to do with the use of epistemological theory in analyses of knowledge, technology and development; and one to do with knowledge processes and Internet use in civil society responses to AIDS. The two sets of concerns are closely connected in that they both come out of an overarching interest in the relationship between knowledge, technology and development. They address the subject from two different perspectives, however, and with two different aims in mind, one theoretical and one empirical. There are therefore two major research questions:

Theoretical question

> *How can contemporary theory of knowledge – particularly the naturalistic strand of analytic epistemology – be used to develop a philosophically grounded knowledge-based analysis of development and technology?*

Empirical question

> *What role does knowledge play in NGO responses to a development challenge such as the AIDS epidemic in KwaZulu-Natal, and to what extent is the Internet a supporting technology?*

The two questions can be seen as representing different approaches towards answering a single more fundamental question:

> *What is the relationship between knowledge, development and technology?*

The research questions and their methodological implications are discussed further in the following chapter.

1.3 THESIS STRUCTURE

The shape of the thesis that follows is largely determined by the two research questions. After the preliminary material, including a review of literature relating to knowledge, development and technology, and to epistemology (sections 1.4 and 1.5), and a discussion of methodology (chapter 2), there follows a theoretical chapter (chapter 3) explicating a naturalistic theory of knowledge and showing how it can be related to development and technology, giving a general theoretical framework. Chapter 4 provides a preliminary application of one part of the theoretical framework, analysing secondary NGO literature in terms of three dimensions of knowledge and generating a more specific framework which is used to structure the case study. Chapter 5 introduces the case study proper, setting out the historical, biomedical, political and social context of the South African epidemic. The following chapter (6) reports the results of the case study, and chapter 7 discusses the results and integrates them within the general theoretical framework. Chapter 8 assesses the contributions, limitations and future directions of the research.

1.4 LITERATURE REVIEW: KNOWLEDGE, DEVELOPMENT AND TECHNOLOGY

Knowledge-based perspectives on development and technology are varied and diverse, operating at different levels of generality and in different domains. The review that follows is necessarily somewhat scattered, but it follows a rough progression from more macro to more micro-level analyses and from more general to more specific.

1.4.1 Macro-level economic perspectives

Theories operating at the macro level tend to focus on the economic and productive power of knowledge. Castells (2000), for example, identifies knowledge and

technology as key driving forces of economic and social change on a world-historical scale. Knowledge, in this view, gives mastery of technology, and technology 'embodies the capacity of societies to transform themselves' (Castells 2000:7). In the contemporary 'informational mode of development' the relationship is intensified as knowledge becomes not only a means to mastering technology but also a product of that technology. A virtuous circle is set up in which knowledge gives mastery of technology, which increases knowledge, which leads to better technology, which further increases knowledge, leading to yet better technology and so on. Development is seen to hinge crucially on knowledge, but it is knowledge of a particular type – technological knowledge – and this knowledge inhabits the ahistorical, networked 'space of flows' which Castells juxtaposes to the temporally and spatially rooted 'space of places' where meaning and identity reside. Developing countries are caught on the horns of a dilemma: enter the magic circle and face a loss of identity, or stay out and condemn yourself to a pernicious cycle of deepening exclusion.

Where Castells's view is essentially historical, international development agencies tend to be more interventionist. The World Bank has pushed hard to persuade governments and donor agencies to adopt an economically based knowledge approach. Styling itself 'the knowledge bank' and taking on the role of 'knowledge broker', it produced an influential conceptual framework in the *World Development Report 1998-9: Knowledge for Development* (World Bank 1999) (hereafter referred to as WDR). The WDR analysis is primarily a macro-economic view which sees knowledge as a commodity or good, requiring effort and investment to create, but also having the two key properties of a public good, being 'nonrivalrous' (utility is not diminished by sharing) and 'nonexcludable' (people cannot be stopped from using it once it is in the public domain). These properties prevent creators from appropriating all the returns on their investment, leading to market failure and the undersupply of knowledge. ICT makes the communication of knowledge more efficient, increasing the problem, and therefore the need for intervention in the form of intellectual property rights (IPR) and public investment.

WDR does not offer a theory, definition or taxonomy of knowledge, but it identifies two kind of knowledge as specially important for development: practical and technical 'know-how' (nutrition, birth control, software engineering and accountancy are the

given examples) and commercially important knowledge such as product quality or the creditworthiness of a firm. For the WDR the key actors in overcoming knowledge deficits are international agencies and national governments, the former to provide public knowledge goods and act as intermediaries, the latter to implement knowledge promoting policies and ensure access to trustworthy commercial information. In almost all these processes ICT is seen to play a central role.

WDR is an ambitious attempt to articulate a detailed framework relating knowledge, development and technology. It has, however, been criticised for simplistic approach downplaying the effort involved in knowledge creation and communication, ignoring political and cultural contexts, and overlooking the role of civil society and the media (Panos 1998). The types of knowledge are also somewhat restricted and arbitrary. Wilson and Heeks (2000), for instance, suggest that 'know-why', 'know-who' and 'knowing how to learn' be included alongside the 'know-how' and commercial categories.

1.4.2 Learning regions and communities

Knowledge and learning paradigms are also increasingly being applied to regional, national and community development. Some of these approaches focus on the relationship between knowledge and economic development in a specific area, such as the development of high-tech industry or telecommunication infrastructure to enable local participation in the knowledge economy (see for example Mansell and Wehn 1998; Boekema 2000). Other authors such as Mutume (2003) and Lister, Dovey et al. (2003) focus more broadly on the Internet and new media as general tools for developing regions.

Community-level approaches are also found. O'Dubhchair, Scott and Johnson (2001) apply the learning paradigm within a broad view of community development. They propose a knowledge infrastructure consisting of 'the set of locally specific physical, informational, educational, organizational and cultural resources needed to facilitate community learning and action toward a desired collective future' (O'Dubhchair, Scott et al. 2001:6). Three essential components are identified: public engagement, high-quality information, and ICT access and applications such as collaboration, decision-support and archiving tools. Similarly, the growing telecentre movement,

embodied in projects such as Kerala's Akshaya initiative (www.akshaya.net/) has a significant knowledge dimension in terms of practical knowledge for citizens in interacting with government, and in terms of Internet access, local content and literacy. Colle (2005), for example, highlights the role of telecentres within local knowledge and educational infrastructure.

1.4.3 Political and cultural empowerment

A body of literature closely related to learning perspectives focuses on ICT as a tool of empowerment and democratic participation. While not all of this work is explicitly knowledge-based, it does encompass a range of knowledge-intensive activities such as advocacy, problem-solving and decision-making. Mele (1999), for example, highlights the role of ICT, particularly Internet applications such as email and the web, in providing local groups with information and linkages by which they can project local struggles into a national or global arena. Moore (2003) identifies the Internet and other ICT such as mobile phones as the 'connective tissue' in global social and protest movements. Papacharissi (1999) finds the Internet supporting activism because of lowered costs of communication which disproportionately benefit marginalised, oppressed and minority groups. Kidd (2003) similarly identifies the Internet 'commons' empowering NGO and activist groups through information exchange that would otherwise be prohibitively expensive. Bennett (2003) argues that the Internet facilitates loosely structured networks, weak identity ties and patterns of organising and defining issues that distinguish a new type of global protest politics. For Pickerill (2003)it is linking features that are most significant, with the Internet promoting networking, solidarity, communication and skill-sharing among NGOs.

As well as political empowerment, the potential of the Internet to support identity and cultural empowerment has also been commented upon for example in terms of preservation and transmission of local languages and indigenous knowledge (see for example Arnold and Plymire 2000; Wasserman 2003). Other authors are less positive, especially when ICT is used for archiving rather than to support communication and interaction. Agrawal (1995), for instance, argues against the *ex situ* conservation in databases of indigenous knowledge on the grounds of its disempowering effects on local people.

One empowerment perspective that does refer explicitly to underlying explanations in terms of knowledge is Mukherjee Reed (2000) who argues that ICT can aid political empowerment in marginalised communities through opportunities for autonomous collective learning, communication and collaboration. In this perspective, whether ICT becomes a liberating tool will depend on the ability of communities to use it for collective decision-making, practical action and the strengthening of collective identity.

1.4.4 Organisational perspectives

A growing literature addresses issues of knowledge in the development community. This literature falls roughly into two categories: analyses that focus on internal organisational practices and those concerned with knowledge interactions between the organisation and the wider environment.

Literature in the first category is heavily influenced by managerial and business models, and reflects in increasing trend towards professionalism in larger development agencies. Walsham (2001) reviews four knowledge management frameworks taken from organisational literature and concerned with issues such as harnessing and creating knowledge in organisations, promoting knowledge exchange among colleagues and cross-cultural knowledge sharing in work teams. ICT-based knowledge management has been imported into many development organisations (see for example Denning 1998; Béguin and Estrada 1999; Hunt 2000), largely as a result of initiatives and workshops run by Bellanet (www.km4dev.org) and through the influence of the World Bank and the knowledge-focused 1998/99 *World Development Report*. Bailur (2002) identifies this as part of widespread change towards a more businesslike and professional environment within development management. The applicability of Northern-derived knowledge management practices to international development has, however, been questioned by authors such as van der Velden (2002) on the grounds that it treats knowledge as a 'rootless commodity', removed from the context of the knower and her social and material environment.

The second strand of literature on knowledge and development organisations treats knowledge less from an organisational perspective than as a central aspect of development, part of the goals rather than the method of development organisations.

The roles of NGOs are changing (Murphy and Bendell 1997; Rawcliffe 1998), partly as a result of previous successes and partly because of the failings of the public and private sectors in dealing with complex problems of poverty, underdevelopment and environmental damage (Heap 2000). In the development sector specifically there has been a change from operational work to international advocacy (Madon 1999), and towards the building of civil society and democracy (see for example Fox 1992; Clark 1995). Such activities, alongside emerging concepts of development as public action and policy formation, and the proliferation of ICT, have caused NGOs to recognise the fundamental importance of knowledge and communication activities such as research and lobbying (Thomas, Chataway et al. 1998).

Meyer (1997) argues that the economic role of development organisations is largely an informational one and analyses their activity in terms of information inputs and outputs. Powell (1999) sees development organisations as information-rich, and information activities as central to their goals and has subsequently proposed a more knowledge orientated perspective (Powell 2001). A switch from project-based to information-based work has been advocated in non-governmental organisations (Edwards and Hulme 1992) and the information and learning roles of international NGOs have been stressed (Madon 1999). Chambers (1994) analyses and diagnoses some notable development failures in terms of the distorting effect on knowledge of power relations between 'uppers' and 'lowers', advocating epistemic virtues such as honesty and trust as correctives.

Another development in the NGO sector has been the emergence of specialist organisations offering Internet goods and services to assist capacity-building in development organisations, promote networking and collaboration, and to share lessons learned. Large agencies such as Panos (www.panos.org), APC (www.apc.org) and One World (www.oneworld.org) offer web-based information services, training and networking facilities to the non-profit community. Smaller and more regional services, such as Kabissa (www.kabissa.org), provide services tailored to local needs – in the case of Kabissa free website hosting, email and listserv facilities for African NGOs. The largest and most controversial web initiative has been the Development

Gateway[4] (www.developmentgateway.org), initiated by the World Bank in 2001 with the express intention of acting as the primary intermediary and gatekeeper of development knowledge. This centralising model aroused the hostility of smaller initiatives, and has been seen as seeking to impose a dominant North American worldview on the entire development community and to close down alternative perspectives (see for example Aslam 2000; Thompson 2002). This approach can be seen as occupying the opposite end of the spectrum from the political and cultural empowerment perspectives mentioned above, which seek to exploit the dynamic, process-based and many-to-many potential of the Internet rather than its ability to tap into aggregating tools.

1.4.5 Knowledge networking

More in keeping with these approaches, but operating with a more general conception of empowerment, is Vikas Nath's (2000a; Nath 2000b) Internet-inspired knowledge-networking perspective. For Nath knowledge is a weapon against poverty and social disadvantage of all types, and the falling cost of ICT holds out the promise of vastly increased knowledge resources to be harnessed for development purposes. In this view knowledge empowers individuals cognitively: '. . .to think, to analyse and to understand the existing situation, and the inter-linkages and externalities of each action.' From cognition comes action, including political and economic action: 'Knowledge empowers an individual to form his or her own opinion, to act and transform conditions to lead to a better quality of life' (Nath 2000a). All forms of knowledge are important, including traditional knowledge and, particularly, knowledge to help the poor improve their lot. Although knowledge exists in the minds of individuals, processes of knowledge sharing are crucial, which is why the Internet is such powerful knowledge technology.

In this view ICT is a driver of knowledge, breaking down barriers, promoting information and communication, enabling new economic forms, and empowering individuals and communities. Participatory and inclusive networks allow people to 'harvest', customise and add value to data from many sources. Creating a knowledge society, however, requires a conducive environment that nurtures individual cognitive

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[4] The initial name was the Global Development Gateway.

capacity and that recognises the value of its outputs. Developing countries are rich in intellectual diversity but less good at providing a knowledge-conducive environment. Barriers of access, content, skills and language must be overcome; governments must deregulate, provide vision, strategy and infrastructure, and promote information-sharing; state and private sectors must collaborate on education and development. In turn developing countries must participate in international initiatives such as those of the World Bank, Global Knowledge Project and remote volunteering schemes.

It is clear from this review that a widespread recognition exists of the close connection between knowledge, development and technology. This can be seen at all levels, ranging from the most global to the most local, and across multiple domains – organisational, educational, political, cultural, economic. What we do not have, however, is a general theory that explains the nature of the knowledge-technology-development relationship or accounts for the wide variety of activities and approaches that are claimed to exemplify it. Furthermore there is little explicit reference within the literature to theories of knowledge and almost none to recent work in epistemology. This lack of theory is one of the motivating factors behind the current project and it is on current analytic epistemology that the remainder of the literature review focuses.

1.5 LITERATURE REVIEW: CONTEMPORARY EPISTEMOLOGY

Definitions and analyses of the concept of knowledge and related notions such as justification have been a central part of the Western philosophical tradition for some 2500 years. In works such as the *Republic* and the *Timaeus*, Plato distinguishes knowledge (*episteme*) from belief or opinion (*doxa*) and sets out conditions for the justification of belief. In trying to account for the existence of both genuine knowledge and false beliefs Plato develops the complex metaphysics of the Forms, and in the *Thaetetus* he proposes a tripartite definition of knowledge roughly equivalent to justified, true belief (Moser and vander Nat 1987; Audi 2003), a formulation that has been fundamental in much of the subsequent literature.

Contemporary philosophical writings on knowledge cover many different areas, not all of which can be mentioned here or are of relevance to this study. The following sections are therefore restricted to tracing the broad outlines of contemporary views on the nature and structure of knowledge, and do not cover any of the more specific writings on epistemological topics such as scepticism or particular types of knowledge. In addition, it covers only work in the analytic tradition, since it is developments in this area that initially motivated the project. The detailed discussion of knowledge in chapter 3 will, however, make reference to ideas from other strands of epistemology, particularly to African thought, as they connect with aspects of the discussion.

1.5.1 Kinds of knowledge

The subject matter of analytic epistemology is propositional knowledge, that is knowledge that something is the case, such as that the earth is the third planet from the sun or that someone is 6ft tall – typically the kind of factual knowledge that the natural and social sciences aim to generate, but including any form of knowing with conceptual or, in logical terms, propositional, content. Philosophers differ about whether all knowledge is of this type or whether there might also be non-propositional or non-conceptual cognitive states, and if so whether these constitute knowledge albeit of a different kind. Grote (1865, 1900) places thought on a continuum ranging from knowing things by direct experience to knowing *about* things through inference and judgement as well as experience, and suggests that only the latter are contentful. Helmholz (1962) makes a similar distinction between *Wissen* (ideas about things) and *Kennen* ('familiarity with phenomena') but maintains that both involve judgements and have propositional content.

James develops the distinction into a theory of reference which differentiates between thoughts that directly refer to and are constituted by their objects, and thoughts that refer to objects indirectly through inference. Although he terms the first 'knowledge of acquaintance' (James 1975) he elsewhere suggests that this is only a precondition for knowledge and not knowledge itself (James 1976). The best-known version is that of Russell (1910-1911), who distinguishes 'knowledge by acquaintance' from 'knowledge by description', arguing that while the former is psychologically prior, only the latter has propositional content. The issue of whether any form of non-

conceptual, not-inferential cognition exists, let alone constitutes knowledge, remains controversial, however, with philosophers such as Crane (2001), Peacocke (1992) and Evans (1982) arguing that at least some perceptual experience is of this sort, while others such as McDowell (1994) reject the notion of any non-conceptual cognition.

Different linguistic constructions in terms of the verb 'know' have also led to claims that knowing *who*, knowing *what* or, most commonly, knowing *how to*, is a fundamentally different kind of knowing from knowing *that*, the standard form in which propositional knowledge is expressed (Everitt and Fisher 1995; Sturgeon 1995). For Polyani (1967), 'how to' knowledge – such as how to ride a bicycle – is necessarily implicit and has to be acquired through experience, whereas 'that' knowledge can be made explicit and acquired through symbolic communication. Such distinctions have, however, come in for criticism and it is by no means universally accepted that the knowledge involved in performing an action such as riding a bicycle does not have propositional content, however difficult it may be to express and communicate, for example when the referent is an internal body state (Hintikka and Hintikka 1989; McGinn 1989; Moore 1997; Williamson 2001).

1.5.2 The analysis of knowledge

A classical method in analytic philosophy is to attempt to give a coherent definition of a concept in terms of a set of necessary and sufficient conditions which include all relevant cases and exclude everything else. The standard definition of knowledge is based on three conditions:

- Justification – good grounds for thinking something to be true.
- Truth – its actually being true (since you cannot know something that is false).
- Belief – having a certain type of mental content.

Justification – and alternatives

At the heart of the tripartite definition is the notion of justification, which links belief and truth, and which has long been a central focus in epistemology. A fundamental issue is the strength of justification. Philosophers such as Descartes traditionally looked for certainty, wanting a knower's grounds for belief to guarantee truth – the infallibilist position. But if justification requires ruling out even the *possibility* of error

(Dretske 1971) very few beliefs are justified. Contemporary epistemology, influenced by the natural sciences where very little is infallible, certain and immune from revision, is marked by a massive shift away from infallibilism and towards a more liberal, fallibilist position. Popper, for instance, argues that there are positive reasons for rejecting but not for accepting a belief (Popper 1963, 1972). Nozick (1981) points up a logical mistake underlying some infallibilist thinking, which confuses the necessity of a belief's being true in order to count as knowledge, with the view that beliefs have *of necessity* to be true to be knowledge. For fallibilists, we should require that a belief be *in fact* but not *of necessity* true; we need to admit the possibility of error or we shall be left only with certain knowledge, which is a very small domain indeed.

For fallibilists, people are justified in believing things that, though they could be false, are in fact true; justification need not be so strong as to logically entail truth. A serious problem exists with this view, however, known as the Gettier Problem after Ernest Gettier who formulated a set of counter-examples (Gettier 1963) demonstrating that the fallibilist position admitted too much into the realm of knowledge. Gettier examples show that someone can believe something on good grounds, and the belief can be true, but it can still be just an accident that the belief happens to be true – and such lucky accidents should not count as knowledge. Much recent epistemology has been driven by the need to find a satisfactory solution to the Gettier Problem (Shope 1983; Dancy 1985; Pollock 1987; Sturgeon 1993).

There is also a large literature on the nature of justification. Internalist theories hold that justification depends on factors internal to the knower or to which she has privileged access, such as the relationship of the belief to other beliefs. Externalist theories emphasise factors outside the knower – such as the causal history of a belief – or that the knower may not have any special access to, such as the functioning of sense organs.

There are two classical internalist positions, foundationalism and coherentism. Foundationalism distinguishes 'given' or 'basic' beliefs that are immediately justified, from other beliefs, which are justified through chains of inference from basic beliefs. Historically foundationalism has stressed certainty and immunity from error, in terms

of requiring basic beliefs to be infallible, incorrigible or indubitable, and in accepting only deductive inference as a legitimate path to justified non-basic beliefs. Contemporary writers see these requirements as too stringent (Chisholm 1977; Alston 1989) but there is no general agreement on an alternative. Significant criticism has been directed at foundationalism, particularly for the view that some beliefs are just 'given' and intrinsically justified independent of any other beliefs (Sellars 1963; Williams 1977; BonJour 1985; Sturgeon 1995).

The rival view, coherentism, attempts to overcome such problems by suggesting that instead of a hierarchy of beliefs, some of which are inherently justified and some of which are justified in terms of other beliefs, all beliefs are justified in the same way, that is in terms of their place in a whole framework or 'web' of belief, a raft as opposed to the pyramid of foundationalism (Sosa 1980). Philosophers such as Williams (1977), BonJour (1985) and Davidson (1986) have all proposed varieties of coherentism, and the radical empiricism of Quine can also be seen as fitting in to this tradition (Quine 1969a).

Both foundationalism and coherentism face difficulties because of their focus on the structure of belief alone, the exclusion from justification of processes such as perception, and the failure to incorporate any connection with truth into their account (Sturgeon 1995). These failings have led to an influential movement towards externalism in recent accounts. Various versions of externalism exist, with slightly different formulations, but essentially all motivated by a desire to connect mental states such as knowledge much more closely with the external world. Some early attempts formulate the connection as a causal one – you are justified in believing something if your belief is caused by the fact itself (Goldman 1967; Armstrong 1973). A version of this is reliabilism, probably the most widely influential form of epistemic externalism. Reliabilism gives a probabilistic account in terms of which beliefs are justified to the degree that they are produced by a reliable process (Goldman 1979; Dancy 1985; Goldman 1986; Pollock 1987; Sturgeon 1995). A related approach found in Nozick (1981) dispenses with justification altogether and gives instead an externalist account of knowledge itself, in which a true belief is knowledge if it 'tracks the truth' (the knower would believe it if it were true and would not believe it if it were false). Similar accounts are proposed by Dretske (1970; 1971; 1991) and

Peacocke (1986). Williamson (2001) has much in common with other externalisms but presents perhaps the most radical version currently on offer, rejecting the decomposition of knowledge into necessary and sufficient conditions and suggesting instead that knowledge is properly understood as a basic – unanalysable – relation between mind and world. This motivates an account of belief in terms of knowledge rather than vice versa as in the tripartite account.

Externalist and fallibilist epistemology, with its close linking of mind and world and rejection of certainty as a requirement for knowledge, is part of a broader tendency towards naturalism in contemporary philosophy, and it is no accident that externalists such as Goldman have been influential in moves to get philosophers and cognitive scientists working together on problems of knowledge. Goldman, however, proceeds from the conceptual analysis of knowledge as reliably produced true belief to the involvement of empirical sciences in determining the reliability of different routes to belief. A more thoroughgoing naturalism is the strong empiricism of Quine, who rejects conceptual analysis at the same time as defending the normative status of epistemology: knowledge is about having *true* beliefs. Quine appeals to Darwinian theory to explain the adaptive advantage of having mechanisms for arriving at true beliefs (Stich 1990). Another naturalistic philosopher, David Papineau, argues that it is the need to avoid error that underlies the capacity for knowledge and gives it its normative dimension (Papineau 1993). Sober (1978), Kornblith (1985) and Harman (1986) offer and discuss a range of other perspectives that bring together normative and descriptive aspects of knowledge, arguing that how people *actually* think and how they *ought to* think are in fact much closer than commonly supposed, or even identical. Similar ideas have historically been a central part of the 'reformist' strand in pragmatism (Migotti 1988). Thinkers in this mould include Peirce (1931-1958), Lewis (1946; 1952), Ramsey, Sellars (1963) Reichenbach (1938; 1949) Rescher (1977; 1981) and to some extent Dewey (1929), James (1907; 1909) and Putnam (1981; 1989) as well as Quine (1953; 1969b), who all in various ways stress linkages between human interaction with natural and social environments and normative criteria in cognition. By contrast Schiller (1907) and Rorty (1982) – Migotti's 'revolutionary' pragmatists – reject a normative dimension in knowledge, seeing the whole enterprise of epistemology, and the notions of truth and reality, in relativistic and historically dependent terms. Such views have elements in common with strands

in the Continental tradition of epistemology, and have been influential in the development of postmodern perspectives and the strong programme in the sociology of knowledge although much less so in analytic epistemology.

Belief

Belief is a fundamental concept in epistemology: standardly, knowledge is taken to be a species of belief, and it is beliefs to which epistemic properties such as truth and justification are said to apply. Various accounts have been given as to the nature of belief. In general, belief is taken to be a psychological entity, a kind of cognitive map by which we guide our interactions with the world (Ramsey 1978). In analytic philosophy, beliefs are one of the propositional attitudes, states of mind that combine content with a psychological orientation (in this case, that of giving credence) towards that content.

Taking belief to be a state of mind imports into epistemology concerns and debates from the philosophy of mind, and a variety of views on how such states are to be understood. Some, such as Williamson (2001), even argue that epistemology should be viewed as part of philosophy of mind. Fodor (1981) sees beliefs in terms of a linguistic analogy, as mental sentences in a 'language of thought'. Others see beliefs as expressible in sentences but reject structural linguistic analogies, arguing that beliefs are directed at states of affairs in the world rather than at sentence-like propositions (Stalnaker 1987). Many empiricist theorists are wary of mentalistic assumptions and prefer to characterise beliefs in terms such as behavioural tendencies (Ryle 1949), ascriptions made on the basis of observed language and behaviour (Quine 1960; Davidson 1984), or as heuristics for predicting behaviour (Dennett 1987). Eliminativists seek to do away with concepts such as belief altogether, relegating them to the realm of 'folk psychology' to be replaced one day by a proper cognitive science (Churchland 1981; Stich 1983; Churchland 1986), though such thoroughgoing reduction of the mental has found little favour with most philosophers, and folk psychology is defended for example by Jennifer Hornsby (1996).

A number of theorists have recently pointed out the graduated nature of belief: two people may believe the same thing but to very different degrees. Simply characterising belief as a state of mind is not sufficient to capture this, and belief is

better thought of in probabilistic terms (see for example Ramsey 1978; Goldman 1999; Williamson 2001). This account represents a more sophisticated version of the standard picture of belief as a propositional attitude but does not essentially challenge it, and belief remains generally construed as a state of mind.

Truth

The concept of truth, fundamental to many branches of philosophy such as logic and metaphysics, also plays a key role in epistemology, distinguishing knowledge from more general states such as belief or inference which may encompass both true or false instances. If something is shown to be false then we revise any assertion about ever having known it: 'I thought I knew where we were but then I realised I was wrong'. Fallibilist theories – discussed above – hold that all or almost all knowledge claims could in principle be wrong and susceptible to revision but in such cases what the 'knower' originally had was not knowledge but only what she believed at the time to be knowledge.

All theories of knowledge thus incorporate implicitly or explicitly some concept of truth by which they define the boundaries of their territory. There are many views of truth, however, and differences at this level account for many of the major faultlines in different views of knowledge.

The oldest and in many ways most natural account of truth is the correspondence theory, in terms of which something is true if and only if it accords with the facts (Wittgenstein 1922; Austin 1950): it is true that snow is white just because snow is in fact white. Correspondence theories are found among philosophers of many different periods and schools of thought, from Plato and Hegel to contemporary figures such as William Alston and Alvin Goldman. In its basic form the correspondence thesis has little substantive content, however, and attempts to give an account of what facts are and what it is to 'correspond' with a fact have run into difficulties. Nozick's final book addresses the problem, defining two central issues for correspondence theorists to resolve: firstly specifying the nature of the relations between the way things are and their representation in thought or words – the 'makes-true' relation – and secondly specifying the components of facts. For Nozick until better accounts are available of these matters the correspondence theory, while correct in its basic characterisation of

truth, remains only weakly statable: 'there exists something about the world, and there exists some specification of the makes-true relation, so that a statement is true when that thing about the world stands in that specified relation to the statement' (Nozick 2001:74)

An alternative approach is to bypass metaphysical commitments to entities such as facts in favour of more accessible criteria such as verification conditions (Peirce 1931-1958; Hempel 1935) and procedures (Dummett 1978; Putnam 1981) or successful outcomes (James 1909; Papineau 1987). Such theories collapse the distinction between criteria for deciding truth *claims* and those distinguishing truth itself, and therefore run into difficulties in accounting for counterexamples where well-grounded claims turn out to be false. They also cannot accommodate truths that outstrip the human ability to know; on these views there cannot be beliefs or propositions that are true but whose truth we do not have the means to determine.

Another set of theories attempts to 'deflate' the notion of truth, seeing appeals to truth as a way of adding emphasis to an assertion rather than a property conferring special status (Ramsey 1927; Strawson 1950; Quine 1990). Asserting that some proposition, p, is true is merely equivalent to asserting p (Horwich 1990): to say 'it is true that snow is white' is to say no more than 'snow is white'. Deflationary theories have been highly influential but are not without their problems, not least because there seems to be no way to characterise what it is all the instances of such propositions have in common – and thus what they are instances *of* – once the concept of truth is dispensed with.

Correspondence and moderate deflationary theories share a realist orientation in that they interpret truth in terms of the way things are rather than in terms of any methods that people may use to make judgements about truth and falsity, however successful (indeed they would argue that a satisfactory account of 'success' seems impossible to give without an appeal to how things are). Similar ideas are found in some non-Western epistemologies, and chapter 3 discusses some African equivalents.

Truth thus remains an enigmatic and problematic aspect of knowledge. There are two broad schools of thought: a realist or ontological view in which the truth of a belief is

a matter of its embodying the way things are, and a methodological or epistemic view in which truth is a matter of the process by which a belief is arrived at. No fully satisfactory or unproblematic account of truth exists, nor can epistemology do without a concept of truth, so this remains an area in which knowledge-based theories currently lack secure and uncontroversial foundations. For externalist and naturalist philosophers at least, demanding a fully-fledged theory of truth is asking too much at this stage:

> 'To know the correct and deep theory of truth's nature requires far more than the mere ability to state particular truths. It requires a knowledge of the ultimate dependence relations, and of the ultimate explanatory and ontological factors. A theory of truth, therefore, arises closer to the end of inquiry than to its beginning. Do not be surprised that we have not reached it yet.' (Nozick 2001:74)

We have to work with the tools we have, imperfect as they are. Waiting for a 'resolved' theory of knowledge (and presumably therefore also a resolved theory of mental content and of truth) is to misunderstand the nature of enquiry and to lose the opportunity of benefiting from the insights that have already been achieved. The development of externalist and naturalistic, but still normative, accounts of knowledge within analytic epistemology represents a significant advance and one that holds out the possibility of collaboration between philosophers and natural and social scientists. Such developments are already evident in cognitive science but are only gradually making themselves felt in social enquiry. This project represents a tentative step in such a direction.

1.6 SUMMARY

In this chapter the background and rationale for the project were discussed. The key motivations were identified as a desire to investigate the possible contribution of contemporary analytic epistemology to the proliferating volume of work on knowledge and technology 'for development', and to demonstrate the possible empirical application of such theoretical work to the particularly severe development

challenge posed by AIDS in sub-Saharan Africa. Two research questions were developed reflecting the theoretical and empirical motivations behind the study, and were shown to embody two approaches to answering a single overarching research question: What is the relationship between knowledge, development and technology? The structure of the thesis was then discussed, falling roughly into two halves, the first dealing with the theoretical research question and the second with the empirical question. Finally two bodies of literature were reviewed, one concerned with the place of knowledge and technology in development, and one with contemporary epistemology.

With chapter 1 having established the context and rationale for the project as a whole, chapter 2 now turns to methodological issues, including the underlying commitments entailed by the naturalistic and externalist epistemology on which the research is centred.

2. Methodology

This research project arises out of two distinct concerns. Firstly, there is a concern with attempting to specify more closely the relationship of knowledge, technology and development, and with investigating the degree to which developments in contemporary naturalistic epistemology may be helpful to this project. Secondly, it is concerned with trying to understand the knowledge dimensions of a specific development situation, namely the work of AIDS NGOs in KwaZulu-Natal. The study can be seen as having both explanatory and descriptive aims, seeking on the one hand to develop a theory that will explain the knowledge-development-technology relationship and on the other to provide an account of its dynamics in a particular case. A case study design was chosen because, while most commonly used for exploratory and descriptive research, it is also suitable for explanatory and theory-building research (Yin 1994). Yin has done much to advance the cause of the case study and have it taken seriously as a research strategy, and the approach adopted here follows broadly the guidelines in Yin (1981; 1994) for the single-case, embedded design. This is discussed in more detail below, but first it is necessary to consider some more fundamental methodological issues.

(Blaikie 2000) identifies five distinct levels of decision-making in social research design. These are choices about:

- fundamental approach, paradigm or perspective
- strategy, or logic of enquiry
- methods of data collection
- form of the data
- methods of data analysis

To call these choices does not mean that all options are open to all researchers on all research projects. Many researchers have ontological or epistemological commitments that direct them towards or preclude particular approaches. Furthermore, not all combinations of approach, strategy, methods and data are compatible, and decisions made at one level can limit choices at another (Blaikie 2000). Most important is the

role of research questions and objectives. Different questions and goals seek to investigate different kinds of things, and presuppose or require different approaches, strategies, methods and data. The starting point of research design is therefore the framing of questions and overall objectives. The remainder of this chapter reviews core methodological commitments, decisions and issues in the project, taking the research questions and objectives as its starting point and then moving on to a discussion of choices made at each of the five levels identified above.

2.1 RESEARCH QUESTIONS AND AIMS

Research questions are commonly divided into two categories: primary questions, which are closely related to the core aims of the research, and secondary questions, or subquestions, which deal with issues or information presupposed in answering the primary questions. Primary questions are broader and more abstract than secondary questions. Cresswell (1998) suggests that all research should be formulated as a single overarching research question and a number of subquestions.

In addition to distinguishing primary and secondary questions, research questions can be categorised according to the kind of contribution they aim to make. Research theorists standardly identify three main purposes, which also correspond to phases of investigation (Yin 1994): exploration, description and explanation. Exploratory studies aim at generating theory and hypotheses in a relatively new or little researched area; descriptive studies at providing detailed accounts of phenomena, events or situations; and explanatory studies at exposing causal relationships. Blaikie (2000) identifies a number of additional research objectives, such as change, prediction, evaluation and impact assessment. The way a research question is phrased will often indicate which purpose is involved. 'What' questions, for example, are typically indications of an exploratory, descriptive or predictive study, while 'why' and 'how' questions suggest an explanatory aim (Yin 1994; Blaikie 2000). In the case of this project there are two main research questions, a theoretical 'how' question aimed at explanation, and an empirical 'what' question aimed at description:

Theoretical question

> *How can contemporary theory of knowledge – particularly the naturalistic strand of analytic epistemology – be used to develop a philosophically grounded knowledge-based analysis of development and technology?*

Empirical question

> *What role does knowledge play in NGO responses to a development challenge such as the AIDS epidemic in KwaZulu-Natal, and to what extent is the Internet a supporting technology?*

Bearing in mind the advice of Cresswell to attempt to frame a single overall research question, which is necessarily broad and abstract, these two questions can be seen as representing different approaches towards answering the more fundamental question:

> *What is the relationship between knowledge, development and technology?*

Each of the two major questions also generates a number of subquestions (Table 2.1). Taken all together the set of research questions can be seen as a basic structure underlying the project and embodying many assumptions about content and approach.

Broad overarching question *What is the relationship between knowledge, development and technology?*	
Primary theoretical question *How can contemporary theory of knowledge – particularly the naturalistic strand of analytic epistemology – be used to develop philosophically grounded knowledge-based analyses of development and technology?*	**Primary empirical question** *What role does knowledge play in NGO responses to a development challenge such as the AIDS epidemic in KwaZulu-Natal, and to what extent is the Internet a supporting technology?*
Theoretical subquestions • What is this theory of knowledge? • How does it relate to technology? How does it relate to development? • How can all three concepts be related within a single theoretical framework? • How can the resulting framework be applied to the analysis of empirical cases? • How does it relate to other theories of knowledge, development and technology?	**Empirical subquestions** • How are NGOs responding to AIDS and what knowledge activities are they undertaking as part of their response? • What factors are affecting knowledge activities and what knowledge problems are there? • To what extent and in what ways is Internet use supporting NGO knowledge activities? • What factors are influencing Internet use and what problems are there?

Table 2.1 Research questions

2.2 FUNDAMENTAL COMMITMENTS

All research projects reflect underlying assumptions and commitments of the part of the researcher, particularly in terms of ontological and epistemological orientation – that is, the attitude the researcher holds to the existence of objects and relationships (for example social structures, groups, processes, mental states, meanings), and to the kind of knowledge that can be obtained and the methods for obtaining it.

2.2.1 Epistemological and methodological commitments

Knowledge is the fundamental topic of this research project and the view of knowledge on which the research is based entails some very specific commitments. The details are spelled out in chapter 3 and will be only briefly outlined here in terms of four key commitments with methodological implications: naturalism, externalism, fallibilism and realism about truth.

Naturalism

The first commitment is to a moderate form of naturalism, the view that human and social phenomena are part of the natural world and can be studied as part of it. It is a moderate version in that it is non-reductive and accepts that different kinds of objects require different methods of investigation: the objects of social science will not necessarily be amenable to the methods of natural science. This is consistent with naturalism since even among natural sciences there are significant methodological differences: cosmology cannot be done in the same way as chemistry any more than political science can be done in the same way as population biology. Thus although the project has an explanatory aim, the notion of explanation invoked here is not the same as that in, say, a closed physical system. Philosophical accounts of explanation rest fundamentally on the notion of causation, and it is just this that is meant. It has to be recognised that in open systems such as knowledge a causal account is not going to be a deterministic account since many factors are at work, only some of which can be captured by the study.

Furthermore, some of the causal factors may be internal to human agents' consciousness, where freedom comes into play. It is accepted in this study that causes may in the case of human action include people's beliefs, hopes, desires, motivations

– in short, reasons can be causes. Naturalism about the mental does not entail reductionism and there is a strong philosophical tradition of naturalistic explanation that preserves the causal role of intentional states – see for example Davidson 1980; Kim 1984a, 1984b, 1987, 1990, 1993; Burge 1986, 1989, 1993, 1995; Dretske 1988, 1989; Baker 1995 and Lennon 1990. In any nonreductive but naturalistic theory first-person accounts are considered crucial, since reasons are seen to be part of a causal account of human and social behaviour. Burge goes so far as to maintain that there are areas in which first-person knowledge is infallible. A causal explanation will therefore crucially need to make reference to agents' own accounts and understandings. Clearly this kind of naturalism has to accept methodological pluralism – fears and beliefs cannot be studied in the same way as economic or material factors but all may have a legitimate place in social explanation.

In addition, the epistemology underpinning this project allows that many knowledge processes are probabilistic or inductively based and that, apart from the limited realm of pure deductive logic, no methods can be considered intrinsically reliable or unreliable. Methods have to be empirically tested to establish the scope and circumstances in which they are reliable. Scientific practice has no privileged status but has to prove itself in epistemic terms just like any other form of practice.

Externalism
The second commitment is to externalism, a position closely allied to naturalism. Externalism has applications in different branches of philosophy but is essentially the view that phenomena traditionally located 'inside' a subject, such as meaning, thought, perception or knowledge, in fact have at least some of their contents external to the individual. Externalist semantics, for example, which was developed in the 1970s and 1980s by Putnam, Kripke and Burge, locates meaning in the (social or natural) world, 'not all in the head'. In this view a statement about water has a different meaning in a world where water is H_2O from that in a world where water is not H_2O, even if the person who utters the statement has exactly the same ideas about water in each world. Applied to knowledge, externalism maintains that it is the process by which a (true) belief is acquired that distinguishes knowledge from non-knowledge. Different philosophers specify the distinction in slightly different ways – as causal, probabilistic, truth-tracking or counterfactual contingency – but essentially

agree that knowledge is belief that comes about through specific types of social and material processes rather than belief with a certain structure of logical support.

A methodologically important implication of externalism is that individuals are not necessarily in a position to know about their own knowledge states: they will not always know the meaning of the words they use or which of their beliefs are knowledge, for instance. Studying such topics therefore requires understanding the social and material processes at work as well as the inner subjective context. While first-person accounts are an *essential* part of the picture they may be only a *part*, and first-person privilege cannot be assumed.

Fallibilism

For externalists about knowledge or other states of mind, the world as well as the knowing subject needs to be included as an object of study. But the world is not necessarily known or perhaps even, in some aspects, knowable. While ontological and epistemological positions are to a degree independent, there tends to be an inverse relationship between them in that stronger assertions about existence imply weaker assertions about knowledge and vice versa. Externalism is ontologically strong, asserting the existence of a theory/mind/language -independent world which is the object of scientific investigation. Corresponding epistemological positions are of necessity fallibilist, recognising that theoretical descriptions and explanations are always open to revision and that certainty cannot be a requirement for knowledge. Methodologically, fallibilism requires researchers to remain open to the possibility of error and not so assume that any particular theory represents the final stage in knowledge, however apparently well-grounded. Some fallibilists, such as Goldman (1999) and Williamson (2000), stress the probabilistic and graduated nature of knowledge processes, and thus of knowledge itself. Despite its fallibilism, the position underpinning this research is not a sceptical philosophy; it maintains that knowledge is possible and does in fact exist, even though we can in most cases never be certain which of our beliefs are knowledge. Just because we could be wrong does not mean that we *are* wrong; fallibilist analyses have provided some of the strongest recent refutations of scepticism, such as that of Nozick (1981).

Truth realism

Finally, the philosophical perspective adopted in this research is committed to a view known as 'alethic realism', that is, realism about truth. In this view, truth is a property given by the way things are, not by relations between beliefs. Alethic realism is compatible with several philosophical theories of truth, in particular correspondence and deflationary theories, but not with coherence theories – see chapter 3 for a more extended discussion. Methodologically, this has implications for the way theories are viewed, that is as attempts to express theory-independent truths. This is a non-epistemic and non-relativistic conception of truth, but it is nevertheless consistent with conceptual pluralism. Goldman, for instance, maintains that objectivity about truth is entirely compatible with the view that conceptual structures are at least partly socially determined: 'there are many truths … each of them is true at all times and places' (Goldman 1999:354) – a view he uses to defend multicultural education.

2.2.2 Research paradigm

Closely related to epistemological commitments is the choice of research paradigm. A number of different typologies exist of different paradigms or fundamental theoretical orientations in social science research, such as those of Burrell and Morgan (1979), Guba and Lincoln (1994) and Blaikie (1993, 2000). In Information Systems research many classifications and typologies have been provided (see for example Galliers 1991; March and Smith 1995; Järvinen 1999; 2000). Chua's typology (1986) has been particularly influential, being adopted by Orlikowski and Baroudi (1991) and still referred to as a basic scheme by, for example, Trauth (2001). This typology identifies three 'theoretical lenses' distinguished by different ontological and epistemological/ methodological assumptions:

Positivism – the social world, like the natural world, is assumed to consist of fixed relationships which can be investigated and measured by means of instruments.

Interpretivism – the social world is a world of meanings constantly created and recreated by humans. The researcher cannot objectively observe meanings but has to enter into the exchange of meanings between people in a particular context in order to understand the deeper structure.

Critical approaches – social life takes place within structures that constrain human action and relationships. The role of research is to uncover and change oppressive structural features of society.

A great deal of work in Information Systems makes explicit reference to this typology and locates itself within one of the three traditions. In the case of this project, the situation is more complex since the particular philosophical perspective outlined above has elements in common with moderate positions in all three perspectives. Like positivistic approaches, it sees the social and natural worlds as continuous and views the researcher's role as one of uncovering stable relationships – for example, between knowledge and technology. It is, however, not compatible with the extreme empiricism and instrumentalism of some versions of positivism, which exclude unobservable entities from their ontology and reasons from their causal accounts.

Like interpretivist approaches, the philosophy underlying this research accepts that what people think, believe, experience and find meaningful is legitimate subject matter for social science, and that a full account of such things must include agents' own descriptions. In a sense it is relativist about knowledge in that conceptual categories are seen as at least partly socially constructed[5] and therefore the terms in which the world is known and experienced will be different for different people. However, it is not relativist about truth: the world itself is the same for everyone, regardless of the fact that they understand it in different terms. In this sense, it is not compatible with strongly relativist and idealist positions in interpretivism.

Finally, the epistemology on which this project is based has an interest in social change. This is particularly strong in the version set out by Goldman (1999), where it is argued that the origins of knowledge lie in the external world, particularly the social world. To the extend that we consider knowledge a good, and perhaps a necessary part of any emancipatory project – and Goldman acknowledges that is it just one good among many – this view therefore suggests that a critical analysis of social institutions in terms of knowledge is motivated.

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[5] There is evidence that some categories such as colours are biologically based (see for example Pinker 1994). Dretske (1981) gives a more general evolutionary account of the informational basis of concepts.

One possible response is to integrate positivist and interpretivist approaches (see for example Lee 1991; Trauth and Jessup 2000). Klein and Myers (2001) question this approach because of the challenge it raises to Burrell and Morgan's view of paradigms as 'mutually exclusive ways of seeing the world' (Burrell and Morgan 1979:398) and to the independence of paradigms. Clearly, however, there are many positions in epistemology and metaphysics, and many combinations of positions. Given this large area of intellectual space in philosophy it would seem surprising if there were no crossover positions in social science. This thesis describes one such position, which endorses a naturalistic philosophy while preserving the importance of agents' accounts and understandings, accommodating elements of both interpretive and positive approaches without underlying contradictions.

There are in fact developments in social science which reflect this recognition. Little (1991), for instance supports both moderate naturalism and moderate non-naturalism in social explanation. There is also a growth of interest in realist theories – a view of social science more compatible with the underlying philosophy of this project. These theories are relatively recent arrivals but appear to be gaining currency. The best-known such theory is critical realism (CR), a metatheoretical perspective that aims to avoid the pitfalls of both extreme empiricism and extreme idealism, and that has been seen within Information Systems as offering a new methodological perspective (see for example Walsham 1995; Mutch 1997; Dobson 2001; Mingers 2001a; 2001b). Debate on CR has intensified since the 2002 International Conference on Information Systems at which John Mingers endorsed it as an alternative to both positivism and interpretivism, and was met with criticism from interpretivists. Papers by Mingers and his critics have subsequently been published in a special edition of the journal *Information and Organization* (Klein 2004; Monod 2004; Mingers 2004a, 2004b). Similarly, Carlsson (2004) turns to CR on the basis of criticisms of interpretivism, particularly its focus on agency to the exclusion of structural and systemic features (Reed 1997; Jones 1999), and its rejection of the possibility of objectivity even as an aim of science.

It is unlikely that Mingers and Carlsson will convince committed positivist or interpretivist researchers that CR offers a better alternative. Metatheoretical positions are hardly subject to confirmation or disconfirmation in the same way as lower-level

theories and fundamental commitments are not lightly altered. Nearly 30 years ago, Mary Hesse (1976) whose work on models is often cited as influential in CR, foresaw four possible outcomes for what she characterised as a conflict between 'new empiricism' (empiricism with a more realist conception of scientific method and aims) and 'paradigm-centred' analyses, the interpretivist strand of social science:

- The overthrow of social science by a reductionist programme of natural science, an increasingly unlikely prospect as the social sciences develop their own methods.
- The overthrow of natural science by a relativising and historicist social science.
- A stalemate in which the natural and social sciences occupy rigidly divided spheres – unlikely in practice and undesirable in theory.
- An ongoing interchange of approaches and ideas based on careful analysis and resistance of globalising ambitions by either side.

For Hesse, it is the last of these at which we should be aiming, and this is probably a more useful approach for CR than claims of superiority over other paradigms. There is no theory at this level without problems and contradictions and it is certainly not right to suggest that CR resolves fundamental questions of metaphysics and epistemology. Nevertheless, for those who are unhappy with both old-style positivism and with idealising tendencies in interpretivism, CR does offer an attractive alternative perspective on social science. Although this research project was not conceived and planned within a CR framework, it does in many ways fit well with both the theory and methodological approach advocated by CR, bearing out the claim made by adherents that CR represents a formalisation of what researchers do anyway. This is perhaps not surprising in this case, given that CR explicitly endorses the method of 'retroductive' logic which corresponds to core methodology in philosophy, and it is therefore no coincidence that the philosophically based conceptual work in the first half of the thesis can easily be seen as embodying the initial stage of a critical realist research project. A short outline of the philosophical perspective of CR is therefore included below, and the following section on research strategy includes an analysis reconceiving the project in critical realist terms. This is intended partly to throw a different spotlight on the research, highlighting methodological issues in a

slightly different way, and partly as a contribution to the very small number of critical realist studies available in Information Systems.

The theory of critical realism

Critical realism, also sometimes called transcendental realism, is a social-scientific version of the broader doctrine of scientific realism – the view that the aim of science is to provide true descriptions of independently existing entities and processes, and that when scientific theory refers to unobservables it is postulating their existence, not simply setting up pragmatically useful or predictively successful constructs. Scientific realism has been a powerful strand of philosophy developing throughout the latter half of the 20th century, initially as a critical response to logical positivism, which asserts that only statements about observable states of affairs can be considered meaningful. For logical positivism a theory that refers to sub-atomic particles is therefore really a theory about the way instruments behave, not about the kinds of objects that exist but cannot be directly perceived. This instrumental and verificationist view of science was criticised by Quine, and later by philosophers of science such as Popper, Kuhn[6] and Lakatos who were interested in theory change from a perspective in which 'theories were social constructions, offering competing descriptions and explanations of a theory-independent world' (Bhaskar 1994:548).

In the social sciences, critical realism emerged in the 1970s and 1980s from dissatisfaction with, on the one hand, the extreme empiricism of positivist approaches such as behaviourist psychology, and, on the other, the relativism and idealism of interpretivist approaches. The work of theorists such as Hesse and Harré played a key part in its development, emphasising the role of metaphor and analogy in attempts to theorise and model unobservable structures, processes and objects. Harré's student, the philosopher Roy Bhaskar, first coined the term 'critical realism' and has subsequently been an articulate proponent of a realist perspective in social science. CR now refers generally to work in this style, including contributions by a variety of thinkers who have developed and applied Bhaskar's philosophy, such as Archer

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[6] Kuhn is sometimes read as an antirealist but this is oversimplifying a much more nuanced position and one that developed over time. Kuhn (1977) defines five transparadigm criteria for theory choice, including accuracy. O'Hear includes Kuhn among philosophers of science who 'accept as a premiss of their enquiries … that there is a world independent of we who observe it and live in it … a world which scientific enquiry can teach us more about…' (O'Hear 1989:130).

(1995); Collier (1994); Lòpez and Potter (2001); Sayer (1992; 1997; 2000); Layder (1990; 1993b; 1993a; 1998); Danermark, Ekström et al. (2002).

The starting point for critical realism is a commitment to a view of science as directed at uncovering the fundamental reality of the natural and social worlds. Bhaskar proposes a stratified view of reality, consisting of three domains: the empirical, which is the world of direct experience; the actual, which is the world of events at a more abstract level of description than experience; and the real, which is the world of fundamental causes generating phenomena at other levels – although it is important to recognise that causation operates within and across domains, so, for instance, human motivations can bring about physical actions (reasons can be causes). This 'depth realism', envisages two objects of science, the 'intransitive' object, which is the independently existing object (causal mechanism, generative structure), and the 'transitive' object which is the theories that science generates in an attempt to understand the intransitive object. Rival theories are different transitive objects aimed at the same intransitive object – this is what makes them rivals. Transitive objects change over time, allowing a place within CR for the weak programme of sociology of knowledge: 'explanations of scientific results as produced by mechanisms quite extraneous to the project of our deepening our knowledge of nature' (Collier 1994:51).

It is important to note that scientific realism is a theory about the aim of science not about the kinds of things that exist. CR does not specify any particular ontology for any particular science – this is work to be done by scientists developing transitive objects in particular disciplines. Within disciplines scientists will disagree about ontology. Ian Hacking (2004), for example, defends a realist view of natural science while admitting to scepticism about black holes. Realism does not prescribe any specific view of the nature of underlying reality:

> '…the realist claim is not that any particular science, in its present
> configuration, has indeed captured objective structures of natural or social
> reality… …realism is not committed to the adulatory reification of particular
> existing sciences, as intellectual and social forms, any more than to that of
> particular theories and methods within them. Its claim is the weaker but

important one that ontological commitments, whether of general epistemologies or of specific scientific theories, are inescapable and to be taken seriously….There is here an inescapable political commitment to the overall project of modern science to expand and refine our knowledge of the natural and social world.' (Outhwaite 1987:181-182)

Critical realism is not completely agnostic about underlying social reality, however, but describes it in terms of generative mechanisms or structures. Social phenomena are not amenable to the same methods of investigation as physical phenomena since they include the meanings and understandings of human agents which require specific social-scientific methods of investigation (Bhaskar 1989).

CR is furthermore a fallibilist philosophy and realist scientists must remain open to the possibility of change, even radical change, in their field. No particular science, however apparently stable, can ever assume that it has correctly described the domain of the real.[7] In addition the domain of the real itself is stratified, since nature consists of many different generative mechanisms. These mechanisms exist at different levels and interact causally with one another. This means that natural systems are open – animal populations, for example, are affected by fundamental chemistry and physics and even though chemistry and physics do not typically play a part in population biology explanations, much less determine them, animals do not break the laws of chemistry and physics. Higher-level mechanisms arise out of and depend causally upon lower-level mechanisms but are not determined by them. This deep-level stratification account allows critical realists to uphold a plurality of explanations in science and resist pressures towards reduction.

Critical realism is thus an ontologically realist and epistemologically naturalistic philosophy, allowing for a plurality of causal mechanisms accessible to different types of investigation. A further important aspect is the 'critical' dimension. There is a strong socialist strand in Bhaskar's critical realism and he frequently describes deep-level generative structures in terms of Marxist theory. However, this is not a necessary

[7] Although Bhaskar is himself somewhat unclear on this point and has been read as suggesting that contemporary science is in fact 'non-fallible' (Cruickshank 2004).

part of critical realism, which is a philosophy of science and as such is compatible with a wide range of political beliefs (Collier 1994). Nevertheless, there is an inherent ethical and emancipatory dimension to this philosophy. For Bhaskar, facts and values are intertwined and coming to understand a situation as unjust or oppressive must give rise to the desire to change it. Since it is only through social research that the causal mechanisms underlying observed unjust or oppressive situations will be discovered, the social sciences necessarily have a central place in social change.

One core aspect of emancipatory social science, though by no means the only aspect, is intimately related to knowledge and is thus of central relevance for this project. For critical realists the point of enquiry is the development of theories and models that accurately – but fallibly – describe mechanisms and structures underlying social life. Theories are a product of social and historical factors as well as reason and experience, and will be more or less accurate: 'We know the same world but under irreducibly historical (and better or worse) descriptions' (Bhaskar 1994:549). This formulation is remarkably similar to Goldman's position that there are many truths all of which are true at all times and places, but that the way truths are framed differs in different times and places.

A consequence of this view of knowledge is that, like Goldman's project to reform social practice on epistemic grounds, CR opens the door to judging social arrangements in terms of their causal relationships to knowledge. Social structures, systems or institutions that bring about false beliefs are to be negatively evaluated, and actions aimed at changing them positively endorsed (Bhaskar 1979). For Sayer, the emancipatory role of knowledge lies at the very heart of social science:

> '… the point of all science, indeed all learning and reflection, is to change and develop our understandings and reduce illusion. This is not just an external and contingent sociological condition of learning but its constitutive force, which not only drives it but shapes its form. Without this universal necessary condition, none of the particular methodological and ethical norms of science and learning in general has any point. Learning, as the reduction of illusion and ignorance, can help to free us from domination by hitherto unacknowledged constraints, dogmas and falsehoods' (Sayer 1992:252)

From such a perspective it becomes possible to evaluate our institutions, media and technologies in terms of their contribution to a better or worse knowledge environment. We might begin to think in terms of knowledge rights and indeed of responsibilities – for example, how should we hold accountable leaders and institutions that promote poor descriptions of the world? In the context of this research one outcome in this vein is a suggestion that what is sometimes referred to as a failure of political will in South Africa – the disastrous delay in providing AIDS treatment owing to reluctance to recognise a causal link between HIV and AIDS – might be better conceived of as a failure of knowledge leadership. Knowledge is not just something that happens in universities and high-tech firms but something that affects every aspect of life and underlies every action we take. It is this recognition that motivates Outhwaite's 'inescapable political commitment', and it is also this which drives the programme of social epistemology developed by Goldman.

2.3 STRATEGY OR LOGIC OF ENQUIRY

The term 'research strategy' is used in two slightly different but related senses by different theorists of research design. The first sense is more abstract and refers to the underlying logical structure and procedure of the research (Blaikie 2000). The second refers to specific established research formats which exemplify a particular logic, such as case study, experiment, archival analysis, history and survey (Yin 1994). Different strategies employ different types of logic and embody different underlying assumptions about knowledge and the nature of the social world. At the most abstract level Blaikie (2000) identifies four fundamental research strategies and logics, each drawing on different philosophical and theoretical traditions (Table 1.2).

Blaikie stresses that the four research strategies as represented in his typology are 'pure' types and that in practice much research mixes different approaches, often sequentially as stages in a research project with a number of different objectives. The strategies also encompass a range of ontological and epistemological positions which make specific versions of them more or less compatible with other strategies. Many applications of inductive techniques are not strictly positivist in that they explicitly make use of theory-guided observation, thus becoming compatible with deductive

strategies. Retroduction has elements in common with both deductive and abductive strategies. Furthermore induction is fundamental and inescapable for any kind of knowledge acquisition, even for Popperian falsification.

Blaikie argues that realist metatheoretical orientations imply a retroductive logic of enquiry and a strategy based on the building and testing of theories and models. The aim of science in such views is to give accounts that come closer and closer to describing independently existing reality. This is essentially the strategy employed in this research project, where a theory of knowledge and technology is outlined and then used to construct analytical tools to guide empirical research. The empirical findings are in turn used to reflect back on theory and theory-derived tools.

Neither the realist philosophy underlying this research project not CR aims to present social science with a new method. Both Goldman (1999) and critical realists reject any attempt to define a specific method, arguing that methods differ according to the properties of the object under investigation (Danermark, Ekström et al. 2002). This is a central tenet of non-positivist naturalistic positions in social science since it allows the researcher to accord ontological status to social phenomena and to study them in their own right while at the same time acknowledging their continuity with the natural world and natural science. In terms of the epistemology used in this project, what matters is that a method be related in a particular way to the object of study. The relevant relationship is characterised in different ways by different theorists: as reliability for instance (Goldman), causal connection (Dretske) or truth-tracking ability (Armstrong, Nozick). These are all fallibilist views of knowledge which do not deal in logical necessity but allow for the possibility of error. In this, they are much more appropriate epistemologies for science, where knowledge is typically probabilistic, partial, revisable, contingent. They also allow for a wide variety of methods to be used, and for different methods to be employed in different domains. A thermometer may be good for tracking temperature, for example, but very different approaches are needed to track self-esteem or social exclusion or the exchange of information in a work team.

LOGIC	INDUCTIVE	DEDUCTIVE	RETRODUCTIVE	ABDUCTIVE
Metatheoretical background	Positivism – Bacon, Mill, Durkheim	Critical rationalism - Popper	Scientific realism – Harré, Bhaskar	Hermeneutics, social phenomenology, moderate interpretivism – Weber, Winch, Schütz, Giddens
Aim	Universal generalisations to be used as pattern explanations	Elimination of false theories and corroboration of survivors	Underlying mechanisms to explain observed regularities	Description and understanding of social life in terms of actors' motives and accounts
Research strategy- from:	Observations, data →	Theory →	Regularity →	Actors' meanings, motives →
through:	Generalisations →	Hypotheses, predictions →	Hypothetical model →	Technical account →
to:	Use generalisations as patterns to explain further observations	Test hypotheses against observation, data	Find evidence for mechanism through observation/ experiment	Develop and iteratively test theory
Form of theory used	Generalisations/laws Networks of propositions	Deductively derived hypotheses	Generative structures or mechanisms	Social scientific accounts Ideal types
Use of models	Abstract descriptions Mathematical representation Conceptual frameworks	Theoretical models Diagrammatic representation Mathematical representation	Abstract descriptions of episodes Use of analogies	Abstract descriptions (ideal types)
Most suitable for	Exploration Description Pattern explanation	Explanation Prediction	Explanation	Exploration Description Understanding

Table 2.2 Blaikie's typology of major research strategies in terms of underlying logic of enquiry

2.3.1 Case study as research strategy

In a slightly less abstract sense than Blaikie's, research strategies are overall formats for research, such as the experiment, the survey, the case history or the ethnography. The different strategies each offer 'a different way of collecting and analysing evidence, following its own logic' (Yin 1994:3). The choice of strategy depends on various factors, but it is now generally accepted that the various strategies can all be used whether research is aimed at exploratory, descriptive or explanatory goals (Yin 1994) or building theory and bringing about change (Gummesson 1991). Case studies are seen as having superior explanatory power in developing-country research (Bulmer 1993) and it has been claimed that the realist explanatory goals are particularly well matched to the qualitative case study strategy (Danermark, Ekström et al. 2002).

Case studies, both qualitative and quantitative, are well-established within Information Systems research, where they have been advocated for explanatory and theory-building purposes as well as descriptive and exploratory ones (Benbasat, Goldstein et al. 1987; Eisenhardt 1989; Lee 1989a, 1989b; Walsham 1995; Pare and Elam 1997). The strategy chosen for this research is that of the explanatory single-case embedded design, as described by Yin (1994). Yin argues that the case study should be seen as a 'comprehensive research strategy' and not a means of data collection and analysis, and his work did much to establish the case study as an accepted research tool, and to lay down guidelines for the design and conduct of rigorous case studies. He proposes three criteria that should determine the choice of strategy: the nature of the research question(s), the degree of control over observed events, and whether the focus is on contemporary or historical events. The case study, he argues is particularly appropriate for explanatory research in situations where the investigator has little control and where contemporary events are the central focus. In this project all three conditions apply. We have already seen that the research questions conform to the explanatory and descriptive models which Yin identified as suitable for case study research. Furthermore the empirical part of this research project is aimed specifically at investigating events in the full complexity of their real-world setting, since the externalist concept of knowledge developed in the theoretical section of this work contains elements that make it

inseparable from its human and social context. Any attempt to control events is thus precluded although, as is described below, one form of data collection did involve a minimal form of intervention (setting up a networking website for participants). Furthermore, the focus of this research is very much on contemporary events, unfolding in some cases very rapidly. For all these reasons, this case fits well with Yin's arguments for the appropriateness of a case study strategy.

2.3.2 The logic of case study design

Yin argues that the case study has its own logic of design, which consists of two aspects. The first relates to scope: case studies investigate phenomena as they occur in context and often where they cannot easily be separated from their context. This is clearly the case with the research questions in this project. The theoretical framework developed for studying knowledge processes explicitly incorporates contextual factors within which these processes occur as a crucial element. In addition, the analysis presented in chapter 3 shows how the material, biological, psychological and social contexts of knowers are fundamentally implicated in knowledge processes and the basic building blocks of thought such as concepts and conceptual organisation.

The second aspect relates to the process of data collection and analysis. Because case studies are typically concerned with complex phenomena involving more variables than there are data points, they tend to rely on multiple sources of evidence. Yin therefore advocates the development of theoretical propositions to guide data collection and analysis. Again, these requirements suit this study well, since a variety of data sources are envisaged, ranging from observations and interviews to websites and email correspondence, and the design of the research is based on the generation of theoretical tools as the first stage of enquiry.

2.3.3 The selection of the case

This case study falls into the category of what Yin terms the single-case embedded design, that is a single case with multiple units of analysis. In selecting the case a number of choices were made specifying the domain in terms of civil society organisations

(generically referred to here as NGOs), AIDS, KwaZulu-Natal and Internet use rather than some other form of ICT. The rationale for these choices has been discussed in detail in chapter 1 and essentially relates to relevance to development: civil society is increasingly recognised as a key sector in development, particularly in responding to AIDS; KwaZulu-Natal is the worst-affected region in one of the world's worst-affected countries; the Internet has been described as a revolutionary and developmentally transforming technology. Furthermore, while much work referring to knowledge and technology has focused on the organisational context of relatively large-scale private and public-sector implementations, relatively little has studied Internet use among civil society groups, much of which is small-scale, ad hoc and informal. It was considered particularly important that the focus should be not on internal organisational issues but on development outputs and the contribution made by knowledge and technology to these. In addition, South Africa is a technological leader in Africa, with some of the continent's highest rates of Internet penetration and usage. Since it is also the country with world's highest absolute number of HIV infections it represents something of a critical case.

2.3.4 The design of this case study

Research design is a logic that connects theory and observation. It has two purposes: to guide the collection of data (to go from theory to empirical observation) and to guide the analysis of data (to go from observation to theory). A good design should ensure that the researcher collects the right kind of evidence and processes it in the right kind of way to meet her goals. Design is therefore about choosing methods that are appropriate for delivering the kind of conclusions the project is aiming at. Yin identifies five important components of case study research design: questions, propositions, unit of analysis, logic linking data to propositions, and criteria for interpreting findings. The research questions have already been described. The other four factors are now considered.

Propositions

Theoretical propositions direct the researcher's attention to aspects of the situation that are relevant to the study. As pointed out, no one can observe everything and it is therefore necessary to select. Selection in this study is made on the basis of the theoretical

framework developed in chapter 3. This framework is based upon propositions about the nature of knowledge, the mechanisms by which it is acquired, the concepts in terms of which it is represented, the factors that influence knowledge processes, and the role that technology plays in knowledge.

Unit of analysis

The empirical part of this case study concerns the way in which a particular technology, the Internet, contributes (or fails to contribute) to knowledge processes that are crucial to the work of development. It sets out to find evidence for this claim in one particular development context: that of civil society HIV/AIDS initiatives in KwaZulu-Natal. The unit of analysis of the case study is therefore the civil society HIV/AIDS sector in this region. The case is necessarily tightly bounded: it is restricted by sphere of activity to HIV/AIDS, by sector to civil society, by geography to KwaZulu-Natal, and by time to data collected over the course of about two years (August 2000 to August 2002) with an update of some data in 2004.

Within this primary unit of analysis there are also lower-level 'embedded' units, such as that of civil society actors themselves – groups, networks, individuals – and at an even lower level, individual knowledge-related activities. This is an inevitable result of studying a sector as diverse and informal as civil society, for which very few sector-level data are collected. It is also a result of studying knowledge analytically, since constituent components such as information, epistemic processes and conceptual structures cannot readily be studied at a high level – or not without running the risk of losing touch with the phenomenon itself. Many knowledge-based analyses do choose to focus on schools, high-tech industries or technology penetration, but such approaches beg questions about operationalisation and construct validity. A central motivation behind this research was to get back to the building blocks of knowledge itself and avoid high-level operationalisation.

Linking data to propositions

Case studies lack the clearly defined methods of inference available, for example, in experimental research (Yin 1994). Researchers use many different methods, such as pattern matching (Campbell 1975) and triangulation, where evidence from more than one method of investigation points to the same conclusions (Webb, Campbell et al. 1966). In this study, however, where theory occupies a central role, the main strategy for analysis of data is through linking findings back to propositions of the theoretical framework through the process of 'analytic generalisation' in which 'a previously developed theory is used as a template with which to compare the empirical results of the case study' (Yin 1994:31).

Criteria for interpreting findings

Findings in this study are interpreted according to the theoretical framework developed to link knowledge processes and technology use to development outputs. Since the objects under investigation, such as information, epistemic processes and conceptual structures, are involved in almost everything that humans do and say, and also because they are not transparent categories, selection and interpretation of relevant data is not straightforward and depends very much on the understanding of the theoretical framework. It is partly for this reason that the framework needed to be developed in two phases, leading to a generic and a specific version, with the specific version based on secondary literature on NGOs and AIDS and thus making categories clearer and less in need of interpretation. The other approach that has been used to make the process of interpretation more transparent is to give fairly extensive descriptions of the data. This should enable others to see the inferential processes at work in interpretation.

2.3.5 The role of theory

Yin's model of case study strategy identifies the development of theory ahead of data collection as a core feature distinguishing it from similar approaches such as ethnography (Van Maanen, Dabbs et al. 1982; Lincoln and Guba 1985, 1986; Van Maanen 1988) and grounded theory (Strauss and Corbin 1990). Yin argues for theory development as a crucial part of the design phase, whether the overall aim is theory development or theory

testing. Mitchell argues along similar lines: 'we may characterise a case study as a detailed examination of an event (or series of related events) which the analyst believes exhibits (or exhibit) the operation of some identified general theoretical principle' (Mitchell 1983:192). In this view data must be collected and analysed in terms of a theoretical framework or with the aim of supporting theoretical conclusions.

In this study theory development is central to the project's aims and occupies the first half of the work. Chapter 3 outlines a naturalistic position in contemporary epistemology and shows it to have close connections with strands of thinking about technology and development, leading to the articulation of an integrated into a general theory. The core of this theory is then used to generate a more specific analysis of NGO knowledge activity (chapter 4) which is used as an organising structure for case study data collection and reporting (chapter 6). Chapter 7 returns to the general theory, discussing case results in terms of its core relationships.

2.3.6 Reconceiving the project as critical realist research

While this research project was conceived and carried out in terms of Yin's general case study strategy, it is interesting to consider in addition how such a project might look from a critical realist perspective. CR theorists have developed a distinctive approach to social research. An indication of this was given above in Blaikie's description of the retroductive strategy but a more extensive discussion is provided by the Swedish critical realists Danermark, Ekström, Jakobsen and Karlsson (2002). These theorists highlight three key arguments of critical realism with important methodological implications, and develop a model of the research process based on the three guidelines of generalisation, different modes of inference and the goal of explanation. The following paragraphs discuss these in more detail, and Table 2.4 shows how the current project may be reconceived in terms of one model of critical realist explanatory research.

Generalisation

For critical realism, all science, including social science, must aim to make and evaluate general claims of some sort. Two basic kinds of generalisation are identified:

- Empirical extrapolation which generalises by a process of induction such as statistical sampling from a observed instances to unobserved instances.
- 'Transfactual' generalisation (so-called because it draws on theory beyond the realm of observable fact) which employs retroductive inference to generalise on the basis of underlying causal mechanisms and structures.

An example of the first type of generalisation would be testing a drug for side effects on a group of volunteers and then inferring that, say, one in ten users would suffer side effects. By contrast, the second type of generalisation would try to uncover the causal mechanism, say a particular genetic factor, which generated side effects in some people but not in others. The results would then be generalised to infer that all users with the factor would be at risk of side effects while those without it would not. Transfactual generalisation is thus very close to the 'analytic generalisation' advocated by Yin as the appropriate method for generalising from empirical case results to theory (Figure 2.1).

Empirical extrapolation (inductive inference)

Empirical instances   E1   E2   E3   E4   E5   ……EN

Transfactual generalisation
(retroductive inference)

S1   S2   S3
Underlying mechanisms and structures
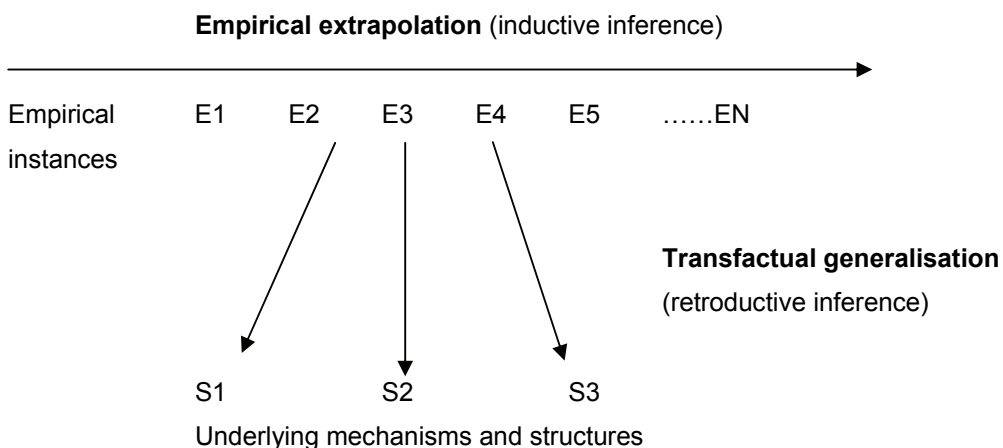
Figure 2.1 Two types of generalisation
(Source: Danermark, Ekström et al. 2002)

Different modes of inference

Scientific method must encompass different modes of inference, including those which are not logically valid, that is which cannot guarantee true conclusions from true premises. Strictly, only deductive inference is logically valid. Induction, for example, depends on regularities in nature which are empirically but not logically established and which could in theory always fail. Demanding certainty, however, is too much to ask of empirical science and deductive logic too limited a basis for investigation. As discussed above, this is very much in harmony with the naturalistic epistemology underlying this project, which stresses the need for even philosophy to give up its deductive bias in the interests of developing more relevant if less certain and more fallible analyses. Critical realist science as described by Danermark, Ekström et al. acknowledges the impossibility of not using deductive inference in any project of enquiry. As pointed out above, induction is also impossible to live without. In addition, critical realists make use of abductive and retroductive logic.

Abduction has been characterised in various ways by different writers, notably by Peirce (1931-1958) who gave abduction formal logical expression as a type of inference in which an empirical case is related to a general rule in such a way that a new idea is formed about the case. Like induction, this is a non-logically valid form of inference and is therefore fallible. In the social sciences abduction usually takes the form of interpretation, that is, representing an observed case in terms of a theory or theoretical frame of reference (Danermark, Ekström et al. 2002), or what is termed by Jensen (1995) redescription or recontextualisation. Much innovative social science, Danermark et al. suggest, is abductive in that it is associated not with discovering new events or regularities but with finding new ways of conceiving of phenomena and making new connections between them. Abduction is essentially a process of seeing something as something else and as such it depends vitally on creativity and imagination. It plays an important role in fertilising and broadening research programmes and can yield deeper knowledge of phenomena as theories are gradually submitted to a process of testing.

Retroduction is a type of inference used to clarify or theorise the underlying structure or mechanism of an observed phenomenon – for example, what properties a belief must have in order to count as knowledge, or what the nature of a just society is. It aims to identify conditions that must be fulfilled for a phenomenon to be an instance of some more abstract idea. This approach, of identifying necessary and sufficient conditions, is well known in philosophy, and importing it as an explicit methodological approach in social research opens up an interesting realm of contact between social theory and philosophy, much as naturalistic philosophers have long maintained exists between their discipline and the natural sciences. Of course, topics such as knowledge and justice have often been the subject of social research, but much of this research relies on theory constructed elsewhere or, more problematically, barely refers to theory, operating with lay or superficial concepts. There is a voluminous literature on knowledge, for example, that makes almost no reference to epistemological theory beyond an occasional allusion to 'justified true belief' – recognised since the 1960s as an inadequate formulation. There is no universal method of retroductively arriving at underlying causal mechanisms or structures. Like abduction, creativity and imagination are required: it is after all a form of theory generation. However Danermark, Ekström et al. (2002) do identify a number of strategies that can be used, including both philosophical techniques such as counterfactual reasoning and thought experiments, and empirical methods such as extreme and comparative case studies.

An important insight of critical realism is that although retroductive logic seeks explanation through identification of causal mechanisms, these mechanisms operate in open systems where any number of other mechanisms or factors may moderate their effects. The kind of explanation that is possible within social science is therefore typically causal but non-deterministic and non-predictive. This does not necessarily set it apart from the natural sciences, particularly biological sciences. Consider the example of 'transfactual' generalisation above, where it was suggested that a particular genetic mechanism might causally account for drug side effects in some patients. Even armed with this causal understanding, it is likely that medical research may discover that not everyone with the genetic predisposition develops side effects. This is not to say the

causal account is wrong but rather to suggest that other mechanisms may be mitigating the effects in some way. Perhaps good nutrition or low stress can interact with biology in such a way as to offset some of the negative genetic influences.

The goal of explanation

For critical realism the ultimate aim of science is explanation of observed phenomena in terms of deeper-level generative mechanisms. Explanation is a two-stage process involving (i) conceptualising the properties and causal mechanisms giving rise to events and (ii) applying conceptual insights in describing how different mechanisms manifest under specific conditions (Danermark, Ekström et al. 2002). This differs from the standard hypothetical-deductive (or deductive-nomological) model of scientific explanation which relies on deductive inference from laws or lawlike generalisations. Critical realism rejects this model because of its empiricist bias against admitting unobservables into its ontology and its weak view of causation as statistical or regular relationship. The critical realist model of explanation, by contrast, refers to a process of trying to identify underlying mechanisms giving rise to observed phenomena. Danermark, Ekström et al. identify six steps (Table 2.3) which do not necessarily all feature in all cases or always in the same order, but which outline a general model of what they see as the structure in fact followed by much explanatory work in science.

I CONCEPTUALISING STAGES
1. Description – giving an account of the object of study in everyday language, referring to interpretations of the people involved, making use of both qualitative and quantitative data.
2. Analysis – selection of specific aspects or components for study.
3. Abduction – redescription in terms of conceptual frameworks and theories.
4. Retroduction – identifying constitutive or generative properties, structures, causal mechanisms. This is closely related to 3 and draws on established concepts and theories.
5. Comparison – evaluation of different theories in terms of explanatory power. They may be complementary or contradictory.
II APPLICATION STAGE
6. Concretisation – empirical study of the way identified structures and mechanisms manifest in a particular situation and interact with other features of the situation.

Table 2.3 Stages of critical realist explanatory research
(Adapted from Danermark, Ekström et al. 2002)

This picture of the research process seems particularly designed to capture the stages of a project concerned with choosing from among a number of competing theories. The conceptual stages are given rather more prominence than the applied stage, although the authors acknowledge that several of the conceptual stages are often combined, such as abduction, retroduction and comparison. In this research project, the emphasis is somewhat different since the concern is less with choosing among competing explanations than with developing an explanatory framework for a highly complex set of phenomena in the first place. The stages in the project are therefore somewhat different – see Table 2.4 below.

CR STAGE	THESIS CONTENT	THESIS SECTION
Description/ analysis/ selection	Discussion of general claims about the importance of knowledge and technology for development, and the development challenge of HIV/AIDS	Chapter 1
Abduction	Review of different theoretical perspectives on knowledge, development and technology	Chapter 1 – literature review
Retroduction	Development of a philosophically grounded general theory of knowledge, technology and development	Chapter 3
Concretisation (i) show mechanisms in context	Application of core aspect of theory (three dimensions of knowledge) to analysis of secondary literature on knowledge in NGOs Detailed description of the case study context Findings of the case study	Chapter 4 Chapter 5 Chapter 6
Concretisation (ii) contribute to explanation	Discussion of findings in terms of underlying structures and mechanisms identified by theory	Chapter 7
Comparison	Discussion of theoretical and empirical contributions of research, relationship to other approaches	Chapter 8

Table 2.4 The project reconceived in terms of critical realist explanatory research stages

2.4 METHODS OF DATA COLLECTION

Several different methods of data collection are used in the case study or application stage of the project. Most of the evidence collected is qualitative, deriving from interviews and observations, but a questionnaire was also undertaken in order to increase

the breadth of the study and to establish some general quantitative features of the case, such as the extent of email and web access. Overall numbers of participants are shown in Tables 2.5 and 2.6 on page 67.

2.4.1 Interviews

A total of 62 interviews was conducted with 56 different interviewees, six of whom were interviewed twice. Initial contacts were made through *Who's doing What* (KwaZulu-Natal Church Leaders' Group 2000) the only HIV/AIDS directory for KwaZulu-Natal at the time. Attempts were made to contact all voluntary-sector and related individuals and organisations listed in the directory. Many were not available or had moved on to other organisations, but valuable contacts were made through this process that led to interviews with a range of other organisations as well.

Forty-seven of the interviews were with NGOs workers, volunteers and beneficiaries, and the remainder with individuals involved in collaboration or partnerships with NGOs through formal or informal linkages. Altogether, interviewees were drawn from 38 different organisations, 28 of which were NGOs or NGO partnerships and the remainder public or private-sector organisations with significant NGO links. All but three interviews took place between September 2000 and November 2001. The exceptions were those conducted with staff at the Centre for HIV/AIDS Networking (HIVAN) at the University of KwaZulu-Natal in December 2003. HIVAN is a particularly influential networking project which was being planned but not yet functioning during the main round of interviews.

Interviews varied greatly in length and context, with some conducted in the relatively formal semi-structured manner envisaged at the outset, but with others carried out in a more ad hoc fashion as opportunities to ask questions arose during site visits, for example. More formal interviews generally lasted for up to around 90 minutes while some of the ad hoc questioning took place in just a few minutes snatched in between other activities. Forty of the interviews were conducted face-to-face, 16 by telephone and six by email. Face-to-face interviews were tape-recorded where circumstances permitted

and participants were agreeable. In other cases notes were taken at the time or written up immediately afterwards. Telephone interviews were recorded in note form during and immediately after the conversation. The interview guide is reproduced in Appendix I.

2.4.2 Written questionnaire

In April 2001 a questionnaire was mailed to all 141 suitable organisations listed in *Who's doing What* (KwaZulu-Natal Church Leaders' Group 2000) as well as another 15 non-profit organisations with which contact had been made. Over time, as new contacts were made, questionnaires were sent to other organisations as well, reaching a total of about 200 printed forms in all. Questions covered three main areas:

- nature and work of the organisation
- use of email, the web and information technology generally
- expertise, information and contacts

In return for completing the questionnaire participating organisations were offered the opportunity to publicise their work on a website set up as part of the project: www.kznaidslink.kabissa.org (Figure 2.2). The website was conceived as a research tool, enabling the researcher to make and maintain contact with KwaZulu-Natal AIDS NGOs, but also as an attempt to give something back to the local community. At the time, Kznaidslink was the only site offering a web presence to small NGOs and a web-based AIDS directory. This fact is probably responsible for the relatively good response rate of about 24% (47 questionnaire responses, of which 42 were from NGOs or NGO partnerships). Eleven responses were from organisations which had also been interviewed, making a total of 70 organisations represented in the whole study through either interviews or questionnaire responses, 59 of them in the voluntary sector. The questionnaire was also posted on the website and responses continue even now to be received intermittently from this source. The site is still running and receives regular new subscribers, material for posting and enquiries, even though there are now larger online databases such as HIVAN at the University of KwaZulu-Natal: www.hivan.org.za. The questionnaire is reproduced in Appendix I.
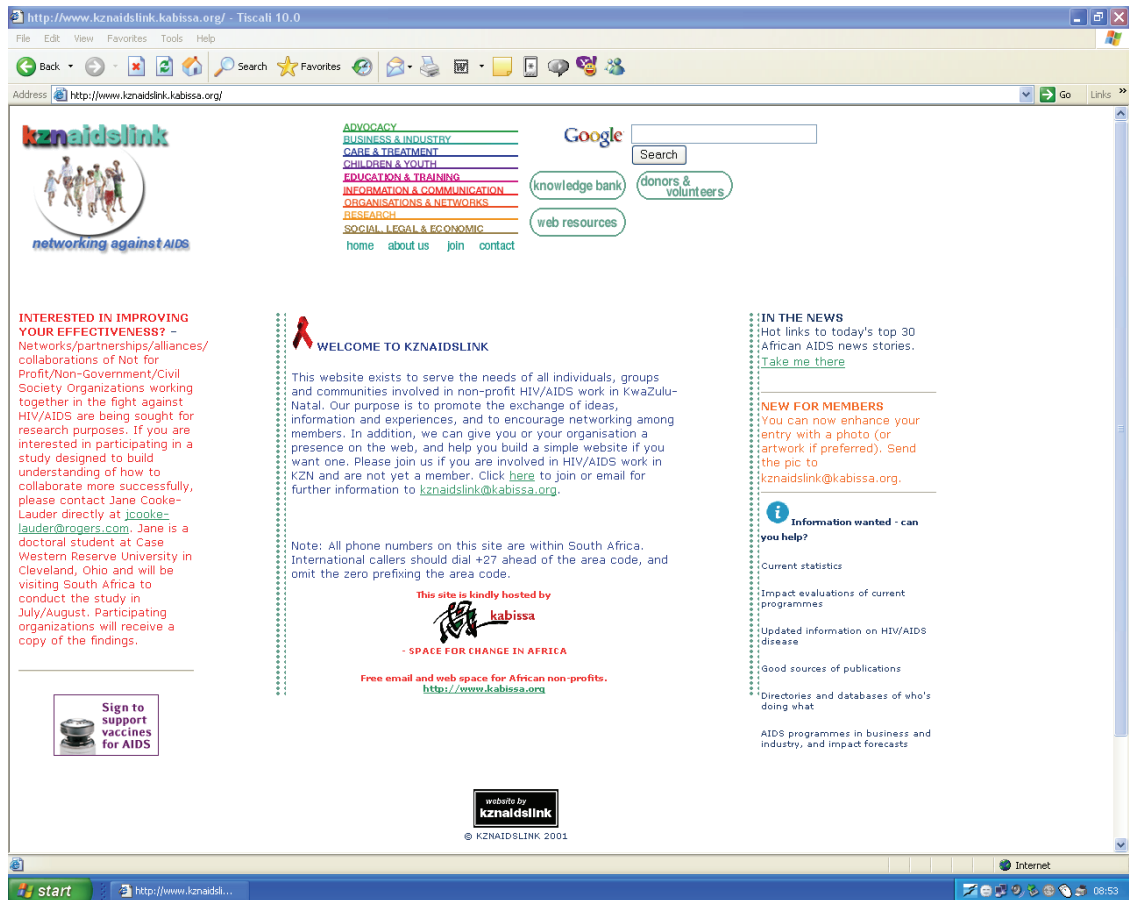
Figure 2.2 Home page of Kznaidslink website set up as part of the research project

2.4.3 Print and electronic documents

A large amount of documentary evidence was collected during the study including:

- notices and minutes of meetings

- reports

- press releases

- newsletters

- journals

- websites

- email from discussion groups

- promotional material such as flyers and leaflets

- press reports and articles

2.4.4 Site visits

In a number of cases, it was possible to observe the work of an organisation during a site visit or to accompany staff on a working trip such as a visit to beneficiaries or partners. Such visits varied from an hour of being shown around the premises to, in one case, a week's stay on-site.

	Interview only	Questionnaire only	Interview and questionnaire	TOTAL
NGO	17	31	11	59
Non NGO	7	2	3	12
TOTAL	24	33	14	71

Table 2.5: Numbers of organisations participating in the study

	Interview	Questionnaire	TOTAL
NGO	47	42	91
Non NGO	15	5	20
TOTAL	62	47	111

Table 2.6: Overall numbers of interviews and questionnaire responses

2.4.5 Location of respondents

Attempts were made, as far as possible, to include a mixture of rural and peri-urban[8] sites (Figure 2.3) as well as urban sites in interviews, questionnaire responses, visits and documentary evidence, and also to collect evidence from sites in all parts of KwaZulu-Natal (see map, Figure 2.4). Details of participant organisations and sites can be found in Appendix II.

Figure 2.3 Informal settlement in Cato Manor, about three miles from Durban city centre. Estimates suggest one in three households may be affected by HIV/AIDS (Hodge and Garbharran 2003)

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[8] Periurban areas are those where interfaces between rural and urban activities occur. They are typically areas in transition created by processes of migration to cities. They can be seen as sites of mediation between rural and urban existence, and are subject to rapid change (Iaquinta, D. L. and Drescher, A. W. (2000)), creating often severe social and ecological pressures. Anyone who has flown in to Durban or driven around the city will be familiar with the many large 'informal settlements' in areas that were until recently open space.
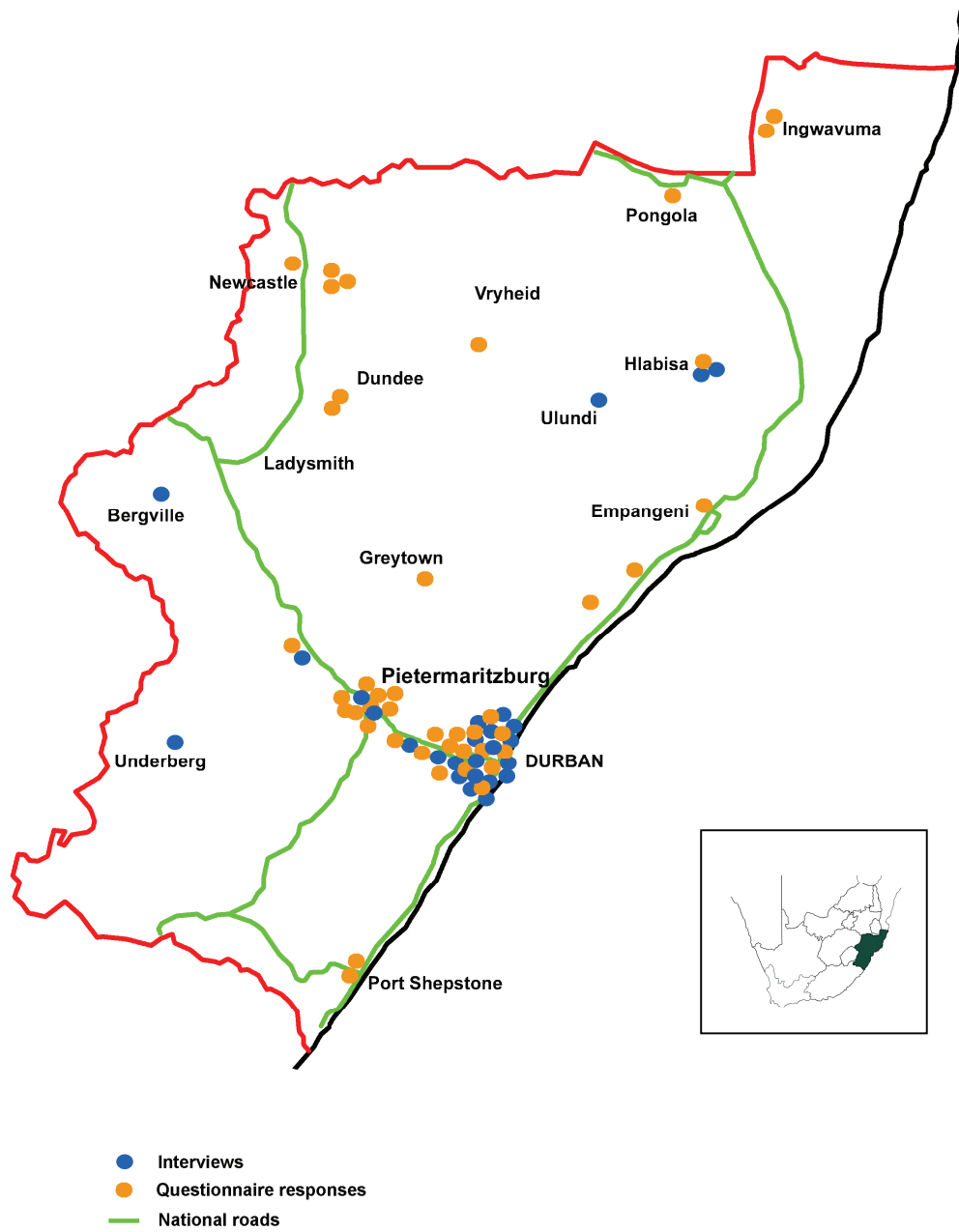
Figure 2.4 Case study sites

2.5 FORM OF THE DATA

By 'form of data' Blaikie (2000) means whether the choice of using words or numbers, qualitative or quantitative data, at the three stages of collection, analysis and reporting. In social science generally, and Information Systems specifically, there is a variety of views about the meaningfulness of the qualitative/quantitative distinction. At one extreme are those for whom these are two fundamentally different approaches which can occasionally be combined in limited ways but which exemplify essentially different outlooks on the nature of social enquiry. Van Maanen, for instance, holds that qualitative methods are 'interpretative techniques which seek to describe, decode, translate and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world' (Van Maanen 1979:520). At the other end of the spectrum – and this is perhaps the more common view nowadays – are researchers who see quantitative and qualitative as distinctions that apply at the level of data and analytical methods but that do not necessarily describe fundamentally different research logics. In Information Systems many writers have commented on the existence of positivistic qualitative work while recognising that there remains in practice an alignment between qualitative and interpretive research on the one hand and quantitative and positivistic research on the other (see for example Trauth 2001; Wynn 2001). In social science research generally, it is increasingly accepted that qualitative and quantitative methods do not necessarily reflect different underlying logics and can be combined (see for example King, Keohane et al. 1994; Bryman 2004). It is the second view that is taken here – as will be shown the project operates with an overarching qualitative framework but also makes reference to quantitative data.

2.5.1 Qualitative and quantitative data

Trauth (2001) identifies a number of factors influencing the choice of qualitative approaches in IS research including the degree to which the artefacts to be analysed are primarily linguistic, and the nature of the theoretical lens being applied. Interpretivism tends to be associated with qualitative methods although there is also positivist (Markus 1983; Eisenhardt 1989; Lee 1989a; Pare and Elam 1997) and mixed qualitative work

(Kaplan and Duchon 1988; Lee 1991; Gallivan 1997). Qualitative research also tends to be used when less is known about a phenomenon. Galliers and Land (1987), for example, argue that including people and organisations in IS research increases complexity, imprecision and the potential for multiple interpretations, motivating qualitative methods. Lastly, extrinsic factors may come into play, such as the researcher's skills and academic context.

In this project all these factors had some part in the decision to opt for a primarily qualitative approach. The analysis of knowledge in this project is largely made through linguistic objects, both verbal and written, and theoretical lens is not a positivist one. There is also a high degree of uncertainty, with few preceding analyses of NGO knowledge activities. Finally, the researcher had more extensive experience of textual analysis and during the LSE Information Systems Department research seminars was exposed to a wide range of qualitative methods and to rigorous interrogation of them.

Blaikie argues that in a sense almost all primary data start out as words, and that is certainly the case in this research where even the questionnaire was open-ended and did not use tick-boxes or preformed categories but allowed respondents to answer in their own words. The emphasis on verbal data was also maintained in by far the greater part of the analysis and reporting, although it was natural to report some data in quantitative terms, such as prevalence of email accounts and websites. These data help to give an overall sense of ICT penetration in the civil society AIDS sector but do not engage with the deeper knowledge issues that lie at the heart of the project. In any case, the distinction should probably not be too sharply drawn between quantitative and qualitative approaches. Quantitative thinking depends on prior qualitative processes to establish meaningful categories. Qualitative thinking depends on quantification to distinguish even the presence of some factor from its absence. Stake (1995) for instance argues that qualitative comparisons always involve some sense of degree of similarity or difference, while quantitative studies must proceed from a sense of which qualities are to be measured.

2.5.2 Data analysis

A number of techniques for case study data analysis have been suggested by authors such as Miles and Huberman (1994). Yin, however, emphasises the role of a general analytic strategy rather than of any particular method. The most desirable strategy is to 'follow the theoretical propositions that led to the case study' (Yin 1994:103) and that is the strategy used in this study. Theoretical propositions draw attention to some data rather than others and provide a structure for organising the analysis. In this study, data is analysed in terms of the main categories and relationships identified in the theoretical framework in a process of 'explanation-building'. Various forms of inference are used for this, including the more 'creative' methods of retroduction and abduction. Some of the most interesting findings in this case are to do with categories that appear not to be featuring significantly in the case and yet which theory suggests would be important for harnessing knowledge and technology for development. This leads to some suggestions for improving practice – although the research design, concerned as it is with building rather than definitively testing theory and explanation, does not permit more to be claimed for these than existing at the level of hypotheses in need of further testing.

In an embedded case design, multiple units of analysis pose additional demands on analysis since data must be analysed at different levels. Specifically, there is a danger of becoming too focused on lower-level analysis and ignoring the level of the primary unit of analysis (Yin 1994) – in this case the sectoral level. The case study has been defined as 'a way of organizing social data so as to preserve the unitary character of the social object being studied' (Goode and Hatt 1952:331). Care needs to be taken that data at embedded levels is analysed in such as way that it yields information at the level of the case.

In this case study, individual pieces of data at the lowest level concern small units of knowledge activity, such as a conceptual problem confronting a project team or an expressed need for information. At this very basic level data can be fitted in to the theoretical framework to reveal characteristic patterns of activity in some areas and little or ambiguous activity in others. At a slightly higher level there is data about individuals and organisations – how well-informed they consider themselves, how much technology

they have access to and where it comes from, what skills problems they have, what their purposes are and so on. At a still higher level is data which shows patterns of activity across organisations and individuals – for example, data about networks linking multiple groups together or data from different organisations citing reliance on identical information sources. Data from all levels needs to be integrated into an analysis that deals with the overall shape of the sector as well as the multiple individual activities occurring within it. In this research the theoretical framework is used as a 'map' to guide the analysis of lower-level data in ways that reveal higher-level patterning.

2.6 SUMMARY

Since this thesis is substantively concerned with knowledge, the methodology section has been somewhat longer and more complicated than usual. Starting with a discussion of the research questions, it reviewed four cornerstone commitments of reliabilist epistemology – to naturalism, externalism, fallibilism and truth realism – and discussed some important methodological implications in terms of research paradigm and methods. The epistemological theory was shown to have elements in common – as well as differences from – both positivist and interpretivist approaches in Information Systems, and to have notable points of contact with the emerging critical realist strand in the discipline. The second half of the chapter discussed the choice of a case study strategy and the design of the empirical portion of the work, the nature of data collection and the methods of analysis. The historical background to the case is described more fully in chapter 5 while chapter 6 reports the results. Before this, however, it is necessary to address the first research question and to consider the possible contribution of contemporary analytic epistemology to the development of a general theory of knowledge, development and technology. This is the subject of the following chapter.

3. Three dimensions of knowledge: towards a capability theory

The hope here is for something between a philosophical doctrine and a new science, which would study the ways in which the world can be known. It would build on psychology, biology, and also what philosophers have achieved in understanding knowledge from the inside. Can we achieve this? How deep an understanding might it give us? We can only find out by trying. (Morton 2003:174)

As the literature review in chapter 1 has shown, there are many different knowledge-based approaches to development, and many claims made within them about the role of technology. These approaches operate at different levels of generality, scope and abstraction, and focus on different domains – international, regional, organisational, networking and so on – but few make reference to an explicit theory of knowledge. This chapter attempts to show how the gap may be filled, by describing some recent influential work in contemporary analytic epistemology and developing from it a three-dimensional theory of knowledge. This theory is shown to have close parallels with the capability approach to development, and an account drawing on both is given of the relationship between knowledge, technology and development. The account is deliberately general in this chapter. The following chapter demonstrates how it can be more narrowly applied within a specific context – in this case that of civil society organisations responding to HIV/AIDS.

3.1 INITIAL CONSIDERATIONS

3.1.1 The choice of a theory

Anyone setting out to ground some aspect of social theory in philosophy faces the problem of which philosophical perspective to adopt. This is particularly so in the case of knowledge, where there are perhaps more – and more varied – theories available than

anywhere else. Chapter 1 sketched just some of the more fundamental faultlines between the major epistemological orientations. Most of these orientations have some support within mainstream philosophy but none is without problems and critics. Social theorists who want to draw on philosophical work thus have to choose which perspective to opt for and to make their readers aware of the implications of the choice.

The epistemological orientation chosen here started out as a radical break with traditional philosophy in the 1960s and 70s but has rapidly come to occupy a central position and is now widely accepted as a major shaping force in contemporary analytic epistemology. The reason for choosing this position is partly because of its influential nature, and partly because it seems to offer a genuinely new direction and a way out of the impasse that led to analytic epistemology being regarded for a long time as one of the driest and least practically relevant branches of philosophy. In addition, it is a naturalistic philosophy that recognises the interdependence of philosophy and science and that therefore provides theories more readily applicable than some others to empirical studies. Finally, of course, is the researcher's own orientation. While the strand of thought presented here is not without problems and further work to be done, it appears to the researcher to be the right *kind* of approach, seeking to give an account of knowledge tied firmly to the social and material world. This is not to say that it is a non-normative theory – it is not – but rather that norms are seen to rest on descriptive features. It is not a theory of knowledge that will appeal to philosophical idealists or to those who see knowledge, mind and reason as something apart from the natural world. The fundamental prospectus here is that 'Reasoning is a way that human beings touch and track the world around them. It is one of the central adaptations of our species … Other species know in different ways; knowledge is a natural phenomenon.' (Morton 2003:175)

3.1.2 Why knowledge matters

Clearly it is essential to survival and success in many circumstances to have true beliefs: to believe that petrol is flammable and that arsenic is poisonous rather than the reverse could save your life. Other true beliefs let us predict consequences, take action and devise steps to overcome problems. So why do we have a concept of knowledge over and above

that of true belief, and why is its nature of so much interest both in philosophy and social science? Williams (1978) suggests that what knowledge adds is access to the *means* of acquiring true beliefs. Instead of merely having true beliefs, someone who *knows* is using generic methods and processes of belief acquisition that can be more widely applied. Building on this, Papineau (1993) maintains that the whole point of a concept of knowledge is precisely to pick out and focus attention on a specially valuable type of true belief – the type 'generated by a truth-producing process'. More important than any individual true beliefs is the general ability to get true beliefs. It is this general or systematic (Peacocke 1999a) ability that across multiple domains and contexts improves our chances of avoiding error and achieving successful outcomes, and that we therefore accord the special status of knowledge.

This insight is fundamental to the view of knowledge presented in this chapter. It is a relatively recent view with a number of variants and formulations, but for the purposes of this project the differences are not significant. All share an emphasis on generic, systematic or reliable truth-producing processes/mechanisms/abilities as a defining characteristic of knowledge and the vital ingredient that lifts knowledge beyond simple true belief. Apart from theoretical advantages – discussed in detail below – this approach lends itself to practical applications since the concept of systematic and reliable mechanisms points the way to real-life interventions.

Many key names in contemporary epistemology are associated with this approach, including David Armstrong, Alvin Goldman, Fred Dretske, Robert Nozick and Timothy Williamson, and many other key names are to be found proposing related accounts in neighbouring branches of philosophy, particularly metaphysics and philosophy of mind. The theory as presented here draws on ideas from many thinkers but Goldman features prominently because of his ongoing efforts over several decades to develop both the theory and its applications, particularly to social domains in his 'veritistic social epistemology' (VSE) (Goldman 1999). Acceptance of all aspects of Goldman's formulation is not assumed or necessary however.

3.1.3 Method in epistemology

A standard method in philosophical analysis, such as the analysis of knowledge presented below, is to start with the everyday concept and by a process of example and counterexample to develop a set of necessary and sufficient conditions that together fully capture the intuitive concept. Goldman identifies three stages in the creation of naturalistic epistemological theory: firstly providing necessary and sufficient conditions for linking belief to truth (in this theory in terms of reliability); secondly specifying a criterion for the conditions; and thirdly giving a detailed description of the system governing the criterion. The first two stages are logical work to be done by philosophers but the third requires input from the empirical sciences for determining the fine-grained content of the theory. Epistemology and science thus have to work together to produce a complete theory of knowledge. In developing his VSE, for example, Goldman makes reference to ideas from Gricean linguistics, evolutionary theory, cultural replication, primate development, social psychology and many other social and natural sciences. Furthermore, the kind of philosophy that results will not always be able to offer the certainty of deductively derived conclusions, but is instead seen as at least in part fallible and subject to revision. These characteristics give a distinctive 'flavour' to naturalistic philosophy.

The analysis of knowledge presented in this chapter is based on what individuals have to do, and the resources they have to have, in order to know. As we shall see, many of these things are aspects of the environment, particularly the social environment. This recognition has prompted several epistemologists to suggest that social factors make important and systematic differences to people's ability to acquire knowledge (Goldman 1987; Kitcher 1993, 1994; Kornblith 1994; Goldman 1999, 2002). A veritistic and social knowledge analysis leads naturally to the idea that it may be possible to evaluate and compare social arrangements in terms of their knowledge-helping or knowledge-hindering propensities:

> 'People have interests, both intrinsic and extrinsic, in acquiring knowledge … and avoiding error. It therefore makes sense to have a discipline that evaluates

intellectual practices by their causal contribution to knowledge or error. This is how I conceive of epistemology: as a discipline that evaluates practices along truth-linked … dimensions. Social epistemology evaluates specifically social practices along these dimensions.' (Goldman 1999:69)

3.2 THE ORIGINS OF RELIABILISM

Until the second half of the 20th century analytic philosophy standardly accepted the tripartite definition of knowledge as justified true belief. According to this there were three conditions, individually necessary and jointly sufficient for knowledge: someone had to believe something; what was believed had to be true; and the belief had to be justified. Knowledge thus had a dual nature: it was a form of belief and as such depended on factors internal to the knower, but it was also, specifically, *true* belief and as such depended on states of affairs external to the knower. You can believe it is raining if it is not, but you cannot know it is raining unless it is in fact raining. Justification added a second internal condition: beliefs were justified in terms of their relation to other beliefs. A debate ensued on the precise nature of the relationship and on whether some beliefs were more 'basic' or foundational than others or whether all were held together in a netlike 'web' of belief, but for some time little attention was paid to the tension between the external truth condition of knowledge and the internal justification and belief conditions. The oversight eventually destroyed the tripartite definition altogether.

In 1963 Ernest Gettier published a set of counterexamples to the tripartite definition, showing that justification was not a strong enough criterion for true belief to count as knowledge. They all exploited the gap between the (internal) condition of justification and the (external) condition of truth, demonstrating that an element of luck could still play a part in ending up with a true belief even if the believer were justified. Imagine, for example, that you park your car in the street one evening, go into your house, have dinner and fall asleep. The next morning you reach for your car keys, believing your car to be in the street where you left it the night before. In fact, this is true: your car is in the same

place. You are also fully justified in believing it to be there since you have very good evidence to think that the car stayed where you left it and none to suggest it did not. However, it in fact turns out that unknown to you, someone broke into your car during the night, started the engine and drove around the block, parking the car in the same place. You still have a justified true belief that you car is where you left it, but your belief does not amount to knowledge since it is only accidentally true. The link between justification and truth is not strong enough, Gettier examples show, to deliver what our intuitive sense of knowledge demands.

Such examples provoked a flurry of activity in epistemology as philosophers tried to come up with formulations that either strengthened justification or replaced it with an alternative criterion that would exclude Gettier cases without also throwing out much of normal everyday knowledge. One distinctive set of theories came out of a growing strand of naturalism in philosophy generally. Naturalistic philosophers aim at giving accounts of phenomena such as knowledge, mind, ethics and aesthetics in terms of an understanding of humans as part of the natural world, producing explanations that relate reason, thought and values to their place in the physical, biological and social world. Such views are not necessarily non-normative but they do require that normative features be shown in the end to rest on descriptive ones. In the naturalistic revaluation prompted by Gettier, many contemporary epistemologists have turned away from more structural accounts of knowledge towards process-based accounts more in keeping with the kind of causal and probabilistic explanation found in the natural and social sciences.

These theories see knowledge as a relation between mind and world, which is implemented in certain kinds of (true-idea-delivering) causal or probabilistic[9] processes. Several slightly different formulations exist but all share the same basic insight that what matters is non-accidental (Unger 1968) or reliable (Ramsey 1931; Goldman 1979; Talbott 1990) linkage between what people think is the case and what actually is the case. These theories are generically known as reliabilist accounts and can be seen as a subset of

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[9] The two are not necessarily incompatible. Probabilistic accounts of causation have been given by a number of philosophers including Suppes (1970), Salmon (1980) and Humphreys (1989).

causal theories of knowledge. A powerful influence was Armstrong (1973), whose naturalistic account of mind is based on the idea of reliable indicators: a belief must reliably indicate truth as a thermometer reliably indicates temperature through adherence to the laws of nature. Dretske (1971; 1981), Goldman (1986) and Nozick (1981) give related accounts in terms of counterfactual conditions under which a belief would not arise unless it were true. McGinn (1984), following Austin (1961) and Goldman (1967), prefers a version based on the criterion of reliable discrimination: to know is to be able to tell someone or something apart from others, or to be able to tell a true proposition from a false one. McGinn (1984), Sosa (1992) and Goldman (1992) have all given readings in terms of epistemic or intellectual virtues, general capacities to tell truth from falsity, or to make correct discriminations in a range of relevant situations.

Some forms of these theories such as those of Sosa, Goldman and Talbott apply the reliability condition to justification; others dispense with justification and replace it with direct reference to reliable process. This project adopts the latter approach. This is not to downplay the significance of justification, which is an important subject in its own right, but dispensing with justification as a criterion for knowledge (as opposed to knowledge claims) enables a more liberal and inclusive theory in terms of which children, animals and all of us in unreflective states can have genuine knowledge.

As well as being a naturalistic position, reliabilism is part of a related trend in recent philosophy towards externalism. As with naturalism, various externalisms exist in different sectors of philosophy. What they all share is a tendency to locate aspects of cognition traditionally thought of as 'inside' the mind, in the outside world or perhaps more accurately in processes or events that go beyond the person's cognitive perspective and that are not necessarily accessible to her consciousness. Reliabilist accounts of justification, for example, are externalist in that they allow that aspects of the world to which the believer may have no cognitive access – such as causal processes – can in fact determine whether or not she is justified in believing something. Traditional accounts of justification, by contrast, emphasise internal factors of which knowers are aware such as the evidential basis of belief. Limited externalism about knowledge is more common than

externalism about justification, since all but the most idealist theories of knowledge invoke a notion of truth that goes beyond the mind. However, more strongly externalist epistemologies such as reliabilism in addition set up a link between belief and truth which is not necessarily part of the knower's cognitive domain. A radical externalism has recently been proposed by Williamson for whom knowledge is prior to belief. Rather than seeing knowledge as a special kind of belief, it is knowledge that we have first and foremost and belief that we have when we fall short of knowledge.

> 'Knowledge and action are the central relations between mind and world. In action, world is adapted to mind. In knowledge, mind is adapted to world. When world is maladapted to mind, there is a residue of desire. When mind is maladapted to world there is a residue of belief. Desire aspires to action; belief aspires to knowledge. The point of desire is action; the point of belief is knowledge.' (Williamson 2000:1)

Williamson rejects the 'decomposition' of knowledge into necessary and sufficient conditions, what he terms the 'reductionist programme'. Knowledge is therefore not defined but is taken as the basic relation between mind and world when perceptual and cognitive processes are functioning properly (reliability is a core concept in explicating this). Like memory and sense perception[10], knowledge is a 'factive' mental state, meaning that it is a mechanism by which truths about the world are internally apprehended.[11] If the content is false it is because the mechanism has failed and we do not speak of knowing, remembering or seeing, but of believing mistakenly, misremembering, or imagining, hallucinating or dreaming. As a factive mental state, knowledge is (like vision or memory) properly part of the study of mind, and epistemology for Williamson becomes a branch of philosophy of mind. In fact, he further argues that knowledge is fundamentally involved in all other factive mental states, all of which aim in some way at knowledge.

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[10] 'Perception' is used here in the philosophical sense. Psychologists employ the word in a broader sense that includes illusions and mistakes (Sperber, Premack et al. 1995).

[11] Truths about the world can of course include truths about the mind, since for naturalistic theories mind is part of world. Such truths are distinguished by metarepresentations – representations of representational states.

Externalist epistemology has a number of advantages. For a start, traditional problems for internalist theories, such as induction, are readily soluble (Goldman 1986) once the answer is sought in the real world of processes that are in fact reliable rather than in the rarefied air of pure thought and necessary connections. Secondly, externalist accounts permit a much wider range of beliefs to count as knowledge and believers to count as knowers. You do not need to be able to produce a full account of why you believe the tree in front of you to be an oak in order for your belief to be knowledge. Knowledge need not depend on deep reflection and an aptitude for long chains of inference. Young children and even animals can legitimately have knowledge; the fact that they cannot explain the process by which it is acquired does not diminish its status as genuine knowledge.

The externalist revolution in epistemology is clearly not over and it is not easy to predict its future course. It has already been profoundly influential, forging stronger links between the mental content and conditions in the world, and focusing attention on the mechanisms by which beliefs are formed in interaction with the world. Since such mechanisms involve physical, psychological, social and, increasingly, technological, processes the way is opened for greater collaboration between epistemology and the natural and social sciences.

It is also, of course, not the only trend in contemporary epistemology. Craig and various forms of speech act epistemology, for example, give behavioural rather than cognitive accounts of knowledge. In some ways these are close to reliabilism, placing the emphasis on process rather than logical structure. However, some of these views are metaphysically idealist rather than realist in tone, seeing knowledge as a process of creating or constituting the world and thus as having a mind-to-world direction of fit rather than the strongly world-to-mind direction that externalism proposes. Some of the points of difference will be noted below as various aspects of the theory are discussed in more detail.

3.3 THE RELIABILIST ANALYSIS OF KNOWLEDGE

It is not within the aim or scope of this project to defend a specific version of reliabilism. Instead, the general view of knowledge and insights shared by all theories of this type will be used to develop a theoretical framework for thinking about and analysing knowledge in empirical situations. This section outlines in more detail the key philosophical features of reliabilism as a general position. Common to all reliabilisms is the view that knowledge is about a certain kind of relationship existing between something in the world and something in the mind. There are thus three fundamental conditions for knowledge:

- A truth condition (the 'something in the world').
- A reliable process condition (the 'certain kind of relationship').
- A mental content condition (the 'something in the mind').

The following sections review some of the key requirements of each condition.

3.3.1 The truth condition

You cannot know something if it is not true (you can of course claim on good grounds to know something that in fact turns out to be untrue: the criteria for knowledge claims are different from those for knowledge itself). Consequently, analyses of knowledge all refer to the concept of truth and very often the view that is taken of truth gives a characteristic 'flavour' to the type of epistemology that results. There are many truth theories in philosophy, some of which are compatible with reliabilism and its causal, world-to-mind notion of knowledge, and some of which are not. The fundamental distinction is between realist accounts which maintain that what makes beliefs, propositions or sentences true is to do with the way they relate to reality, and theories which maintain it is to do with some other feature, such as methods of verification or pragmatic success. This section reviews some of the problems with these views and briefly describes the realist alternatives endorsed by contemporary philosophers such as Kitcher (1993), David (1994), Schmitt (1995), Alston (1996), Goldman (1999) and Nozick (2001).

The most natural and intuitive notion of truth is the correspondence theory, a realist position that maintains a proposition is true if and only if it corresponds with a fact or existing state of affairs (Russell 1912; Wittgenstein 1922; Austin 1950). This account is problematic, however, in that the notions of a fact and what it is to 'correspond' with a fact are opaque. Even contemporary adherents of correspondence theories, such as Nozick (2001), admit that significant work has still to be done. But the biggest impetus behind the attempt to devise an alternative theory of truth is the way in which correspondence accounts seem to make truth remote and potentially ungraspable, although most correspondence theorists do not in fact hold truth in the main to be radically transcendent (in principle unknowable) – see for example Goldman (1999).

The most influential alternative approach is that of verificationism, which upholds an epistemic rather than a metaphysical view of truth. Peirce (1931-1958), for example, identifies truth with verifiability, and Dewey (1938; 1957) with warranted assertibility. Coherence theories fall into this category as well, maintaining that truth is a matter of a proposition fitting into a whole coherent system of belief (Bradley 1914; Hempel 1935), as do views which identify truth with particular verification procedures or with agreement (Dummett 1978; Putnam 1981). All these theories latch on to something correct about truth, which is the correlation with evidence and other verification techniques, but all fail to show that these features are plausible either as necessary or sufficient conditions:

> 'Our judgement that a cat is in the garden is made true, if it is true, by the cat's being in the garden. The issue of how other people would judge it is no part of this truth condition. Nor is the question of whether the belief that it is would enter into any proposed system of belief. We don't, as it were, look sideways, either to other people or to systems of belief. We look at the cat and look round the garden.' (Blackburn 1984:247-248)

Furthermore, evidence in general is defeasible and can be undermined by new evidence. There can be truths for which we simply have no evidence and perhaps truths which are in principle unknowable (Goldman 1999, Williamson 2000). Attempts to strengthen

verificationist accounts to overcome these problems tend to end up in the same position as correspondence theories, with truth once again elusive. Putnam, who speaks of having made 'a long journey from realism back to realism', for instance comments 'truth is sometimes recognition-transcendent because what goes on in the world is sometimes beyond our power to recognize, even when it is not beyond our power to conceive' (Putnam 1994:516)

A second alternative is found in pragmatism, according to which truth is a property of beliefs that lead to successful outcomes (James 1907, 1909). Numerous problems exist with this account too. Firstly, it is clearly not a contradiction to say that false beliefs can be useful or true beliefs damaging to the believer, so pragmatic success cannot have a necessary connection with truth (Goldman 1999). Secondly, the same belief could be advantageous for one person and damaging for another (Kirkham 1992). A potential response to this is relativism about truth: relative to one person it is true that there is some wine left in the bottle since having a drink will be pleasant and do her no harm, but relative to her alcoholic twin it is not true since *this* belief will be advantageous for *her*. Such a notion of truth strains the boundaries of intelligibility (Putnam 1981). Fundamentally the problem is that it seems impossible to make sense of the idea of pragmatic success without implicitly assuming a more substantive notion of truth: it is pragmatically useful to believe that it is raining so that you can take an umbrella – but only if it is in fact true that it is raining, and true in a sense that has nothing to do with your benefit or otherwise.

It is this idea of truth as a relationship between beliefs and reality that realist theories uphold. Two basic types of realist theories exist, deflationary and correspondence theories, and both are compatible with reliabilism (Goldman 1999), although most reliabilists are in fact correspondence theorists. Deflationism is a relatively new theory and has a number of versions, all of which share a dislike of the inflated language often associated with truth. For Strawson (1950) and Ayer (1963), to assert that p is true is merely to assert p in a particularly approving way. For Quine (1971), talk about truth is a useful linguistic device but one that can be dispensed with: the sentence '"Snow is white"

is true' can simply be replaced by the sentence 'Snow is white'. Horwich (1990) proposes a minimalist theory according to which truth is a property but one without substantive content. For minimalists a proposition is true just if the proposition obtains, so snow is white is true if and only if snow is white. In this theory, for every proposition such as 'snow is white' there exists another proposition 'snow is white is true if and only if snow is white'. Deflationary theories all have significant problems to contend with (see for example discussions in Lewy 1947; Boghossian 1990; Horwich 1990; Kirkham 1992; Gupta 1993; Field 1994; Schmitt 1995; Alston 1996) and for Goldman (1999) fail to address the way in which people are able to understand truth attributions even to propositions they do not understand. The concept of truth, then, seems to outstrip individual instances of true propositions in a way that deflationary views cannot account for. Such concerns lead back to a correspondence account.

Correspondence theories of truth are based on the idea that truth bearers (that is, true sentences, beliefs, propositions, ideas, theories) in some way correctly 'fit' a reality independent of themselves and those who create or uphold them. Michael Polyani for instance speaks of scientific discovery as a personal activity in the 'service' of an external reality:

> 'The discoverer is filled with a compelling sense of responsibility for the pursuit of a hidden truth, which demands his services for revealing it. His act of knowing exercises a personal judgement in relating evidence to an external reality, an aspect of which he is seeking to apprehend.' (Polyani 1967:24-25)

The problem for such theories is, on the one hand, to give an account of the 'fits' relation and, on the other, to give an account of 'truth makers' – those aspects of reality which truth bearers have to fit. Traditional correspondence theories such as those of Wittgenstein (1922) and Russell (1912) identified the relationship as one of 'picturing' or 'mirroring', and represented truth makers as facts, but this raises many problems (Quine 1987; Rorty 1991). Contemporary correspondence theorists in general reject both the picturing analogy and the appeal to facts, preferring formulations such as:

'A statement is true if and only if what the statement says to be the case actually is the case.' (Alston 1996:22)

Goldman formulates a version based on descriptive success:

'An item X (a proposition, a sentence, a belief etc.) is true if and only if X is descriptively successful, that is, X purports to describe reality and its content fits reality.' (Goldman 1999:59)

For Goldman, the notion of success if crucial. To call a belief true is to say that it has achieved its aim.[12] In this account there is no need to refer to facts, or even to suppose that a single category of truth makers exists:

'Perhaps some propositions are made true by concrete events, whereas other propositions are made true by relations among abstract entities. As long as anything that makes a proposition true is part of reality … For purposes of analogy, consider the theory of reference. There is no assumption in the theory of reference that only one category of objects can be referred to. All manner of "objects" – not just substances but trajectories, sounds, manners, and amounts – can be referred to. Why, in the case of truth theory, must it be assumed that only one category of things must serve as truth makers?' (Goldman 1999:62)

Clearly there is still work to be done in explicating the details of a correspondence theory but as things stand this seems the best hope of an account of truth that preserves everyday intuitions.

It is perhaps this feature that has led too to a number of African philosophers defending correspondence views. Kwasi Wiredu (1980) discusses the concept of truth among the Ghanaian Akan people in terms strongly reminiscent of the realist correspondence or mildly deflationary theories found in Western epistemology: truth is a matter of things

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[12] A close parallel can be found in Williamson (2000:1): 'the point of belief is knowledge'.

being so. For Wiredu 'truth and fact are among the most fundamental concepts of human thought. Without the notion of something being a fact or of a proposition being true, thinking is inconceivable . . . ' Wiredu rejects the suggestion, for instance, that the Akan view can be interpreted as a consensualist[13] one:

> 'there is a sharp awareness of the disparity between the cognitive capabilities of wise persons (*anyansafo*) and the populace (*akwasafo*) … agreement cannot be the essence of truth in the primary sense, for when there is agreement in cognition it is about something being so; the agreement is that something is so, i.e. that it is the case. It is this notion of something being so that connects agreement with truth at all.' (Wiredu 1980:234)

Goldman (1999) cites a wide variety of examples and sources that seem to lend cross-cultural support to robust notions of truth and reliability underlying epistemic concepts, such as the work of Maffie (1995), Onyewuenyi (1991) and Oruka (1990), and sees in South Africa's Truth and Reconciliation Commission an example of their continuing importance in modern African thought. Another expression of such a view to come out of Africa can be found in the declaration issued at the close of the World Conference against Racism, Racial Discrimination, Xenophobia and Related Intolerance held in Durban in 2001. Article 98 reads:

> '**We emphasize the importance and necessity of teaching about the facts and truth of the history of humankind from antiquity to the recent past, as well as of teaching about the facts and truth of the history, causes, nature and consequences of racism, racial discrimination, xenophobia and related intolerance, with a view to achieving a comprehensive and objective cognizance of the tragedies of the past' (United Nations 2001:17).

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[13] Consensual views are a version of verificationism in which truth is deemed to be what people – or sometimes experts – do or would agree on under optimal discursive conditions.

If we accept a realist notion of truth as a matter of something being so or being the case, we are faced with the problem of access. What access do we have to snow's being white? Sceptics worry that by locating truth in worldly states of affairs and not in the head we make it transcendent and unattainable. A person's experience of or belief in snow's being white is not direct access to truth, but is something she accomplishes through processes of vision, inference, memory – all of which may be faulty. If we are to judge our processing capacities in terms of true-belief-delivering potential then we cannot give an account of truth based on what our processing tells us about the world. On the other hand, in a naturalistic philosophy the world cannot be a remote metaphysical realm but has to have intimate connections with human knowledge and experience.

In dealing with this issue, Goldman (1999) distinguishes between two forms of transcendence thesis: radical transcendence which maintains that truth is in principle unknowable, and moderate transcendence which maintains that truth is logically independent of human thought but not in principle ungraspable. The first he rejects as a general hypothesis, while admitting that there may be some truths that are in principle unknowable, a point also accepted in Williamson (2000). The second thesis Goldman accepts: there is no necessary or logical connection between the way the world is and the way people experience it or think it to be. This does not mean that truth in general cannot be grasped by human minds but it does require acceptance of fallibilism – we must accept that what we take on any specific occasion to be truth may in fact turn out not to be.

3.3.2 The reliable process condition

What makes reliabilism different from other epistemologies is its attempt to tie mental content to truth through the notion of reliable process. This can be seen as a development from Armstrong's analogy between the way people form beliefs and the way a thermometer 'tracks' the temperature of a room. Provided the mechanism is working properly there is a nomic, or law-like, relation between the output (beliefs, temperature reading) and truths (the state of affairs represented in the belief, the actual temperature). The three main reliabilist epistemolgists, Dretske, Nozick and Goldman, all follow this basic idea but offer slightly different accounts of the nomic relationship.

For Dretske (1971; 1981), a propositional representation that is to count as knowledge must have a causal connection with the represented state of affairs. The person must come to have the mental representation precisely *because* the world is a certain way, the way the representation says it is. She must have the image of a cat because there really is a cat in front of her; she must have the idea it is raining because it is in fact raining. Nozick (1981) gives a counterfactual account: the mechanism for forming a belief that is to count as knowledge must be such that it would lead someone to form the belief if it were true and it would not lead her to form the belief if it were not true. Hallucinating a cat when there is a cat in front of you fulfils the first criterion (it leads you to think something that is in fact true) but it fails on the second criterion since it would still make you think there was a cat there even if there were not. The counterfactual account is very close in effect to Dretske's conclusive reasons account, and can be seen as a generalisation of the causal theory (Dancy 1985).

For Goldman (1986), reliability is the criterion: the process by which the mental representation is formed must be a reliable one. Such processes include individual cognition such as perception and introspection, and also social processes of testimony and argumentation. Contrasted with these are unreliable processes of belief formation such as wishful thinking, consulting your horoscope or faulty reasoning. In some ways this is a less severe constraint than causation and Goldman has used it to open up new areas in epistemology, particularly in terms of its social dimension. For example, he provides a rich account of trust and rehabilitates the idea of authoritative sources, traditionally treated as an example of the ad hominem fallacy.[14] People and other sources of information that prove reliable can be genuine sources of knowledge for Goldman, but it now becomes important to provide not just accurate content and good evidence but also information to help receivers consciously or unconsciously discriminate reliable sources. Drawing on Gricean linguistics he develops a set of suggestions for speakers such as identifying themselves, giving information about past reliability, establishing their credentials, knowing their audience and understanding the constraints of the medium.

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[14] The mistake of evaluating an assertion or argument on the basis of who makes it rather than internal merits such as consistency, coherence and evidential support.

Processes of knowledge acquisition

A key task of naturalistic epistemology as conceived by Goldman is to describe the system governing the relationship between having a true idea and the conditions in the world that make it true, that is, the processes by which people acquire knowledge. This is in large part a matter of empirical investigation, and philosophy here must draw on insights from many natural and social sciences. Epistemology standardly recognises six generic processes: memory, introspection, inference, perception, testimony and argumentation. The last two of these are social processes and form the focus of the 'veritistic social epistemology' (VSE) developed in Goldman's book *Knowledge in a Social World* (1999). Since social epistemology covers a wide range of different practices, some more sociological than philosophical, 'veritistic' is included to emphasise the centrality of truth in the reliabilist version, and its project of evaluating and improving social practices in terms of their ability reliably to deliver true belief.

At the micro level, VSE is concerned with understanding the fundamental processes by which people acquire knowledge socially. Through testimony, people are exposed to accounts from others on the basis of which (in combination with pre-existing knowledge, inferential processes and other factors such as who the speaker is and how much she is trusted) they form beliefs of their own. In argumentation, a social process of reasoning occurs in which two or more people put evidence before each other and debate the inferences that can legitimately be drawn from it. The following sections summarise Goldman's analysis of the two processes drawing on several cognitive disciplines including psychology and linguistics.

Testimony

In testimony, people communicate observations or experiences to others so that it is possible for them to know about things with which they have no direct acquaintance or even with which they could never have direct acquaintance (what someone else's headache feels like, for instance). There are four stages in the process: discovery (becoming aware that one has knowledge worth communicating); the production and transmission of messages (including the process of converting mental representations into

external representations); reception (external representations are converted back into mental representations); and acceptance (a process of inference involving not just the content of the message but pre-existing knowledge about the world and the source of the message).

A number of factors influence the effectiveness of this process. For a start there is the informational value of the message, such as whether it is on a topic of interest to the audience (and readily recognisable as of interest), whether the information is new or surprising – perhaps running counter to popular belief or going against what was predicted, or being about something few people have been able to observe.

Speaker practices also have different veritistic effects. Speakers do not always tell the truth, either because they make mistakes or lack knowledge themselves, or because they have some other objective. The desire to get elected, sell a second-hand car, avoid a prison sentence or even just give someone a surprise may all lead people to deceive or keep silent rather than tell the truth. But, while truthtelling apparently benefits receivers more than speakers, it seems that there may also be some strong motivations to be truthful. Goldman cites the philosopher Thomas Reid who argues for an innate disposition to truthful communication. Some empirical support for the thesis that truthfulness is the default comes from developments in linguistic analysis which show how people use contorted expressions and experience stress when lying. Society gives informal rewards (smiles, friendship, status) for information-sharing, and often formal rewards too: experts build their careers on being able to give valuable advice, newspapers sell because people will pay to find out about world events. There are also disincentives for not telling the truth; both human and animal groups may punish individuals who withhold important information or deceive others (Hauser 1996, Goldman 1999).

Motivation is just one factor influencing the veritistic outcome of testimony. Given that someone is motivated to communicate her knowledge, her success will then depend on many things including what she knows about her audience, their interests, and their existing state of knowledge about the subject. There are implications here for technology,

since different communication media provide different levels of support for these factors. Other things being equal, media formats that allow speakers and audience to question each other are veritistically superior, for example, since this promotes complex forms of mutual knowledge.

Knowledge communicators also need to know the communication media and patterns of use employed by the intended audience. A newspaper announcement may be less effective than word of mouth in a rural village, and radio may be better than television. A priori judgements cannot be made and fast, high-tech or wide-area media are not necessarily better; it is a matter of understanding the behaviour of the specific audience to be reached. Communicators also need to consider the effects of other sources. These can compete for public space and audience attention and, depending on the volume and organisation of messages, make it difficult for hearers to find and identify potentially relevant communications. Filtering can help, but filtering techniques are not all of equal veritistic value.

Speakers can also do things to promote their veritistic credentials to the audience. To enhance the perception of competence they may indicate qualifications, titles, achievements, experience or professional status, or use domain-specific language. They can use voice, appearance and body language to convey trustworthiness, honesty and confidence in the veracity and importance of their message. They can establish a reputation for truthtelling, and they can draw attention to previous occasions demonstrating their competence and honesty. They can produce evidence and tell people where to go for further authentication; they can call on others to confirm their assertions; they can provide evidence of impartiality; they can mention and refute opposing views; and they can invite questions.

Of course people who are incompetent or dishonest, or who have a non-truth-linked motive, also use such techniques, and this is one reason why social acquisition of knowledge always involves some effort. Hearers constantly have to judge and evaluate not just the content of the messages they receive but also the clues provided by the

surrounding information – and that can be hard work. Many social institutions have been developed to reduce the burden on individuals, such as mechanisms for recognising expertise or for flagging past failures of competence or honesty. The hard work involved in finding and evaluating important information is also exploited by a host of industries. Mass-market publishers sift medical, dietary, scientific and all sorts of other specialist information for the general public, and know the advantage of a trusted name on the jacket. Newspapers and news broadcasts select the events of the day; conference committees carefully vet submissions and journals peer-review contributions. Such intermediary and editorial roles are some of the most important ways we have of reducing the effort of judging sources. Of course the strategy carries risks – editors, experts and intermediaries can have non-truth-linked motives of their own, and can make mistakes. The fewer sources or intermediaries we rely on the more valuable trust becomes and the greater the potential for error if trust is misplaced. People know this, and so they have to judge the judges. Individual cognitive effort is an inherent part of knowledge acquisition and cannot be entirely done away with, however good our social knowledge institutions.

Goldman makes the point that hearer strategies perform differently in veritistic terms in different reporting environments. In an 'ideal reporting environment' in which people tell only the truth a 'blind trust' strategy (believing everything) will work perfectly. In a situation where speakers tell only untruths 'blind contratrust' (believing the negation of every utterance) would be equally reliable. Real-life situations, however, fall somewhere inbetween, with speakers sometimes saying things that are untrue, whether out of ignorance, fallibility or dishonesty. Hearers can neither believe nor disbelieve everything. They therefore have to make probabilistic inferences about the likelihood of truthtelling in each instance. Factors that serve a veritistic purpose in such judgements will include prior knowledge about the subject, knowledge about the speaker's history of truthtelling, her authority to speak on the subject in question, her access to relevant information or evidence, her motivations to speak the truth or not, factors that may be clouding her judgement. Other factors may have a negative veritistic effect – for example, people may believe what they want to hear or what those they identify with believe even in the face of contradictory evidence.

In Goldman's analysis there is no single strategy that is veritistically optimal in every situation. Nor is it feasible to develop separate strategies for every one of the vast range of situations where people have to make epistemic judgements. What he does propose, however, is that there are practices that, on average, across a wide range of situations, will yield veritistic improvements. They do not guarantee a particular level of knowledge but in terms of objective probabilities they are likely to increase the hearer's degree of knowledge. Goldman bases his analysis on Bayesian probabilistic inference patterns[15] but with the caveat that the results are only as good as the initial inputs (the person's pre-existing, probabilistically weighted beliefs). The argument is that, ' . . . when a reasoner starts with *accurate likelihoods* . . . it is objectively probable that Bayesian inference will increase his degree of knowledge (truth possession) of the target proposition' (Goldman 1999:115-116). That is, if people have good initial information and apply good reasoning they can more accurately judge the degree of acceptance they should accord to a proposition. Good reasoning is therefore legitimately classed as a reliable process, and is intimately bound up with the social exchange of knowledge through testimony.

Argumentation

Testimony is the simplest form of social knowledge transfer. Generally, when people seek to convey knowledge, they not only report facts but engage in argumentation – that is, offering reasons and evidence, and displaying some of their inferential processing to back up their assertions. The process of presenting a chain of inference as opposed to merely stating a conclusion is a central mechanism for increasing the social spread of knowledge.[16] Goldman distinguishes three modes of argumentation: *monological*, in which a single speaker presents an argument; *dialogical*, in which two or more speakers

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[15] Bayesian inferences are probabilistic judgements made on the basis of existing judgements – for example, how likely it is to rain today given that the weather forecast said it would and the forecast is usually right but there are no dark clouds on the horizon.

[16] Not everyone takes a knowledge or truth-directed view of argumentation. Hamblin's (1971) 'logic of dialectic' proposes a set of rules for communication that are not derived from a commitment to truth. Biro and Siegel (1992) see argumentation in terms of its ability to yield rational or justified beliefs. Van Eemeren, Grootendorst et al. (1993) stress dispute resolution. Habermas and Rawls are concerned primarily with democratic participation and decision-making. These are all legitimate in their own right but without a linkage to truth cannot be considered as epistemic practices.

participate; and *debate*, in which there is an audience as well as participant speakers. Argumentation happens in many different contexts and involves different relations between participants and audiences. Sometimes it is undertaken to propose a particular view, or to criticise it; sometimes to submit a view to examination. The ultimate aim may be purely epistemic or it may be action-directed – trying to decide what to do.

Argumentation has recently come to the fore in many social and political theories, for example about the role of dialogue and the importance of the public sphere for democracy. But what reason have we to suppose that argumentation leads to *true* beliefs rather than some other outcome such as the triumph of views that are superficially appealing, backed by powerful interests or flattering to the audience? For reliabilism, there is no guarantee that it will, but there are a number of practices that can increase reliability in argumentation. Speakers for example should attempt to conform to rules such as:

- Assert only conclusions you believe.
- Assert only premises you believe.
- Have good reasons for believing your premises.
- Ensure premises jointly provide strong support for the conclusion.

These injunctions have close parallels in some of the conversational rules developed by the linguist Paul Grice (1989), such as, 'Do not say what you believe to be false' and 'Do not say that for which you lack adequate evidence'. Both Grice and Goldman see such rules as deriving from an implicit social undertaking to promote cooperative knowledge acquisition. As well as these rules some argumentative good practices can be added, which do not have the same status but which can nevertheless contribute to veritistic gain:

- Be informative – address audiences that do not already all believe the asserted conclusion.
- Make premises credible to the audience.

- Display the premises-conclusion relationship in a way the audience can understand.
- Do not present arguments for which you know the audience has a defeater.[17]
- Include replies to foreseeable criticisms.

Further rules follow for critical dialogic argumentation. Here, speakers must continue to conform to 1-4 but in addition present defeater premises to one another, deny one another's premises, or undermine one another's links between premises and conclusions. For veritistic gain they must also ensure that rebuttals are accurate and effective. Furthermore, if a participant changes her mind as a result of dialogic argumentation, and particularly in debate situations where there is an audience, she ought to say so and if necessary offer a retraction of her original view – the point here being to assist the audience to make truth-directed revisions of their own views.

It is not only the behaviour of individual speakers that determines veritistic outcomes of argumentation, however. Goldman identifies two sets of social practices that are also relevant: increasing incentives and increasing opportunities for critical argumentation. In the first category, he suggests that both excessive attention to promoting harmony or to winning arguments will diminish veritistic outcomes, the first by inhibiting critical discourse, the second by encouraging people to assert things they don't believe or for which they have little evidence and by inhibiting changes of opinion and public retractions. Instead, techniques such as adopting a more playful approach, or publicly promoting a fallibilist outlook – truth is hard to attain, evidence contradictory, new information always possible, and all views in principle revisable – can create a social environment conducive to critical argumentation.

In the second category, Goldman considers three mechanisms for determining opportunities for public speech participation: automatic turn-taking, ability to pay, and criticism-bias. In the first a moderator allows everyone a limited amount of time to make their case irrespective of content. In the second content again plays no part in selection

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[17] A telling counter-argument or piece of contradictory evidence.

but access to channels is allocated through a market mechanism. The third mechanism applies to channels such as scientific journals where papers are selected for publication on content-specific criteria. Clearly the third case employs some criteria very similar to those Goldman develops for argumentation in general (informativeness, evidential support, willingness to retract and so on) but it is a matter for empirical research which social arrangements do in fact lead to veritistic gains.

Objections and responses

For all their success and influence, or perhaps because of it, reliabilist theories have come in for criticism, particularly from internalist epistemologists. Some criticisms, such as the problem of reliable clairvoyants, will not be discussed here as they affect reliabilist accounts of justification rather than of knowledge itself, which is the issue here. Four problems will be discussed, however: the charge of circularity, the generality problem, the problem of radical deception and the problem of information inputs. In responding to these, reliabilism has been clarified and strengthened. The following paragraphs outline briefly the nature of the objections and the ways in which reliabilists can respond.

The charge of circularity stems from the observation that if knowledge depends on reliability, it may be extremely hard to get going. Before we have knowledge, it seems, we have to have knowledge about reliability. Since most processes are not a priori reliable, they have to be tested and prove their worth in practice. But how are we to know how to interpret test results before we know which processes of knowledge are reliable? Goldman points out that this is an issue for other social epistemological theories too: whatever criterion is used for knowledge or knowledge processes, some kind of knowledge is presupposed. For example, in the theory known as consensus consequentialism epistemic processes are judged in terms of their ability to deliver a consensus of belief (Goldman 1999). But we can only know which processes do this after we already know something about the results of different processes. In both consensus consequentialism and Goldman's reliabilism, we have to use a selection process to decide which processes are optimal in terms of the chosen criterion (consensus or reliability) and therefore before we know whether the selection process is itself valid in these terms.

Goldman's response to this problem is that there is no logical guarantee available that a selection process will succeed, but that this does not mean it will necessarily fail. This can be seen as a direct consequence of the anti-foundationalist, fallibilist nature of this type of epistemology. By giving up the demand for certainty – knowing that we know – and the search for guaranteed-solid foundations, we accept that mistakes are possible and that judgements about reliability, like any other beliefs, are in principle always revisable. The crucial point here is that the fact that we *may* be mistaken does not mean that we actually *are* mistaken, and should not be taken as grounds for scepticism about the very possibility of knowledge. Instead knowledge is seen as a processes of constantly revising and adapting beliefs in the light of further information. The inductive nature of this process means that logical guarantees are not on the agenda. Once we reject the model of knowledge as a logical structure built out of a priori indubitable assumptions and deductive reason we have to accept that not just beliefs themselves but also our methods for forming beliefs might not always serve us well and might need to be revised. Establishing epistemically good methods is an ongoing project and not something to be decided once and for all.

The second problem for reliabilism is that of generality or specification (Audi 2003): how broadly or narrowly to specify the process that has to be reliable. It is not very meaningful to ask 'Is human memory reliable?' for example. Some people have better memories than others, and some are better at long-term remembering, or remembering facts in a specific domain. Circumstances also make a difference: if you are tired, ill, distracted, or under stress your memory may be less reliable. People who drink heavily, take certain drugs or have brain disease may be chronically poor rememberers. Specifying the broad process itself as reliable is therefore not fine-grained enough, since there is no process that is always reliable. On the other hand. if we are too specific we run the risk of being unable to attribute reliability to the process type at all and only to individual instances (in philosophical terminology to process tokens) – in which case it ceases to be reliability that we are talking about and becomes actual accuracy in an individual case, undermining the core conception of knowledge as some sort of *systematic* way of forming true beliefs in a variety of contexts and situations.

The generality problem is a practical rather than a theoretical issue for reliabilism, and there are a number of ways of responding. Firstly, reliabilists can observe that we are in general much less concerned with absolute attributions of reliability than we are with judging the relative reliability of a number of alternatives. While we are unlikely to ask if memory in general is reliable we may well want to know if A's memory is more reliable than B's. We therefore choose the level of generality which is appropriate to the kind of options we are faced with in a given situation. If we are trying to decide whether to believe A's account or B's, we look at the history in relevantly similar cases. If in this case neither A nor B has any special reason to remember more or less accurately than the other, we look at their relative reliability on previous occasions when this was also the case. If something is at stake – for example if it is a matter of remembering who lent whom some money – then we look at the relative reliability of A and B on previous occasions when they each had something to gain or lose. There is no need for reliabilists to prespecify some level of generality in advance for use on all occasions. In most real-life situations people have a limited number of options and the issue is to decide on their relative reliability for the purpose.

Secondly, as a naturalistic philosophy, reliabilism's normative dimensions must rest on descriptive properties. Except perhaps in the limited case of deductive inference, reliability is not an a priori or necessary property, but rather an empirical and contingent one that leaves epistemological processes marked by their causal history. Knowledge processes evolve through millennia of interaction between organisms and environments, and are reliable relative to those environments. Human eyesight is generally quite reliable, given that we use it in circumstances similar to those in which it evolved. This seems right, in that we quite naturally monitor our belief-forming processes and adjust continually for changes in the environment or in ourselves that may affect their functioning. We do not trust our vision at night as much as during the day, we avoid alcohol before an examination, we choose a quiet environment if we have complicated thinking to do.

Giving due weight to environmental constraints also allows reliabilists to answer the challenge of radical delusion. The worry here is that even if we use only reliable belief-forming processes, we could still be massively deceived. In a high-tech futuristic version of Descartes 'evil demon' scenario, imagine a wicked scientist able to keep a human brain alive (by tradition this is done in a 'vat') without the rest of its body. Imagine furthermore that neuroscience has advanced to the point where the scientist can create all sorts of phenomenal experiences for the brain by stimulating it with electrodes. The unfortunate brain has all the experiences of a fully functioning human being, thinking itself to be perceiving and acting in the world, forming beliefs, doing deductions and so on. There is nothing wrong with the brain's processes but nevertheless the brain is wrong about almost everything. What is to say, sceptics argue, that we are not all in some similar situation?

A possible reliabilist response is that a belief-forming process can be working properly and still be unreliable if used in the wrong environment or with the wrong inputs. Even if the scientist were able to stimulate the brain in such a way that it developed a true belief – that it was a brain in a vat, perhaps – this belief would not amount to knowledge since it would not have been arrived at by a reliable process such as sense perception, but rather by direct electrical inputs to the cortex, a type of input for which brain processes are not designed and for which they are not reliable. For reliabilists, then, brains in vats do not have knowledge even if they accidentally have true beliefs. In addition, reliabilists concede that we do not know that we are not brains in vats. Therefore we do not know that we have knowledge: it is always possible that we are in fact brains in vats and globally deluded. However, the fact that we *could* be wrong does not mean that we *are* wrong; rather it means that we are fallibilists – aware that anything we count as knowledge may turn out not to be. By embracing fallibilism we have to give up certainty (knowing that we know) without giving up knowledge: we do not know that we are not brains in vats but we do know such everyday matters as whether we are standing up or sitting down.[18]

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[18] This refutation of scepticism is made Robert Nozick (1981) and turns upon accepting that knowledge is not closed under known logical implication.

The final problem arises out of the observation that even when we have dealt with the issue of appropriate internal and external environmental conditions, another factor that is nothing to do with the process itself can still affect our ability to form true beliefs. Consider deductive inference – a process that most would agree is itself 100% reliable. However, if the premises on which a deduction is based are wrong, we will end up with false or only accidentally true beliefs. Knowledge, it seems, cannot be a matter of having only the right kind of processing. In addition, we have to have the right kind of inputs into the processing. In the case of deduction, the inputs are pre-existing beliefs. Other types of processing depend on other inputs – visual or auditory stimuli, sensations of heat, cold or pressure, images stored in memory, communications from other people or from books, databases, websites. If these inputs are inaccurate, incomplete, out of date, irrelevant to our concerns, poorly organised or of a type we cannot process, even the most reliable process will fail to yield true beliefs.[19]

Peacocke (1999a) refers to these requirements as the 'informational conditions' of an epistemic process – that is, just those conditions which must be fulfilled for a (correctly functioning) faculty or mechanism to yield a true belief. They are different for each type of process, with some processes 'embedding' others, that is, taking their outputs as its own inputs. Memory, for example, embeds sense perception (in order to remember you have to have seen or heard or felt something in the first place); its reliability is therefore dependent on the accuracy of the initial perception as well as the individual's powers of recall. These constraints ramify in the complex environment of social knowledge processes such as testimony. When we acquire knowledge through the account of another person, the inputs into the process have been through multiple layers of processing from initial sense perception to being committed to memory to being thought about and inferentially processed and finally converted into a communicable format, whether this takes the form of a simple utterance or of a complex package such as a news report.

The inputs or informational conditions of a knowledge process are closely related to the truth condition discussed in section 3.3.1 above. As discussed there truth is a relational

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[19] I am indebted to Dr Scott Sturgeon's seminars at the University of London for these ideas.

property; a truth claim is a claim made on behalf of a referential entity such as a proposition or sentence to correctly represent a state of affairs. Information is the access we have to states of affairs. Recall Blackburn's example of the cat in the garden: 'Our judgement that a cat is in the garden is made true, if it is true, by the cat's being in the garden. … We look at the cat and look round the garden.' The truth of the belief about the cat is determined by the state of affairs (whether the cat is in the garden) but the way in which the state of affairs is assessed is by *looking* – through the reception of visual information. This is the critical role of information in knowledge – as our access to states of affairs and the basic input without which epistemic processing, however reliable, has nothing on which to operate. To the requirement of reliable process we therefore need to add a prior requirement for knowledge, that of informational inputs.

Information is, as we have seen, intimately truth-linked. Many other norms have also been proposed for information evaluation – these have already been briefly mentioned above, in the discussion of speaker strategies. The world is full of potential information sources, but processing power is limited, so a key criterion is relevance. We do not gratuitously seek to catch sight of cats in gardens; we need a good reason to look. Typically, we want information to be current, and we want it to be comprehensive, at least so far as relevant. Information is also more valued when it is original and surprising, and not merely what can be gained from many other sources or what would have been expected in any case. Finally, some information is far more significant than other information: a forecast of snowfall in July may be surprising and even relevant to a keen gardener, but an asteroid on a collision track with Earth is news of a different order. In terms of a reliabilist approach, which is concerned with systematic access to the means of forming true beliefs, we thus need to add to epistemic abilities, a set of skills concerned with securing high-quality information inputs. These are essentially the skills designated as information literacy – the ability to search, sort, codify, compare and organise information; to convert it into different formats for different types of processing and for storage; to judge relevance, novelty, significance and currency; to anticipate what might become relevant in the future and to decide how much effort to put into tracking information down.

Some consequences of reliabilism

Reliabilism has a number of consequences that distinguish it from some other epistemological positions. As we have seen, it takes attempts to establish certainty (knowing that you know) off the agenda, rejecting both coherence and foundational views of justification. The reliability of belief-forming processes is inductively established and there is thus always a chance that we can be wrong in evaluating a process as reliable. While reliabilism robustly refutes scepticism and maintains that people do indeed have knowledge it does so always under the constraint that we may turn out to be wrong in thinking that something is knowledge. All – or almost all – knowledge claims are in principle defeasible by further information, and nothing should therefore be considered certain, definitive or immune to revision.

Secondly, reliabilism does not automatically privilege any particular methods as reliable routes to true belief. Scientific practices, just as much as anything else, must demonstrate their veritistic superiority, and it may well be that other methods not currently accepted by science are of equal – or greater – merit. There is no reason why science cannot be criticised or improved or, indeed, why radically different ways of investigating the world should not be just as valid as currently accepted scientific method.

Thirdly, reliability is not a property of a process in isolation but of a process operating in an environment and with certain inputs. In an externalist perspective, the processes of knowledge cannot be sharply distinguished from the environment in which they operate and with which they of necessity interact.

Finally, since there are degrees of reliability and since reliability is what distinguishes knowledge from true belief, the thought is motivated that reliabilism allows for degrees of knowledge. The distinction between knowledge and true belief becomes a matter of shades of grey not of black and white. What really matters is distinguishing between greater and lesser reliability, not between knowledge on one hand and everything else on the other. In any case the decision of how much reliability is needed for knowledge is a fairly arbitrary one and perhaps one we should be allowed to remain vague. Williamson

(2000) points out that most of our concepts are inherently vague but this does not hinder us from using them accurately and effectively. It matters less whether we set the boundary of knowledge at 95%, 99% or 99.99% than that we find ways of making less reliable mechanisms better.

Reliability of
mechanism: unreliable   moderately reliable   highly reliable

                              ——————————————————————▶

Epistemic status: TRUE BELIEF   KNOWLEDGE   TOWARDS CERTAINTY
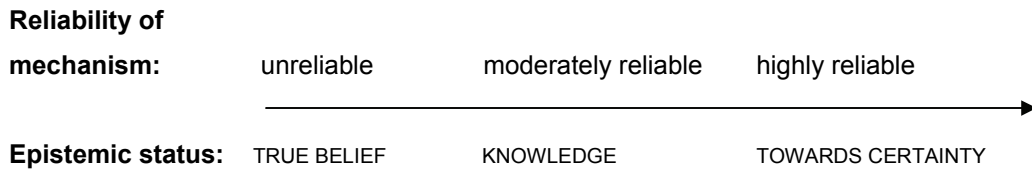
Figure 3.1 Degrees of reliability and degrees of knowledge

3.3.3 The mental content condition

The third condition for knowledge relates to mental content. Reliabilist theories, as we have seen, take knowledge to be or to involve a state of mind whose content correctly represents the world: 'In knowledge, mind is adapted to world' Williamson (2000:1). The theory of mental content or mental representation is traditionally part of philosophy of mind and not of epistemology, but if knowledge or its constituents is conceived as a state of mind an account of knowledge must include at least a basic account of the kind of mental content involved in knowledge.

In philosophy, the property of having content – that is, being directed at or being about something, or meaning something – is referred to as intentionality, and is something that knowledge and belief share with mental states such as hope, fear and desire, and well as with phenomena such as language. Brentano (1874/1973) used intentionality to argue for metaphysical dualism on the basis that it marked an absolute divide between mental and physical phenomena, but contemporary naturalistic philosophy sees mental phenomena as part of the physical world and the issue of intentionality thus becomes a matter of explaining what it is for some aspect of the physical world to refer to or be about some other aspect (Davies 1995). Some philosophers would even argue that there are non-mental natural signs or indicators that possess content, as when clouds mean rain:

'Naturally occurring signs mean something, and they do so without any assistance from us' (Dretske 1986:18).

In epistemology generally, the kind of mental content that receives most attention is so-called propositional content. This is the kind of content typically expressed in English in terms of *that* clauses such as 'I believe that it will rain soon' or 'She knows that two plus two equals four'. Knowledge is often analysed in terms of states of mind associated with propositional content such as belief or acceptance. These so-called 'propositional attitudes' involve two things: a proposition and a particular attitude towards the proposition. In the first case above, the proposition is that it will rain soon and the attitude is one of belief. The next-door neighbour who is planning a party could *fear* that it will rain soon. In this case the two neighbours would have different attitudes (belief and fear) towards the same content (it will rain soon).

Propositions have aroused much debate in philosophy[20] and the issues extend far beyond the scope of this project, but they are in general thought of as something akin to referential meanings, the abstract entities to which beliefs, thoughts, sentences or speech acts refer. They are sometimes defined as entities capable of being the meaning of a declarative sentence in any real or possible language (Russell 1903; Frege 1949) or as actual or possible states of affairs (Lewis 1944). Frege thought of propositions as related to each other in logical structures but in Fodor's 'language of thought' hypothesis propositions have sentential structure and minds are 'sentential engines' (Fodor 1975, 1987). This view has been highly influential but there are reasons for rejecting too close an analogy between thought and language or the related position that thought is language-dependent – see below. Furthermore it is important to recognise that propositional content is a logical concept, to do with the semantic content of thought; it is not (in the sense used here) a psychological or biological concept and says nothing about how semantic content is represented or implemented in thinkers and brains. This is the distinction made in

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[20] Some empiricist philosophers find all appeals to abstract entities suspect. Quine, for example, has called propositions 'creatures of darkness'. Nevertheless, propositions continue to play a central role in many accounts of meaning, mind, language, knowledge and other areas where content or reference are involved.

cognitive science between the *content* of thought and its *vehicle*, or between the logical entities (propositional structures) that are the *object* of thought and the psychological entities (beliefs, mental models) that are its *ground*: 'logical structure is not literally in the head (though it may be uniquely determined by what is), but that does not prevent it being correctly assigned to what is in the head' (McGinn 1989:183).

The particular importance of propositional content for epistemology lies in the fact that propositions are taken to be the primary bearers of truth, falsity and modal states such as possibility and necessity, with sentences, beliefs, knowledge claims and assertions inheriting truth or falsity from the propositions they express. In the case of knowledge the proposition that forms the content of the thought has to be true – you cannot know it is raining if it is not. Some other propositional attitudes also involve necessarily true content. You can, for example, regret something you said yesterday or remember a promise you made only if you did in fact say the words or make the promise (otherwise you regret only what you *think* you said, or you *mis*remember). But regret and remembering are complex rather than simple states and they involve a knowledge component (in Peacocke's formulation they embed prior epistemic processes). It is this that leads Williamson (2000) to claim that knowledge is prior to or more fundamental than other factive mental states. Other philosophers such as McGinn (1984) and McDowell (1982) endorse related views.

Propositions are complex entities, composed of constituents that take the form of concepts. To have a thought with the propositional content that it is raining in Durban you first have to possess the concepts of raining and Durban. Concepts thus determine the thoughts it is possible for someone to have. If you have never seen rain or heard of the idea of rainy weather you cannot think the thought that it is raining in Durban, or anywhere else (see for example Dretske's argument for the informational basis of concepts in *Knowledge and the Flow of Information*). Nor can you have any propositional attitudes involving rain: you cannot know, belief, hope or fear that it is, was or will be raining. In this sense concepts are fundamental constituents of knowledge, determining

the mental content it is possible for propositional attitude mental states to have.[21]
Likewise, conceptual acquisition and change are key processes for the development and
expansion of knowledge: acquiring the concept of raining enables someone to know or
believe, hope, fear a lot of things she would not otherwise be able to.

Concepts can take many forms, and the term is used in slightly different senses by
philosophers, psychologists and cognitive scientists. The most general characterisation is
that concepts are the objects or constituents of thought, which are also shareable, being
common to different people and to the same person at different times. As such, concepts
are not the same as particular transient thoughts, but include ideas at some level of
generalisation, whether abstractions (truth, justice), individual entities (Durban, my
mother, this piece of paper), generic or specific object types (city, cheese, balls, dogs, oak
trees, quarks), properties (redness, roundness) or relationships (being bigger than, being
married to). Different philosophers give different accounts of the reference of concepts:
for example, in terms of extension (Quine 1960), possible worlds (Montague 1974) or
causal properties (Millikan 1984; Dretske 1988).

Concepts are frequently represented in natural or formal languages but visual, auditory,
physical and other modes of representation also exist. Different people may use different
types of internal or external representations, or combinations of representations, to
express the same concept: for one person, the concept of barking may be represented by
an image of a dog while another may inwardly hear a woof. Most philosophers maintain
that these representations carry the same informational content but some have suggested
that different representational vehicles carry different kinds of content. Haugeland
(1991), for example, maintains that a picture of an object carries a different type of
content from a verbal description of the same object. If this is true, reliance on particular
modes of representation may limit the knowledge a person is able to acquire in a domain.

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[21] Some philosophers of mind such as Crane (2001) and Dretske (1995) maintain that there are also mental
states (typically perceptual states) with non-conceptual content. You can, for example, see and hear rain,
get wet and even take steps to avoid getting wet, without having the concept of rain. These they take to be
representational and intentional states but not propositional ones.

A number of different theories exist about the nature and structure of concepts. According to the classical view concepts can be analysed in terms of necessary and sufficient conditions. However, these 'conditions' are themselves concepts and have to be acquired somehow. The classical view has never given an adequate account of basic unanalysable concepts. Positivist and verificationist views propose that concepts are individuated by the empirical means of ascertaining whether or not they apply – the concept of a dog just is the steps someone would to take in order to decide if something were a dog or not. This view has been much criticised, since very few concepts have been successfully defined in purely empirical terms and in many cases it is hard to see how this could be achieved even in principle. Quine rejects concept as units of meaning and insists instead that only a whole system of belief can be empirically tested, undermining the view that concepts are shareable. At the opposite extreme, Fodor (1975; 1979; 1991) upholds an atomistic view of concepts and argues that they are innate rather than empirically acquired. Other theories see concepts as based on complex sets of properties that add up to prototype examples with which individual objects are compared.

A different approach, and one more in keeping with the perspective of this project, comes out of externalist and causal theories of linguistic meaning and natural kinds developed in the 1970s and 80s by philosophers such as Kripke, Putnam and Burge. These theories overturned some standard internalist assumptions about meaning, and have ongoing influence in metaphysics and theories of reference. In these views, the content of thought is a matter of aspects of the (social or material) world to which they refer and with which thinkers causally interact. In the now famous catchphrase of content externalism: 'meanings ain't all in the head' (Putnam 1975/1985).

Putnam develops the well-known 'Twin Earth' scenario to show that thoughts are individuated by their contents (meaning, reference) and not – or not only – by intrinsic properties of the thinker: suppose there were another world (Twin Earth) exactly like ours except for the fact that water were not H_2O but some other chemical combination, say XYZ. Then, when a person's double on Twin Earth thought about water, she would not be thinking about the same thing as the person herself would be here on Earth, and

therefore their thoughts would be different thoughts, regardless of the fact that they were physical (and psychological) doubles.

Putnam's externalism is not just physical – the content of our thoughts about the world is the world – but also social. His so-called sociolinguistic hypothesis points out that a division of linguistic and epistemic labour exists in society. According to this hypothesis, ordinary members of society acquire and use words such as 'water' and 'gold' without having any special knowledge of the entities they designate (perhaps being unable to distinguish water and gold from apparently similar substances) but in a way that depends on other specialist speakers in society. Concepts or meanings are thus not the personal possessions of individuals but possessions of the 'linguistic community considered as a collective body'. They are also primarily epistemic and only secondarily linguistic, since the division of linguistic labour 'rests upon and presupposes' a prior division of knowledge and expertise:

> '…the way of recognizing possessed by … "expert" speakers is also through them possessed by the collective linguistic body, even though it is not possessed by each individual member of the body, and in this way the most recherché fact about water may become part of the social meaning of the word while being unknown to almost all speakers who acquire the word.' (Putnam 1975/1985)

Putnam's conclusion is that concepts and meanings – the constituents of thought – are to a large extent material and social entities, not merely matters of individual psychology. This is important for the epistemology of this project, since it permits us to retain the idea that knowledge is or involves a state of mind without this move becoming a subjectivising and psychologising one. Putnam's work, and that of others in the same tradition, such as Kripke and Burge, marks a significant break with previous internalist accounts of mental content and has been widely influential. Peacocke, for example, (1999b) makes use of Kripkean insights in developing a naturalistic but nonreductive account of the normative dimension of conceptual (and non-conceptual) content.

Putnam's externalism is a form of content externalism – locating the meaning or content of thought beyond the consciousness of the thinker. More radical versions have also been proposed that extend externalism to the vehicle of thought (that is, to cognitive architectures, processes and states), notably by Clark and Chalmers (1998) and by Rowlands (2003), who draws parallels with views found in Sartre and Wittgenstein. Furthermore a sharp distinction between content and vehicle may not be possible. Clapin (2002c) uses the notion of tacit knowledge to argue that mental architecture embodies some semantic content.[22] Similarly, for Dennett (1983), tacit knowledge is essentially embodied knowledge, analogous to the 'know how' hardwired in a computer by means of which it is able to manipulate explicit symbols. Similarly Damasio (1999) in his multilayered theory of consciousness stresses the emergence of explicit knowledge from tacit and bodily states that exist prior to language and symbolic representation.

These points are highly abstract but they have important practical implications. Clapin, for example, suggests that conceptual change may in some cases occur through 'changes to the representational scheme rather than simply by the addition of new theorems to the existing scheme.' He argues that architecture may change and mature as part of development and that it is possible that 'some of the thinking that children do while growing up makes a difference to the cognitive architecture they have as adults'. In this view, it becomes possible that explicit thinking about something may lead to the development of tacit knowledge, as is perhaps the case when someone reaches an expert level of skill in some field after long periods of practice and study.

For the purposes of this project these theories are interesting for two main reasons. Firstly, they support the generally externalist and naturalistic perspective of the work, which seeks to locate knowledge as a relationship between mind and world. Secondly, they help to give a unified account of knowledge, which includes a graduated range of

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[22] It is important here to distinguish semantic from linguistic content. Clapin's thesis occurs in the context of a critique of the Fodorian 'language of thought' hypothesis which restricts semantic content to the realm of explicit language-like symbol processing, seeing mental architecture as merely the 'non-cognitive implementation of cognition'. The point is precisely that meaningful content need not exist in the form of a symbolic system.

mental states, from those which are nonverbal, tacit and architectural to those which involve explicit representation in language or another formal system such as mathematics. A fundamental requirement for knowledge is mental content but as we have seen mental content can involve many forms of representation. Skills, maps, models, bodily awareness are all candidates for knowledge. Since knowledge involves truth, there must be logical objects in each case that are truth-functional (there must be a difference, for example, between knowing how to swim and not knowing how to swim, between having an accurate and an inaccurate mental map of how to get somewhere, and between having a correct and an incorrect sense of your orientation in space). Provided this condition is met there is no need for knowledge to be represented in any particular way. Specifically, knowledge does not have to conform to sentential structures, 'that' clauses or any other language-like category.[23]

Thought and language

Some very strong claims have in the past been made for the fundamentally linguistic nature or language dependence of thought and its conceptual constituents (see for example McDowell 1994). Increasingly, however, such views have come under attack from a variety of directions – the linguistic movement in philosophy and the Sapir-Whorf hypothesis (language as the medium of thought) have both been widely abandoned, and classical cognitive science much criticised – see Clark (1993), McGinn (1989), Smith (1997), Clapin (2002b). Even Fodor, who maintains that propositions are *structured like* sentences, resists full commitment to the language dependence of thought (McGinn 1989). The fact that there are good reasons for rejecting strongly linguistic views of thought is not to deny the extreme cognitive importance of language, however, but only to stress that it is as a tool of thought that language needs to be understood and not as its fundamental constituent or medium.

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[23] For reliabilist theories the mental representation involved in the knowledge associated with a skill or action – whether held as a mental map, model or action schema – must of course also be acquired through reliable or non-accidental processes. In the case of such physiologically based knowledge, however, it is hard to see how this could fail to be the case since acquiring a complex skill is never a matter of accident in the way that having a more sententially represented true belief might be. It is possible, as Gettier showed, to come to have a true belief about your car through an unreliable mechanism, much harder to see how you could learn (correctly) to drive by following a method that was just as likely to have failed.

Support for this view comes from philosophy of mind and cognitive science. Crane argues:

> 'To have a concept … depends on the kinds of recognitional, inferential, and other capacities one can exercise in one's thinking. Not all these capacities depend on one's mastery of a language. The suggestion is that one could have, for example, a capacity for recognizing a certain kind of animal X, and this capacity is something one also employs in reasoning about animals of this kind. One need not have a word for the kind of animal in question, but one has enough of an idea of what the thing is to qualify as having a concept of X.' (Crane 2001:153-154)

This view allows that non-linguistic animals and people in non-linguistic states such as young children and all of us when performing tacit tasks can reason and have genuine knowledge quite apart from the ability to represent or express the content in words. Similarly, Clapin (2002a) points to the richness of pictorial representation and explanatory power of models by comparison with sentential expression. In work based on Craik (1943) and Johnson-Laird (1983), and with close parallels in Wittgenstein (1922) and Ramsey (1931) ('belief is a map by which we steer'), McGinn (1989) conceives of thought in terms of mental models rather than linguistic analogues:

> '…we construct mental representations of the world by constructing mental models of it – this is the explanatory mechanism of mental representation. Manipulating mental models thus constitutes the working machinery of cognitive problem solving. A thinking system, we might say, is a simulation engine – a device that mimics, copies, replicates, duplicates, imitates, parallels reality. The basis of the intentional relation consists in the relation of literal modelling. And the procedures that operate on these models themselves model external processes: mental causal processes replicate worldly causal processes, mental laws imitate physical laws … Not only, then do mental models have the structure of what they represent; they also work in the same way …' (McGinn 1989:176)

Furthermore, language is a cognitive ability that itself requires explanation (Dennett 1977), and the widely held Chomskian theory of an innate language-acquisition device requires that this type of cognition, at the very least, must be prelinguistic. In addition, theories such as connectionism and dynamical systems propose new views of mental processing that are not readily interpretable in linguistic terms (Clapin 2002a).

Introspective support for the non-language-dependence of thought can be found in Penrose (1989) who cites Hadamard (1945) on creative thinking. Hadamard quotes Schopenhauer – 'thoughts die the moment they are embodied by words' – and a letter in which Einstein writes: 'The words or the language, as they are written or spoken, do not seem to play any role in my mechanism of thought. The psychical entities which seem to serve as elements of thought are certain signs and more or less clear images . . . of visual and some muscular type. Conventional words or other signs have to be sought for laboriously only in a second stage . . .' Penrose himself reports doing almost all his mathematical thinking visually and using 'non-verbal concepts', giving him a similar difficulty of translation because 'there simply are not the words available to express the concepts that are required' (Penrose 1989:549)

Evidence also comes from cultural linguistics which has shown for example that even though languages differ greatly in how many basic colour terms they possess (between two and eleven) speakers of all languages identify the same eleven focal colour categories regardless of whether or not they have linguistic terms for them: 'The way we see colours determines how we learn them, not vice versa' (Pinker 1994). Anthropologists such as Berlin (1992) and Atran (1990) have pointed to widespread cross-cultural forms of categorisation as indicative of biological or psychological universals. Rosch, Mervis et al. (1976) argue that correlational clusters in the natural world (feathers go with wings, beaks, flying, claws, laying eggs, for example) underlie basic-level concepts (bird).

Pinker cites as further evidence against linguistic determinism examples of languageless adults such as the congenitally deaf Mexican farm labourer Idlefonso, who was intelligent

and numerate even though he had never acquired a language, and who was able to give full accounts of his experiences after learning sign language (Schaller 1991). Similarly, studies of neurological impairment show that people with even severe damage to linguistic centres in the brain may retain essentially intact thought processes. Damasio infers from empirical evidence that all linguistic expressions of knowledge are 'translations' from prior, nonlinguistic representations of knowledge and a knowing self:

> 'Language – that is, words and sentences – is a translation of something else, a conversion from nonlinguistic images which stand for entities, events, relationships, inferences. If language operates for the self and for consciousness in the same way that it operates for everything else, that is, by symbolizing in words and sentences what exists first in a nonverbal form, then there must be a nonverbal self and a nonverbal knowing for which the words "I" and "me" or the phrase "I know" are the appropriate translations, in any language. I believe it is legitimate to take the phrase "I know" and deduce from it the presence of a nonverbal image of knowing centred on a self that precedes and motivates that verbal phrase.' (Damasio 1999:107-108)

The fact that thought can and does happen without language does nothing to undermine the importance of language. Even on the 'translation' view, language is fundamental in creating external representations and therefore in the social transmission of knowledge. Furthermore, language gives tools for manipulating internal representations and for structuring and organising concepts. At a logical level, however, it is important to recognise that language does not exhaust thought and that tacit knowledge can exist that outstrips our expressive ability.

Conceptual change
The picture of concepts that has emerged in this section is a complex one. On the one hand, the concepts that an individual grasps determine the kind of thoughts and knowledge that it is possible for her to have. One the other, concepts are not private but social and material entities that arise out of causal interactions with the environment and

tap into the general knowledge and expertise of the community. Conceptual change thus needs to be looked at from the perspective of the individual knower and from that of society as a whole. Current views about how individuals develop and change their conceptual structures stresses two sets of factors: ecological (regularities in the world, the immediate environment and the interaction of an individual with the environment) and intellectual (the organisation of cognitive constructs) (McCauley 1987, Neisser 1987). Although debate continues about the relative importance of external and internal factors, it is widely accepted that concepts exist as linkages of explanatory or broadly theoretical knowledge structures (Murphy and Medin 1985, Keil 1989, Murphy 1993).

It is clear that important consequences follow for interventions aimed at increasing knowledge. If concepts and categories, the building blocks of thought (Van Mechelen et al. 1993), are a type of theory, then acquiring new knowledge may mean acquiring new theories, new ways of thinking about and understanding the world. To cope with this people need not just information but understanding of basic principles (Chi, Feltovich and Glaser 1981, Murphy and Wright 1984, Keil 1989). Further, if ecological views are right and concepts derive from interactions with a particular environment, they may not be readily transferable to other environments, or not without significant adaptation. The understanding necessary for knowledge may need to be to some extent home-grown, not imported.

We also need to remember that theories can of course always be wrong and are in principle always revisable. In practice, however, conceptual structures can be highly resistant to change and there may be social as well as epistemological matters at stake, especially where concepts represent broad modes of understanding that are widely shared and an important part of social identity.

The social dimension of concept change has been studied largely in terms of scientific theory change. The first theories in this area developed in the early 20th century out of the work of logical positivist philosophers of science such as Carnap, Reichenbach and Hempel, who saw scientific progress as the development of logical structures in a process

that was essentially continuous and cumulative. In reaction to this view, historicist theorists such as Hanson, Feyerabend and Kuhn from about the 1960s began to propose an alternative view of science as involving periodic major upheavals in the form of 'revolutions' in which existing conceptual schemes were overthrown and replaced by others that were inconsistent or even incommensurable with the old ways of thought.

More recently, the development of cognitive science has led to analyses of scientific change combining insights from philosophy, history of science and psychology. This cognitive-historical approach does not offer an overarching theory of conceptual change but does suggest some new – and more naturalistic – directions, breaking with both the positivists and historicists in focusing on actual scientific practice rather than on the logical or semantic structures of theories ('endpoint analysis'). Cognitive-historical analyses seem to suggest that theory change in science is typically continuous but not cumulative – that is to say, new ideas arise out of old ones but do not build upon them in a logical fashion so much as reinterpret, revise or recast them in a new light. Nersessian (1984) argues, for instance, that science is marked by conceptual evolution in which lines of descent can be discerned between concepts that are not mutually consistent – undermining the tacit acceptance by both positivist and historicist views of the classical notion of concepts as sets of necessary and sufficient conditions. By contrast, prototype, schema and frame theories of concepts can generate accounts more consistent with actual practice, showing how partial change may lead to radical overturning of established views in a continuous but noncumulative fashion. Nersessian is concerned with physical theories but the same point is equally applicable to social science concepts such as poverty and development.

The cognitive approach to theory change has also opened the door to discovery and innovation as legitimate subjects of study (long neglected owing to the positivist denial that there could be a logic of discovery). Analyses in different sciences have now produced evidence of similar problem-solving processes involving the use of techniques such as analogy, thought-simulation, imagistic reasoning and other modelling approaches.

Conceptual diversity

It is also a matter of debate how much conceptual change at the social level does – or should – work towards unity. Concepts have a normative dimension (they refer or fail to refer) and theories can be right or wrong, or more or less right or wrong. So diversity for its own sake is clearly not desirable and some concepts deserve to die or transmute radically (phlogiston, witches). Others, however, even if not mainstream, may still be valuable resources in terms of providing alternative views of the world – or so it has been argued. Agrawal (1995) defends the preservation of indigenous knowledge – in living form, not in databases – on just such grounds. The issue is not clearcut however, and was the ground of a major disagreement between Feyerabend and Kuhn (described in Churchland 1999b; Churchland 1999a). The Feyerabendian position upholds theoretical diversity in science: 'It is not true that all empirical facts are equally accessible, nor that their significance is equally evident, independently of the conceptual framework one brings to the experimental situation. This is all one needs to justify the proliferation of theories' (cited in Churchland 1999a:275). Kuhn, by contrast, maintains that collective understanding will advance only if there is a widely shared framework of understanding and evaluation within which results can be brought forward for examination and discussion. This shared framework needs to be protected from 'unorthodox enthusiasms' so that we do not waste time and resources. Both positions are conceptually normative but in Kuhn's case norms take the form of a shared framework while for Feyerabend they are agreed standards for evaluating the strength of competing theories.

In this section we have moved far from the standard territory of epistemology, to look not just at the propositional content of thought but at the conceptual building blocks out of which thought is formed. Some theories in this domain bear clear family resemblances with the kind of epistemology described here, coming out of the same general movement towards naturalism and externalism in contemporary analytic philosophy, and stressing causal and explanatory linkages between mind and world. Nevertheless, conceptual content is not the same as knowledge. Concepts have many origins – biological, psychological, social, material – and conceptual development involves thought processes such as analogy and imagistic reasoning that are as likely to yield false as true results

(Nersessian points out that scientists use the same methods to develop unsuccessful theories as successful ones). Knowledge, however, has to involve truth. From a logical point of view, we can fix conceptual categories any way we want, but once the categories are fixed the truth or falsity of propositions involving them is determined by the world. As Searle puts it:

> 'What counts as a correct application of the term "cat" or "kilogram" or "canyon" … is up to us to decide and is to that extent arbitrary. *But once we have fixed the meaning of such terms in our vocabulary by arbitrary definitions, it is no longer a matter of any kind of relativism or arbitrariness whether representation-independent features of the world satisfy those definitions, because the features of the world that satisfy or fail to satisfy the definitions exist independently of those or any other definitions* … we do not make "worlds"; we make *descriptions* that the actual world may fit or fail to fit. But all this implies that there is a reality that exists independently of our system of concepts. Without such a reality there is nothing to apply the concept to.' (Searle 1995:166, italics in the original)

Searle's view is an internalist one; externalists would go further in that some ways of fixing meanings refer and others do not. In either case the important point is that while the concepts we have determine the kind of descriptions of the world that we can generate, it is the world itself that determines which of those descriptions are true. It is not enough to develop conceptual understandings; we have continually to test them against the world to which they refer.

3.3.4 Summary: knowledge on three dimensions

In this section we have outlined a view of knowledge as a state of mind characterised by true beliefs obtained through reliable methods of 'tracking' the domain in question. These methods may be physical, biological, psychological and also, crucially, social; usually they are a combination, with some methods embedding others. Reliability, we have seen, is in general an empirical, probabilistic and graduated matter, not an a priori or absolute one; what we are concerned with in naturalistic epistemology is the improvement of

reliability in real situations where limited options exist for forming epistemic judgements. This suggests a critical programme of ongoing evaluation and perhaps reform of epistemic practice aimed at monitoring and improving reliability, including in the social and technical forums where testimony and argumentation take place.

However, we have also seen that the concept of reliable process needs to be qualified in two important ways. Firstly, no processes are always and everywhere reliable; rather reliability emerges as a property of a process *in an environment* and *operating on particular information inputs*. Secondly, pre-existing conceptual structures, while they do not determine reliability, do determine the range of beliefs it is possible to acquire, regardless of the processes available to a would-be knower. As with knowledge processes and their environments and inputs, conceptual structures have an important social and environmental dimension and should not be thought of in narrowly psychological terms.

Taken together these insights yield a model that can be used for the empirical investigation of knowledge in terms of the three dimensions of informational inputs, epistemic processes and conceptual structures. On each dimension different normative criteria apply. In terms of information we are concerned primarily with determinations of accuracy and relevance, and associated features such as comprehensiveness, currency, source identity, originality and timeliness. In judging epistemic processes it is reliability itself that is the norm – the functioning of a process in an environment. In terms of the conceptual dimension we may look to features such as the strength and connectedness of the epistemic community, forums of collective problem-solving and support for creative and imagistic thinking as processes underlying the development of either Kuhnian shared frameworks of understanding or Feyerabendian proliferation of strong competing theories.

3.4 KNOWLEDGE AND DEVELOPMENT

Having outlined a theory of knowledge, we turn now to a consideration of the relationship between knowledge and development. As with knowledge, development is a complex concept, even in its simplest formulation of 'good change' (Chambers 1997) containing both descriptive and normative, or 'immanent' and 'intentional' (Cowen and Shenton 1996), dimensions. Thomas (2000) perceives separate but related domains of reference orientated to description, prescription and action in the form of, respectively, historical processes, desirable states and active intervention. Process is probably a more accurate specification than change since intuitive notions of development contain a sense of irreversibility. This is particularly clear in immanent development but is also apparent in interventionist conceptions. We would not, for example, consider feeding a hungry person to be 'development' since she will soon be hungry again. Achieving a state where (severe) hunger ceases to be a regular experience seems to have a much stronger claim. There are interesting parallels here with reliabilist epistemology, in that it is it is ongoing and reliable processes – whether immanent/historical or intentional/interventionist – of getting closer to desirable states that we are concerned with. This formulation shows how closely linked are Thomas's three domains, and in reality most theories of development explicitly or implicitly contain elements of all three.

Mainstream development theory is dominated by economic models and particularly by visions of progress resting on productivity gains and capital generation brought about by industrialisation. During the 1980s and 1990s two poles emerged within this tradition centred on the respective roles of markets and states, neoliberals advocating market freedom and removal of barriers to competition, and structuralists state regulation and protection of local industries. By the last decade of the 20th century, however, both perspectives were being called into question, as the limitations of both markets and state planning became increasingly apparent. In this landscape Thomas (2000) discerns the emergence of a new hybrid mainstream perspective, 'interventionism', broadly capitalist in orientation but acknowledging a regulating role for multiple agencies including but not confined to states.

While industrialisation and economic growth remain cornerstones of mainstream development theory, a range of alternative views have been articulated and in recent years have started to assume the shape of a loosely connected but clearly identifiable alternative school of thought. Sometimes called 'people-centred', these views are grounded upon moral considerations, taking as their starting point the prescriptive dimension, that is, the nature of value and of desirable states of being. Some views are highly relativist, calling into question the existence of universal values and seeing development as a 'discourse' or 'cultural artefact' imposed by the West on others. Such views have been criticised by theorists such as Crush (1995) and Palmer (1990), who warns against a 'descent into discourse' and 'reducing life to language and obliterating the relations of power, exploitation and inequality that order society'.

At the other end of the spectrum from cultural studies approaches, however, people-centred development encompasses a perspective that stands out as having marked similarities with the type of epistemology defended here, coming out of a similar philosophical tradition and sharing many of the same critical and ethical commitments. It is therefore on just this one approach to development that this project will concentrate, while acknowledging from the outset that it is only one of multiple possibilities. It is, however, a *general* theory which, like the theory of knowledge used here, takes conceptual analysis as its starting point. This is therefore a broader and more encompassing view of development than those which focus on specific domains, and in terms of which these can be accommodated. It is also an influential and dynamic theory offering a rich set of ideas which, while they emerge out of long-standing traditions of thought both Western and non-Western,[24] continue to undergo vigorous evolution.

The approach to development is generally referred to as the 'capabilities' approach although the concept is close to that of human excellence or 'flourishing' found in Aristotelian ethics and expressed in a variety of formulations in subsequent political and ethical thought from Kant to Marx to Rawls. Alkire (2002) finds parallels in a number of contemporary theories ranging from Manfred Max-Neef's (1993) human needs categories

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[24] Sen (1999), for example, finds parallels with classical Indian philosophy of the 8th century BC.

to John Finnis's (1980) natural law theory and Deepa Narayan's dimensions of wellbeing (Narayan, Chambers et al. 2000; Narayan, Patel et al. 2000). Perhaps the best-known versions are those pioneered in economics by Amartya Sen and in justice by Martha Nussbaum, and adopted by the UNDP in its *Human Development Reports*. It is on these versions that the following sections concentrate, firstly outlining the general theory and then showing how it can accommodate knowledge and technology, leading to an overarching theory linking the three concepts.

3.4.1 Development as human capability

Capability theory proceeds from a basic dissatisfaction with standard economic theory and its emphasis on wealth or subjective satisfactions ('utility'), in place of which it seeks a deeper and richer concept of the goal of human action. From this perspective utility and access to resources still matter but they matter instrumentally rather than constitutively. That is, they matter as means to achieving a fully human life, but having them does not in itself constitute the achievement of such a life. Formulations differ as to precisely what such a life is: where Aristotle speaks of human excellences or virtues, Kant of a kingdom of ends, Rawls of basic goods and Finnis of self-evident goods, Sen and Nussbaum prefer the language of capability, described by Sen as:

> '… the various combinations of functionings (beings and doings) that a person can achieve … a set of vectors of functionings, reflecting the person's freedom to lead one type of life or another ... to choose from possible livings …'
> (Sen 1992:40)

For Sen capability is best understood in terms of what he calls 'substantive freedoms' – the fundamental requirements, both positive (freedoms *to*) and negative (freedoms *from*), for a fully realised human life. Substantive freedoms are for Sen universal goods that make possible the enrichment and fulfilment of human life, and the expansion of such freedoms constitutes the primary goal of development. Sen has always resisted pressure to operationalise capability but he does accept that freedoms must be specified if this approach is to have practical application (see for example Sen 1993; 1997; 1999).

Development as Freedom (Sen 1999:36) provides the following partial list:

> '… elementary capabilities like being able to avoid such deprivations as
> starvation, undernourishment, escapable morbidity and premature mortality, as
> well as the freedoms that are associated with being literate and numerate, enjoying
> political participation and uncensored speech …'

A somewhat different but compatible (Sen 1993) account is Nussbaum's neo-Aristotelian
version developed in a variety of works (for example Nussbaum 1992; 1993; 1995b;
1995a; 2000). She distinguishes three types of capabilities: basic capabilities which are
innate human abilities such as being able to see, to speak and to love; internal capabilities
which are developed states such as the ability to form mature relationships or to hold and
express a point of view; and combined capabilities which are internal capabilities
combined with an environment in which they can be expressed. Nussbaum (2000)
identifies ten categories of combined capabilities ('central human functional capabilities')
which closely echo many of Sen's freedoms: life; health; bodily integrity; sensation,
imagination and thought; emotion; practical reason; affiliation; other species; play; and
control over one's social and material environment.[25]

Understood in these terms, capability is what Nussbaum (2000) refers to as a
'freestanding moral idea' which asserts an irreducible ethical claim on social and political
arrangements. For capability theorists a just society is one in which the opportunity to
develop and express capabilities is provided to all. To some extent this may be a matter of
resource allocation but it is much more about empowerment, the ensuring of
opportunities and freedoms, and securing an environment in which human potential can
be realised. Since capability refers to the actual conditions of people's lives, the actual
choices they are able to make and the functionings they are in reality able to achieve,

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[25] It is important to note that by no means all human capacities are capabilities. Sen (1999) speaks of the
need to evaluate and to rank different freedoms. Nussbaum (2000) points out that people have the capacity
for deception and aggression, and for exploiting one another but these do not constitute capabilities since
they are not constitutive of a fulfilled human life.

opportunities and freedoms need to be evaluated in terms of real and existing aspects of life as it is lived and not in theoretical terms. The measure of capability is what people as individuals and as groups (Nussbaum refers to 'associational capabilities') can in reality achieve and not a set of aspirations, a bill of rights, a mission statement or a legal framework.

Capability expansion is in one sense a natural, even a biological process. Babies are – apart from sad exceptions – born with the potential to learn to speak, to walk, and to become in due course fully fledged human adults. As we confront the world we constantly develop capabilities to help us deal with it – the ability to read other people's expressions, to respond to danger, to earn a living. Capability expansion happens naturally through both maturation and learning, but this is not to say it is an exclusively internal process. The role of the environment – of the actual social and material conditions in which people live their lives – is as central in capability theory as in externalist epistemology. In Nussbaum's theory:

> ' … developing an internal capacity usually requires favourable external conditions … A child raised in an environment without freedom of speech or religion does not develop the same political or religious capabilities as a child who is raised in a nation that protects these liberties. …I insist on the twofold importance of material and social circumstances, both in training internal capacities and in letting them express themselves once trained…' (Nussbaum 2000:85-86)

Someone may, for example, have all the competencies required to formulate and articulate an opinion, for example, and yet in a repressive enough environment may fail to do so. Sen (1999) similarly stresses that substantive freedoms incorporate both process and opportunity dimensions and that freedom is not only the end but also the means of development. He identifies five sets of instrumental freedoms covering political life, economic activity, services such as health and education, transparency in social interactions, and the security of a minimum standard of living. As the expansion of

capability, development thus needs to accommodate both a dual approach involving on the one hand direct nurturing of capability, and on the other indirect support in the form of the creation of a generally empowering environment (Figure 3.2).
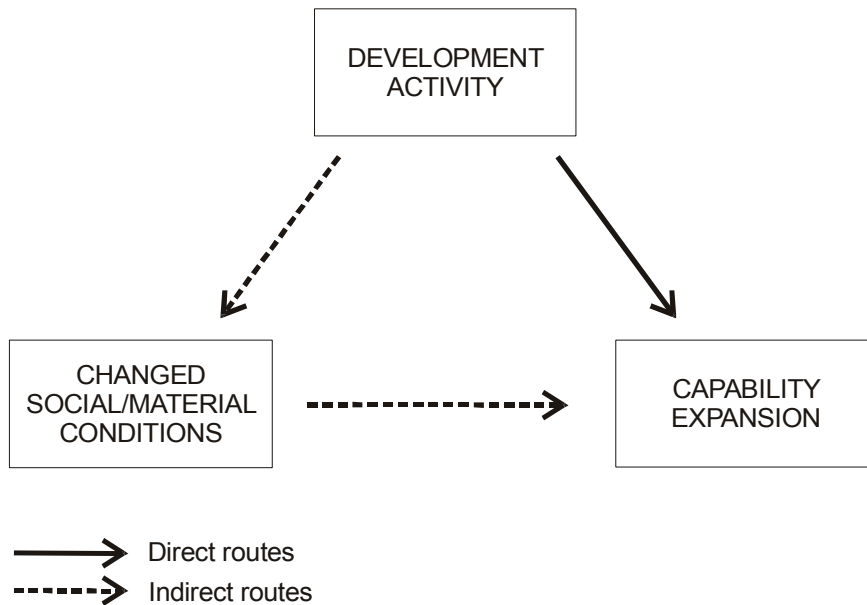
Figure 3.2 Direct and indirect routes to development

The dual approach enables capability theory to incorporate both a universal and a relative dimension within development. On the one hand capability is an absolute rather than a relative concept, being based on a universalist conception of human wellbeing (Cowen and Shenton 1996) whether interpreted in terms of Nussbaum's list of core capabilities or Sen's criterion of the ability the determine and pursue a life that one values. On the other hand, capability theory is pluralist in terms of how these underlying values are to be realised. Sen's criterion involves value pluralism, recognising that different people and groups will value different things, although he has also suggested that pluralism may be a facet of the level of description and that at a sufficiently general level a consensus will emerge.[26] In a similar way Nussbaum upholds universal values – life, health, sociability –

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[26] This is somewhat ambiguous, however, since Sen does also refer to the need to rank freedoms from central to trivial. It is not clear how universal such ranking is intended to be.

but recognises that they can be multiply realised.[27] Forced marriage is always a violation, but many different forms of courtship and marriage may be compatible with personal freedom; illiteracy may always be a handicap but that is not to say every child must sit in a classroom five days a week. There are striking parallels here with Goldman's epistemology which upholds a normative notion of knowledge while supporting methodological pluralism.

3.4.2 A capability perspective on knowledge

Knowledge has always occupied an important place in capability theories. For Aristotle the purpose of life is *eudaimonia* or 'human flourishing'(Cooper 1975), which is understood to be a process constituted by rational activity expressive of specifically human virtues, among which are included knowledge and intellectual capacities such as honesty and good judgement. Nussbaum's list of capabilities includes alongside life, health and bodily integrity, faculties of sensation, reason and imagination. Finnis (1980) places knowledge and the pursuit of truth second only to life in his list of self-evident goods. Even though Sen in general avoids list-making he does, as we have seen, give a central place to cognitive abilities such as literacy and numeracy, and in his work with Anand (1997) on indices of poverty and deprivation he identifies three core dimensions one of which is deprivation of education and knowledge. In addition to being a core dimension in its own right, knowledge is also instrumental to overcoming the other two dimensions of survival deprivation and economic deprivation. Furthermore, Sen's view is founded on the ability of people to make determinations of value and of how to achieve valued goals. He argues the need for collective epistemic processes and for a wide informational basis for decision-making, criticising the narrow scope of traditional economics, and seeking to bring into the picture not only information about values and how they might be realised but also about rights and obligations, situational factors and unintended consequences (Alkire 2002). Sen also accords a central role to conceptual and imaginative faculties, one of the most damaging forms of deprivation being the inability to conceive of broader horizons. A related set of ideas is Philip Pettit's notion of freedom

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[27] Andrew Sayer (2004) cites Nussbaum in developing a similar 'qualified ethical naturalism' within critical realism

as 'discursive control' (Pettit 2001) – an idea elaborated in terms of the two capacities of ratiocination (the ability to reason and to express one's reasoning in discourse) and participation in relationships (inclusion in discourse-friendly interactions).

The connections between such ideas and the theory of knowledge presented earlier in this chapter are not difficult to see. Like capability theory, reliabilism has Aristotelian roots, and can be seen as a version of 'virtue epistemology', emphasising the abilities and attributes (virtues) needed for a person, group or society to be able systematically to obtain true beliefs on matters it considers important. The parallels with a view of development as capability rather than as utility or access to resources are obvious. Resources are of course important but it is the *systematic ability to acquire and use resources* that both reliabilism and capability theories take to be critical, and not the achievement of some particular pattern of distribution[28]. As reliabilism is concerned with generic mechanisms for building up true beliefs in many different contexts so capability theory is concerned with generic freedoms and powers of choice and action across multiple domains.

Furthermore, both theories are developmental in that they are concerned not just with description and analysis but with improvement. Both seek to show how human faculties – whether knowledge-related or more general – may be strengthened, and both recognise the need to address the material and social context. In terms of knowledge, for example, factors such as physical resources, values, norms and institutions all influence people's ability to develop and use their informational, epistemic and conceptual capacities.

There are therefore strong substantive and structural congruencies between the epistemology espoused in this chapter and a capability approach to development, and the two theories significantly enrich each other. Capability theory places knowledge in the

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[28] This is not to say that equality is not important in these theories but capability equality cannot be simplistically equated with equal distribution of resources. A point frequently made by Sen is that different people are able to benefit differentially from the same resources. Very often the factors that prevent someone from acquiring resources in the first place – such as an illness or disability – also prevent her from enjoying them when they are acquired, making simple redistribution an inadequate strategy for addressing capability inequality. This is clearly the case with knowledge resources such as information.

larger context of human functioning, giving a new way of looking at knowledge processes in terms of freedoms and opportunities, and bringing out the ethical and progressive dimensions of the theory. For its part analytic epistemology helps capability theory by specifying knowledge more precisely and enabling the development of more concretely formulated and domain-specific applications of the general approach.

3.5 THE PLACE OF TECHNOLOGY

I see technology as a means to shape the landscape. (Hughes 2004:3)

Having looked in some detail at a view of knowledge as a kind of generic ability to align mind with world, and at a conception of development in which such an ability can be located among the most fundamental forms of human functioning, we turn now to a consideration of the way in which technology can be seen to relate to knowledge and its capabilities. The paragraphs that follow outline firstly a theoretical perspective in which technology is seen to be intimately related to knowledge and cognition, followed by a discussion of direct and indirect relationships between technological change and knowledge capability expansion, and concluding with some criticisms and refinements, specifically addressing issues of agency and ethics.

3.5.1 Technology and knowledge: the 'mind tools' perspective

Technology and knowledge have long been closely intertwined concepts, the Greek word *technē* referring to the 'craft' knowledge associated with practical and productive enterprises such as baking, farming, medicine and also artistic creation. *Technē* is characterised by instrumentality, its usefulness as a means to an end. Socrates contrasts it strongly with wisdom or insight into which ends ought to be pursued; Aristotle maintains a less absolute distinction, seeing virtue itself as a form of practical reasoning developed through habits and practices, a perspective that remains influential in modern virtue theories and in applications such as consensual and discursive models of ethical decision-making. Boundaries with scientific knowledge are likewise blurred, with many

contemporary theorists pointing out the methodological and technical basis of scientific discovery. Reliabilist epistemology, as we have seen, is similarly methodological in orientation,[29] giving an account of knowledge in terms of distinctive belief-forming processes and practices rather than in terms of logical architecture. To a certain extent, then, knowledge acquisition can, for reliabilists, be considered a form of technical practice based on the employment of tools and techniques such as sense perception, inference and argumentation; it is not accidental that one of the cornerstone analogies in reliabilism is between thermometers and the human mind, as instruments that 'track' the world albeit in somewhat different ways.

Within cognitive science a theory of knowledge and technology along these lines has been developed by Gregory (1981) and, following him, Dennett (1996), who give an account of mind in terms of the ability to exploit and manipulate the informational environment. In this perspective, technology is identified with tools and techniques by which we use the world to extend our powers, a special subset being 'mind tools' aimed specifically at extending our knowledge capabilities. For Dennett what distinguishes human intelligence from that of other species is

> 'our habit of *off-loading* as much as possible of our cognitive tasks into the environment … where a host of peripheral devices we construct can store, process, and re-represent our meanings, streamlining, enhancing, and protecting the processes of transformation that *are* our thinking.' (Dennett 1996: 177-178, italics in the original)

Or as Dahlbom and Janlert put it, 'just as there is not very much carpentry you can do with your bare hands, so there is not very much thinking you can do with your bare brain' (cited in Dennett 1996). Mind tools reduce 'cognitive load' by transferring mental effort onto the environment, and are not confined to humans – many animals mark their environment by methods such as laying down scent trails which reduce the demands on

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[29] It is important to note, however, that this is a methodological *orientation* only, not a methodological theory of knowledge, and that reliabilism operates within a strictly non-methodological conception of truth.

memory. Humans, however, construct and use not only physical but also symbolic tools to adapt both the inner and outer environment in ways that vastly enhance their knowledge capabilities. Symbolic technologies such as speaking, writing and imagistic representation are immensely powerful since they support communication and thus the emergence of complex forms of collective cognition. Although Dennett pays relatively little detailed attention to the social dimension he does acknowledge its significance, referring to the human mind as 'a product not just of natural selection but of cultural redesign of enormous proportions', making his account compatible with those of philosophers such as Goldman and Putnam. From this perspective, then, we can start to appreciate the array of objects and mechanisms that can legitimately be considered knowledge technologies: from glasses and x-rays to improve information inputs; to maps and calculators to support different forms of inference, to universities and perhaps art and literature to provide explanatory and conceptual resources. The fact that some are individual and some collective mirrors the nature of knowledge processes themselves.

In terms of this theory there is no logical or functional distinction between tools or techniques that are internal, innate or biological and those that are external, acquired or artificial. This point was made 2500 years ago by Aristotle in relation to material technology: 'There is no difference between what is attached by growth and what is not so attached; for the stick becomes a kind of detached member.' (*de motu animalium* 702b4f). Dretske (1981) and Dennett makes it with respect to cognition: 'The shopping list on the slip of paper gets its meaning in exactly the same way as a shopping list memorized in the brain' (Dennett 1996:187). Simon (1996) claims the whole of psychology as a 'science of the artificial' and Dahlbom asserts:

> '… most of the thinking that goes on today involves the use of tools: logic, language, books, logarithm tables, slide-rules, book-keeping, statistical methods, maps, pencils, rulers, blackboards, databases. Some of these tools are internal to the mind, but many of them have an external aspect. We think by manipulating symbols on blackboards, computer screens, in conversations, talking to ourselves…' (Dahlbom 1996:5-6)

So also with information and communication technology: arithmetic is arithmetic whether you do it in your head, on your fingers or with a calculator, and question-asking has epistemic value whether conducted face-to-face, by email, by text message or by VoIP.[30] Dennett characterises the essential difference between inner and outer processes not in functional terms but in terms of the degree of the agent's control:

> 'The denizens of the "internal" environment are distinguished not so much by which side of the skin they are found on … as by whether they're portable, and hence omnipresent, and hence relatively more controllable and better known, and hence more likely to be designed for an agent's benefit.' (Dennett 1996:187)

This is not to say that the nature of the technology is unimportant: symbolic interactions take place within a material medium, whether embodied or artificial, and the properties of the medium constrain the nature of the inputs, outputs and processing that can be involved. We can manipulate larger numbers with a calculator than in our heads, for example, owing to limitations in short-term memory. On the other hand asking a question face-to-face can enable us to receive valuable visual and aural information through body language and tone of voice that would not be available in a text-based medium.

3.5.2 Integrating mind tools into knowledge capability theory

The mind tools theory has a natural resonance with reliabilism and with externalism, showing how not just the content but also the processes of thought extend beyond the individual thinker. With its understanding of technology as a means of augmenting and increasing human powers it also has a clear affinity with capability theory. As argued above capability theory suggests a dual analysis in terms of which capability expansion can occur either directly – as through a health or education programme for example – or indirectly through changes to the material or social environment – as in the provision of clean water or removal of barriers to school attendance. The same dual analysis can be applied to technology.

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[30] Voice over Internet Protocol – a technique for sending speech signals digitally using the Internet.

Discussions of mind tools tend often to focus on the direct knowledge benefits of tools such as calculators and communications media. One case in point is Goldman's (1999) analysis of the role of ICT in knowledge expansion through the relationship between the 'message infosphere', the totality of all encoded messages available at a given time, and the 'mental infosphere', the totality of all beliefs at a given time.[31] For knowledge to advance, new true beliefs must be added to the mental infosphere or old false beliefs removed from it. This can happen through the spread of existing true beliefs, the decline of existing false beliefs, or the (individual or collaborative) acquisition of entirely new true beliefs not previously part of the mental infosphere at all. In all of these processes the message infosphere plays a direct role as do the technologies which affect its properties and accessibility. Asynchronous technologies such as writing, for example, increase the size and stability of message infosphere by enabling messages to be accumulated and stored over time. Radio and other propagation technologies increase the range and speed of transmission, while reproduction technologies such as printing and digitisation enable cheap copying of messages, vastly increasing the size of message infosphere if not its richness.

This is not to say that direct knowledge tools are equally or always reliable. Clearly both message content and delivery can be faulty, and even when of high quality do not transmit information to all receivers equally. This is nothing to do with the use ICT. Both organic and non-organic mechanisms can be reliable and both can malfunction. Eyesight can be less than perfect just as calculators can fail. Nevertheless, it may seem reasonable to suppose that evolution ensures that biological mechanisms cannot be *systematically* unreliable, at least when functioning properly and in the kinds of environments for which they evolved. Human-made technology, by contrast, can be intentionally designed to bring about false representations – as in the scenario of the evil scientist with the brain in a vat. However, humans are perfectly capable of deliberate deception without the aid of technology. People can lie in any medium including face-to-face unmediated conversation. This is not to say that the technology is unimportant but rather that specific

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[31] Goldman's model refers to the totality of all human knowledge in the world but there is no reason why it should not be applied to a particular domain, group or society, or even to individuals.

technologies interact in subtle ways with human and social behaviour. Email, for instance, seems to present greater barriers to lying than does the telephone (New Scientist 2004).

The case here is not that technology is knowledge-neutral but that it can have positive, negative or very mixed effects on people's ability to form accurate representations. Goldman points to the way in which the size, connectivity and openness of the World Wide Web make it a valuable knowledge tool but at the same time can create significant problems in terms of filtering, searching and evaluation. Technical processes, like organic thought, need to have their reliability empirically established. There is nothing inherently more or less reliable about medical diagnosis by computer than by general practitioner: both have to prove themselves through trials over time and in both cases it is advisable for patients to be fallibilists and remember that mistakes are possible. Furthermore, as argued above, reliability is a property not of the belief-forming process in the abstract, but of the belief-forming process *in an environment*. The precise conditions and scope of reliability thus also need to be established; we should perhaps not expect to find tools that directly confer universal knowledge gains.

In terms of indirect capability expansion, it is fundamental to the mind tools theory that we do not simply make tools to help us acquire and process information from the existing environment but that we use tools to reshape the environment itself so that it becomes more knowledge-productive for us. Some reshaping is material – lighting the streets or creating cellular microwave networks, for example – but a great deal is social, as when we use communications media to establish new research networks or discussion forums. Social knowledge processes depend upon the ability of people to interact and communicate, and when technologies arise that change the material basis of interaction and communication, changes occur also to the way in which knowledge processes are enabled and constrained. Bonchek (1997), for example, argues that the physical properties of the Internet, which combines digitisation and propagation within a global network structure, give rise to features that uniquely distinguish it as a communications medium. Goldman (1999) similarly praises email for the way in which physical

properties such as speed, asynchronousness, global reach and interactivity reconfigure the information landscape. ICT thus has the potential to enable changed patterns of interaction and information exchange among individuals and groups and thus to restructure some aspects of society.

This is not a deterministic or closed relationship, however, since ICT provides only the material base of symbolic interactions and a multitude of non-technological factors play a part in determining the precise shape and content of those interactions, including their knowledge-conduciveness. Goldman is careful, for instance, to stress the active role of receivers in selecting and evaluating both messages and messengers, and he identifies a specific stage of acceptance/rejection which is separate from message reception. Moreover, he stresses that within the specific domain of mind tools at least, technical functionality is by no means always a determining factor and that social, economic and political formations may work *against* knowledge as much as for it – as in the cases discussed above of cost-based mechanisms of public speech or of norms that make it difficult for people to admit to errors. Knowledge, for Goldman, is just one value among many and it may well be overridden by other factors such as the need for social cohesion. Nevertheless these are specific arrangements; what is perhaps less conceivable is whether a society could in any general sense fail to pursue and adopt improvements in the reliability of its belief-forming practices – or indeed in other capability-functional practices such as those related to health, survival or sociability.

As with direct capability effects, indirect effects are not necessarily always either intended or solely knowledge-positive. The proliferation of computers in schools may not always lead to better education, or increased bandwidth make for more well-informed public debate. The physical presence of computers and hyperbolic public discourse concerning information technology may spread simplistic views and exaggerated expectations. Global media may undermine local expertise by providing faster, cheaper access to foreign but less relevant sources. Goldman similarly acknowledges that environmental factors, including features of the social system and the way in which technologies are implemented, as well as their unintended consequences, can work

against knowledge. Indeed the whole point of *Knowledge in a Social World* is to argue for the critical evaluation of social arrangements – including their technical dimensions – in terms of knowledge conduciveness.

The relationship of technology to knowledge capability revealed by the mind tools perspective is thus a complex one operating in both direct and indirect ways; involving elements of intended and unintended change; and with the potential for positive, negative and mixed outcomes. The tools perspective furthermore has marked points of contact with reliabilist and externalist epistemology on the one hand, and with capability theory on the other, in seeing tools as ways of extending human functioning, including thinking, into the world. It is, however, by no means the only perspective that can be taken on technology and has come in for criticism. The following section discusses and attempts to respond to two important sets of objections.

3.5.3 Criticisms of the tools theory

Conceiving of technology in terms of tools or instruments employed in pursuit of other (non-technical) ends is an intuitive and longstanding perspective: Aristotle defines a knife in terms of the function of cutting and a shoe in terms of the goal of protecting the foot. Nevertheless, such theories have come in for criticism on two important counts: firstly for ignoring the structural implications of technology which transcend the motivations of users, and secondly for treating technology as an independently existing phenomenon separate from the realms of human and social action.

The first criticism is forcefully expressed by Winner (2002):

> 'Missing in the tool/use perspective is acknowledgment of a basic fact about people's relationship to the technological realm: our utter dependence upon the large, complex, artificial systems that surround us on every side, giving structure to everything we do.'

Tools theories, however, do not need to be so narrowly formulated and in the case of mind tools cannot be. Our most powerful mind tool, language, is perhaps the supreme example of a large, complex, artificial system giving structure to everything we do. Dahlbom includes logic, computers and conversation alongside slide rules and blackboards as tools to think with. Goldman's analysis similarly includes a consideration of the role played in knowledge by social institutions and forms of organisation – libraries to preserve, organise and catalogue regions of the message infosphere; research institutes to support the discovery and addition of new content; values, norms and standards to regulate message quality; interactive mechanisms to support multiple exchanges between the mental and message infospheres such as in question-asking, dialogue and collaborative discovery. From a capability perspective tools are instrumentally important because of the intended and unintended roles they play in promoting (or diminishing) human wellbeing – and this requires us to consider both the narrow aspect of direct use and the much broader systemic or environmental aspect.

Broader conceptions have a well-established place in the general theory of technology, if not in general of tools. Ellul (1965) defines technology as methods 'rationally arrived at ... having efficiency' while Mumford (1967) identifies social formations as technical artefacts for achieving collective goals. For Idhe (1993) technology is a combination of material elements, the uses to which they are put and their relations with people. Winner (1980) goes further yet himself, including alongside physical devices and techniques, forms of organisation and networks of human and mechanical elements. Many of these authors who focus on the large-scale social and systemic dimensions of technology present profoundly dystopian visions in which collective mechanisms are seen as outstripping human control or serving the interests of a narrow elite and thus diminishing rather than expanding capabilities, as in Mumford's dehumanising 'Megamachine'. We have already seen that the mind tools theory admits the possibility of negative as well as positive capability effects in both direct and indirect or structural ways and is thus not necessarily in conflict with such views. It would, however, look to empirical rather than to a priori judgements about such effects and is perhaps closer to the perspective of Pursell (1994) for whom technology is a means to a human end, but a means that brings

consequences that are not the same as the intended ends, and that impact very differently upon different individuals and in different situations, enhancing some people's capabilities and eroding others'.

The second challenge to the tools theory comes from the social constructionist (or constructivist) school, which has for some time laid claim to being the dominant approach within technology studies although with significant dissenting voices (see for example Winner 1993; Kallinikos 2004). The social constructionist approach proceeds by suspending or 'bracketing off' functional and normative considerations such as how well a technology works or what its ethical implications may be, in keeping with its theoretical underpinnings in the sociology of knowledge which is explicitly 'impartial' (Bloor 1973) with respect to the truth of falsity of the beliefs under investigation. Instead of functional analysis, constructionist studies focus on careful unpicking of the social dynamics through which particular technologies come into being and are continually adapted and reinterpreted by different individuals and groups. A classic case in point is Pinch and Bijker's (1987) study of bicycle evolution which shows the degree to which an apparently technical process is in fact better understood in terms of processes of social negotiation and convergence on a set of agreed meanings. Despite significant differences of emphasis and approach, the work of Law, Hughes, Collins, Woolgar, Callon and Latour is generally considered to be located within an identifiable programme of studies in this vein.

Insofar as ultimate questions about functional and ethical norms are suspended, social constructionism is perhaps better seen as a method or approach to the study of how science and technology happen, rather than as a substantive theory. Bijker and Law (1992) for instance describe technology as *having to do with* history, economics, politics, psychology and sociology rather than as occupying a specific place in relation to these disciplines. Latour (1999b) argues that 'for science studies there is no sense in talking independently of epistemology, ontology, psychology, and politics'. In actor network theory (ANT), with which both Law and Latour are closely identified and which has been described both as a method and as a theory, it is heterogenous 'actor-networks'

comprised of both human and technological elements, and the relations between them, rather than tools themselves, that are the fundamental objects of study.

A capability theory of technology such as that developed here is by its nature concerned with technology in instrumental terms – its contribution to an objective notion of human wellbeing – and is thus normative in a way that is fundamentally different from the constructionist position. It is, however, not antithetical to the view that technology 'has to do with' a wide variety of social (as well as natural) sciences or that the development and application of technology is deeply affected by social factors. It also shares with ANT the rejection of any absolute dualism between the realms of human and technical phenomena, since capabilities are seen to extend into the world and to rest in important ways on technical competencies (knowledge for example on reliable belief-forming processes). However, where constructionism tends to be content with describing interactions between the social and technical realms,[32] a capability approach must look ultimately to evaluation and where possible amelioration of interventions and environments – including technologies and their environments – that result in poor outcomes in terms of important human functionings.

Constructionist insights can furthermore elucidate the concept of multiple realisation employed in capability theory, according to which the broad types of functioning universally constitutive of a good human life are differently realised in different contexts. If we accept that the evolution and use of technology are influenced by local contexts and meanings, then we start to have an account of the relationship between technology and development that permits a wide degree of divergence in the way technologies are constructed and used while maintaining a normative framework at the most general level. In terms of knowledge this means that if a technology is to be considered developmental, it must in the broadest terms either directly or indirectly contribute to people's ability to

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[32] The lack of an evaluative dimension has been a source of serious criticism of these theories, Winner for example accusing constructionism of moral and political indifference and 'an almost total disregard for the social consequences of technical choice...what the introduction of new artifacts means for people's sense of self, for the texture of human communities, for qualities of everyday living, and for the broader distribution of power in society...' (Winner 1993:368). Walsham (1997) criticises ANT on similar grounds.

form reliably based true beliefs. The form that the technology takes, however, and how it is used may vary significantly according to local material and social conditions and the existing capabilities – including the conceptual and interpretative capabilities – of individuals and groups. From a capability perspective, then, specific tools are perhaps best thought of as narrow realisations of broad functionings.

Despite being able to incorporate some of the insights of constructionism, the theory advanced here does not support stronger forms of the constructionist thesis. In particular it does not support a full-blown notion of 'interpretive flexibility' – the doctrine that technologies have no inherent characteristics but are purely defined by the meanings given to them by humans. This view can be criticised for ignoring the practical constraints and implications of technology use which are in some cases much narrower and less flexible than constructionists suggest (Kallinikos 2004).[33] In terms of the theory developed in this chapter, a further objection can also be raised. As we have seen, both the epistemology and capability theories discussed above reject the view that valued states – whether knowledge or other forms of functioning – are always fully amenable to subjects' consciousness. People may unknowingly employ more or less reliable knowledge processes, and individuals or groups may be wrong about their knowledge status, just as they may about other functionings such as health. We may therefore need to look beyond subjects' accounts and interpretations to gain a full picture of knowledge or other capabilities. This is problematic for strong forms of constructionism. ANT theorists, for example, stress the need to be led by actors: 'actors know what they do and we have to learn from them not only what they do but how and why they do it' (Latour 1999a:19). Applied to knowledge, such views raise the old problems of internalist epistemology discussed at the beginning of this chapter, such as the requirement for certainty (actors need not only to know but to know what they know) and of transparency (they need to know how they know). Transposing the knowing subject from the individual human being to a network of relationships does little to resolve these problems and indeed adds some new epistemological difficulties such as explicating the sense in which a network

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[33] There are parallels here with reliabilism's recognition of the input sensitivities of specific knowledge processes.

can be said to know at all. The issues extend far beyond the scope of this project but it should be clear from this discussion that while knowledge capability is not antipathetical to the basic insights of at least weak versions of social constructionism it has some profound differences with more radical positions.

3.5.4 Summary: technology as knowledge capability

To summarise, this section has suggested that a case can be made for a central place to be given to technology in a capability view of development. Understood in the broad sense of mechanisms by which humans extend their powers into the world, technology can be seen as potentially a form of capability expansion – development – itself. It can also be seen to fit the dual model of development, having both direct and indirect effects on capability expansion. In terms of substantive freedoms and rights ICT can be a tool, enabling direct access to a wide range of information and ideas, and to educational, dialogic and conceptual opportunities. At the same time ICT can have indirect, macro-level, systemic or environmental effects, changing communication norms, patterns of interaction and the topography of the message infosphere (see Table 3.1 below for a summary of some environmental and technological influences on knowledge capabilities).

To this general picture a number of qualifications must be added. Firstly, technology on its own is only *potentially* a form of capability expansion. Not all the human powers expanded by technology have the ethical status of capabilities, and furthermore technologies typically have multiple and mixed effects dependent not only on technical properties but also on the environment of use and existing capabilities of users. In capability terms it is therefore necessary to look at interactions between all three domains (technology, capability and environment) when trying to understand the operation – or failure – of technologies to deliver knowledge gains. Secondly, the social environment and the capabilities of individuals and groups are not only affected by technology but are the background out of which it arises. The nature of the technologies we develop therefore reflects – as constructionist analyses show – a host of human and social concerns quite apart from technical efficiency. While it is unlikely that a society could be

radically unconcerned about knowledge or other capability effects, these are only some of the interests that play a shaping role in technology, and it may be that concerns such as social cohesion, power or economic interests play a greater role than capability enhancement in the design, implementation and use of specific technologies. Nevertheless, it is capabilities that matter, and capabilities in terms of which we must judge not only our technologies but the social arrangements that exert such an important influence on the way technologies are developed and used.

Finally, if the inner and outer environments are not fully distinct but are rather descriptions for parts of the world that are respectively more and less omnipresent, controllable and reliably beneficial for agents, then the direct and indirect routes to development identified in Figure 3.2 may need to be seen as two ends of a continuum rather than as clearly distinct pathways. At the one end are interventions, including technologies, that are portable, ever-present and reliably accessible to agents, and at the other are those that agents can access in certain situations but not in others, which are subject to independent change and over which individuals have relatively little control – the difference for example between being able to read (a portable, omnipresent skill) and using a library (a place-based activity depending on many factors beyond the agent's control).

3.6 KNOWLEDGE, DEVELOPMENT AND TECHNOLOGY: A CAPABILITY THEORY

We now have all the elements in place for an integrated, capability-based theory of knowledge, development and technology (Figure 3.3). Central to the theory is a view of knowledge not as a resource, commodity or even a belief structure, but rather as a core aspect of the way humans function in the world, and of the informational, epistemic and conceptual abilities on which this type of functioning depends as core forms of capability (this relationship is represented by the bottom right circle in Figure 3.3). These three components of knowledge interact with one another and with other forms of capability,

knowledge being an instrumental as well as a constitutive freedom. They also interact with the environment, feeding into society new ideas, methods, attitudes, resources and forms of activity and interaction, and altering social and material conditions. These two relationships represent the direct and indirect roles played by knowledge in development through, on the one hand, constitutive and instrumental effects on capability, and, on the other, creation of a more generally empowering social and material environment. In Figure 3.3 the effects of knowledge on capability are represented by arrow Kc and of knowledge/capability on the wider environment by arrow Ke/Ce – always bearing in mind that there exists an intimate connection between knowledge processes and their environments, and a 'deep complementarity' (Sen 1999) between agency and social arrangements.

Knowledge and other capabilities emerge out of and depend for their existence on interactions with the environment; at the same time they enable and constrain the ways in which we shape that environment. Arrows of influence thus run in the opposite direction as well. Arrow Ck represents the influence of other capabilities such as health and associational powers on knowledge, and Ek/Ec of general environmental factors such as material resources, institutional structures and patterns of distribution on knowledge/capability generally. Ck and Ek also include norms and values. Gyekye (1997), for example, attributes the lack of indigenous scientific tradition in Africa to cultural attitudes while Goldman (1999) points out the epistemic role of norms such as the value attached to collective pursuit of truth over the winning of arguments.

In capability theory development takes place when capability expands. In terms of the model presented in Figure 3.2 above, this can occur directly through internal capability processes or specific interventions such as literacy or empowerment programmes that build the portable, always accessible internal environments of agents. It can also occur indirectly, through bringing about changes in the wider, less portable, less ubiquitous, less individually controllable social and material environment that in turn confer capability benefits – as when campaigners work to change social attitudes that keep girls out of school. Technology can be seen as an instance of this general pattern; the

relationships we are interested in in this case are those of direct capability expansion through technology (Tk/Tc) and of indirect expansion through environmental change (Te-Ek/Ec). Direct expansion may for example come about through enabling participation in forums of collective problem-solving (Tk). A more indirect effect may occur through the development of electronic information resources or the emergence of new media which over time change the nature of social knowledge processes and the inputs that go into them (Te-Ek). Table 3.1 below summarises some of the substantive content from the foregoing discussion that would go into an elaborated theory of ICT-enabled knowledge capability expansion.

However neither technology nor any other intervention confers capability gains on everyone equally. Capability theory proceeds from the recognition that those already disadvantaged often benefit least since the same factors that cause deprivation in the first place tend to prevent its being overcome when conditions improve or resources become available. We have already seen, for example, that quite complex speaker and receiver strategies and skills are required for effective participation in electronic forums. Existing knowledge and other capabilities thus play an important role in determining the ability of people to develop and use technology (Kt/Ct). Technology also has unintended effects: Tk and Te-Ek describe influences that may be knowledge-negative as well as knowledge-positive, just as we have seen in the case of Ek when social arrangements act against knowledge interests. Finally, existing conditions including social arrangements exert a powerful influence on the development and use of technology (Et); this is the relationship on which constructionist studies tend to focus. Clearly infrastructure and material resources are important here but so too are factors such as social attitudes to technology, policy priorities, relationships of power and influence, the distribution of wealth, and general levels of education.
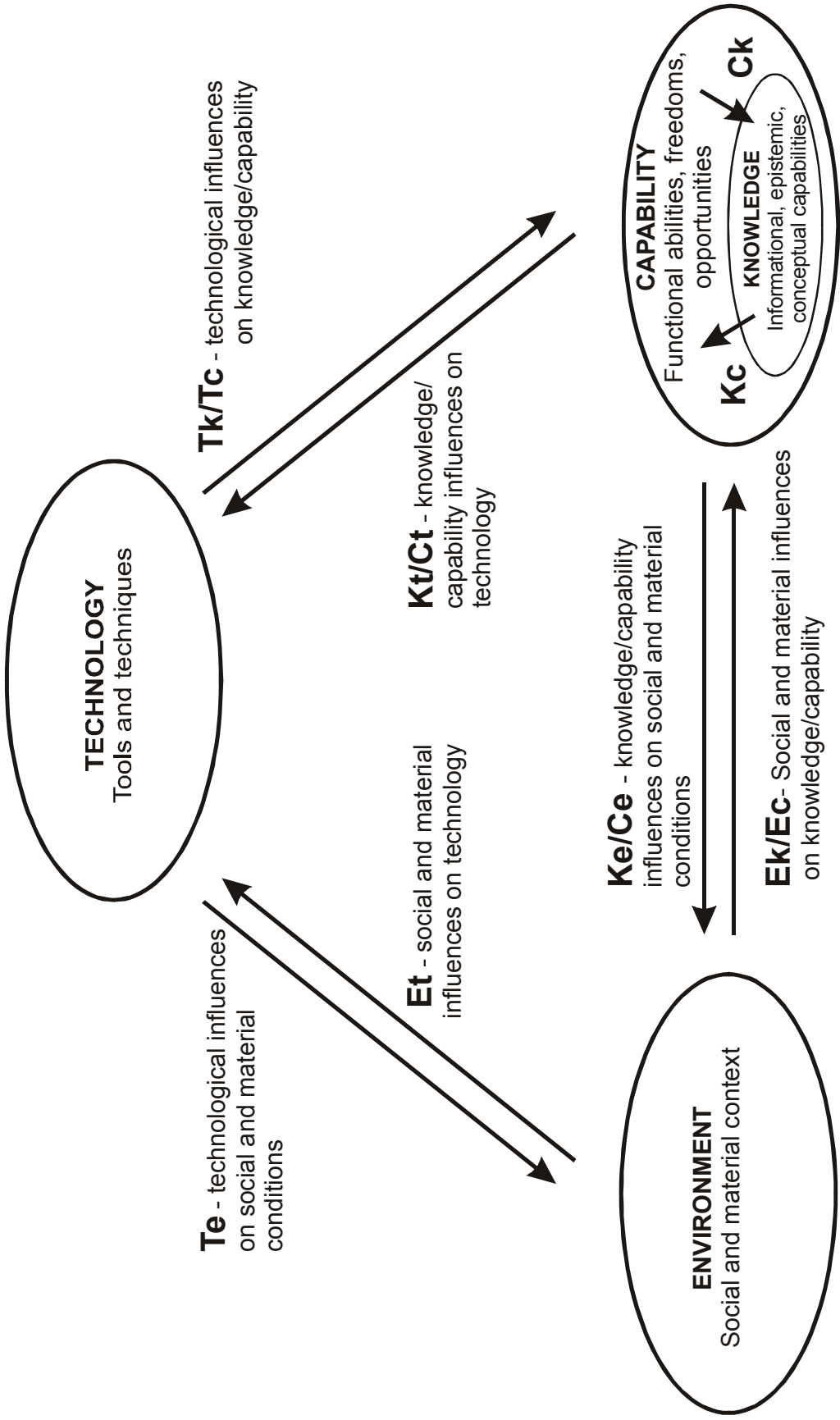
Figure 3.3 Knowledge, development and technology: a capability perspective

TECHNOLOGY
Tools and techniques

CAPABILITY
Functional abilities, freedoms, opportunities

Ck

Kc

KNOWLEDGE
Informational, epistemic, conceptual capabilities

ENVIRONMENT
Social and material context

Tk/Tc - technological influences on knowledge/capability

Kt/Ct - knowledge/capability influences on technology

Te - technological influences on social and material conditions

Et - social and material influences on technology

Ke/Ce - knowledge/capability influences on social and material conditions

Ek/Ec - Social and material influences on knowledge/capability

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Taken together these relationships comprise a foundational theory of knowledge capability at the most general level. However, the discussion so far has provided only an indication of the broad categories of factors that may be important, and work is still required to show how these categories may manifest themselves in the dynamics of a specific domain and context. This is the task of the following chapter, which presents a preliminary literature-based analysis of informational, epistemic and conceptual dimensions of NGO work. Chapter 5 discusses environmental and contextual features relevant to the empirical case study, while chapter 6 reports the empirical results in terms of the framework developed in chapter 4. Chapter 7 relates these results to the general theory articulated in this chapter.

	ENVIRONMENTAL INFLUENCES – SOCIAL AND MATERIAL (Ek)	ICT INFLUENCES – DIRECT (Tk)	ICT INFLUENCES – INDIRECT (Te-Ek)
INFORMATIONAL CAPABILITIES			
Determining what information is valuable, relevant **Generating, storing, organising, disseminating information** **Accessing relevant information efficiently** **Evaluating and comparing sources**	Conditions that affect relevance of information Educational opportunities Literacy Information literacy Social and economic power Norms, values, legal frameworks relating to information Libraries, archives, media	Faster, cheaper access to information, including unencoded (visual, auditory) information Access to greater range of sources Greater ease of reproduction and transmission Issues of overload, filtering, organisation	Changes environment, relevance Changes shape and content of message infosphere Changes distribution of information Introduces new formats, speed, volume
EPISTEMIC CAPABILITIES			
Sense perception **Inference** **Introspection** **Memory** **Testimony** **Argumentation**	Public health provision Poverty, deprivation Educational opportunities Values, attitudes, trust Existence of intermediary mechanisms Incentives for critical argumentation Opportunities for participation Alternatives to market mechanisms of speech	Ability to publish globally Ability to participate in global interactive forums Lowered costs and increased frequency of interaction with existing partners New opportunities for critical dialogue New skills required for participation	Changed opportunities and patterns of participation Reduced costs of publication New intermediaries Emergence of new media, new speech mechanisms, new cost models Undermines repressive controls, increases critical dialogue
CONCEPTUAL CAPABILITIES			
Imagination, creativity **Problem-solving** **Analogical thinking** **Modelling, simulation** **Developing shared frameworks/ standards of evaluation**	Features of environment determine reference of concepts Educational opportunities Expertise in the community Institutional support for discovery Attitudes, values	Access to forums for collective problem-solving Access to greater range of expertise, new models, understandings	Changed environment brings new conceptual needs New forums/networks for collective problem-solving, creative thinking Extension of linguistic/epistemic community

Table 3.1 Environmental and direct and indirect technological factors influencing core knowledge capabilities

4. Knowledge capabilities and technology in NGOs

The last chapter described a theory of knowledge as involving three sets of generic abilities and it located these abilities as lying at the heart of the capability concept. This chapter investigates how this very general view of knowledge can be used to generate a more specific analysis – in this case, an analysis of knowledge capability in NGOs, particularly AIDS NGOs, and the place of technology within it. The aim is twofold: firstly to investigate the feasibility of approaching knowledge in this way and secondly to see what a picture of NGO knowledge capabilities might look like.

It is widely acknowledged that the roles and work of NGOs are changing, and that these changes are at least partly being brought about by a growing awareness of the importance of information, knowledge and related supporting technologies for both the organisations and the sector, and for development generally. At the same time, in both developed and developing countries NGOs have been at the forefront of initiatives to combat HIV/AIDS and to improve the lives of the infected and affected. In San Francisco a powerful and articulate gay rights movement was influential in putting AIDS on the US national agenda and in promoting research and development of treatments. In poor countries activists have forced reluctant and under-resourced governments to admit and confront the problem, and community groups have shouldered much of the burden of health and social care.

Along with these roles have come strenuous knowledge demands and challenges for civil society groups. Some are generic problems for development organisations, such as how to conceive a complex problem, how best to intervene, how to sustain an intervention, how to monitor and evaluate activities and projects, how to diagnose and learn from problems. Others are more specific to AIDS, such as the taboo and stigma that prevent people speaking out or coming forward for help, the complexity of the medical issues, and the difficulty of obtaining accurate statistics. Despite the difficulties, ideas and

approaches developed within NGOs have been disproportionately influential in the field of AIDS (DeJong 2003).

In this chapter secondary literature is reviewed and findings about NGOs, their AIDS work and technology use are analysed according to the three-dimensional model. It should be pointed out that this is not meant to be a comprehensive survey of all the literature on the topic, which is beyond the scope of this project. Rather, these are indicative findings used as an initial trial of the framework, and to show how it might be applied.

4.1 THE INFORMATIONAL DIMENSION

The informational dimension of knowledge is concerned with the raw material upon which knowledge processes operate – the nature and quality of information that is available, and the way in which it is accessed, stored and disseminated.

4.1.1 Information work

Secondary literature indicates that information activities occupy a central place in the new roles being adopted by NGOs (Meyer 1997), as project-based work is increasingly displaced by information-based work (Edwards and Hulme 1992). The following paragraphs describe some of the activities mentioned in recent literature.

Acquiring, recording and storing information

NGOs can be considered information-rich environments (Powell 1999), having access to sources that are seldom brought together anywhere else. They may have close ties to local communities and to grassroots groups while at the same time being well-informed about the functioning of government and even international organisations and decision-making processes.

Providing information goods and services

NGOs' access to information from diverse origins can make them a valuable resource for local people, as communities benefit from being able to access a wide range of different information sources (Brown 1991). NGOs increasingly pay attention to informal and locally derived sources such as folk media, drama, storytelling and voice recording (Edwards 1994; Mundy and Compton 1995) and informal channels (Madon and Sahay 2002), allowing them to provide information in a locally appropriate fashion. The mixture of formal and informal sources and communication channels can promote the inclusion and participation of marginalised groups such as slum dwellers in consultations with government (Madon and Sahay 2002). At the other end of the spectrum NGOs which operate internationally or which have links at supranational level can access play a crucial role in local – global information transfers (Madon 1999).

A case study of the South African AIDS NGO, Treatment Action Campaign (TAC), shows many of these factors in action. TAC makes use of use of a wide range of media including video, photography, music, posters, newsletters, street protest, word of mouth, a website and an extensive email list to disseminate information. Furthermore, it has done so across both spatial and social boundaries, managing to mobilise local and international elites in the cause of fighting an epidemic that overwhelmingly affects the poor and marginalised (Wasserman 2005 forthcoming-a).

Local knowledge is particularly important in AIDS work, where the problems are social, political, economic as much as medical, and the knowledge needed to solve them is localised: 'generalisations negate the reality of the great diversity and variety in the way people react to this unprecedented situation.' (Webb 1997:xiii). Local and community NGOs may have an advantage here through greater understanding of the problems and the confidence of the population (Panos dossier 1992). Desmond, Gow et al. (2002) for example suggest that problems such as orphan care can only be dealt with by awareness-raising and informational activities at community level, for example, to identify children in need of help, link them to service providers, and monitor and track progression.

Maintaining multiple linkages

Information is also a strategic resource for NGOs aiming at empowerment of the poor (Grimwood-Jones and Simmons 1998). To be effective, informational flows need to be a two-way process: on the one hand ensuring the voices of the poor are heard by policy-makers, and on the other that information about government, policies, services and benefits reach the poor, (Madon and Sahay 2002). Similarly, NGOs increasingly participate in two-way exchanges with business, acting as indicators of public opinion while in return receiving insight into business perspectives (Heap 2000).

Mobilising support and coordinating action

Without information exchange it is impossible to plan and execute any kind of coordinated activity. People have to plan a course of action and make it known. Increasingly NGOs act in concert with one another, sometimes on a global scale. Multiway information exchanges are needed to coordinate and communicate such complex activities. The TAC in South Africa, for example, is linked to and coordinates with protest campaigns in many other countries (Wasserman 2005 forthcoming-a).

Advocacy

It has also been suggested that in the case of AIDS at least information provision alone can be a form of advocacy. The concept of so-called 'weak' advocacy (Stein 2002) arises from media research rather than NGO research but, if correct, may indicate another way in which NGOs can use informational resources for mobilisation. One newspaper editor describes weak advocacy as a matter of letting facts 'speak for themselves':

> 'Journalists have to report what is happening. And the issues speak for themselves. Journalists don't need to advocate if there are women who can't get access to drugs.' (Quoted in Stein 2002:9)

Of course, the selection and presentation of information is not neutral, and there is conceptual content in any socially transmitted information. In 'strong' advocacy, however, value judgements and prescriptions are overtly offered alongside descriptive information – see below.

4.1.2 Technology and information work

A substantial literature addresses NGO use of ICT in terms of information-based activities such as networking, mobilising and local-global interactions.

ICT linkages for development

Even before Internet access became widely available to southern NGOs, writers such as Brown started to show an increasing awareness of the importance of networks, describing 'linkage indicators' as a crucial aspect of evaluating community development (Brown 1991; Madon and Sahay 2002). From the early 1990s researchers began to recognise the networking potential of the Internet and other ICT for facilitating connections between organisations (Annis 1992; Salamon 1995). Whether electronically based or not, networking aspects of NGO activity are now stressed by many researchers: Madon and Sahay, for example, speak of intermediary NGOs as information 'hubs' having both vertical linkages to government and grassroots, and lateral connections with other NGOs and the media (Madon and Sahay 2002).

Furthermore, networks and the Internet have been seen as instrumental in the growing importance of the civil society sector in general and a 'levelling factor' in relations with the business and state sectors (Mathews 1997; Bray 1998; Winter and Steger 1998; Heap 2000). The Internet has been identified as an important site of interaction between civil society and state groups (Baber 2002); in South Africa it has the potential for a central role in the development of democracy and the public sphere (Rønning 2002; Wasserman 2005 forthcoming-a).

AIDS NGOs use the Internet to disseminate information in many different ways. Public information on prevention, care and treatment is mostly disseminated from the West in websites such as The Body, and medical and scientific information by IGOs such as UNAIDS and WHO. AIDS NGOs in developing countries make extensive use of email networks and mailing lists such as

- Afro-nets (list.healthnet.org/mailman/listinfo/afro-nets)
- Af-aids (archives.healthdev.net/af-aids)
- Health and Development Network lists (www.hdnet.org)

The TAC makes significant use of the Internet within a highly developed media strategy that encompasses communication, mobilisation and education. What the Internet adds is a broadening of the organisation's constituency, particularly in linking to local and international elites and expanding network links with other organisations.

Mobilisation and activism

Annis (1992) and Salamon (1995) draw attention to the role of the Internet and ICT in organising collective action. The ability of the Internet to facilitate relatively cheap, easy and quick communication across geographical boundaries also makes it a powerful tool for mobilisation, allowing activist groups to exchange information and coordinate activities at many different levels (Bray 1998; Gurak and Logie 1999; Papacharissi 1999; Pickerill 2001) and to avoid some of the monitoring and surveillance other ways of organising may be subject to (Baber 2002).

Castells, for instance, has proposed a view of networks as inherently democratic, transferring information, knowledge and power from the centre to the periphery, and bringing about structural social change (Castells 1997) – as when the Zapatistas were able to use the Internet to mobilise worldwide support against repression by the Mexican government. Opposition groups in Serbia used radio broadcasts over the Internet to oppose Milosevic, and in Malaysia and Indonesia websites have been used to provide information in challenge to the government (Ferdinand 2000). International linkages enabled by the Internet have also led to a number of high-profile protests, such as those against the World Trade Organisation in Seattle and against the Multilateral Agreement on Investment in 1998 (Bray 1998; Deibert 2000) although the effectiveness of these has been questioned. Lewis (2001), for example, casts doubt on the part played by the protests in derailing the Seattle negotiations. The Internet has also played a significant role in AIDS activism. Groups such as the TAC use email and the web to organise and

promote collective action. The TAC website, for instance, contains links to other activist organisations and information about international protest events.

Local-level advantages

It has been suggested that the Internet has some particular advantages for small and local organisations. Grassroots networks benefit from the medium's non-hierarchical structure and consequent reduced need for centralised communications. Electronic media have enabled local issues to become part of a global agenda and local activists and minority groups to engage with global social movements (see for example Agre 1999; Mele 1999; Arnold and Plymire 2000; Lax 2000; Mason 2001; Struwig and Conradie 2003).

4.1.3 Informational problems

Compared with achieving high conceptual and epistemic standards, improving informational status is generally less problematic for NGOs. Of course, there may be crucial information that an organisation cannot get hold of or information that it would like to disseminate but lacks resources to publish, but these are the kinds of problems third-sector organisations typically excel at resolving, requiring practical if unconventional solutions. Nevertheless, informational problems do exist.

Firstly, NGOs may lack resources to access certain types of information, particularly secondary data and difficult sources (Thomas, Chataway et al. 1998). In South Africa, many AIDS NGOs operate outside legal and regulatory frameworks, having little access to critical information about funding, training and good practice. Such information gaps have led to limited effectiveness and variable quality of service provision; in addition lack of information exchange with government prevents effective lobbying and advocacy on behalf of local communities. (Desmond, Gow et al. 2002).

NGOs are not always skilled in information provision to the media either. South African AIDS groups have been criticised by the press for courting coverage of uncontroversial topics but refusing to provide information on controversial topics, keeping PWAs away from the media, and providing media workshops that ignore press needs:

'These courses are a waste of time for experienced health journalists … AIDS experts can't teach the media how to write, which is why Soul City can't run a workshop. What you need to learn is – how to turn it into a story.' (Quoted in Stein 2002:31)

This seems to be symptomatic of a wider problem of inappropriate presentation of information. According to Singhal and Rogers (2003) AIDS communication projects are seldom guided by appropriate strategy, leading to ineffective campaigns and wasted resources. Little research is done into communication and when it is done results are often disregarded.

The relationship between technology and information is problematic too. It might seem as if there were a relatively straightforward equation between the Internet at least and information gains[34]. But the situation is more complex and many of Goldman's theoretically derived concerns such as the problem of vast uncatalogued resources (Goldman 1999) are reflected in empirical studies of Internet use among NGOs. Madon diagnoses widespread problems of information overload and underdeveloped systems for information seeking, storing, transferring and disseminating (Madon 1999), and Edwards (1994) points to the negative impact of large quantities of email adding to the already severe workload of hard-pushed NGO employees. Surman (2001) finds NGOs experiencing multiple difficulties in making effective use of the Internet, and Song (1999) argues that while the Internet increases research efficiency and collaboration it also increases workload and resource requirements.

Perhaps most serious is the tendency in some NGOs to overrate information provision as a strategy for dealing with complex development problems. AIDS is a case in point. Providing information is a necessary but not sufficient part of a public-health AIDS campaign and message-driven campaigns need to be balanced by participation and knowledge creation processes (Eaton, Flisher et al. 2003). Petersen and Swartz (2002)

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[34] Edwards (1994), for example, speaks of the Internet bringing about 'a paradigm shift in storage, retrieval, handling and dissemination of information.'

point out that an emphasis on information, education and communication strategies has raised awareness but done little to change behaviour. AIDS programmes typically emphasise information provision and individual responsibility but fail to look at systemic and structural aspects and the need for social change which are the real causal factors behind the epidemic (Webb 1997; Harrison, Smit et al. 2000).

4.2 THE EPISTEMIC DIMENSION

The epistemic dimension of knowledge is concerned with the individual, organisational and social processes which enable information to be turned into knowledge.

4.2.1 Epistemic work

NGO literature suggests that a complex variety of epistemic activities are central to the internal functioning of organisations and also form a significant part of their external role.

Planning, monitoring and evaluating action

Perhaps the most obvious and ubiquitous epistemic demands on NGOs are in the processes of planning, executing and evaluating action. All groups have to have methods for deciding what to do, how to do it and whether it is working. Often the methods remain implicit – at least until problems arise. However, demands from donors and partners, and general requirements for accountability in the sector, are increasing the need for explicit methods. This is most advanced in the sphere of monitoring and evaluation (M&E), often perceived as problematic and a source of criticism for NGOs, which are generally seen as not being very good at it (Brett 1993). Although M&E has traditionally been seen – and sometimes resented – as a donor imposition, sustainable development work needs local management and M&E is therefore as important for recipients as for donors (Mikkelsen 1995). The area remains fraught, with many commentators pointing out methodological problems, weaknesses of NGO evaluation and the difficulties inherent in epistemic decisions such as what information to collect, how to collect it, who should collect it, how and by whom it should be processed.

Methodological development and innovation

NGOs are by no means only consumers of M&E methods, but have also been significant innovators. During the 1990s a shift occurred away from progress reviews and impact assessment by 'neutral' outsiders' (Mikkelsen 1995) to more process-focused, participatory and interpretive techniques. These have been defended on epistemic grounds, Chambers (1994), for example, arguing that they can be more reliable than surveys in delineating dimensions of poverty.

Participatory approaches have however recently come in for significant criticism, for ignoring vital aspects of development such as political and empowerment dimensions. Clearly there is a need for ongoing critical and creative research into evaluation techniques. Fowler (2000) argues against the establishment of a development 'mono-culture' and stresses the key role of NGOs working with local agents to develop innovative cross-cutting approaches rather than narrow conformity of methods.

Testimony from the front line

AIDS NGOs in both the North and the South have been able to gain epistemic advantage from their closeness to affected communities. Communicators in the successful STOP AIDS campaign in United States were seen as credible by their audiences because they were HIV+ themselves and their messages were culturally and linguistically appropriate[35] (Singhal and Rogers 2003). In South Africa the use of PWAs has been shown to increase effectiveness of workplace HIV/AIDS programmes, and PWAs are increasingly being integrated into AIDS programmes at all levels, even to bring about attitude change among politicians (Simon-Meyer and Odallo 2002)

Strengthening knowledge processes in the community

Epistemic roles extend beyond the internal needs of the organisation and its partners. NGOs are also often important providers of knowledge tools and techniques to the community. These organizations' proximity to and experience with those they serve contributes to their valuable, yet often overlooked, roles as community facilitators. In that

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[35] The communicators came from the same community they were addressing but at the same time were opinion leaders respected by the audience.

role, they serve in an important position of early adopters and arbiters of tools, resources, and practices most likely to succeed in addressing individual and community needs. More resources (technological and otherwise) should be deployed to places where the need is greatest for innovation to address growing numbers of underserved populations in an effective and efficient manner, yet where demand is suppressed due to lack of awareness and understanding as to their availability or relevance (Turner 2002).

Another epistemic role for NGOs is facilitating testimony, dialogue and dissent at grassroots level (Edwards, Hulme et al. 1999). Processes of public dialogue are one of the main ways in which social interactions can facilitate knowledge (Goldman 1999) and NGOs are often key contributors in civic participation and democratic, dialogic cooperation among parties involved in development (Edwards 1999; Fowler 2000). In AIDS work, presenting choices and fostering debate, dialogue and consensus building are more effective than simple information provision. Eaton, Flisher et al. (2003) found a need to foster understanding, and for analysis leading to action, rather than transmission of preformatted messages. People need to be involved in the creation of their own messages and engaged with ongoing reinterpretation in social contexts, emphasising the need for conceptual and epistemic approaches alongside informational ones.

Dialogue processes are seldom quick and decisive, particularly in political discussions and where there are numerous stakeholders. The existence of mechanisms for ongoing political exchange both within communities and between communities and policy-makers has been considered a key development indicator, and NGOs have been key players (Brown 1991; Madon and Sahay 2002). Such roles depend crucially on epistemic virtues such as reputation, trust, integrity, which in turn depend on high standards of truthfulness, error recognition, open-mindedness to new ideas and ability to learn (Chambers 1994; Edwards 1997; Edwards, Hulme et al. 1999). Typically third sector organisations have trust advantages over other organisations but they can be discredited by poor research (Heap 2000) or come to be viewed with suspicion by the poor owing to their perceived wealth (Holloway 1999) or closeness to government, business and funders (Pearce 2000).

An implication of this last finding is that there may be tensions and contradictions between the different dimensions of knowledge which make it impossible to maximise all three dimensions. Multiple linkages across different sectors are seen as an informational strength of NGOs, for example, allowing information to travel where it would not otherwise, and yet connections with business and government can damage the powerful epistemic commodity of trust at the local level. It may be that NGOs sometimes have to decide, for example, that epistemic values come before informational ones: some types of information may perhaps be too expensive (in knowledge terms) to be worth acquiring.

Correcting errors and misconceptions

The theory of knowledge suggests that equally important as acquiring new (and relevant) knowledge is the ability of people to recognise and correct false beliefs and ignorance. This is a core part of dealing with a disease such as AIDS where fear, stigma and taboos have bred false beliefs in both developed and developing countries. In Zambia for example, young men significantly underestimate their risk of infection owing to false beliefs and lack of knowledge (Population Services International 2003). A central function of the TAC website is to correct misunderstandings and false assumptions about AIDS, such as the position of 'denialists' who reject the link between HIV and AIDS (Wasserman 2005 forthcoming-a).

Changing material reality

Externalist epistemology sees intimate linkages between what people know and how they come to know it with conditions in the world around them. An interesting example in AIDS work is the recent evidence that availability of ARVs has been shown to have a knowledge impact, as the existence of treatment operates as a major incentive for testing. A study of nine sites in South Africa found the highest rates of testing and desire to be tested as well as highest level of condom use in Khayelitsha, where ARV trials were run (Parker, Oyosi et al. 2002). In this case, material realities affect the informational property of relevance (the availability of treatment makes a test result a matter of life and death relevance) and therefore the motivation to acquire information – a demonstration that knowledge work is inextricably linked into material, reality-changing work.

4.2.2 Technology and epistemic work

ICT and particularly the Internet are seen by many as potentially revolutionary tools for improving both public knowledge processes and those within development organisations. Nath (2000a) proposes a general theory of development based on Internet-enabled 'knowledge networking'. Others emphasise specific features such as the capacity to support social knowledge processes such as discussion, deliberation, dialogue and decision-making – in epistemic terms, argumentation – leading to bottom-up decision-making (Moore 2003). Rheingold (2003) focuses on interactivity and many-to-many interactions as enablers of new virtual public spheres. Madon (1999) highlights the potential for learning in networks, which enable NGOs to extend knowledge resources beyond themselves. Organisations such as IDRC and Bellanet have long hosted electronic discussion groups which act as learning sites, and most international development conferences now run parallel electronic conferences, permitting otherwise excluded voices to contribute to debate and in some cases even to formulating the agenda. The effect in the case of AIDS conferences has been significant (France and Chatani 2000).

The importance of ICT and the Internet in particular is now so widely recognised among NGOs that training in the use of these technologies forms part of the work of many groups, and a number of intermediary and capacity-building organisations have emerged offering specialist Internet services and products to NGOs. The Association for Progressive Communications, one of the first and still one of the largest, has been joined by many others such as One World and Kabissa, which hosts the Kznaidslink website.

4.2.3 Epistemic problems

NGOs can suffer from a number of problems in trying to build stronger knowledge processes. Trust is often a natural advantage of civil society groups but can be undermined by poor research (Heap 2000), the perception of wealth (Holloway 1999) or closeness to government, business and funders (Pearce 2000). Dialogic processes are not necessarily easy to implement and support, and NGOs have themselves been criticised for 'an eclectic outpouring of ideas and views, without organised and coherent debate' and for inability to ensure equitable participation (Pearce 2000).

Epistemic processes are demanding and not all NGOs have the resources to develop them. Inputs into policy in particular require both access to information and highly developed inferential and analytical skills. An activist who took part in a review of health provision in South Africa commented: 'Until I participated in the review and visited provinces, I never understood what a district health system was, or the incredible difficulties of amalgamating five bureaucracies into one province, or what a rural health service looked like.' (Schneider and Stein 2001). Similarly NGOs need to know more about government decision-making. Grindle and Thomas (1991) find concepts such as 'political will' too often used to disguise lack of real understanding of how decisions are made and what constraints are operating within government.

Thomas, Chataway et al. (1998) identify routinised and often inappropriate techniques as a problem, and argue for a more critical approach. While limited resources mean that academic standards of data collection, analysis and corroboration may be unattainable, there is a need for rigour in obtaining and interpreting evidence, and for fully-fledged investigations into causal relationships ('how and why things happen as well as what has happened'). Methodological diversity can be a strength of NGOs (Fowler 2000) but researchers under pressure may apply techniques unthinkingly and in over-standardised ways, yielding superficial results (Thomas, Chataway et al. 1998). Furthermore, development problems such as AIDS are constantly changing (Singhal and Rogers 2003), placing added burdens on knowledge requirement.

The use of the Internet as a knowledge tool is also problematic. Despite all the claims for its revolutionary powers, there is evidence that many NGOs are only gradually moving beyond basic applications such as email and static web pages and very few, even among northern agencies, are making extensive use of more strategic applications such as online publishing, lobbying and discussion forums (Saxton and Game 2001). Knowledge about the technology and how to use it is lacking, and even when it exists there is often a lack of technical skill to implement it (Surman 2001). Manji, Jaffer et al. (1999) found that many NGOs recognise a need for training in knowledge aspects of networking

technology such as using the Internet for research, and they diagnosed a need for applications for democratic participation.

Goldman diagnoses several theoretical problems that compromise the reliability of Internet-based knowledge processes: the proliferation of misleading, deceptive and malicious communications; a tendency for networks and forums to become introverted, reinforcing prejudices rather than opening up spaces for critical argumentation; loosening of the social constraints that promote truth-telling in face-to-face communication; reduced accountability owing to anonymity; lack of meta-information leading to diminished ability to judge accuracy and integrity of messages; hidden commercial – and other – interests; lack of editorial controls and low barriers to entry; and hidden selectivity of hypertext linkages. Many of these have been borne out in empirical studies – Gurak (2003), for example, found web protests suffering from credibility problems owing to anonymity. The low barriers and ease of Internet campaigning can therefore be a negative factor. Such problems can be overcome, for example by better use of search engines and intelligent agents; reliance on named and accredited sources and websites; more use of email and other interactive applications (allowing epistemically valuable contact between communicators and receivers); hypertext to help structure an argument or link to supporting evidence; promoting open and active discussion groups where the seeds of conceptual change, not just information exchange, may be sown[36].

4.3 THE CONCEPTUAL DIMENSION

At the conceptual level, knowledge analysis is concerned with categorising and sense-making activities, for example the development of causal, ethical or structural understandings of the world. This level presents probably the greatest challenges of all knowledge work since it is here that high-level cognitive skills are most required, such as

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[36] In similar vein Bray (1998) gives the example of an Internet discussion group on NGO-business relations hosted by Newcastle University www.mailbase.ac.uk/lists/business-ngo-relations, and Shell, which has used its website to acknowledge and openly discuss controversial issues.

imagination, synthesis and the generation of new and possibly contradictory or controversial ideas. It is also here where computational aspects of technology are least helpful (as is well known there is no algorithm for theory generation and concepts are essentially theories). However, there is still a role for technology in its communicative aspect.

4.3.1 Conceptual work

In theory, the same factors that give NGOs informational advantages can make them a source of conceptual wealth, for instance the simultaneous attachment to the local and engagement with the global that characterises many international NGOs (Madon 1999). Similarly, cultural organisations which preserve and promote local identities, including local languages, knowledge and world views, would seem to be able to contribute to conceptual diversity. Exploiting these resources, it seems, should allow NGOs to bridge conceptual divides and act as 'translators' between different groups and outlooks. Some areas in which this has been identified as relevant are described below:

Advocacy

A primary area of conceptual activity in NGOs is advocacy work. Lewis (2001), citing Najam (1999) identifies advocacy as one of four central activities in the sector, and interprets advocacy as an attempt to tackle the root causes of problems rather than to address them symptomatically. As such, advocacy is usually directed at governments but can be aimed at any elite. In knowledge terms, a core part of advocacy is the conceptual work of attempting to change others' (elites') theories of the domain. AIDS, for example, has become a political issue in many countries and national policies are central in dealing with it. Advocacy groups have been identified by some as playing a crucial role in national agenda-setting and formation of policies (Singhal and Rogers 2003) although a number of writers have pointed out the limited successes actually achieved by NGOs in influencing policy as opposed to carrying out projects (Edwards and Hulme 1995; Edwards 1997; Madon 1999).

On the three-dimensional analysis developed in chapter 3, advocacy requires efforts on all three dimensions. Campaigns have to be backed with high quality, relevant information, both to plan effectively and to support the arguments being made. At an epistemic level, advocacy organisations must be trustworthy and seen to be so, presenting convincing evidence and argument, and ensuring methods are reliable and transparent. Fundamentally, however, advocacy is about changing conceptual structures such as underlying values and outlooks, sometimes in ways that run counter to vested interests or long-standing prejudices. This can be complex, and activities such as lobbying, research, publishing, policy input and helping to draft ethical guidelines and codes of conduct involve exchanges and networking across organisational and sectoral boundaries (Edwards and Hulme 1992; Meyer 1997; Thomas, Chataway et al. 1998; Madon and Sahay 2002). Given these demands it is perhaps not surprising that many NGOs have relatively weak advocacy skills (Manji, Jaffer et al. 1999).

Reconceiving development problems

Development problems are typically complex and multifaceted, and how to understand them is a major challenge for those who want to intervene: 'It is not the duty of the media to promote a specific philosophy, but AIDS is such a big problem, we need to revolutionise the way we think.' (South African journalist quoted in Stein (2002:9)). Similarly, Webb (1997) argues the need to 'reconceptualise' the HIV/AIDS epidemic in Africa, with 'new ways of looking' at the epidemic supported by evidence but based on social theory as well as medical and health insights.

More specifically, there is a need to develop new ways of thinking in society in order to deal with particular aspects of the crisis. Madhavan (2004) argues the need for new definitions of family, clan and kinship and new models of orphan care based on conceptual development and empirical research: 'without a solid conceptual grounding of caregiving in particular communities, we run the risk of not only wasting resources but worse, exacerbating conflicts to the further detriment of children's well being.' Similarly, there is a need for conceptual work in dealing with stigma and denial, which impair the ability of individuals, households and communities to deal with AIDS (Stein 1997;

Wright 2000; Desmond, Gow et al. 2002). Like syphilis and tuberculosis, AIDS has been particularly linked with notions of immorality, dirtiness and 'otherness' (Sontag 1989) and this is true as much in the West as in Africa (Singhal and Rogers 2003).

Conceptual change as structural change

Conceptual structures are socially shared and have implications for social action: 'If an earthquake – or an epidemic like AIDS – is conceptualised as a natural disaster, an act of God, people in some cultures are less likely to demand immediate government assistance than if it is seen as a massive social or public health crisis' (Treichler 1992). The externalist view of knowledge presented in chapter 3 suggests that such conceptual frameworks may be more accurately seen as structural features of society rather than matters of individual outlook, and that conceptual change may need to be part of structural interventions in dealing with a problem such as AIDS. This is borne out by other work showing the strain AIDS places on a society's cognitive resources. Barnett and Blaikie, for example, point to complex understandings that emerge in the 'abnormal' time of AIDS when rules of cause and effect seem to break down and people invent and hybridise explanations, rationalising in a way that deflects fear and allows them to continue life relatively unchanged. Loslier (1993) speaks of the need for 'conceptual control' of the environment as a fundamental determinant of health. If this is correct then in the case of AIDS not only is there a biological threat to health but as the existence of the epidemic becomes indubitable conceptual control can be expected to diminish, exacerbating the health crisis. Conceptual work therefore starts to seem like a core aspect of AIDS intervention.

Similar ideas can be found elsewhere, such as Eaton, Flisher et al (2003), who criticise an overemphasis on individual cognitive processes and subjective aspects of social influence in theories of health behaviour, calling for greater recognition of the way objective structural factors such as poverty may be implicated in belief. An excessive focus on counselling has similarly been criticised for the assumption that the epidemic is best dealt with by individual adjustment rather than social change (Petersen and Swartz 2002).

Conceptual change is likely to be contested, however, perhaps more than epistemic and informational activities, since it may involve challenges to fundamental understandings of the world and associated legitimising logic of entrenched power elites. Research conducted in southern Africa in 2000-2003 found activist organisations to be highly influential in determining how societies think about rights, for example, and in introducing universalistic conceptions which may be in conflict with local traditions:

> 'Often people are made aware of rights through activists who can also impose new cultural frameworks on communities, which can cause conflict at the local level and create resentment from, say chiefs (in the case of women's rights and gender equality).' (SLSA Team 2003:22)

4.3.2 Technology and conceptual work

Little has been written specifically about the role of technology in supporting conceptual development. However, some claims have been made for the Internet; Arnold and Plymire (2000) and Wasserman (2003) for example find minority groups using of the Internet to strengthen cultural identity through creating and disseminating their own knowledge and languages. For Agre (1999), networks imply conceptual diversity and require organisations to give up trying to organise people's cognitions and instead embrace 'collective cognition'. Other authors make a similar point in terms of the Internet being a platform for alternative perspectives (Ferdinand 2000; Rheingold 2003).

4.3.3 Conceptual problems

In theory, NGOs can be well placed to make use of a variety of conceptual frameworks. In practice, conceptual work is demanding and needs just as much critical thinking as informational and epistemic work. Young (1992) found that advocacy organisations tend to develop strong views as the result of a single charismatic leader and, though they are held together by common goals and values, they are not necessarily democratic, accountable or critical. Thomas, Chataway et al. (1998) identify problems including static conceptualising (reliance on preconceptions about the nature of the situation), assuming

the problem is already known, and not involving participants in defining the issues. Mawdsley, Townsend et al. (2002) have criticised NGOs for 'shared thinking', finding greater conceptual similarities between northern and southern NGOs than between southern NGOs and their beneficiary communities. Networking and contact is sometimes greater within the development community than among NGOs and beneficiaries. The power of donor agencies is partly to blame but it is also true that operating across cultural and conceptual divides is not necessarily easy or comfortable and few NGOs set out to take this on. One result of this is that campaigns frequently fail through lack of cultural insight (Singhal and Rogers 2003).

NGOs have also been criticised for failing to clarify their concepts and make meanings clear when this would result in controversy (Pearce 2000). At a macro level, there is also the need to question the fundamental assumptions of development itself and to look for new conceptions (Pearce 2000). Edwards, Hulme et al. (1999) speak of the need for a 'paradigm shift' in development work, and for NGOs to develop 'strategic understanding' of global issues. To deal with this NGOs need to develop stronger theoretical bases on which to ground their identity and actions (Pearce 2000).

Developing local theoretical capacity is important outside the development community too. Escobar, for example, argues that 'the belief that theory is produced in one place and applied in another is no longer acceptable practice. There are multiple sites of production and multiple mediations in the generation and production of theory' (Escobar 1995). NGOs are obvious candidates for participating in such developments yet, for all the talk of new knowledge and informational roles, little attention has so far been paid to their potential as agents of social-theoretical change.

4.4 NGO KNOWLEDGE WORK: A MAP OF THE LANDSCAPE

We are now in a position to generate a map of NGO knowledge activities, problems and knowledge-directed ICT use in terms of the three-dimensional model of developed above. This map – summarised in Table 4.1 – represents an initial attempt to integrate empirical findings into the theoretical structure developed in chapter 3 and provides a rough structure in terms of which the case study results are reported and discussed in chapters 6 and 7. Table 7.1 on pages 284-285 summarises empirical study findings in relation to the map. Before turning to the micro-level knowledge activities of the NGOs studied in the case, however, it is necessary to consider the broader social and political context in which the case takes place and which provides important background to the Ek/Ec relationships of the empirical case. This is the subject of the following chapter.

DIMENSION	INFORMATIONAL Inputs into knowledge processes	EPISTEMIC Processes of knowledge creation	CONCEPTUAL Structures of understanding
NGO ROLES	Acquisition, recording, storage of information Provision/dissemination of information Setting up new information services Access to/strengthening of existing information sources/resources Building information awareness and skills Campaigning for information access, rights Creating and sustaining information linkages across and within sector Mobilising and coordinating activity 'Weak' advocacy	Processing and analysis of information Initiating or supporting local knowledge processes – dialogue, testimony Education Research Experimentation and innovation Monitoring and evaluation Methodological innovation Promoting knowledge in the sector Training in research, monitoring, evaluation, information processing skills First-hand testimony Correct errors and misconceptions Change material conditions to enable knowledge processes	Conceptual development in the community Acting as 'translators' Developing explanations and hypotheses: - How to conceive the problem - Who/what matters - Why things go wrong - What to try next Developing new development paradigms Changing social/structural attitudes Advocacy: - Challenging prejudices and preconceptions - Providing alternative views, values, analyses, priorities, policies - Agenda-setting e.g. AIDS conferences
PROBLEMS	Limited awareness Overload, lack of resources Partial – poor use of secondary data, silent voices Power – 'misinformation' Lack of access to key information Inappropriate presentation Overemphasis on information	Implicit methods Routinised techniques Lack of rigour and resources Donor demands vs innovation, diversity Lack of causal analysis Trust vs multiple linkages Need for technical training	Unrecognised need Weak theory Lack of causal, structural view Static conceptualising Lack of participant involvement Conflict avoidance Change is difficult, threatening
ROLE OF TECHNOLOGY	Horizontal and vertical network linkages Interaction with state and business Public information Email networks and lists Mobilisation and activism Local-global integration	Virtual public spheres Learning networks E-conferences Research networks NGO discussion forums	Cultural networks Alternative sources of news and opinion

Table 4.1 Knowledge and technology in NGOs

5. Case study background: HIV/AIDS in KwaZulu-Natal

'We are looking at the destruction of our population'
(Professor Robert Shell, address to Demographic Association of South Africa, 2003)

When apartheid ended and democratic elections were held in 1994 South Africa seemed one of the most hopeful places on earth, embarking on a new era of justice and freedom, righting old wrongs and showing every indication of assuming a leadership role in Africa and beyond, particularly in conflict resolution and the overcoming of historic divisions. Yet the country was already in the grip of an epidemic. In 1994 tests at antenatal clinics were indicating 7.6% of the population to be infected with human immunodeficiency virus (HIV). Four years earlier the figure was below 1%. By the end of the first term of democratic government it had risen to 22%. The second and third terms have been largely defined by the failure to contain HIV and the follow-on disease of acquired immunodeficiency syndrome (AIDS). HIV/AIDS today threatens every one of the South Africa's development goals. For a country newly emerging from apartheid and with an idealistic president upholding a vision of 'African renaissance' the epidemic has dealt a particularly cruel blow.

This chapter reviews the nature of the AIDS epidemic and its manifestation in South Africa, with specific reference to the province of KwaZulu-Natal, where the case study that follows in chapter 6 is located. The first section discusses the scale of the epidemic; the second section discusses AIDS as a development issue; and the third and fourth sections deal respectively with AIDS interventions and with the role of NGOs in responding to AIDS. A short review of the biomedical facts relating to HIV/AIDS can be found in Appendix IV.

5.1 THE SCALE OF THE PROBLEM

There was a time when HIV and AIDS were seen as primarily medical and health issues. Today the disease is widely referred to as one of the most serious threats to development generally. As early as 1992 Michael Merson, Director of WHO HIV/AIDS Programme, was warning 'All sectors of life are threatened. So is the development process itself.' (Panos 1992:152). The message has been echoed repeatedly and at the highest level: Richard Holbrooke, former US ambassador to the United Nations and president of the Global Business Council on AIDS, called it 'the most serious threat the world faces today' (Neary 2001:4). Kofi Annan, Secretary General of the United Nations, speaking at the XV International AIDS Conference in Bangkok, 2004, described AIDS as 'far more than a health crisis. It is a threat to development itself.' Oxfam now 'mainstreams' AIDS within its work, and few research institutes, government departments and international agencies concerned with development do not have an AIDS programme.

Partly the growing focus on AIDS within the development community is the result of the sheer scale of the epidemic. According to the United Nations, since HIV was identified in the 1980s as the cause of AIDS, more than 23 million deaths are estimated to have been attributable to the virus, and a further 39.4 million people to be currently living with HIV, 25.4 million of whom are in sub-Saharan Africa and 95% in poor countries (UNAIDS 2003a; UNAIDS/WHO 2004a). In 2004 alone, approximately 3.1 million people died of AIDS and another 4.9 million contracted HIV (UNAIDS/WHO 2004a). There is no sign either that these figures represent the peak of the global epidemic. While rates of increase may be levelling off or perhaps declining in Latin America and sub-Saharan Africa, other parts of the world such as India, Russia and China appear to be on the brink of exploding epidemics. Even in the West, where rates of infection are tiny by comparison, recent increases in HIV and other STIs have been observed, leading to fears about complacency and a renewed spread of disease.

A number of factors make HIV/AIDS not just a health and medical disaster for poor countries, but a much more general threat to development. Firstly, since the disease is primarily sexually transmitted, it disproportionately affects adults of reproductive age,

the most productive members of society and those on whom both younger and older generations are often dependent. Secondly, there is generally a lengthy period between infection with HIV and the onset of illness, increasing the likelihood of infection being passed on and decreasing the effectiveness of public health campaigns since it may be years before infected people feel unwell or realise their status (see Appendix IV for a brief review of biomedical aspects of HIV/AIDS). Finally, there is to date no vaccine or cure for either HIV or AIDS, nor any expectation of either being developed in the near future. Drugs can in many cases slow down the progression of illness and prolong life, but fewer than 8% of those who need treatment currently receive it, most of them in the developed world (World Health Organization 2004a). In poor countries infection with HIV in the vast majority of cases results inevitably in a period of declining health and productivity followed by death, usually within ten years of acquiring the infection. When large numbers of people are affected the implications for social, economic and personal life – for development in every aspect – become profound. Section 5.2 below discusses these in more detail.

The situation in South Africa

South Africa is a middle-income country with a population of about 47 million people. Demographic data still frequently divide the population according to pre-1994 racial categories of black/African, white, Coloured and Indian. Currently about 79% of the population is black, 10% white, 9% Coloured and 2% Indian (Statistics South Africa 2004). South African cities have been and continue to be subject to processes of rapid urbanisation. Some 60% of the population now live in cities, and 40% in rural areas. In both urban 'informal' (squatter) settlements and sparsely populated rural areas large parts of the population lack infrastructure and access to services, making accurate demographic information difficult to come by.

In terms of AIDS South Africa is one of the world's worst-affected countries, having an estimated 5.3 million people living with HIV infection, the highest absolute number of cases of any country (UNAIDS/WHO 2004a). The figure is an extrapolation from Department of Health antenatal clinic surveys conducted in 2002, which revealed a national HIV prevalence rate[37] of 26.5% among clinic attendees. The

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[37] The percentage of the population estimated to be infected with HIV at a given time. Prevalence rate

epidemic is relatively recent: in 1990 prevalence was just 0.76% (Abdool Karim and Abdool Karim 1999). By 2003 medical researchers were calling for AIDS to be recognised as a national emergency (Stabinski, Pelley et al. 2003).

Within South Africa, there are widely varying rates of infection, indicating the existence of a number of sub-epidemics. KwaZulu-Natal, the most populous province, appears consistently the worst-affected, recording three times the prevalence rate of the Western Cape (see Table 5.1 below). Compared with adult prevalence rates across sub-Saharan Africa generally of around 8%, and worldwide of 1% (UNAIDS/WHO 2004a), KwaZulu-Natal's 37.5% in 2003 represents the epidemic at one of the most devastating levels found anywhere in the world. Extrapolated to the province's general population, these antenatal figures suggest that about 1.8 million people, or 20% of KwaZulu-Natal's 9.2 million inhabitants, are currently living with HIV. 370,000 people are thought to have died in the province from AIDS in 2003 alone (UNAIDS/WHO 2004b), compared with 364,000 deaths in the whole country in 1996 (Bourne 2000). Among some groups and in some locations the rates of infection are staggeringly high. Trucking routes from the port of Durban are one example. The South African Medical Research Council gives a figure of 95% prevalence among truck drivers at the en-route town of Newcastle (Singhal and Rogers 2003), where Lamont (2001) found 64% of commercial sex workers to be HIV+.

Although the Department of Health 2003 antenatal survey (see Table 5.1) shows the highest rate of HIV infection ever recorded in South Africa (27.9%), some comfort has been drawn from the fact that the rate of increase appears to be tailing off, suggesting that in terms of new infections at least the epidemic may have peaked. Rates of HIV prevalence in the population are, however, a facet of two factors: the number of new cases entering the population and the number of old cases leaving as individuals become ill and eventually die. When HIV rates level off it may be because fewer people are becoming infected or because more of those who are infected are dying – or a combination of both. Since it takes on average about eight to ten years from HIV infection to the onset of AIDS, experts speak of two epidemics: first an

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is the main measure used to track HIV and AIDS epidemics. Incidence rate (the percentage of new cases within a given time period), another important measure, is inferred from fluctuations in the prevalence rate.

HIV epidemic and then about a decade later an AIDS epidemic. There is evidence that South Africa's declining rate of increase in HIV prevalence may be an indication of an accelerating second-wave AIDS epidemic. In KwaZulu-Natal about 10% of those with HIV are thought to be sick, some 180,000 people[38], representing the onset of the second wave or AIDS phase of the epidemic.

PROVINCE	1999	2000	2001	2002	2003
KwaZulu-Natal	32.5	36.2	33.5	36.5	37.5
Gauteng	23.9	29.4	29.8	31.6	29.6
Free State	27.9	27.9	30.1	28.8	30.1
Mpumalanga	27.3	29.7	29.2	28.6	32.6
North West	23.0	22.9	25.2	26.2	N/A
Eastern Cape	18.0	20.2	21.7	23.6	27.1
Limpopo	11.4	13.2	14.5	15.6	27.5
Northern Cape	10.1	11.2	15.9	15.1	16.7
Western Cape	7.1	8.7	8.6	12.4	13.1
NATIONAL	**22.4**	**24.5**	**24.8**	**26.5**	**27.9**

Table 5.1 HIV prevalence (% with infection) in South African antenatal clinics
Source: Department of Health (2001; 2002; 2003)

Breakdowns of prevalence rates by age (Table 5.2) give further evidence of stabilisation in younger age groups (Ijumba, Day et al. 2004; AVERT 2005).

Age group	2000	2001	2002	2003
<20	16.1	15.4	14.8	15.8
20-24	29.1	28.4	29.1	30.3
25-29	30.6	31.4	34.5	35.4
30-34	23.3	25.6	29.5	30.9
35-39	15.8	19.3	19.8	23.4
40+	11	9.8	17.2	15.8

Table 5.2 HIV prevalence (% with infection) by age in South African antenatal clinics
Source: Department of Health (2001; 2002; 2003)

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[38] Figures from a presentation by Dr Christopher Jack, University of KwaZulu-Natal.

The Department of Health surveys are the most widely cited and relied upon source of data on South African HIV prevalence rates and although they include certain biases[39] antenatal clinic data are considered a reasonable proxy for the general adult population (Barnett and Whiteside 2002). These figures provide the basis of most other estimates, such as those of UNAIDS and the South African Medical Research Council.

A much lower prevalence rate was found by a Nelson Mandela Foundation and Human Sciences Research Council (HSRC) household study conducted in 2002, based on interviews and tests within a selected sample. This survey estimated a national HIV prevalence rate of 11.4%. KwaZulu-Natal ranked fourth among the provinces, with a prevalence rate of 11.7%. The HSRC study also collected racial data, and found that HIV was by no means a purely black disease: overall prevalence among the white population was approximately half that of the black population (6.2% as opposed to 12.9%) but still a generalised epidemic and higher than any other measured level among a white community (Doherty and Colvin 2004). The discrepancies between the antenatal and household survey results have not been fully explained, however the data and methodology of the HSRC study, which was not peer reviewed, have been questioned (UN IRIN 2003).

5.2 AIDS AS A DEVELOPMENT ISSUE

'AIDS is turning back the clock on development.'
(James Wolfensohn, President of the World Bank, address to United Nations 2001)

While infection and disease processes in individuals can be understood as fundamentally biomedical events, epidemics – the spread and patterning of biomedical events in a population – involve complex interlocking webs of social, economic, political and personal factors as well as physical and biological causes. It is now widely recognised that a two-way causal linkage exists between HIV/AIDS

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[39] Pregnant women tend to be disproportionately at the younger end of the adult age spectrum, for instance. HIV is also known to reduce fertility, and thus to be underrepresented in antenatal clinic attendees. Those who are very poor or who live in very remote areas may be unable to attend a clinic and thus be excluded – as will those who can afford private care.

epidemics and underdevelopment and poverty. Zwi and Cabral (1991) identify a range of situations in which normal checks on high-risk practices may be removed, including poverty, migrancy, social disruption and war. A Panos report of 1992 identifies the spread of the illness as both a symptom and a cause of underdevelopment, and argues the need to deal with poverty as part of an anti-AIDS strategy, asserting 'HIV/AIDS will not be contained as long as it is regarded as a health issue and not placed within the overall context of development' (Panos 1992, 151). Researchers at the World Health Organization, Harvard University and UNAIDS argued throughout the 1990s for a broader approach to AIDS that would address social issues such as inequality and human rights as well as biomedical aspects (for example Mann, Tarantola et al. 1992; Mann and Tarantola 1996), although even at UNAIDS itself most programmes remained focused on medical and behaviour-change models (Barnett and Whiteside 2002).

Wallace (1993) proposes that communities under social stress owing to factors such as violence, crime or poverty are liable to increased pathologies and public health problems, particularly HIV/AIDS. Loslier (1993) speaks of 'environmental disorder' and 'pathogenic milieux' as the result of individuals' inability to understand or control their environment and direction of life within it. Webb (1997) identifies specific environments such as truck stops and schools in which physical, social and personal factors conspire to reduce the ability to perceive and respond to health risks. None of this should be taken to downplay the role of individual behaviour and agency, however. Marks (2002) analyses the South African epidemic in terms of a historical/social dimension and an agency dimension, and van der Vliet (1994) perceives a danger of fatalism and disempowerment in a one-sidedly structural view of AIDS. A comprehensive and balanced framework is that of Barnett and Whiteside (2002), who argue that the origins of HIV/AIDS epidemics are historical and structural while acknowledging the role of biomedical and behavioural factors in each instance of infection. They develop a model based on four levels of causation ranging from immediate biological determinants to macro-structural factors such as culture – see Table 5.3.

Distal determinants		→	Proximal determinants
Macro environment	**Micro environment**	**Behaviour**	**Biology**
Wealth	Mobility	Rate of partner change	Virus subtypes
Income distribution	Urbanisation	Prevalence of concurrent partners	Stage of infection
Culture	Access to health care	Sexual mixing patterns	Presence of other STIs
Religion	Levels of violence	Sexual practices and condom use	Gender
Governance	Women's rights and status	Breast feeding	Circumcision

Table 5.3 Barnett and Whiteside's 'whole story' of determinants of AIDS epidemics
Source: Barnett and Whiteside (2000)

Depending on how these factors operate, levels of AIDS susceptibility (likelihood of infection) and/or vulnerability (damaging effects of infection) rise or fall. Societies differ in terms of both susceptibility and vulnerability, as do groups and individuals within society. Neither the spread nor the impact of the disease is evenly distributed at any level of analysis, whether regional, national, community or household. Some people and some groups are always more likely to become infected than others, and some (not necessarily the same) to experience more negative effects once infected. Poverty in all its dimensions is often – but not always – a factor underlying other determinants of increased susceptibility and vulnerability to AIDS. Poor nutrition, hygiene and housing, and exposure to other diseases, weaken resistance to infection, and exacerbate its effects. Social stresses suffered disproportionately by the poor, such as migrancy, exclusion, conflict and violence (Epstein 2001), have been implicated in risky behaviour, sexual abuse and the breakdown of institutions and mores (DeJong 2003). Limited social services, education and access to media and information may prevent poor people receiving public health messages and reduce ability to calculate risk (Population Services International 2003). Discrimination, inequality and the inability to realise human rights further disproportionately increase vulnerability and susceptibility among the poor (UNAIDS 2003b).

Poverty can be especially damaging for women, particularly in societies with very unequal gender relations, as in much of sub-Saharan Africa. Economic dependence on

men, lack of power in relationships and often limited access to education mean that poor women may find it difficult or impossible to protect themselves and engage in sex on their own terms, for example, in demanding fidelity from partners or insisting on the use of a condom. Prostitution and sexual abuse – unavoidable ways of life for many women in fractured communities – further increase the risks.

Causal factors in the KwaZulu-Natal epidemic

South Africa as a whole has shown itself to be extremely susceptible to HIV, experiencing in the late 1990s one the fastest-growing HIV epidemics anywhere in the world (Whiteside and Sunter 2000). Within the general epidemic are sub-epidemics differently affecting particular regions and sections of society. As described above, KwaZulu-Natal is the worst-affected province, with estimated adult prevalence rates of 37% or more.

Numerous factors at all four of Barnett and Whiteside's levels have been implicated in the general South African epidemic and its particularly severe manifestation in KwaZulu-Natal. At a biological level, for example, South Africa has high levels of STIs and many cases are never treated. In 1995 more than half the women visiting antenatal clinics were found to have at least one STI, and 15% tested positive for syphilis (Harrison 1995). Behaviourally, there is evidence that in at least some sections of society it is not uncommon to have relatively large numbers of sexual partners, often concurrently (Whiteside and Sunter 2000). Cultural factors such as a high value placed on childbearing and fertility have been thought to create potential conflicts between individual life goals and HIV prevention strategies such as condoms and abstinence. While this may be true, there is evidence from KwaZulu-Natal that perceived risk of HIV infection is a significant factor in determining whether adolescent girls see pregnancy as desirable, and that it is in fact perceived as more problematic by young black women than by those who are white or Indian (Rutenberg, Kaufman et al. 2003).

In terms of the wider social and economic environment, low social cohesion combined with high overall wealth have been identified as two key determinants in the spread of HIV (Barnett and Whiteside 1999; Whiteside and Sunter 2000). Societies with weak and non-inclusive civil and political institutions but relatively

high income are typically very unequal in terms of wealth distribution, and it is this pattern which the Barnett and Whiteside framework identifies with rapid and severe epidemics. This is the pattern found in South Africa, where extremes of wealth and poverty exist side by side.

Many of South Africa's structural problems go back to apartheid, which formalised and institutionalised social divisions, emphasising tribalism, disrupting communities, and separating families through systems of migrant labour that removed men for lengthy periods. Migrancy in particular has been implicated in the early spread of HIV in South Africa (Hunt 1989; Jochelson, Mothibeli et al. 1991). Living in single-sex hostels away from wives and families for months at a time, doing physically punishing and dangerous work, and with little opportunity for other forms of recreation and leisure, men working on the mines found visits to prostitutes were often the only release and source of pleasure. Campbell (2001) details some of the extreme demands and dangers faced by men in such circumstances, and the loneliness and intimacy needs that led many to reject condom use and to ignore the risks of HIV transmission.

Under apartheid public services such as health, education and policing were chronically underfunded and extremely limited for the black population – the township of Soweto, for instance, became notorious for some of the highest murder rates in the world. Whiteside and Sunter (2000) identify a wide range of factors stemming from apartheid as causally implicated in the rapid spread of HIV in the 1990s, including income inequality, female poverty, fatalism, diminished self-esteem and responsibility, the disruption of civil society, conflict and political violence, and high levels of violent crime and rape.

The problems did not diminish with the decline of apartheid during the 1980s and its eventual replacement in 1994 with a democratic government. Population movement in fact accelerated in the 1980s and 90s as relaxed regulations made it possible for the rural poor to move in large numbers into urban and peri-urban areas, forming vast informal settlements which have some of South Africa's highest rates of HIV infection (Floyd 1997). Research undertaken in 1994 estimated as much as half the population to be living in informal settlements, with 12 million lacking clean drinking

water and 20 million adequate sanitation (Finance Week, November 3-9, 1994).
Violence, conflict and social disruption also intensified in the period leading up to the
1994 democratic elections. The worst affected region was KwaZulu-Natal where the
state conducted an undercover dirty war provoking bloody conflict between the
traditionally Zulu party Inkatha and the African National Congress (ANC). Large
areas of the countryside experienced a decade or more of brutalising terror, with
devastating effects on social cohesion and particularly on women (Meintjies and
Goldblatt 1998; Turshen 1998). South Africa remains a very violent society, with rape
and assaults against women and girls implicated in the AIDS epidemic (Marks 2002).
Men themselves have been victims, perpetrating aggression and abuse in response to
the endemic exploitation and powerlessness they endured under apartheid (Ramphele
2000; Campbell 2001).

South Africa today is a middle-income country with a GDP comparable to Argentina,
Poland or Mauritius, but with significantly lower rankings on measures of social
outcomes such as infant mortality and the Human Development Index. These sad
statistics represent the legacy of apartheid and enduring extreme inequalities in
society (Schneider and Stein 2001), the same factors that underlie the severity of the
AIDS epidemic in South Africa. Public health is worst not in the poorest societies but
in those where inequality is greatest (Wilkinson 1996).

AIDS impacts: the epidemic as a cause of underdevelopment
South Africa, which has already shown high susceptibility to HIV, is now expected to
experience high vulnerability – that is, more serious impacts than in other countries
(Whiteside and Sunter 2000). The scale of South Africa's epidemic is severe, with an
estimated 5.3 million cases of HIV, the highest absolute number of infections
anywhere in the world. South Africa alone accounts for 13% of all AIDS infections.
This is already taking a heavy toll on the country and projections for the future
suggest a worsening situation for many years to come.

The most obvious and direct effect of AIDS is in terms of personal suffering. Without
an accessible and effective treatment programme, and with more than a third of the
adult population infected in some areas, the potential scale of sickness, suffering and
death to come is enormous. Research shows, for example, that PWAs experience

severely compromised quality of life in terms of diminished mobility, inability to carry on with normal activities, and increased pain, distress, anxiety and depression (Hughes, Jelsma et al. 2004). Families come under severe pressure, as productive adults fall ill or die, with devastating emotional and financial consequences for the household. Already poor families use up meagre savings, borrow money or cut back on essentials such as clothing, electricity and food to pay for treatment and funerals or make up for lost income. Research carried out in South Africa in 2003 found that more than half a sample of 700 AIDS-affected households lacked sufficient income to stave off starvation (UNDP 2003). Projections suggest that by 2012 expenditure on food, beverages and tobacco will be some R30 bn lower than in 2003.[40]

As well as diminished financial status, AIDS brings changes in household composition, with fewer working adults and more elderly people and young children. Some households come to consist entirely of children; in others a whole generation is missing. Loss of one or both parents, and of siblings, imposes serious trauma on children, who may themselves be sick as well as bearing the burden of caring for sick relatives. Orphaning diminishes a child's ability to access necessities such as food, clothing and education, making AIDS just one factor in a pattern of multiple social disadvantages that such children may face (Bray 2003). In the absence of AIDS, about 1-2% of South African children would be expected to be orphans. Recent research suggests that in South Africa the figure may now be as high as 13%, representing some 1.1 million children requiring care and straining already poor households and communities to breaking point (UNICEF 2004a). KwaZulu-Natal alone had an estimated 175,000 AIDS orphans in 2003, a figure expected to almost triple by 2010 (Whiteside and Sunter 2000).

Structural impacts of AIDS are expected to be felt in all South Africa's social services, many of which are already vulnerable and undergoing processes of fundamental transition. In terms of health care, PWAs need a continuum of care, encompassing not only medical treatment but physical and mental rehabilitation services. Since 2003 treatment with antiretroviral drugs (ARVs) has been part of the

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[40] Figures presented Professor Carel van Aardt to conference of the Demographic Association of South Africa 2003 (Leeman and Altenroxel 2003).

government's AIDS strategy and health services now face unprecedented challenges in terms of delivery, as well as in providing palliative medicine, community health services and hospice care for the dying – in addition to which many health workers are themselves infected. South Africa also faces major difficulties in providing appropriate multi-disciplinary care (Hughes, Jelsma et al. 2004). Social services must support families faced with the loss of a breadwinner, children without parents, communities distorted by high mortality among young productive adults. And the burden is not just material and economic: the prevalence of sickness demoralises communities and brings an epidemic of depression in its wake.

The education system, too, is threatened by AIDS. Badcock-Walters et al. (2003) find KwaZulu-Natal teachers dying at three times the rate that would be expected in the absence of AIDS, and UNICEF (2000) estimates that 100,000 South African children have lost their teachers to AIDS. 21.8% of KwaZulu-Natal teachers are believed to be HIV+ (Khangale 2005). At the same time, numbers of school entrants are declining in the province (Badcock-Walters 2001), possibly because of the need to care for sick relatives and orphaned siblings, or because they are ill themselves (Van der Merwe 2001). Furthermore, black participation in higher education is being compromised, with declining numbers of university entrants and losses among management and academic staff (Ntshoe 2003).

Demographically, the impact is hard to overestimate. A recent study by the South African Medical Research Council found that deaths of people aged between 15 and 49 increased 68% in six years, from 272,000 in 1998 to 457,000 in 2003 (Quinn 2004). After taking population growth and improved reporting into account, the study concluded that this represented an increase of 44% percent in the death rate. Deaths among women aged 20 to 49, one of the groups most at risk from HIV/AIDS, increased by 168%. Life expectancy at birth was estimated by Statistics South Africa (2004) to be 51.4 years in 2004, compared with 63.5 years in 1991. The same report put the population estimate in 2004 at 46.6 million, compared with an expected 48.3 million in the absence of AIDS. Medical Research Council projections show life expectancy falling to about 40 years by 2010 (Bourne 2000). In KwaZulu-Natal it may be even lower, dropping from 53 years in 2000 to 37 years by 2008 (Actuarial Society of South Africa 2000).

Whiteside and Sunter (2000) anticipate a more severe economic impact in South Africa than in other countries since South Africa has a more developed economy and is expected to suffer disproportionately from loss of skilled and professional staff. Businesses will have to cope with increased illness and death among the workforce, and an escalating bill for health and life insurance, as well as obligations towards children and families of workers who fall ill. Some industries, such as mining and car manufacturing, have implemented ARV treatment schemes for workers (Ijumba, Day et al. 2004) but others have responded with outsourcing and investment in technology, threatening to increase already high rates of unemployment (Leeman and Altenroxel 2003; Doherty and Colvin 2004; Lewis 2004). Agriculture, too, will be hit hard with 30-45% of farm workers thought to be HIV+ (Njobeni 2005) and an estimated 20% decline in labour expected by 2020 (Food and Agriculture Organization 2002). The state is projected to suffer a loss of tax revenues and civil servants, and at the same time to experience a significantly increased financial burden owing to the relatively high level of provision in terms of pensions, health care, housing, utilities and child maintenance grants (Whiteside and Sunter 2000).

5.3 INTERVENING IN HIV/AIDS

It is now widely accepted that the complexity of AIDS and the multiple factors implicated in its spread and impact, requires a multisectoral and multifaceted response. Furthermore the limitations of a medical and individualistic view of AIDS are being recognised in intervention strategies as well as in determinants and impacts (Petersen and Swartz 2002). AIDS is not a problem that government alone can solve, and a concerted effort is called for involving coordinated efforts on the part of business, media, schools, the voluntary sector, communities, health care workers and many other groups as well as the state. Furthermore, interventions need to be aimed at individuals, households and groups, and also at structural and systemic features of society. Singhal and Rogers (2003) identify three main targets for intervention: cultural beliefs, availability and use of resources, and the political will of the national government. Barnett and Whiteside argue for a 'continuum of policy and practice spanning prevention and impact mitigation' (Barnett and Whiteside 2002:316) and

including an important component of care. As with determinants, they categorise
interventions according to their degree of proximity to or distance from the medical
event of infection – see Figure 5.4.

Distal interventions ⟶			Proximal interventions
Macro environment	**Micro environment**	**Behaviour**	**Biology**
Social policy – redistribution	Social policy Economic policy	Behaviour change communication	STD treatment
Legal reform	Human rights	Condom promotion and marketing	Blood safety
Human rights	Employment legislation	Voluntary counselling and testing	Anti-retroviral therapy
Debt relief			
Terms of trade		Intravenous drug use harm reduction	Vaccines and microbicides

Table 5.4 Interventions in AIDS

Adapted from Barnett and Whiteside (2000)

Anti-AIDS programmes and activities in developing countries have historically
focused on prevention rather than treatment, and particularly on targeting personal
behaviour and promoting 'safer sex' practices. Such programmes typically make use
of public information campaigns, radio and television drama, peer-to-peer education,
youth work, condom distribution, and an emphasis on abstinence and fidelity. The
well known ABC campaign is typical, with its slogan 'Abstain, Be faithful,
Condomise'. In South Africa attempts at such programmes began in the 1980s but
were often poorly conceived, culturally inappropriate and fatally associated with a
racist government (see for example Zwi and Bachmeyer 1990; Christie 1991;
Hamilton 1991; Fleming 1992; Holmshaw 1992; van Niftrik 1992; Carswell 1993;
van der Vliet 1994). Webb (1997) argues that the failure was due both to lack of
adequate understanding and planning, and also to the complexity of the problem,
which required a response for which capacity was lacking. In 1994 the new
government introduced a National AIDS Plan but implementation was marred by a
number of high-profile controversies such as the payment in 1995 of R14m to a
playwright to produce a musical with an anti-AIDS message (PHILA 1996) and an
aborted scheme to make AIDS a notifiable disease. By 1998 the Plan was being
described by an official as merely 'a neat book on the shelf' (Schneider and Stein
2001:724).

Even when information, education and communication (IEC) programmes are well conceived and effectively implemented, they do not necessarily lead straightforwardly to behaviour change. Insisting on the use of a condom is not merely a matter of awareness and resources but of negotiating power – power which women frequently lack. A study of schoolchildren in KwaZulu-Natal showed that even where levels of awareness are high individual behaviour varies widely (James, Reddy et al. 2004). People cannot necessarily act on information; programmes may need in addition to teach skills such as communication and negotiation, and to address deeper issues such as gender attitudes (Irwin, Millen et al. 2003). Religious and cultural factors need also to be considered: condoms may be unacceptable to Roman Catholics and for some they are associated with attempts by white governments to control black fertility. Mistrust also exists among the poor of the current government, with both messages and interventions failing to address local needs and contexts (Kalichman and Simbayi 2003). A study of school prevention programmes found that integration into the wider psychosocial context of the community was critical, and that interventions needed to target different levels of interaction not just a single environment such as the school (Visser, Schoeman et al. 2004).

Tawil, Verster et al. (1999) go further, arguing for structural interventions and enabling approaches which take the emphasis off information and persuasion and place it instead on the creation of circumstances that enable behaviour change. Environments need to be created that promote individual choice, lower barriers to protective behaviour and raise barriers to risky behaviour. In developing countries this may mean interventions such as economic empowerment of at-risk communities and strategies to increase women's access to resources. When it comes to changing health behaviour economic and political empowerment may in fact be a better recipe than information provision.

Economic projects do not of course replace medical intervention and research continues into the possibility of an AIDS vaccine. Despite a massive research effort and a number of trials, there is currently little hope of any imminent breakthrough. HIV is one of the most variable and rapidly mutating viruses known, and since it targets the immune system itself immunisation is particularly difficult. Vaccines have, however, been developed that are effective in protecting monkeys against SIV. This,

and the apparent ability of some long-term HIV+ patients to remain well, suggests that a protective mechanism may eventually be discovered.

In developed countries HIV+ individuals routinely have access to ARVs which in many cases are able to maintain good health and prevent AIDS developing for ten years or more. In poor countries ARVs are generally available only to those with private health insurance or personal wealth, although since 2003 ARV treatment has been government policy in South Africa, and some public provision has begun. Developing countries can experience many difficulties in making ARVs available, however. Initially patents held by drugs companies were a major obstacle, but cheaper generic versions of many drugs are now widely produced. More problematic are inadequate and overstretched public health delivery mechanisms, especially in rural areas where many people have little or no access to the system. It has sometimes been argued that ARVs are inappropriate in a resource-poor setting as the complex drug regime requires patients too manage large numbers of pills on a daily basis, taking some with meals they may not be obtaining. Recent research, however, shows that treatment can be successfully managed even in poor settings (Kasper, Coetzee et al. 2003; Coetzee, Hildebrand et al. 2004; Goemaere, Louis et al. 2004).

Discussions of national-level AIDS responses frequently refer to 'political will', the degree of commitment and personal identification shown by leaders and policy makers. Singhal and Rogers (2003) maintain that the absence of political will renders other interventions ineffective. They use comparative case studies to show that the political commitment of leaders and policy-makers can be an important factor in bringing AIDS under control, and maintain that President Mbeki's support for dissident views on AIDS (essentially denying the link with HIV) has damaged South Africa's ability to respond effectively. Others argue that this is simplistic and that in a country such as South Africa, faced with restructuring every level and aspect of public life after 1994, lack of political will is an inadequate explanation, and that even excluding this there would have been no simple and effective way of implementing the broad, multisectoral response that AIDS requires (Schneider and Stein 2001). Grindle and Thomas (1991) criticise the vagueness of the political will concept and argue the need for more detailed knowledge and analysis of actual decision-making processes in government.

Decision-making about AIDS in South Africa has been agonisingly slow and circuitous but in 2000 the government finally produced an HIV/AIDS/STD Strategic Plan (Department of Health 2000) to replace the defunct National Plan. The new plan envisages a complex linkage of government agencies at national and provincial level with involvement from business, civil society, communities and PWAs. Fifteen main goals are identified in four priority areas, with NGO input envisaged particularly in youth prevention; women's health; community work; children's rights; and information, education and communication (IEC) and media – a summary appears in Table 5.5. In addition the plan suggests that each sector, including NGOs, should develop its own specific plans and establish a technical AIDS committee to oversee implementation and liaise with government.

In its November 2003 budget the South African government announced a dramatic increase in AIDS funding, from R3.3bn to R12 bn over three years. R1.9 bn is earmarked for ARV provision at 75 treatment sites across the country, to be manned by specially recruited health workers. The level of funding was designed to enable the government to meet the Treatment Action Campaign's target of 200,000 people in treatment by March 2005 and everyone who needed it by 2006. However, in March 2004 President Mbeki revised the initial target down to 53,000 people in treatment by March 2005. The first progress report appeared in September 2004, at which stage 11,253 patients were receiving treatment (Department of Health 2004).

AIDS is, however, a more than national problem. From the start its spread has been associated with international travel, and it has also spawned unprecedented global intervention. AIDS has inspired international advocacy and activism on a vast scale, and has led to unique coalitions spanning some of the most and least developed regions of the world and cutting across sectoral, language and cultural barriers. Governments and civil society organisations have collaborated to force multinational drugs manufacturers to reduce prices, and at Doha in 2001 gained a major concession from the World Trade Organization which agreed to waive 20-year drugs patents and allow cheap generics to be produced in public health emergencies. The recognition of AIDS as a worldwide crisis has led to the founding of a new global institution, the Global Fund against AIDS, Tuberculosis and Malaria (GFATM). Despite controversy and problems over raising and disbursing funds GFATM, with its massive target

MAIN GOALS	NGO INVOLVEMENT
Priority Area 1: Prevention	
1. Promote safe and healthy sexual behaviour	• Prevention strategies e.g. with traditional leaders, youth, FBOs, business, media • Condom distribution, acceptance
2. Improve management and control of STDs	
3. Reduce mother-to-child transmission	• Antenatal counselling guidelines and training • Health-care access for HIV+ women
4. Address issues relating to blood transfusion and HIV	
5. Provide post-exposure services	
6. Improve access to voluntary HIV testing and counselling	• Access work, especially with youth
Priority Area 2: Care and support	
7. Provide treatment, care and support services in health facilities	• HIV/AIDS/STDs/TB as poverty indicators • Poverty alleviation projects
8. Provide treatment, care and support services in communities	• HBC guidelines, teams • Stigma-reduction • IEC materials • HBC promotion in media
9. Develop and expand provision of care to children and orphans	• Advocacy on children's issues • Resource mobilisation • Legal protection issues • Welfare and rights support
Priority Area 3: Monitoring and evaluation	
10. Ensure AIDS vaccine development	
11. Investigate treatment and acre options	
12. Conduct policy research	
13. Conduct regular surveillance	
Priority Area 4: Human and legal rights	
14. Create an appropriate social environment	• Promote openness and acceptance through discussion of sexual practices, VTC access, awareness of rights and responsibilities
15. Develop appropriate legal and policy environment	

Table 5.5 Goals of South Africa's HIV/AIDS strategic plan and envisaged NGO roles

budget (as yet unrealised) of $9 billion pa, represents a unique attempt to deal with a health crisis on a global scale. On World AIDS Day (1 December) 2003, UNAIDS and the World Health Organization jointly launched the '3 by 5' initiative to deliver ARVs to 3 million people by the end of 2005. With plans to train 100,000 health workers and develop health systems and infrastructure across 50 countries, it is one of the biggest treatment projects ever undertaken. By December 2004, 700,000 people in target countries including South Africa were receiving treatment (World Health Organization 2005).

Not all responses to AIDS are deliberate interventions or managed projects. In fact, perhaps most responses are the slow, painful, ad hoc adaptations people make out of necessity, responding to changed circumstances as best they can. One example is the way in which the epidemic is gradually bringing about cultural change. The sheer numbers of AIDS deaths in Durban are making stigma and denial increasingly impossible to maintain, for example, and are forcing people to rethink funeral and burial practices (Wines 2004). Similarly, while it is well known that gender inequality and oppression of women is a causal factor in South African epidemic, there are signs that AIDS has been forcing *men* to confront mortality and admit vulnerability in a way that may be altering entrenched ideas of masculine superiority (Morrell 1999). Material conditions – as externalists like to point out (see chapter 3) – can change culture and concepts.

This applies not only to those living in poor, AIDS-affected communities. Barnett and Whiteside argue for no less a change of mentality in the rich world:

> 'We must turn away from the excessive individualism of the final decades of the twentieth century to a *re-cognition*, literally a rethinking, of the ways in which our individuality depends upon common undertakings for the common good ... A change of consciousness is required. It is necessary to recognise health and well-being as public goods … Right now this is not the case.' (Barnett and Whiteside 2002:348).

Macro approaches to intervention often focus on strengthening human rights. UNAIDS (2003b), for example, identifies rights such as freedom of expression and association, access to information and education as important components of effective response. While few would dispute this, it is perhaps now time to look beyond individual rights to collective interests such as a safe and healthy environment and protection from fatal disease. Epidemics are fundamentally social phenomena, while rights address the welfare of individuals and have to be backed by legal process – not necessarily the most appropriate strategy in the face of a global pandemic (Campbell and Williams 1999; Barnett and Whiteside 2002).

5.4 NGOS DEALING WITH THE EPIDEMIC

In almost every country in the world the first response to AIDS has come from NGOs (Panos 1992). AIDS is almost always a highly stigmatising disease when it first appears, being associated with activities that governments and publics alike prefer to deny, such as intravenous drug use, homosexuality, prostitution and promiscuity. By conceiving of the disease in terms of risk groups and risk behaviours, mainstream society raises conceptual barriers between itself and the disease. In such circumstances AIDS is an unlikely vote-winner for governments and NGOs consequently tend to be at the forefront in advocacy and service provision. This is true as much in the developed as in the developing world, with NGOs such as the Terrence Higgins Trust and AIDS Coalition to Unleash Power (ACT UP) playing leading roles in Britain and the United States respectively. In developing counties the lead has tended to be taken by women's groups, community groups and faith-based organisations.

Even when governments do belatedly act, the complexities and often the scale of AIDS are such that NGOs remain crucially important partners in mounting an effective response. Community and NGO involvement has been central to the success of many public health projects (Kahssay and Oakley 1999) and research on primary health care shows the importance of community participation (World Health Organization 2003b). The World Health Report of 2004 stresses the role of NGOs in responding to AIDS at all levels:

'Forming close partnerships with communities and civil society groups, particularly people living with HIV/AIDS, will be crucial to achieving the treatment target, to the success of the overall response, and to the wider goal of strengthening health systems. Such community participation will include advocacy, delivery of services and support to patients. Involving communities as full partners will require changes to the way in which public health services are delivered.' (World Health Organization 2004b:43)

In the context of South Africa NGOs are core providers of training programmes, counselling, workplace programmes, religious and spiritual support, human rights lobbying, prevention and media programmes such as Soul City, a soap opera that has had measurable impact on behaviour (Schneider and Stein 2001). At least as important is the role of NGOs in finding creative solutions to the longer-term effects of AIDS. Barnett and Blaikie (1992), for example, credit NGOs for their innovative approach to problems such as finding new types of housing for orphaned children.

Nevertheless, the central role of NGOs in AIDS is not unproblematic and is argued by some to have led to failures in dealing effectively with the epidemic. De Waal (2003) criticises the NGO approach and the model that has grown up around it by default that AIDS is best dealt with by voluntarism and community participation, rather than by deliberate policy-making and ruthless setting of priorities. NGOs have also been at the fore in promoting right-based approaches which have been criticised for downplaying the importance of public health and social justice interventions. De Cock (2002) for example, argues for disease prevention measures such as prolific testing and tracing of contacts.

Even among the NGO community misgivings have long been expressed about the roles they have found themselves assuming in the absence of effective government action. In 1992 Sue Lucas of the AIDS Consortium for the Third World commented:

'It's not the role of NGOs to research and predict the impact of the epidemic. They should not be doing nationwide strategic planning. That is the task of governments. NGOs know what they should be doing but may not be

articulating it very well. NGOs have local and specific expertise which should be built into national plans.' (Panos 1992:149)

Such views are not shared by all, however. NGOs do increasingly perform research and seek to influence macro-level planning and policy in areas such as the environment. UNAIDS recognises a core role for NGOs in 'the normative and policy-creating work of the UN' (UNAIDS 1999:8). And the reality remains that in many developing countries the choice is not between properly strategised and implemented state programmes and low-level NGO voluntary action; it is all too often between NGO action or no action. Current thinking on AIDS stresses the need for multisector intervention and the role in these of NGOs remains central even where other actors play their part. Community mobilisation and NGO advocacy is planned into the '3 by 5' initiative, for example, which sets explicit targets for the establishment of partnerships across formal and informal sectors (WHO/UNAIDS 2003). Interventions such as the scaling up of ARV treatment, community prevention programmes and long-term care are simply not achievable without significant and ongoing NGO involvement (UNAIDS 1997; World Health Organization 2003a) .

NGOs in South Africa

In South Africa the period leading up to democracy saw generally cordial and cooperative relations between civil society AIDS organisations and government. Schneider and Stein (2001) characterise this as a period of strong networks linking NGOs, health workers, local government and anti-apartheid groups, and an atmosphere of hopeful anticipation that civil society and government would work together on implementing the National AIDS Plan. None of this materialised, however, and by 1998 very little progress had been made and relations between government and NGOs had soured.

It has been argued that the NGO sector weakened after 1994 (Kraak, Faizi et al. 1996). Pearce (2000) sees NGOs during this period as struggling to redefine their role under an ANC-led government, while Crush (1995) argues that in fact they did not change substantially but maintained the 'charity' character they had under apartheid. Webb (1997) describes a period of infighting exacerbated by a 'scramble for funds' as AIDS started to generate a revenue stream. Despite tensions, however, the NGO community as a whole has continued to feature significantly in government planning

and, through a system of tendering, in service delivery for the state. While some NGOs are donor-funded and independent of the state, for many government funding remains a major source of income. At the same time, a number of more politicised and activist groups has begun to emerge – deprecatingly termed 'ultra-left' by the government. These groups challenge government policy and advocate more radical social justice and pro-poor agendas, including in health and AIDS policy (Forrest 2003).

Many of the new activist groups are small but some, such as the National Association of People with AIDS (NAPWA) and Treatment Action Campaign (TAC), have substantial memberships and international linkages. They are not necessarily anti-government but they have been able to draw on support from labour and opposition groups, as well as the continuing poverty and exclusion experienced by many black South Africans. They have already had demonstrable influence on government policy (Haffajee and Robinson 2003) and appear to be evidence of a broader and more dynamic public sphere emerging – a feature recognised as central to the development of democracy in South Africa (Zegeye and Liebenberg 2001; Rønning 2002). A key factor in access to the state by interest groups is the media (Rønning 2002), and many activist groups – notably the TAC – have successfully integrated new electronic media into their activities alongside traditional media (Wasserman 2005 forthcoming-a).

It is not surprising that South African civil society has adopted the Internet as a strategic tool. South Africa is an Internet leader in Africa, with the continent's greatest number of subscribers (Jensen 2002). However, access patterns mirror the general patterns in inequality in South African society, with significant gaps between blacks and whites, and between men and women (Tables 5.6 and 5.7).

	Men		Women	
	2000	**1999**	**2000**	**1999**
Access at work/place other than home				
White Black	25.2% 6.4%	n/a 2.6%	27.6% 1.6%	26.2% n/a
Access at home				
White Black	37.4% 1.4%	35.6% 1.2%	34% 0.4%	31.8% n/a

Table 5.6 South Africans with access to a PC (major metropolitan areas)
Source: Webchek (2000)

	Men		Women	
	2000	**1999**	**2000**	**1999**
Access at work/place other than home				
White Black	12.8% 1.8%	n/a 0.4%	12.2% 0.4%	8.2% n/a
Access at home				
White Black	12.2% 0.2%	9% 0.2%	10.6% 0.2%	7.4% n/a

Table 5.7 South Africans with Web access (major metropolitan areas)
Source: Webchek (2000)

More recent surveys have found growth in access, especially among women, but connectivity remains almost entirely limited to the educated, urban and well-off, who are still predominantly white professionals and office workers (Goldstuck 2002). An International Telecommunications Union study found 3.1m Internet users in South Africa in December 2002, 6.5% of the population.

It is of course not only or perhaps even predominantly for local communication that AIDS NGOs are turning to the Internet. Bennett (2003) identifies the Internet as a tool of global advocacy networks and coordinated action, unprecedented in its ability to

cross boundaries of time, space, culture, even language, and the wide range of NGO uses of information and communication technology (ICT) have been discussed in the previous chapter. Within South Africa attention has recently begun to be paid to the use of electronic media and information technologies as weapons against AIDS. The 2003 Health Informatics in Africa (HELINA) Conference was held in Johannesburg under the title 'Communication and Information Technology in the Global Fight against HIV/AIDS', and included a number of papers relating to civil society. The Southern African NGO Network (SANGONET) is due to hold the first of its annual ICTs and Civil Society conferences in 2005.

Perhaps most of all, the high-profile success of the TAC's international media campaigns has made the sector aware of the potential of ICT. TAC has used Internet technology to network and link together its poor and local constituency with national and international elites, creating a formidable force with which to pursue its agenda (Robins and von Lieres 2004). It has already won numerous highly publicised battles, both with the government and with pharmaceutical companies. Wassermann (2005 forthcoming-b) highlights the part played in TAC's success by its ability to make use of the Internet as an alternative news medium, a forum for interaction and site of organisation and mobilisation. The implications for knowledge – the subject of this thesis – are evident: the exchange of information and the ability to participate in collective processes of reasoning, problem-solving and creative thinking, as well as to link in to global networks of expertise, are core knowledge capabilities.

5.5 SUMMARY: AIDS NGOS IN CONTEXT

The general theory developed in chapter 3 identified aspects of the social and material environment as crucial determinants of the development and expression of capability. We have now seen how both individual health behaviour and the spread and patterning of AIDS epidemics are profoundly influenced by features of the broader environment. In the case of KwaZulu-Natal, historical factors such as the injustices of apartheid coupled with state-sponsored violence in the countryside have had a devastating effect on capability in general, and on the response to AIDS in particular. To the extent that there has been a response, it has come first and foremost from

NGOs and only relatively recently from the state and private-sector. The NGO sector, however, suffers from multiple capability deficits, particularly in terms of its identification with charitable service provision to the detriment of more structural roles. Nevertheless, the focus on environmental factors should not eclipse the importance of agency. A small number of NGOs have become highly effective in AIDS advocacy and policy formation, TAC being one case which has attracted world attention. The skilled and knowledgeable use of ICT, specifically of Internet-based networks, appears to be emerging as an important feature of such organisations, suggesting that technology may in the right circumstances be associated with the expansion of capability. The following chapter now reports on the primary research findings into these complex relationships in a broad range of KwaZulu-Natal NGOs.

6. Case study results

This chapter presents the detailed results of the empirical portion of the project in terms of the reported and observed knowledge activities of NGOs and the way in which Internet technologies were found to be related to these activities. The results are reported here in terms of distinctive three-dimensional view of knowledge developed in chapter 3 and fleshed out in chapter 4 from the analysis of secondary literature on knowledge and technology in NGOs. Section 6.1 describes findings relating to the informational dimension of NGO work, the informational use of technology and information problems. Section 6.2 considers the epistemic activities of NGOs, the epistemic demands and contributions of Internet use, and the epistemic difficulties and limitations experienced by NGOs. Section 6.3 is concerned with the conceptual dimension of AIDS work, often omitted from both philosophical and applied literature on knowledge, but a core aspect of the approach to knowledge developed in this project. Further discussion of the results and integration into the overarching theoretical perspective takes place in chapter 7.

In keeping with the methodological commitments of the study in terms of which testimony is considered in many circumstances to be a reliable source of knowledge, data was collected largely in the form of interviews and questionnaire responses. However since testimony is also recognised to be limited in terms of knowledge processes, which are by no means always transparent to knowers, data also takes the form of observations and inferences. The results that are reported here thus combine elements of testimony with elements of observation and inference. Participants' words are quoted both as direct testimony and as evidence on which inferences are based.

Data for the case study was collected from 59 different NGOs, through interviews and site visits (28 organisations), and through a questionnaire (42 organisations). Eleven organisations participated in both interviews and the questionnaire (Table 6.1).

	Interview/visit	No interview/visit	Total
Questionnaire	11	31	42
No questionnaire	17		17
Total	28	31	59

Table 6.1 Number of NGOs interviewed/visited and responding to the questionnaire

Interviews were also held in ten non-NGO organisations, and questionnaire responses were received from five individuals and groups outside the sector. These included provincial and local government departments, the Durban Chamber of Commerce, researchers and academics, hospital doctors, a journalist, and the Medical Research Council. With both NGOs and non-NGO participants there were a number of cases where the researcher had the opportunity to speak to more than one person in the organisation, or to speak to the same person on more than one occasion, giving a total of 62 separate interviews and 47 separate questionnaire responses from 71 different organisations. The interview guide and questionnaire can be found in Appendix I, and details of participants in Appendix II. Appendix III summarises the quantitative data and discusses statistically significant correlations.

The NGOs involved in the project covered a broad range of civil society groups, including both well-funded, urban, professional organisations and resource-poor rural or grassroots groups, as well as a range of organisations in between. Of the 28 interview sites, 20 were in urban areas and 8 in rural locations, while questionnaire responses were received from 16 rural and 26 urban NGOs. Overall, about 62% of responses were urban based and 38% rural-based, closely reflecting the 60:40 urban: rural division of the country as a whole. Hard and fast distinctions between rural and urban NGOs are extremely difficult to make however, since many groups had offices in an urban or periurban location but in fact did most of their work in rural areas, with the office acting only as a central coordinating point. As well as inhabiting different locations, the organisations also focused on many different aspects of dealing with AIDS. Some worked alongside government departments strengthening local health systems, placing children in care or distributing funding, while others provided local home-based care or feeding schemes, or simply a few hours of counselling every week at the back of a church hall.

By far the majority of NGOs of all types were engaged in service provision, although other activities such as organisational linkages and capacity building were also identified as core aspects of the work of these organisations. With the exception of linking roles such as networking and coordinating, core activities were remarkably similar between urban and rural questionnaire respondents, as shown in Table 6.2.

	% OF NGOS IDENTIFYING ACTIVITY AS CENTRAL		
CORE ACTIVITIES	RURAL	URBAN	ALL
Service provision	69%	69%	69%
Linking	31%	46%	40%
Capacity building	19%	19%	19%
Policy/advocacy	13%	12%	12%
Research	13%	0%	5%

Table 6.2 Core mission activities identified by NGOs

Source: Questionnaire data

6.1 THE INFORMATIONAL DIMENSION

Information is the basis of all knowledge. In terms of the theory developed in Chapter 3, epistemic processes depend crucially upon information inputs, whether these are obtained as unencoded direct experience or in the form of symbolic representations through interactions with what Goldman terms the 'message infosphere'. We therefore begin the case study by reviewing the informational interactions found to be occurring within NGOs, the role played in these by technology and the limitations and problems that were observed.

6.1.1 Information work

NGOs reported and were observed to have both horizontal and vertical information links with many different sectors of society including directly with the community and with beneficiaries, internally within the AIDS and voluntary sectors, and with other specific sectors such as business, academia, the media and various levels of local, provincial and – rarely – national government. Figure 6.1 shows the range of contacts desired by questionnaire respondents, and the following paragraphs describe the actual contacts discussed and observed during interviews and visits.

DESIRED CONTACTS
Community Beneficiary groups Capacity-building organisations Care/HBC/counselling organisations Children's care organisations Community networks Farmers' groups Support/PWA groups Outreach organisations Volunteers **Civil society and AIDS sector** Advocacy and lobbying groups AIDS networks Children's rights organisations Churches Donors, funders, sponsors, investors Human rights groups Women and children's empowerment groups **Public sector** Department of Health Department of Social Welfare Government fundholders Human Rights Commission **Educational/academic** Adult education Early childhood development First aiders Legal experts Life skills trainers Producers of educational materials Researchers Skills development/entrepreneurship experts **Private sector** Clients (for AIDS training courses) Donors

Figure 6.1 Contacts wanted by questionnaire respondents

Links with the community and beneficiaries

Interviews and site visits showed NGOs to be providing a variety of different types of information to local communities, and this was true even of organisations that saw their role primarily as service provision. In a few cases information services were directly available to individuals – for example, one NGO ran an 'AIDS desk' – but a more usual model was for the NGO to provide information through mechanisms such as PWA support groups or income generation projects. Sometimes information resources would be generated by the NGO itself and sometimes they would take the form of third-party material reproduced and distributed by the NGO. Much of the

information transfer that was observed on site visits was informal and involved no written material at all. Particularly in grassroots and community-based NGOs, and in rural areas, it was common to meet local people calling in to an NGO office asking for help or advice or, if they had friends working there, just for a chat. One NGO appeared to be particularly popular because it allowed people to charge their mobile phones in the office. In the course of these visits information relevant to AIDS work could be exchanged, and in both directions, with local people reporting news of individuals or families who needed help or who were ill, for example. In this particular case the NGO had no system for recording such information but it was discussed in the office and at least on some occasions was passed on by word of mouth to home-based carers.

Home-based carers were also seen and used by NGOs as conduits of information to and from rural communities. Their basic role is to support and care for the sick in their own home, but as well as healthcare the carers engaged in numerous different kinds of information and knowledge work. Firstly, they gave skills training by means of practical demonstration to family members on how to care for a sick or dying person at home, often in the poorest of settings where food, water, and other essentials were in short supply. Secondly they offered information-based support to families, telling them what their rights were, how to contact the welfare services and how to claim benefits such as disability or children's grants. Carers reported that because they worked in the intimate surroundings of the home they were able to educate people on subjects that could not easily be discussed in public, such as HIV prevention. Furthermore, they provided counselling services, answering questions and helping family members to deal with fear, stress and grief.

Home-based carers also played an important role in providing information about local communities to NGOs. In one hospital-based NGO the need for information about AIDS patients' home circumstances was a major motivation in starting a home-based care (HBC) scheme: 'We could not just treat them and send them home without knowing where they were going to, what was the home situation, and who was going to take care of them – so that is when we started training home-based carers.'

Information roles in the community also extended far beyond health matters. AIDS was widely recognised to be much more than a medical condition, having implications and challenges for every area of personal and social life. Several rural NGOs stressed the need to provide information on nutrition and particularly on income generation possibilities to affected individuals, families and communities. In fact, for many NGOs the main challenges were seen less in terms of health issues such as prevention and treatment – about which there was often a sense of fatalism – than in terms of impact mitigation such as securing food, shelter, physical security (rape was endemic in some areas) and livelihoods. Other NGOs, typically those in urban or periurban areas, also provided more specialist information, such as on legal and human rights issues, economic and community development and social services. Often information provision depended on the resources available within the organisation or through contacts. However, other models were also emerging. One of the poorest but most activist groups, operating in a complex and fast-changing urban location with high numbers of new arrivals and serious social problems, had actively researched information needs in the area, as a result of which they had decided to concentrate on providing information in the three specific areas of AIDS, paralegal matters and economic empowerment. Another NGO interpreted its informational community more widely and aimed to bring AIDS information to the attention of publics not directly affected. In this it adopted a more media-like role, publishing 'what you can do to help' pamphlets for distribution to the general public.

Links within the AIDS and voluntary sectors

Perhaps the most obvious area of information activity was information exchange among organisations and individuals within the voluntary sector and to some extent the wider AIDS community. Almost all NGOs exchanged information with other NGOs either horizontally or vertically. One particularly common model was that of urban NGOs acting as information sources and intermediaries to smaller community and grassroots groups. Often these urban intermediaries were also channellers of funds and interfaces between donors and service providers, and had acquired informational roles as a result. These roles were bi-directional, with the urban NGO needing to know about the activities and issues faced by the rural groups, and with rural groups needing information and often capacity-building in order to undertake and manage funded projects. Both urban and rural NGOs were acutely aware of the

need to build skills such as report and proposal writing, bookkeeping and other administrative capabilities in smaller NGOs. Training materials – for example for home-based carers and educators – were also often provided by urban NGOs to rural ones. One NGO found written materials, books and information packs invaluable because rural workers 'could not come into town every time they needed information'. A frequent distribution point for written material and for general information exchange within the sector was the 'workshop' – something that could range from a few hours to several days and that brought people from many NGOs together. Workshops were essentially training and discussion sessions but within this context a great deal of information transfer, both written and oral, took place.

Several intermediary NGOs felt that it was important for them to know enough about the sector locally to be able to refer beneficiaries and other NGOs to expertise outside the organisation. Duplication of effort was seen as a constant danger and the importance of knowing whom to consult for help on specific issues such as writing proposals or starting income generation projects was highly regarded.

Information provision to rural areas was often seen as somewhat problematic especially because remote areas were also often those with least technology: 'We have offices in Durban, Cape Town and Johannesburg. We *are* trying to reach out from those areas but it is difficult to get to them by email. We have a newsletter. We get requests, like from a hospital who will write and ask about what we have talked about. There is a demand coming from rural areas.'

Other NGOs appeared to have become known within the sector for their expertise in particular areas, and reported being approached for technical information on matters such as child care, human rights or agricultural and income generation projects. Many of these organisations started out as service providers but through successful service provision found themselves looked to as information resources. In some cases this merged into capacity building and training, particularly where the NGO was perceived as a successful model for others to follow. One case in point was a flourishing network of PWA support groups, which reported being frequently approached for information and advice on how to set up and run a health-support NGO.

Many NGOs had direct or indirect informational linkages with the international AIDS community. One particular catalyst cited by several interviewees was the 13th International AIDS Conference held in Durban in 2000. None of the study participants referred to the conference as an important source of technical or project-related information but for a number of groups it was perceived as an opportunity to communicate their work to a wider audience and to build contacts and relationships with other groups. Several NGOs stressed the importance of knowing whom to approach internationally for different types of information. Such knowledge was seen to be internationally distributed and organisations that were good at acquiring information were often those with strong international linkages and knowledge of NGOs in other countries.

Links with government

Two somewhat different groups of NGOs were found to have strong informational ties with the provincial government. On the one hand there were well-established service providers such as children's charities which had long running links with social welfare and other departments. Many of these NGOs traced their relationships with government back to pre-1994 and the long history of charitable provision of social services in South Africa. These organisations did not define themselves in terms of AIDS but had in many cases had their activities reshaped by the disease and the increasing demands made on services as a result. Their contacts in government remained largely with the departments they had traditionally dealt with and not with the KwaZulu-Natal Provincial AIDS Action Unit (PAAU). One such organisation, for example, saw itself as representing the needs of communities to the Department of Health since health workers frequently had little grasp of AIDS: 'nurses don't know anything about AIDS.'

The second group included many smaller and newer groups as well as networks involved specifically in AIDS work. Their relationships were primarily with PAAU through which they were able to tender for funds and to propose projects. PAAU reported holding regular meetings at which NGOs were invited to discuss their work, the difficulties they faced, and the shortcomings of government plans and interventions. The province also ran capacity building workshops for AIDS NGOs and expressed a desire to do more in this regard. Managerial and administrative

capacities such as report writing and bookkeeping were seen as a problem for the provincial government in interacting effectively with NGOs, and it had implemented sanctions such as stopping funding if reports and invoices were not presented on time.

No NGOs reported close informational relationships with national government. Contacts at this level tended to be through advocacy and campaigning on the part of NGOs, and through the production of high-level strategy documents on the part of government. Some NGOs had closer ties to national government at the level of their central offices but these were almost always located outside KwaZulu-Natal and very little knowledge or participation in such linkages appeared to be resulting in information transfer at provincial or local level.

Local government, however, was making some significant efforts to reach out to and incorporate NGOs into AIDS planning and provision. At the time of the study the Durban Unicity Council was just completing the initial development of a web-accessible database of AIDS groups and initiatives in the region, with a budget of R110,000 (about £10,000) funded jointly by USAID and the Council. It was a small stand-alone project, not part of a Unicity AIDS strategy since, as the researcher was told, 'there is no AIDS strategy'. The technical work and initial content capture were outsourced to an NGO working within a Durban hospital and thus with links to the AIDS community. Researchers were hired to go out into local communities and investigate informal and small-scale initiatives that were otherwise unlikely to be recorded. It was not uncommon for a community centre, church or local NGO existing for some non-AIDS reason to run an AIDS advice or counselling session one afternoon a week, often without any form of publicity except word of mouth, and with no telephone, permanent location or postal address. Larger and more formal organisations were also contacted and asked to supply information for the database. The idea was that content would be updated and maintained by the organisations themselves once the project was up and running, with perhaps a part-time staff member to oversee the process and to run an annual check on any non-updated entries. This has not happened, however, and the database still exists in its 2001 form www.aidsinfo.urbstrat.org.za.

No formal research into information and networking needs or methods had been carried out for the Unicity project, but contacts with the voluntary and AIDS sectors were extensive and thought had been given to a number of aspects that were generally ignored in the information projects observed. Perhaps the most striking was the commitment to bilingualism. The site was intended to be fully functional in both Zulu and English since 'most of those infected and affected speak Zulu'. In addition, since many AIDS groups had non-existent or limited computer and web access it was planned that print versions of the entire database in both English and Zulu would be lodged in public libraries, and that web searches of the database would print easily in both languages.

Closer and in some ways more apparently productive ties than with government departments were found between NGOs and state service-provider institutions such as universities and hospitals. Subsequent to the Council database project, for example, the University of KwaZulu-Natal established a Centre for HIV/AIDS Networking, HIVAN (www.hivan.org.za), which has attracted large-scale NGO involvement. Part of HIVAN's development has been the construction of a multipurpose website including a database of organisations and individuals engaged in AIDS work in the province, among them many NGOs (see www.hivan.org.za/searchOrganisation.asp). Alongside the database, HIVAN publishes research, campaigning documents, news stories, newsletters and general AIDS-related information in both print and electronic formats, and organises a range of events including meetings, workshops and seminars.

Several NGOs operated within or alongside hospitals that were wholly or partly state-funded. These tended to be relatively young organisations set up to relieve the sometimes intolerable pressures confronting hospitals with minimal resources and a growing AIDS burden. A doctor in one rural hospital was seeing 60 patients an hour in an outpatient clinic: 'The bad ones get 5 minutes, the others 30 seconds.' The hospital had 300 beds and six doctors for a population of 250,000. At the time of the study it was without a surgeon. Because of the shortage of resources at the hospital and the large population and geographical area it had to serve, much effort was put into treating patients locally and avoiding hospital visits. The hospital ran 14 community clinics aimed at providing treatment closer to home but even these could not be reached by all. Homes in this area could be miles from a main road and for the

sick or those too poor to pay a taxi or bus fare, the trip could be impossible. Those with AIDS frequently fell into both categories and were thus some of the least likely to visit a clinic. Aware of the need to offer treatment and support closer to rural populations, the hospital had established an NGO to train and organise volunteer home-based carers who could at least provide some basic palliative care and assistance for those beyond the reach of formal health services. Similar models were observed in other hospitals, where medical care was seen as meeting only a small part of AIDS patients' needs. In all the observed cases information linkages between the NGO and the hospital were multiple and intimate. Often the NGO was housed on the hospital premises, with hospital and NGO workers treating each other as colleagues and providing regular though often informal information to each other on individual cases and events in the community such as the activities of traditional healers. In some cases hospital workers did part of their work within the NGO, for example, giving nursing training to volunteer carers.

Links with the media

NGOs also reported regular contact with the media, sometimes being asked to provide information by email or telephone but more frequently to allow visits by local or international reporters researching AIDS-related feature material. According to a reporter on a local newspaper most AIDS stories she covered originated with NGOs. For their part NGOs recognised relationships with the media as important, but they were also often described as problematic. A particularly controversial topic was the desire of the media and press to meet PWAs. There was pressure put on NGOs to produce PWAs who would speak to the media and be photographed, but PWAs and their organisations had a range of different views on the subject: 'If we don't talk, who will talk?' was one response, while another asked 'Why should I be exposed?'

One organisation complained that while NGOs saw themselves as having a responsibility to pass on information to the press, the press showed little enthusiasm for reporting positive initiatives, being 'more interested in horror stories than in good news'. And horror stories alone were seen as suspect, with one NGO worker calling into question the usefulness – or even existence – of an emotional response when an article gave no information or guidance for positive action: 'There are stories in the media every day of people who need help because they are starving, they are orphans.

I do not know why people are not moved. Maybe they don't know the right channels, what they could do.'

Links with academia

As with the media, NGOs were ambivalent about providing information to academic researchers. Several reported receiving numerous approaches from researchers wanting to study aspects of AIDS, but there was a sense that the needs of academics were self-contained and did not necessarily map onto those of local communities. One NGO worker commented that 'research is being done but it does not reflect local needs. The motivation comes from academia.' NGOs for their part did not in general have the resources to provide either an alternative research structure or significant inputs into academic research, although there were some collaborative efforts – see below – and a few NGOs functioned within or had close links to academic institutions and were able to participate in the exchange of ideas and information, for example through placing foreign students within the organisation.

Several NGOs also received information from academic institutes and research centres. One university research unit, for example, provided information to the voluntary sector on costs of different models of orphan care. This was the output of research initially carried out for the government but circulated to NGOs who were in practice dealing with many of the same issues as government departments. Access to such work, however, happened at an informal level. There was no evident mechanism for distributing publicly funded research to civil society.

Links with the private sector

Few NGOs saw themselves as significant information providers to the private sector. One reported very little interest in general among the sector but with signs of attitudes starting to shift as AIDS deaths were becoming more noticeable among workforces. A large privatised utility, for example, had recently created a position in their human resources department with specific responsibility for AIDS. The NGO reported being regularly approached by businesses for AIDS materials, information and consultancy but with the expectation that these would be provided free of charge: 'They see it as a free service, especially when the government has earmarked a certain amount of money for AIDS. They expect the NGOs to provide free services but the NGOs are

struggling for survival themselves.' In this case, the NGO had recently approached more than 100 local companies for assistance without receiving a single donation.

Information networks

As well as one-to-one information links between an NGO and another organisation, whether in the public, private or voluntary sector, many NGOs spoke of the importance of looser but more complex network relationships. In some cases networking was seen as an important activity and meant participating in forums that supported many-to-many interactions such as meetings at which numerous organisations were represented or email discussion lists. A small number of NGOs, however, defined themselves or were seen by others as having a structural or central role as information networkers. Among these were groups such as the Pietermaritzburg-based Children in Distress Network (CINDI), Children's Rights, the National Association of People With AIDS (NAPWA) and the Treatment Action Campaign (TAC). An NGO director commented 'I'm on five different TAC lists … they cover such a range of different topics. … TAC has got a reputation for networking, that you can connect up for action.' Another described an informal network developing around TAC and the information it disseminated by email: 'In particular we get a lot email from TAC … TAC disseminate it to all the role-players. There is an informal network. Person A sends it to person B and so on. It is not just a formal list.'

As well as the network organisations themselves, which maintained and managed the platforms of interaction, an intermediate level of organisation was evident in some cases, with some NGOs operating as filters siphoning off relevant messages from a bigger network to disseminate within a smaller more focused one. The amount of information available on an active list, and the diversity of sources, was considered an important resource but also one that was extremely demanding in terms or time, manpower and technology access for smaller organisations.

Networking was also mentioned as a way of counteracting duplication of effort ('We network, we don't duplicate') and of publicising an NGO's work: 'People say if you want to know about AIDS go to Clermont; it's because we network a lot.' Several interviewees commented on the difficulty local-level groups had in coming to know

about one another and in working together; this was perceived as a vital area for intervention by networking organisations. For one NGO the main AIDS strategy was facilitating information and knowledge exchange between local groups to encourage collaboration at grassroots level. They saw the problem not as a lack of initiatives but a lack of coordination and collaboration stemming from a lack of knowledge about other groups. Information networks were seen by some as a key to coordinated action: 'If you can have the latest information you can coordinate action. And it makes it affordable … It's a two-way process because action and advocacy are linked to people having information. You know, knowledge is power, information is power.'

The role of the churches and of faith-based organisations in building networks and interactions was particularly notable in this study. A number of ecumenical groups such as Diakonia and the KwaZulu-Natal Churches' AIDS Network (KZN CAN) were found to be highly active networkers and facilitators in the AIDS community. On the one hand these organisations were part of international Christian networks with access to information, funding and ideas from a wide range of sources; on the other they were also closely connected with local congregations and communities and thus able to facilitate information transfer across widely differing contexts. Most information transfer appeared to take place in face-to-face settings such as meetings, workshops, outreach work or visits to community projects. Diakonia's Durban office also housed a large resource centre that was available to church and community groups, and their premises were used by numerous other organisations, providing a physical meeting point at which some open-ended networking could occur. Both Diakonia and KZN CAN were also active publishers of printed materials. The KZN CAN Directory was the first and continues to be the only listing in print of KwaZulu-Natal AIDS organisations. The 2003 edition contained some 600 entries.

Churches were also able to form partnerships at a grassroots level without the prompting of intermediary network organisations. In one case a black church serving a poor community outside a town was able to approach a white congregation in the town. The result was a partnership which not only provided food and financial assistance to the poor community but which allowed it to benefit from expertise in the urban population. A qualified nutritionist became involved in designing food packages and professionals in the urban congregation were able to obtain support

from local businesses and from organisations such as the Rotary Club. Through international links, further aid entered the poor community, both in terms of financial support for AIDS-affected families and in terms of training – for example in planning and implementing prevention programmes at local level.

6.1.2 Technology and information work

Both questionnaire and interview responses showed significant ICT penetration into the voluntary sector but with widely varying levels of ICT access among NGOs. For some, especially small and local groups, acquiring hardware alone was seen as almost impossible, with many groups having no access at all and others only accidentally – such as through the personal computers of individual members of staff. On the other hand, urban NGOs with international connections frequently reported that hardware was unproblematic and could readily be acquired through donors. Some NGOs had problems with other physical resources that a computer required, such as office space, furniture and security. In many NGOs skills were an issue – see section 6.2.2 below.

Internet access was also problematic for many groups, being seen as expensive, slow and difficult to control, resulting in prohibitive telephone charges. Very few NGOs had anything other than a dial-up connection, and some groups that had a computer did not have Internet access. Nevertheless, 53% of questionnaire respondents were in NGOs with organisational email addresses, and a further 20% had access to email communication through private or shared addresses. Both in the questionnaire and in interviews it was apparent that those without email were predominantly grassroots and community groups – commented on as a problem by some urban networking NGOs which were increasingly relying on email for coordinating and communicating.

EMAIL	RURAL	URBAN	ALL
None	45%	16%	27%
Personal	18%	8%	12%
Shared	14%	5%	8%
NGO's own	23%	70%	53%
Any email	55%	83%	73%

Table 6.3 Email in rural and urban NGOs

Source: Questionnaire and interview data

Nevertheless, computers and the Internet did appear to be playing an important role in information work in the sector. The following section describes the findings in terms of three core sets of activities: receiving information, disseminating information, and the maintenance of multiway information exchange networks.

NGOs as receivers of information

Using the Internet to search for information was not widely practised among the NGOs interviewed. Many organisations found their dial-up connection too slow or too expensive to permit in-depth information searches. For some skills were the issue – for example, frustration was expressed that a search on 'AIDS orphans' would yield hundreds of hits. Many comments were received such as 'there are too many websites' and 'I don't have enough knowledge about accessing sites quickly and easily'. Nevertheless, skilled staff with computers at home would sometimes do research in their own time. Even in well funded NGOs with professional staff, using the Internet as an information resource was recognised as a skill requiring time and practice to develop: 'It takes time just to surf the net. That is what I did initially. I just surfed the net to find out where the most important sources were for what I wanted. And that's how I got to know the Internet quite well and be better at using it, like just learning to look through the first few lines of a website to see whether it was going to be useful or not…'

A major problem identified by groups who used the Internet for information and research was the vast amount of content that was of varying quality and poorly organised. 'Knowledge structures and validity' were identified by one interviewee as key factors in determining the usefulness of the Internet for development organisations. Data was perceived to have 'outgrown the tools to access it intelligently' and there was a feeling among some interviewees that the web was in danger of becoming more a commercial and entertainment medium than an informational one. One also expressed concern at a blurring of boundaries between commercial and scientific content on health/medical sites. Such problems tended either to discourage Internet use or, among more skilled users, to lead to reliance on known and trusted sites rather than Internet-wide searches. Specifically mentioned trusted sites were:

- AIDS Information Global Education System (AEGIS) (www.aegis.org) for current issues and activities

- Aids and Africa (www.aidsandafrica.com) for African information

- The Body (www.thebody.com) for medical and health information

- Children in Distress Network (ww.cindi.org.za) for local contacts

- Enhancing Care Initiative (www.eci.harvard.edu)

- UNAIDS (www.unaids.org) for medical, scientific and epidemiological information

Relevance was also an issue. Even organisations with the resources to find and process information from the Internet felt that much of it was generated in other circumstances for other needs and that information and approaches would need to be adapted to local conditions

The Internet was also widely used for acquiring certain types of information, such as funding opportunities and calls for project proposals. In the organisations interviewed this information was mainly acquired through email from personal contacts in the voluntary sector, and to some extent from email networks and lists, rather than from bulletin boards, websites or any public forum. Funder databases existed within the sector but cost money to subscribe to. Some NGOs had xeroxes of the database records, and in one case an NGO without funds to subscribe rekeyed the xeroxed records into an Access database of its own.

Information about AIDS conferences, workshops and other events was also often received by email from individuals or lists. One interviewee valued the Internet not as a means of obtaining AIDS information itself but as a way of finding out about conferences where he could meet people face-to-face: 'Information is very important. Sitting in a congress and participating enriches you more than just getting a post from the Internet.'

NGOs as providers of information

Using the Internet as an information dissemination medium was in general restricted to larger and more well resourced NGOs. The exception was email, which was

mentioned by numerous organisations as an important mechanism for providing information to outsiders ('we don't write letters') as well as within NGOs. One long-standing well-established NGO, for example, had recently acquired a computer with Internet and email, and now used email almost exclusively for sending reports to donors and other agencies important to the work of the organisation. In one case email permitted staff to work at home one or two days a week, sending documents back and forth electronically. None of the organisations ran an intranet or virtual private network, and FTP was used purely for website maintenance. As far as could be ascertained, electronic document transfer between individuals and organisations was done exclusively through email.

A few NGOs were also involved in e-publishing. These were generally urban, well resourced, professionally managed organisations such as the TAC and Health Systems Trust (HST). These groups used (and continue to use) their websites to publish a variety of documents in electronic form, including research reports, statistics, news stories, analysis, programme descriptions and photographs, activist material and, in the case of HST, the annual *South African Health Review*. Some smaller groups too showed an interest in using the web as a publishing medium. Typically these were organisations already involved in conventional publishing, such as the organisational development NGO, Olive, which was considering putting its journals online to overcome the cost of subscription and postage which was felt to be prohibitive for many African NGOs. One NGOs commented that there was a general expectation that the sector should be concerned with service provision and it was an effort to change perceptions and to get the organisation viewed as an informational one. The growing importance of the Internet and particularly of email and the web was seen as influential in changing this view. As one interviewee commented: 'I think more and more people are starting to realise we are an information organisation as well. At lots of the meetings I have been to people have commented on our publications or the website or even the electronic lists.'

Website publishing was seen as having a variety of audiences including the research community, the media, the international AIDS sector, and particularly foreign donors and potential donors. One urban intermediary NGO was planning to publish evaluations on their website, for example, of different models of orphan care. This

was seen primarily as a way of validating the organisation and its work to donors, rather than a way of spreading the knowledge locally. Similarly, web publishing was generally considered irrelevant for reaching beneficiary communities, and was ranked alongside television and newspapers (but not radio) as being inaccessible to most poor and rural constituencies. As well as access, tone was raised as an issue in targeting this audience, with web-linked initiatives such as the government's campaign loveLife (www.lovelife.org.za) being criticised as 'slick and urban'. Partly because of lack of access on the part of those most affected, there was little interest in publishing general AIDS information. Some IT-literate and well-funded urban intermediary groups pointed out that there were already many international web resources such as The Body (www.thebody.com) providing health and medical information, and even some such as the AIDS Consortium (ww.aidsconsortium.org.za) providing information with South African relevance.

There were very few local AIDS-related information databases available on the web, and almost none published by NGOs. A number of organisations mentioned that while they had access to valuable local information they lacked the time, resources and knowledge to codify and record it in databases that could easily be shared. Information was often recognised to exist within the organisation, or to be accessible through contacts, but very little was archived in ways suitable for transmission and sharing as opposed to internal use within the organisation. Some NGOs were aware of the existence of electronic databases such as those created by government departments, but few had the skills or facilities to access these, and many others were unaware of their existence. Very few of these databases could be accessed on the Internet. One NGO that did make extensive use of databases for research purposes – for example running a baseline study of children in care – found that it had significant problems with the software (MS Access). In this case, however, the data was confidential and could not in any case be published; nor could volunteer and external help easily be used.

Despite the relatively limited extent of web publishing in the sector, having a web presence of some sort was not uncommon. Twenty-nine percent of NGOs in the questionnaire had their own website, a further 10% were developing one, and 7% had pages hosted by another organisation – a total of 46% with some exposure (Table

6.4). This number disguises a sharp divide between urban and rural NGOs, however, with 57% of the former having a web presence compared with just 27% of the latter.

WEBSITE	RURAL	URBAN	ALL
None	73%	43%	54%
In development	5%	14%	10%
Hosted pages	9%	5%	7%
NGO's own	14%	38%	29%
Any web presence*	27%	57%	46%

*In development, hosted or own website combined.

Table 6.4 Levels of web presence among rural and urban NGOs

Source: Questionnaire and interview data

A web search in October 2004 showed a rise in the number of urban NGOs with their own websites – up from 38% to 54%, but an almost static situation in rural NGOs and an overall figure still well below half (Table 6.5). There was also no parallel increase in the number of hosted pages, which remained extremely small.

	RURAL		URBAN		ALL	
WEBSITE	2000/2	2004	2000/2	2004	2000/2	2004
None/in development*	78%	78%	57%	43%	64%	56%
Hosted pages	9%	5%	5%	3%	7%	3%
NGO's own	14%	18%	38%	54%	29%	41%

*Figures combined because 2004 data could not differentiate.

Table 6.5 NGO web presence in 2000/2 and 2004

Source: Questionnaire and interview data (2000/2) and web search (2004)

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The questionnaire also asked respondents about their desire for greater web exposure. Just over half (52%) wanted greater exposure, while 31% did not and 17% were undecided (Table 6.6).

	FURTHER WEB PRESENCE DESIRED			
WEBSITE	No	Yes	Don't know/ no opinion	Total (% of all NGOs)
None	12%	31%	10%	52%
In development	5%	5%	2%	12%
Hosted pages	5%	2%	2%	10%
NGO's own	10%	14%	2%	26%
Total (% of all NGOs)	31%	52%	17%	100%

Table 6.6 Web presence and desire for increased presence among NGOs
 Source: Questionnaire data

The highest levels of interest in further web development were found among those with their own sites (55%) and those with no exposure (59%) – see Table 6.7 below. NGOs whose pages were hosted by other organisations had the lowest rates of interest in further developing their web presence – perhaps bearing out the reservations expressed in interviews by 'host' NGOs who aimed to hand over websites to groups to manage for themselves. It must be pointed, however, that the numbers in this category are too small to be relied upon and that the correlation is not statistically significant (see Appendix III).

	FURTHER WEB PRESENCE DESIRED		
WEBSITE	No	Yes	Don't know/ no opinion
None	23%	59%	18%
In development	40%	40%	20%
Hosted pages	50%	25%	25%
NGO's own	36%	55%	9%
Any web presence	40%	45%	15%

Table 6.7 Desire for increased web presence by level of existing exposure
 Source: Questionnaire data

In interviews it emerged that an issue in the decision to build a website was the perception of a 'critical mass' of potential users. Little evidence was found of the 'build it and they will come' way of thinking. Much more common were sentiments such as: 'If people aren't going to use it there's no point in doing it. I think a lot of people are now [online]. There is a critical mass; there are enough people who would use it.' Another source of motivation was the 'everyone's doing it' factor: 'It's something we have thought of for a few years. Everyone else has a website I guess.'

There was a sense among some organisations, especially those that relied on foreign donors that credibility demanded a web presence. As with ICT in general, the decision to develop a website often depended largely on the enthusiasm of a particular person within the organisation. In larger organisations, however, website development was frequently undertaken at the centre with little or no involvement from regional offices and staff. One interviewee in a regional office commented: 'I am sure the national office is looking into it [developing a website] because we have an assistant manager who is keen on computers.'

Reaching the target audience rather than other groups was a problem for some NGOs. A number reported that most enquiries resulting from their website came from students looking for information for projects and dissertations. For some this was welcome and they encouraged requests, acted as pointers to information resources, and even used the interest generated to attract research students to work in the organisation. Others felt overwhelmed ('sometimes it can be quite ridiculous, like 15 messages a week') or that it was an indication their websites were giving out the wrong message since they were really aiming at a different audience, usually potential funders or volunteers. Some organisations did report having been approached by funders because of their web presence and others reported having been told by potential funders that a web presence was crucial. Equally, several funders reported that they had used the web in this way and a number of interviewees referred to the idea of using the web to publish proposals in the hope that they would attract funders. One NGO reported that prospective donors in Germany had assumed the organisation did not exist because they could find no website for it. In another case, a virtual volunteer had ended up working for an organisation because 'it was the only community-level AIDS relief project to appear on a fairly detailed Internet search'.

There was very little attempt made to promote NGO websites. This was in marked contrast to local government and university-based organisations which engaged in promotional activities such as handing out rulers and notepads with their URL at public presentations. This was indicative of the general view among NGOs that while the web and email were useful for communicating internally and with other organisations, they were not an important way to reach a public constituency. Websites did, however, generate significant responses for NGOs to deal with. Some

were by email but often there would be telephone or fax contact as well. This seemed to be particularly the case when NGOs placed partial information or summaries on the website rather than whole reports.

Networking – multiway information exchange

As well as one-way and two-way information exchanges, more complex networking interactions were also evident in the sector, in many cases making use of the Internet and especially email. A wide range of networking activities was reported in questionnaire responses, including among churches, children's organisations, multisectoral programmes and training groups. Organisations such as TAC and HST, the most active of the web publishers, were also active hosters of email discussion groups, and had staff who contributed regularly to online discussion forums, many with international audiences.

Almost all of the successful network organisations were quick to acknowledge the importance of email and IT generally to their work. For one, email was seen as the key that had enabled recent rapid expansion of the network, while for another it was said to have been a crucial factor in enabling the organisation to operate from several different locations across the province. One NGO reported that 25 of its 95 affiliated grassroots and community-based network partners had computers and email, and the organisation was in the process of attempting to build IT capacity at least to the level of email in the other 70.

For the director of one networking NGO the advent of Windows with its graphical user interface had been a defining moment:

> 'I was very anti-computers because my interest was in rural areas and in primary health care. You don't have electricity. You've got no television. …When we started there was no Windows. *That* transformed the accessibility of it: you didn't have to learn a lot. And when that happened it helped a lot because there was almost a critical mass of people you could communicate with and have access to information. A lot of work we do relies on communicating in a network of networks. … If someone's not on the Internet I can only communicate occasionally and for very specific sorts of things. If

somebody's on email it becomes doable, affordable; it's quick and the management of it is much easier.'

The 'network of networks' model of communication and information transfer was identified by a number of NGOs as a key aspect of their work, and meant that non-Internet-based networks were frequently able to connect with Internet-based ones. For example, it was not uncommon to find rural NGOs with email functioning as access points allowing urban electronic networks to interface with rural face-to-face networks: 'if there is an organisation that has email in a rural area we assume that they are sharing because we get experiences that are fed back … not much through electronic media, through other networking'. In another case, an NGO official had an arrangement with a priest at a mission station. She would email material to the mission office where the priest would print it out and distribute it to fieldworkers. In this way, email was extending existing information networks by mechanisms that were not always transparent to users, and was indirectly affecting even those with no access. NGOs with information-rich websites also reported being approached by smaller groups wanting to use information from the website. In most cases this was welcomed provided no commercial purpose was involved. In this way information circulated through networks at different levels, for example being generated in well-funded urban NGOs with research and IT capacity, published on a professional-standard website and then picked up by smaller local NGOs and circulated through their websites, by fax or print documents, or even by word of mouth.

A few networks used online environments instead of email, such as that of the Enhancing Care Initiative (ECI) of the Harvard AIDS Institute (http://www.eci.harvard.edu), which brought South African PWA group together with those in other developing countries such as China and Uganda.

Networking across sectoral boundaries tended to rely on electronic media, particularly email and was therefore more prevalent among larger, urban NGOs than grassroots groups. Academic institutes often assumed email as a primary medium: 'Everybody has computers. There's nobody that would use any other way. When we run courses that have participants that use faxes then we use a mixture of email and faxes. But otherwise a good 90% or more of all our communication is by email.'

Being able to communicate instantaneously and at any time with network members was seen as a key advantage by some networking groups, since information needs could arise at any time. Electronic interactions were not seen as replacements for face-to-face meetings but rather as supplements: 'IT is one big need we have as a networking organisation. It's not enough to just have meetings quarterly or monthly whereas the members might be needing information regularly.'

Just as information within a network did not reside in any one place, so technology, although physically located within one organisation's premises, could also be shared among different groups. In one case, an NGO which worked with many PWA support groups would allow them to come in and use its computer.

6.1.3 Informational problems

The case study revealed a number of problems being experienced even at the level of information work.

Access to information resources

A number of informational access problems were observed in the study or mentioned in interview or questionnaire responses. For a start, it was evident from site visits that many NGOs had almost no publications or written resources. One quite large rural NGO with a flourishing team of about 20 HBCs, plus an agricultural project, crèches and PWA support groups, had no books in its office at all. What publications there were were mainly training materials from other NGO workshops and journals put out by some of the urban NGOs. The closest bookshop was more than an hour's drive away. Information in this organisation was typically obtained from personal contacts, by telephone or word of mouth, or to a much lesser extent by email. NGO staff and volunteers had a wide range of contacts in other local organisations and the office was something of a meeting place. People would come in to chat or use the telephone – and when they did so information would be exchanged about goings on in the local hospital, the PWA support group and the nearby town. There was no tradition of turning to written sources for information but there was extensive local person-to-person networking. Mobile phones were also important but calls tended to be very local, sometimes just within the grounds of the hospital where the NGO had its office.

Bearing out the observed lack of information resources, many groups reported in interviews being unable to obtain information on such everyday topics as:

- Activities and contact details of other AIDS groups
- Details of meetings, workshops and training courses
- Funding opportunities and calls for proposals
- Human rights information
- Scientific and medical information
- Current AIDS statistics

Some very similar informational needs were reported in questionnaire responses, including:

- 'Other groups active in the same area'; 'directory of who does what'
- 'Workshops, conferences, collaborations'
- 'Government funding information'; 'project funding'; 'requests for proposals'
- 'AIDS charters'; 'PWA rights information'
- 'Vaccine trials and children'; 'AIDS care and management'
- 'Up-to-date statistics'

Questionnaire respondents also interpreted as 'information needs' a range of resources that in terms of this study are more accurately categorised as epistemic or conceptual matters, such as evaluations, strategies and models. These are described in the relevant sections below.

Information provision

The role of information provider was also problematic for some groups, especially those operating in very poor communities. These reported difficulties in gaining the attention and interest of the target audience, for whom other problems seemed much more pressing and where the traditional role of NGO as service provider was well established. A community worker in the Durban informal settlement of Cato Crest told of an incredulous response to her AIDS prevention messages: 'But we don't have food to eat tonight,' people would say, or 'We have no clean water. First we need a

water pump, then we will worry about this sickness that might kill us in six or ten years' time.' A rural NGO reported similar problems, to the extent that on the first visit to any family AIDS workers would have to take a food parcel to ensure being given a hearing or even admitted into the home. A third commented: 'you have got to see all problems as connected. AIDS as a separate issue is not easy to deal with … It is so difficult to deal with AIDS when you are talking to people who are hungry.'

Probably the most common model for NGOs that saw themselves as repositories and providers of information was that of the conventional paper-based resource centre. Larger intermediary-style NGOs with a networking or facilitating role in the sector would accumulate publications, documents, databases (almost always paper-based) in their – urban – offices. These would be made available to community and fieldworkers attached to the NGO or its affiliates further afield, and also often to members of the public and other groups, at least to consult on site. Facilities were seldom computerised and none provided Internet access or web-based resources.

To outside agencies NGOs were sometimes seen as unreliable information sources. The Provincial AIDS Action Unit (PAAU), for example, was highly selective in its choice of NGO partners, putting significant resources of its own into gathering information on NGOs, their activities and their reliability. A designated official was given responsibility for relations with NGOs, assisted by AIDS coordinators who operated in each district, and who supplied information on NGO activities. The coordinators 'are on the ground, in the area. They know those that are good NGOs and those that are not good NGOs. Things come back to us.' The perception was also expressed in government that a great deal of duplication of effort was occurring among NGOs – something that several NGOs themselves were concerned about. The provincial government was, however, trying to identify and co-opt reliable and well-informed NGOs into its funding process by including them on the committee that allocated financial support.

Networking problems

Despite the prevalence of networking as a concept and a buzzword, it too came in for some criticism. One interviewee was 'too busy to do much networking'. Another spoke of the destructive effect of rivalries and differences within a network, which

had in one case crippled information sharing and mutual learning. A development consultant who had witnessed a problematic attempt to set up a network and directory of AIDS agencies was sceptical of the motivation behind some networking initiatives: 'Networks are conflict-ridden because they are set up for funny reasons.' Networks could also be difficult or slow to establish, particularly when deliberately set up rather than developing organically. In one case a network began by having consultation meetings at which government agencies and NGOs all sat down around the same table. Organising and managing such meetings was found to be highly demanding for the NGOs, especially in terms of dealing with government bureaucracy. Funding too was potentially problematic since networks are not did not always exist, or were not always perceived to exist, as organisations in their own right, and donors were reportedly reluctant to finance communication and interaction as opposed to project costs.

Furthermore networking was not always seen as an effective route to social change. One activist NGO made a careful distinction: 'We are a kind of a network organisation, but again we have got a social movement.' There was also a great deal of scepticism about what information could do, particularly in terms of HIV prevention and behaviour change. By the time of this study it was well known that information alone had little effect on changing risky behaviour: 'prevention through information is obviously not enough; it's one of the steps but it doesn't seem to prompt people to change behaviour … '

Technology

ICT also created its fair share of problems. Organisations that made extensive use of email had problems finding time to deal with the volume of messages: 'Email can take 2-3 hours of my day. And then I've still got the telephone. … I've got nearly 2000 unfiled emails. I haven't got time to do the filing. And if I don't do the filing then I don't know where to find them. And some if it is confidential; I can't give it to someone else.' Email discussion groups could be a problem because they were felt to deluge recipients with information most of which was not relevant to the specific work of the NGO, such as orphan care. Responding to emails and enquiries generated as a result of a website were equally regarded as time-consuming and problematic because they could not be handed over to a technical person but required content and

input from those who knew the aims, mission and communication functions of the organisation intimately.

A more general complaint was occasionally made that IT itself was a distraction, taking staff away from their other work for training and multiplying the amount of desk work to be done. Even organisations that recognised the advantages of IT in their work often felt it to be a mixed blessing. One manager complained that email and electronic interaction kept him out of the field and worried about a distancing effect between office-bound staff increasingly connected to distant colleagues in other organisations, and those in the field with local connections and close contacts to beneficiary communities but no technology.

In other cases, IT was seen in purely technical terms and strategic relevance went unrecognised. An organisational development NGO that provided support to voluntary sector organisations in areas such as organisational change, leadership, policy development and publishing, and which maintained a large paper-based resource centre, did not include any IT, information or knowledge components in their programmes, saying that there was no demand, nor were practitioners sufficiently trained to deliver such content. The organisation had had a visit from the UK-based One World to discuss IT, media and communication, but while these issues were seen as perhaps relevant to the organisation itself, they were not seen as suitable for inclusion in the programmes it offered to client NGOs since 'we don't teach technical skills'. Even when information-related skills were not seen as purely technical they were often relegated to the realm of the library, resource centre or filing system. One resource centre manager commented 'I haven't had time to get into the whole knowledge management thing' which she perceived as a librarianship issue, a matter of filing and organising material. In the same NGO part of the librarian's job was to print out and file a hard copy of certain electronic newsletters. As late as 1997 an HIV/AIDS Networking Guide published by the International Council of AIDS Service Organisations (ICASO) made no mention at all of electronic media in its networking and mass media sections. Overall, NGOs that did speak explicitly about information and knowledge tended to do so in terms of archives and resources rather than in terms of dynamic and interactive processes.

6.2 THE EPISTEMIC DIMENSION

While information resources are the basic fuel on which knowledge processes operate, the processes themselves are far more complex affairs that make different demands upon individuals and organisations in terms of both internal capabilities and an enabling environment. The theory developed in Chapters 3 and 4 indicated that factors ranging from media awareness and audience knowledge to the availability of ARVs could all be important determinants of an organisation's ability to contribute to epistemic capability in the community. This section now review empirical evidence from the case study as to the extent of epistemic work undertaken within AIDS NGOs, and the role played in it by technology, and the limitations and difficulties experienced.

6.2.1 Epistemic work

In interviews NGOs were found to be using a variety of epistemic approaches in their AIDS work. These ranged from research and knowledge networking; to education, skills development and training; inputs into dialogue and decision-making processes; and dealing with ignorance, error and stigma. The questionnaire also asked respondents about expertise that was available within the organisation and that could be shared with others. Most responses focused on service provision, particularly community and care work, but capacity-building skills, educational knowledge and linking and mobilising activities were also identified, as well as some specialist areas such as child development and human rights expertise – see Figure 6.2.

Research activities

Although few NGOs were involved in research in any formal sense, and most when asked identified themselves as consumers rather than producers of research, many were in fact engaged in knowledge acquisition and analysis at some level.

Probably the most clear-cut example of research within interviewed NGOs was the monitoring and evaluation of projects. In fact in some cases a question about 'research' was assumed to be referring to programme evaluation. When asked, nearly all NGOs claimed to conduct evaluations but only the larger and more urban ones produced formal outputs and generally these were unavailable except to funders and

project managers. Baseline studies were being conducted by several organisations at the time of interview, prior to implementing a new project.

Care Bereavement counselling Clinics Family General AIDS care HBC HIV counselling Holistic response Hospice care **Children** Babies with AIDS Bereavement counselling Child development Orphan care – cluster/foster, residential, family/community Therapy **Education and training** Counsellor training HBC training HIV training Life skills programmes in schools Rights' workshops Traditional healer training Training AIDS educators 'Train-the-trainer' (community development and health workers) Youth education programmes	**Community** Drop-in centres Income generation – crafts, toy-making Mobilising in rural locations Running PWA support groups Sustainable/low-cost building projects Women and violence **Church work** Developing AIDS ministry Exposure visits Inner city churches Mobilising churches in community Practical interventions Programme planning Strategising **Capacity building** Advocacy skills Collaboration Creating publications – hard copy and web Formal registration as an NGO Fundraising Human rights expertise Mentorship Monitoring and evaluation Networking Partnership-forming Research (educational approaches, health services) Using publicity and media Writing proposals

Figure 6.2 Self-identified expertise within NGOs

For urban intermediary NGOs evaluation outputs were often vital as evidence for donors of the effective use of funds. Several organisations used email or the web to circulate results to donors and international audiences, but not to disseminate knowledge locally, and when evaluations were published it was usually as formal reports intended for use in an organisational context, not as practical findings for in-the-field use by practitioners. One large international donor did publicise evaluations on its website but only in terms of 'success stories' and none of its South African child survival projects was represented there. Nevertheless interviewees were often happy to talk informally about 'lessons learned' and there was evidence that NGOs did come to know about one another's successes and failures through word of mouth.

Failures in fact seemed more prevalent – or at least to have made more of an impact on some interviewees – than successes. They also appeared to act as strong incentives to thinking and problem-solving efforts, with the need to understand *why* felt as a strong psychological pressure. One case in point was an organisation which had instituted an AIDS education programme that succeeded in passing on knowledge about AIDS but failed to change behaviour. The stark disjunction between knowledge and behaviour change was spoken of as a 'riddle', a 'puzzle' and a spur to speculation in the organisation, with a number of hypotheses being advanced by different people in the organisation.

As well as results being difficult to obtain, information about M&E methods was hard to come by since those who conducted the investigations were seldom available for interview. Some organisations had, however, built a reputation for themselves in a specific field and were used as third-party evaluators. The Valley Trust, for example, widely acknowledged for its experience and expertise in agricultural projects, was being used by another NGO to conduct three-monthly and annual reviews of a community gardening project.

As well as NGOs monitoring one another, several – including some fundamentally supportive of the government – recognised a crucial role for civil organisations in monitoring and holding government to account: 'In terms of determining whether policies are being implemented and promises are being kept, and that there isn't a widening gap between equity access and care delivery, there's always a need for an NGO to monitor and to be able to challenge government on issues where non-delivery is taking place.'

Nor was M&E the only research activity in the sector. The Health Systems Trust, internationally funded and established with the specific purpose of supporting health systems development in post-apartheid South Africa, placed a high priority on research and at the time of interview was involved in evaluating and costing different models of HBC and mother and child care, as well as research into improving health care delivery at district level. In this case research largely aimed at inputs into the public sector. However, given the situation in South Africa where so much AIDS care is provided by civil society the research was at least as relevant to the numerous

community organisations involved in care provision alongside or in the absence of state provision. HST is acutely aware of this and makes its findings publicly available in a variety of ways including print and electronic publications, an email news bulletin and discussion list postings.

A small number of other NGOs also commissioned research. TAC reported commissioning research in line with their activist programme and where relevant knowledge was not readily available, such as treatment needs of HIV+ women. In this case, research had been commissioned from a PhD student active in the AIDS community and already working on AIDS and gender issues. She had subsequently become something of a gender expert within the organisation, and her findings were internationally disseminated to other AIDS organisations.

Research was not confined to large and well-resourced organisations or to the level of formal studies. One rural outreach centre was in the process of appointing a community liaison officer with responsibility for finding out about local needs and priorities: 'There's no point in offering things to the community if they actually don't need them.' Another NGO implemented a policy of interviewing every patient visiting an AIDS clinic, after becoming concerned about the conditions in which some AIDS patients lived. As a result of these interviews a beadwork expert had been found and a programme set up to train others in what rapidly became a successful income generation project – to the extent that at the time of interview it was regularly visited by other organisations wanting to start income generation projects, some from as far afield as Uganda.

Several NGOs spoke of the need to research local conditions and priorities. One hospital-based organisation regularly advised others on conducting needs analyses prior to starting new community projects, and on the importance of finding out about and building on the work already being done in the area. One of the poorest NGOs stressed the need to investigate local priorities and 'research from the people what they want'. This NGO operated in a complex community in a high-density and fast-changing periurban area with large-scale inward migration. They were also among the most activist in the study. Formed as a social action group, they had since the 1980s adopted an explicit developmental stance. A crucial part of their work was the

monitoring of trends and identification of problems in the area, as a basis for designing intervention programmes. They stressed the importance of local relationships – 'networking is the key' – and involving local people in determining objectives. Research was undertaken mainly through networking and contacts with different segments of the community – for example through church groups, Sunday schools, sangoma (traditional healer) and community workshop sessions, and meetings with other NGOs. This organisation set up an AIDS desk at a time when most NGOs avoided referring directly to the illness because of the associated stigma. They explicitly undertook a lobbying and advocacy role aimed at informing government about local conditions and issues, and their offices were among the very few which displayed campaigning as opposed to informational posters – in this case provided by the TAC.

Other NGOs reported acting as research facilitators, for example operating as intermediaries between researchers based in universities and hospitals and communities from which HIV+ subjects were drawn. This was a relatively rare situation, however, and in the couple of cases observed it arose out of a pre-existing close link between the NGO and a hospital involved in research. In most cases NGOs reported no involvement with research even when they were aware of large-scale projects being conducted in their area. The academic and medical researchers similarly reported little or no contact with local NGOs. One NGO was openly critical, accusing the Medical Research Council of not involving the community and 'not recognising that communities have their own knowledge'.

Networking in knowledge activity

Networking was mentioned by several groups as important for research, and particularly for avoiding duplication of effort. One of the major research-commissioning NGOs stressed the importance of linkages with other organisations so that research efforts could be combined. Typically, this resulted in a consortium of research partners jointly conducting the study. Sometimes research would be collaboratively designed, through establishing a network of interested parties who would together decide on the aims and methods. In each case existing linkages were used to make initial contact and disseminate information but the process thereafter was one of deliberately building a network for a specific purpose. Research networks

were not seen as spontaneously arising from existing information-sharing networks but rather as requiring effort and initiative to grow out of existing looser linkages.

Networking was also often referred to as an important model of general knowledge activity in the sector. It was seen as a way of obtaining information but also – perhaps more importantly – of obtaining access to human *sources* of information. People 'networked' in meetings and workshops as much in order to meet others as to find out specific information. Networking among NGOs was often reported to be a very loose arrangement, sometimes within a 'coalition' structure, which was seen less as an organisation than as a series of intermittent interactions, meetings or opportunities, a concept described in the following terms by one interviewee:

> 'People come or don't come. It's not an organisation. It's more a place for sharing information and to discuss issues. Sometimes it's because people want to meet with each other, or meet new people. Sometimes people come because they think they are going to learn the basics about HIV/AIDS, or they may find someone to talk to about it. They network, share information, identify links and support for different kinds of activity and initiatives, raise problems, that sort of thing.'

For several groups networking was just one response to a larger problem of 'structure' or institutional frameworks within which to organise for knowledge sharing and action. One networking NGO, for instance, had identified over HIV/AIDS 80 support groups in the province but found these groups existed independently of one another and with very little interaction or mutual knowledge. Most were informal and without official status or membership. An important role of the larger and better-connected NGOs was thus seen to be connecting disparate local groups in order to enable mobilisation and collective action.

Knowledge processes, even when social and collaborative, involved more than verbal interactions. The role of first-hand observation was also recognised as extremely important and one of the most effective of the networking and facilitating NGOs operated through the arranging of 'exposure visits' for church groups wishing to implement AIDS projects. Members of these groups would be taken on a day trip to

three or four projects in different communities where they would have the opportunity to observe the project first-hand as well as discuss it with project workers. Later the facilitating NGO would run a strategic planning workshop at which the visiting groups discussed their responses to what they had seen and the ideas it had sparked for interventions that might work in their own area. The groups would then be encouraged to take their ideas back for discussions in their own community, beginning a process of dialogue. The manager of an NGO which ran a successful craft-based income generation project commented on a similar experience: 'I remember when I started working here I did not know where to start but my supervisor took me around Johannesburg, Transkei, visiting institutions, places of safety. Children there were making wonderful things, even metal and articles that are very, very expensive.'

Education, training and skills

NGOs reported engaging in a range of activities aimed at strengthening or introducing knowledge processes into their communities. Perhaps most common was acting as providers of education and training, sometimes directly to the community but more often through specific groups such as home-based carers and AIDS educators who in turn passed their knowledge on within the community. In one case, the NGO was just the facilitator, providing a meeting place and institutional base within which PWAs taught one another beadwork and other crafts. Some NGOs were also involved in training of expert groups such as traditional healers who practised their skills in the community but did not necessarily pass them on.

NGOs' educational and training projects spanned a very wide range of areas from nutrition to empowerment and organisational development skills such as entrepreneurship, funding proposals, bookkeeping and report writing. Home-based carers in one hospital-based NGO were being trained in administering projects, running meetings and controlling their own project funds. This same NGO ran nutrition and gardening projects for the community. Training was not always delivered by NGOs themselves, but sometimes the NGO would act as an intermediary drawing other organisations into community-level work. In one case, for example, a further education college business unit was brought in to teach entrepreneurship to local groups. The epistemic significance of the NGO was in its ability to recognise

both knowledge needs in the beneficiary community and potential sources of assistance and needs provision in the wider community. NGOs that ran successful projects could become well-known, and were sometimes approached by other communities to set up similar capacity-building projects.

One of the most widespread educational roles was in the training of home-based carers. These were usually volunteers who worked for nothing or who were paid a tiny gratuity. As discussed above they had an informational role in the community, telling families how to obtain benefits, care for the sick or prevent transmission. However, their work was more than informational since much of what they did involved the teaching of practical skills by means of demonstration and discussion in people's homes. In the privacy of the home, they reported, it was possible to broach subjects that could not be publicly spoken about, such as HIV transmission routes, and to deal with fears and taboos that acted as brakes on knowledge processes in more public settings. Carers were also involved in decision-making processes, such as decisions about when to admit patients to hospital. Home-based carers were generally trained in short workshop courses lasting a few days, and through ongoing support and regular meetings with a group of carers. Some NGOs that were based in hospitals were able to co-opt staff from the hospital to train volunteers. Others arranged training through third-party organisations and in a few cases carers received some training by sitting alongside counsellors. Most carers were taught some counselling skills as well as receiving practical and nursing instruction.

Some home-based carers extended their roles to other areas such as gardening and nutrition. They were seen as well placed to do this because of the reputation and trust they developed as carers. Gardening projects in particular were being initiated by many local-level groups, since nutrition was a key factor enabling HIV+ people to remain well for longer and respond better to treatment. It was also essential for the rest of the family since AIDS typically affected the most productive members of the household, who would then become unable to work, leaving the rest of the family without an income with which to buy food.

Practical skills such as gardening and healthcare were nearly always disseminated in the community through hands-on demonstration, sometimes in the form of a lesson –

as when a carer visited a family at home and showed them how to care for an AIDS patient – or by example – as when volunteers started growing vegetables and encouraging others in the community to do the same. In one case an outside NGO was brought in to start a community agricultural project, and in another a hospital-based NGO planted a vegetable garden in the hospital grounds so that patients could learn skills to take back to the community. The NGO stressed the importance of setting up demonstration gardens before attempting to teach skills since people would believe the effort worthwhile when they started to see results.

Several NGOs were also involved in training educators to go out into the community or into schools to deliver or initiate AIDS prevention programmes. Many of these programmes were sophisticated and none was based on a simple information-provision model. Several, for example, stressed the need for educators to be role models more than just communicators, living out the messages they were trying to put across and presenting an image to young people of success tied to responsible sexual behaviour. Similarly, a children's rights NGO did a lot of training – community health workers, childcare workers, social workers, in short 'anybody working with children'. For this organisation getting people to adopt a children's rights perspective was less a matter of imparting theoretical or legal knowledge, than of, 'practically how do you *live* children's rights in your work, *you* as a person'.

Many AIDS programmes focused on peer-to-peer education, with educators playing the role of facilitators rather than teachers or trainers. Evaluation was frequently problematic, however, with NGOs equivocal about the effects of educational interventions. In one case, a school programme was found to have significantly increased knowledge about AIDS in terms of pupils' ability to answer questions correctly but not to have taught the basic practical ability to put on a condom. In another case, there was speculation that 'very visual' teaching about sex may have 'given ideas' to young people who became sexually active as a result. Being a role model was also a highly demanding task and not one that educators were necessarily cut out for – a notable case is discussed below in terms of conceptual aspects of knowledge. That said, on another project, very different results between schools which all implemented the same HIV education programme were explained in terms of the inspirational quality of certain teachers. Successful schools were found to have

had teachers whose lives became an inspiration to pupils, and who acted as models for what the children themselves could become.

Women were another focus of attention, and women's empowerment was a central strategy for some groups in dealing with AIDS in KwaZulu-Natal. Empowerment was seen by one NGO as a fundamentally epistemic function: the ability to negotiate effectively. Women were being 'abused by partners who refuse to use condoms and expose them to infection because they cannot negotiate when and how they have sex, they cannot even negotiate when to get pregnant'. Several NGOs employed gender workers and ran gender workshops where they taught negotiation skills alongside knowledge of women's rights.

As well as training people who helped to strengthen the knowledge resources and skills available in the community, some NGOs were also involved in supporting and training experts of various types. Alongside home-based care one of the more common roles for an AIDS group was the provision of pre and post-test counselling. Apart from anonymous unlinked testing done for research purposes, HIV testing in South Africa was – and remains – entirely voluntary. The decision to take a test involves many considerations and it was widely recognised that testing needed to be offered in tandem with pre and post-test counselling. Such counselling formed part of the service provision of several NGOs, and aimed to enable individual to make informed decisions. Information provision played a role but the main focus was on assisting processes of decision-making.

The promoting of testing and the training of counsellors feature in the government's national AIDS strategy and was an area in which a lively market existed, with many organisations including NGOs buying and selling training from one another. Counsellor training could be expensive for small NGOs: one spent R10,000 on training 15 people[41], of whom eight had stayed the course to become fully-fledged counsellors. Of the eight, one was HIV+ and had been for five years. This person was considered particularly valuable in removing fear and setting an example of how life could be productively lived even after a positive diagnosis.

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[41] Compared with about R150 to train a home-based carer.

Several NGOs – especially those located within hospitals – were working with local traditional healers ('sangomas'), running workshops to teach safe methods of treatment such as not sharing instruments between patients, recognising the signs of AIDS and giving symptomatic relief. One NGO was also involved in an international initiative to train doctors and nurses to administer ARVs and other forms of specialist care in voluntary-sector clinics. At the time of the study there was no plan for such treatment to be provided within the state health-care system but subsequently this decision has been reversed and the initiative is now a collaborative one with local health services in the public sector rather than a voluntary-sector alternative.

Public dialogue and decision-making

Not all knowledge roles in the community were educational. Some NGOs sat on the funding committee that distributed money from the provincial government for AIDS projects in the voluntary sector. Others participated in dialogic and decision-making forums at national as well as provincial level – a result of the national AIDS plan which explicitly requires PWA representation and involvement in decision-making: 'They don't get people living with HIV and AIDS from the street, they request them from us. So we have people going to meetings and sitting on committees.' In general provincial-level involvement tended to be more positively reported on by NGOs. At national level the process was often seen as frustrating and limited in effectiveness. One NGO commented: 'What I have discovered is that the government will come up with a policy, a task, a deal, or something, and ask for comments but at the end of the day [NGO views] don't get any consideration.' The KZN provincial government, by contrast, was 'far more ready to listen to us and [our views on] the policies we really want to have influence over…'

Ignorance and misconceptions

Several interviewees commented on the fact that AIDS presents particularly difficult barriers to knowledge in that it is a frightening subject that touches on many taboos. As a result ignorance was more widespread and less recognised than with many diseases. One church-based NGO described how ignorance became apparent only when they began a process of encouraging HIV+ people to start speaking about AIDS in their community. Local people and even community leaders, it emerged, had no conception of the difference between HIV and AIDS and would ask the speakers why

they appeared to be fit and healthy when they were HIV+. For the NGO such problems were seen as an aspect of poverty: 'When people are deprived even information does not reach them. They do not have media, facilities. … Many of them cannot read.' Once the NGO had recognised the problem it was able to devise ways of addressing ignorance in the community. Questions such as those put to healthy-looking HIV+ speakers were seen as a valuable starting point, since they opened up the subject for discussion and gave an opportunity for communicators to put across basic information about HIV and AIDS. This would lead to a process of more questioning – how is HIV transmitted, how can it be avoided, can it be cured. The main mechanism adopted by the organisation involved in this programme was the creation of a number of AIDS 'area coordinators'. These were respected figures in the community who were involved in AIDS work and who were recruited to identify the problems, needs and gaps in community AIDS provision, and then to advise churches and other groups on how best to aim their interventions.

As well as lack of knowledge, a number of groups mentioned the need to combat false beliefs and misunderstandings about AIDS. Several organisations specifically mentioned the difficulty they had in dealing with the widespread belief that AIDS was caused by witchcraft. Nor were NGO staff immune, especially in groups where workers were very much part of the local community. NGO volunteers and workers typically came from the same community as beneficiaries, which was seen as a strength and necessary to their work and credibility. But it also meant that workers shared many of the outlooks of the community. When one home-based carer died of AIDS in a rural NGO many fellow volunteers were distressed as she had not seemed very ill. The NGO had had to provide extra counselling and time for discussion with the care workers even though they themselves were people who frequently counselled families in similar circumstances.

Stigma was seen as having a complex relationship with knowledge, represented as both arising from a lack of knowledge and in turn acting as a barrier to knowledge. One faith-based NGO reported that once someone became known to be HIV+ they were subjected to numerous hurtful experiences including the circulation of rumours and untruths, particularly blaming them for bad events: 'suddenly everyone who dies in the area was [the HIV+ person's] girlfriend.' The NGO saw a need to educate the

community, not just in terms of the facts about AIDS but also in terms of values such as respect for the privacy of others and the need not to be judgemental.

The troubled issue of confidentiality

Stigma was said to be a serious inhibitor of knowledge, preventing people who may have been exposed to the virus from seeking an HIV test, and after testing preventing them from publicly acknowledging their positive status. While there was a feeling that individuals had a right to privacy there was also a widespread awareness that collective failure to speak out was extremely damaging both to individuals and to the wider society. One worker described the difficulty of trying to start a support group in an area known to have extremely high rates of infection. Initially she approached people through church groups, since most young people were active church members. This failed to draw any interest so she began to visit testing clinics. On her first day she met ten people, two pre-test and eight post-test. They were angry and desperate; some wanted to kill themselves: 'Because of confidentiality people thought they were the only one.' It took a year to overcome stigma enough to get a support group going in the area but gradually HIV+ people started wanting to meet others in the same situation. Several NGOs mentioned 'breaking the silence' as a vital task in enabling individuals and communities to acknowledge and begin dealing with the multiple problems of AIDS.

6.2.2 Technology and epistemic work

The theory of knowledge capability acknowledges the epistemic role of both social/communicative and inferential/logical processes in knowledge generation. ICT is therefore an interesting technology from this perspective, because of its potential to support both types of capability. Furthermore, the theory suggests that technology may itself place demands on epistemic capabilities. Case study findings suggest that the relationships here are indeed complex and bidirectional.

Electronic networks for knowledge

For a number of organisations email lists and online discussion forums were used for more complex epistemic tasks than simple information transfer – such as dialogue, debate, storytelling, discussion of lessons learned, and exchanging different perspectives. A few organisations were extremely active participants in and even

moderators or initiators of email lists and discussion forums. These tended to be urban organisations with international linkages and a clear agenda. For them, email lists were a vital way to communicate and receive feedback on their ideas, bringing their work to the attention of numerous different audiences, and tapping into different networks of knowledge. One organisation described the international nature of their list and the way in which items would move through other networks and groups:

> 'You get a lot of [foreign] people who have worked in the field in South Africa and who go home after 12 months or so. In WHO even. It creates a dialogue. I know that there are a lot of funders on this list. And a lot of people in other news services. They pick up stories on here. Afro-Nets is another one. They pick up stories we post on behalf of other groups. The KZN Department of Health actually archives the stories on their intranet. They've got an archive of the bulletins on their intranet for their internal people.'

This same phenomenon was observed in an NGO, only in this case the bulletins were printed out and filed in the organisation's library.

Once organisations had the expertise and experience to run a successful mailing list it was not unusual for them to start other lists. Quite a common model was to run some private lists for affiliated organisations where sensitive topics could be discussed, for example among health workers, and some public lists where general-interest information could be more widely disseminated. All the lists were moderated and this was recognised as a vital role but also a time consuming one if lists were active and successful. Some organisations would look for external moderators as a way of spreading the workload and maintaining the independence of the list from the organisation.

Smaller NGOs, especially those in rural areas and with a service orientation, generally had little interest or awareness of electronic discussion forums. Many others subscribed to lists, followed discussions and even forwarded postings to others, but the vast majority of even urban NGOs seldom or never posted messages of their own. There was, however, some awareness of future developments and of lists starting up that could be of interest. In general NGOs tended to be pragmatic in their view of

lists, feeling the need to have usefulness demonstrated before they would be willing to put time and effort into participation.

Lists that were specifically mentioned included:

- The Drum Beat (Communication Initiative)
  www.comminit.com/drum_beat.html
- AF-AIDS (Health Development Network)
  www.hdnet.org/e-forums2.asp
- AFRO-NETS www.afronets.org/index.php

The ultimate sources of list postings were often opaque to recipients. Treatment information for example was vigorously distributed by TAC on both private and public lists. One NGO that acted as an intermediary, filtering relevant material from the TAC lists and passing it on to member groups, reported:

> 'We get a lot of information about treatment … They've got different networks and those networks are connected to other networks … sometimes there's a news report about what's happened or they [TAC] just seem to know what's happened … sometimes it will be highly technical and sometimes it will come from an organisation like the AIDS Consortium – like an article about mortality rates among African children who are HIV+. That email had come through a number of sources, based on a medical journal report that got taken up by somebody and put into a condensed form. It comes from all over…'

While email lists could be a source of knowledge, they also required knowledge in order to be useful. A number of organisations spoke about the importance of relationships and mutual knowledge between communicators and recipients of messages. Email made it easy for organisations to pass messages but a crucial factor was senders' knowledge of receivers and their interests, and receivers' knowledge of and trust in senders. The director of an NGO that acted as an interface between international and local networks commented: 'we have relationships, it's not just

random people sending things through. What happens is that by working together you develop a respect and a relationship…' Such intermediaries functioned as filters, using their knowledge of how credible different sources were on the one hand, and of the needs and interests of receivers on the other, to decide which messages to circulate and to whom. Knowledge of informants' expertise was crucial to this role, and some went further, actively adapting or complementing messages and not functioning simply as passive filters: '…if Jerry Coovadia[42] says something around paediatrics and HIV and AIDS then I listen to it … I know what his medical strengths are, I know what his clinical strengths are, I know what his perspective will be, and I know how to complement that … It's knowing who the role players are …' Equally important was the realisation that no one person or organisation could know everything, that knowledge had always to be built up out of various sources with differing levels of reliability: 'It's knowing that you never know everything. And that nobody knows everything. And getting things, seeing things, from other perspectives…'

Knowledge of other organisations was considered crucial for collaboration as well as communication. Choosing a potential partner could require a great deal of knowledge in the politicised and controversial atmosphere of the South African epidemic at this time. An interviewee from the TAC commented: 'We have to make sure [the potential partner] has no links with government in any way and they are committed to the issue of treatment and are going to talk openly about treatment.'

Education, training and skills

Electronic media were used by several capacity building and intermediary organisations which produced training and information materials for community and grassroots groups. Internet applications such as websites and email lists were seen as useful distribution mechanisms for documents such as training programmes and manuals for HBC workers. Conventional print media were almost always produced alongside any electronic publications, which were seen as reaching only a small proportion of grassroots groups. One urban intermediary organisation found that investing in its own print station, and producing and printing posters and promotional material was much cheaper than buying commercial services. At the time of

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[42] Professor of HIV/AIDS Research at the Nelson Mandela School of Medicine at the University of KwaZulu-Natal in Durban, a paediatric AIDS expert and high profile critic of government policy.

interview, they had plans to publish training packs on their website but a check in June 2004 revealed that this had not yet happened.

The Internet also made it possible for NGOs to access a wider range of skills through remote volunteering. A Canadian church looking for a community AIDS project to sponsor was able to make email contact with a project in northern KwaZulu-Natal through a website created by the local Rotary Club. This project and another in the same region received help from a remote volunteer with the development of brochures, publicity materials, PowerPoint presentations, funding proposals and business plans. Communication was through email, with documents sent for review as attachments. The system was felt generally to work well, although there were problems from the volunteer's side with slow responses – which had to be sensitively handled so as not to cause offence – and there were also issues with software incompatibility, particularly in design and layout tools used to produce brochures. Remote volunteering was felt to work relatively smoothly in this case because the volunteer was dealing with an urban intermediary with good skills and resources rather than directly with the poor community which was the ultimate beneficiary. The intermediary was relatively well funded and there were even suggestions of voice or video conferencing in the future if donors could be found through international links.

ICT capacity building

One of the greatest epistemic demands on NGOs was from ICT itself. Although the concepts of 'information literacy' and 'computer literacy' were spontaneously mentioned in a number of interviews, skills and technical expertise were an issue for many NGOs at all levels, and many comments were received such as 'IT skills are still very low in our communities'. This was true across the wider AIDS community and not just in the voluntary sector. Within provincial government email was considered vital for internal information and communication, but few NGOs interacted with government in this way and even many government staff were said not to know how to use their computer. Unlike NGO staff, however, government employees were being trained, not always voluntarily: 'It's a matter of saying, "By this date everyone in this office should be computer literate and if not tough luck."'

Several NGOs commented that while donors could often be found to supply computers, the real problems were much more to do with training and skills ('how to handle programmes, software, being able to get work done') – something donors tended to expect NGOs to provide for themselves on an ongoing basis. However, they reported that 'in more cases you find that they [affiliated groups] have got computers that are not in use. The need is for training and technical backup as well.' In one case, for example, an urban NGO with eight staff had been given four computers by foreign donors. The boxes were still unopened on the desk since the donor expected the NGO to finance training, support and ongoing expenses – which in this instance at least was not realistic. The NGO felt that a layer of organisation was needed in the sector to 'bridge the gap' between local IT needs and foreign expectations. Sometimes local donors were able to provide interim support, for example in the form of a three-month temporary assistant, but this was rare. In larger NGOs computing access and functions were sometimes distributed among a number of staff – one, for instance, had a full-time data-capture clerk as well as two senior managers with responsibilities for different aspects of work involving technology.

Questionnaire responses bore out many of the issues raised in interviews, with both material factors such as hardware and funding, and human factors such as skills and time, being mentioned by more than one-third of NGOs (Table 6.8). There was no statistically significant difference in the problems identified by rural and urban groups. There were wide variations among NGOs, however, with responses ranging from 'we have no IT owing to lack of finances', 'we have no assets' and 'we are running on a zero budget – we have a 486 computer but with no modem' to 'analysis of data is a problem' and 'secure credit card facility wanted for sponsorship'.

	NGO LOCATION		
IT CAPACITY NEEDS	Rural	Urban	All
Physical, material	44%	35%	38%
Human	38%	35%	36%
Email	0%	15%	10%
Software	0%	4%	2%
Unspecified needs	19%	4%	10%
No needs	25%	31%	29%

Table 6.8 ICT needs identified by rural and urban NGOs
Source: Questionnaire data

Some interviewees also recognised needs within specific beneficiary groups: 'I think there is a big need to build the IT capacity of PWAs in the province. The issue of IT is central because of their need to be able to communicate.'

In some cases where skills and expertise did not exist within an organisation, networking between NGOs meant that technical knowledge and resources could be acquired from elsewhere and shared, allowing organisations to tap into one another's strengths. For instance one church-based NGO received a contract from another to update a database of individuals and organisations. At the same time, however, the NGO outsourced its website development to another Christian non-profit offering web design services and training as a form of income generation.

Some intermediary NGOs were playing an important role as informal providers of technical expertise. Several reported giving technical assistance to voluntary-sector partners, helping to mend a computer for instance or provide ad hoc training on a particular piece of software. One small NGO had no official IT support internally but felt confident that if needed support could be obtained either within the organisation, 'within the building' (shared with other groups), or from a wider network of other NGOs.

One Durban-based intermediary NGO took on a Voluntary Service Overseas (VSO) volunteer for a short contract (5-6 months) who said that he 'is the IT department'. His job was to maintain the organisation's network across two buildings, administer the server, look after the hardware and also update and redesign the website. In addition, he found that as his presence in the intermediary NGO became known to the local AIDS community, he started to receive hardware for repairs from other organisations – both those supported by the intermediary and others that were not. At the time of the interview there were three desktop PCs and one laptop belonging to other organisations awaiting repair in his office. When his contract ended he was supposed to leave behind him staff with the knowledge and skills to continue his work. However, he found it extremely difficult to find time to train others in the role. In theory the Durban organisation saw part of its role as IT capacity-building in community groups with which it worked, but it was admitted that in practice this was unlikely to occur owing to lack of time, personnel and other resources.

In some cases international help, such as a VSO appointment, could take a long time to arrange. One NGO had had to wait a year from placing an initial request to receiving a visit, and was still not sure what the result would be. One alternative pursued by some organisations was remote technical volunteering, with contact made over the Internet as discussed above. This was enabling some NGOs to have technical work done and media produced by volunteers working at a distance, usually in another country. One rural NGO was having a logo and website created by volunteers in the United States and United Kingdom. Information was captured locally in the form of photographs, interviews, print documents and specially written text, and then mailed or emailed to the overseas volunteers.

Technical NGOs

A related phenomenon was the growth of specialist technical NGOs. The growing importance of ICT in the South African economy and awareness of ICT in the voluntary sector, led to the development of a small but distinctive group of NGOs offering technical services, training and support. A number of organisations in this study had acquired technical capacity for their own work but had then found themselves increasingly turned to for help by other NGOs. One of the commonest forms of assistance was for an NGO with a registered domain name to incorporate web pages for other organisations on its website. Often this was done through parent organisations which represented a larger grouping to which the NGO was affiliated or had close links – for example, a church or charitable institution. In other cases a health NGO that had a strong web presence and good in-house technical expertise would act as a host for smaller health and development groups. A capacity-building model was preferred to straightforward hosting services, and one NGO commented that hosting:

> 'used to be a service but now we would rather they did it for themselves. At the end of the day every time there is updating [to be done] you are doing it and they are not learning …Capacity-building has always been key in this organisation…We are trying to provide support to get them to actually do it themselves because that builds skills. There are a lot more websites that are now offering free space – Yahoo, AOL etcetera. It's very easy to do that. We'd rather that they learned and we help them when they get stuck so that they have the understanding. There are some hospitals that have done that, that

have done their own website. We try and encourage them to do it now. Initially when there wasn't [free web] space we did quite a bit but now we try and encourage them to do it on their own.'

Questionnaire responses appeared to bear out the host NGOs' reservations, showing groups with hosted pages having less interest in further developing their sites than any other category. A check in October 2004 revealed that the NGO quoted above was no longer hosting other groups' pages on its website.

Staff in larger NGOs who had had IT training were often highly conscious of the need to pass on their learning to smaller NGOs. The process was furthermore seen as a two-way learning opportunity: 'You are always thinking how you can pass on the information. One of the things you will notice in this organisation is that anything we learn that is new in terms of entry, databases, programming, whatever, we pass on [to other groups], teaching each other and getting feedback. So we develop ourselves as well as other people.'

Such views perhaps stem from the fact that even in larger urban organisations few staff had come in with IT training and most had had to learn on the job, as a result of which they appreciated the needs within other groups for training. In one organisation staff were developing IT specialisations, with one person learning Linux and another developing expertise in graphic design and website construction. In this NGO a handful of IT staff were supporting 160 people working in three different cities and running servers for a major health information website, the organisation's own website and managing a number of health email lists. Staff involved in content and strategic decisions saw their role as requiring them to know the specialisations of the other staff members and to know whom to ask for help or to tackle a particular task. Only two staff members had entered the organisation with any IT background: 'The rest of us all have health, teaching or allied occupations but come into IT and we have to learn. We teach ourselves and go on courses … It is very rare for a person to come into the organisation with IT …'. When training was needed within the organisation the preference was to get staff to train each other, because training was recognised as a two-way process in which teachers learned as well as those they were training. It happened that one of the regional offices became known as a centre of IT expertise,

doing training not only for the organisation but for may of the smaller groups they worked with. This had benefits but also costs for the staff: '[IT] is slowly being recognised as a skill but not necessarily something we want to get stuck with. We are happy to start the process but they must eventually appoint an information manager, a web manager … It is something that needs to be handed over.'

In some organisations informational and technical capacity building became an explicit project goal. Health Systems Trust, for example, published instruction manuals and guides on their website to educate users in activities such as list participation (Figure 6.3). When interviewed they were in the process of developing a training manual for list moderators and managers covering not only technical issues but epistemic and content issues such as etiquette, critical appraisal, management of public debate and how to respond to members. There were plans to disseminate the manual to other organisations, including HIV training groups in other African countries, for in-house training of list moderators.
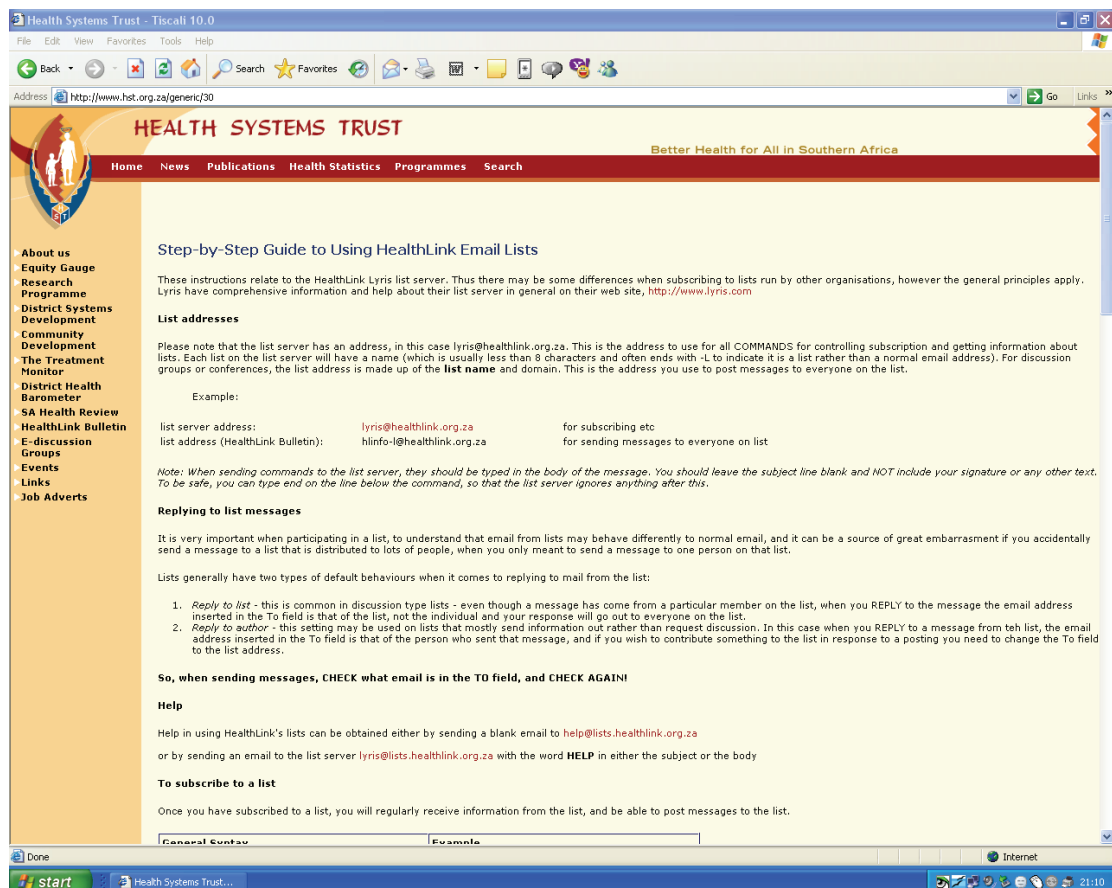
Figure 6.3 Health Systems Trust – building knowledge among list users

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Some projects begun with an educational purpose had grown into fully-fledged information services. Health-e (www.health-e.org.za), for example, which began life as a project designed to 'get people connected and to get them to understand what electronic networking means' now acts as an agency supplying news, analysis and reporting services on African health topics to electronic, print and broadcast media.

A number of reasons were given for the shift towards technical work in NGOs with expertise and capacity. Firstly, technical skills and resources were felt to be expensive to acquire and once they existed within an organisation there was often a feeling that they should be fully exploited – often beyond the bounds of the organisation itself. If an NGO sent a staff member on a web design course and invested in authoring software then it was natural to look for further applications beyond the setting up of the organisation's own website. Technical know-how was widely seen as having an economic value, and to offer income generating potential. Some NGOs with good skills thus looked for government or, less commonly, private clients as well as assisting voluntary sector colleagues. Secondly, because computer skills were perceived as valued by employers, several NGOs involved in economic empowerment saw ICT courses as a way of enhancing the employability of beneficiary groups. So, for instance, an NGO 'communication centre' started taking on commercial web design projects and offering web design courses to young people alongside its original functions of publicity and information provision. Skills that were acquired to do its own work were recognised as having commercial value and were passed on to beneficiaries. Some organisations were able to integrate ICT capacity-building into their project work. In one case a project proposal had been drawn up to train unemployed youths in computer skills and then as trainers who would be employed by the NGO to build capacity within the organisation and among affiliated grassroots partner organisations. In another NGO, a strategic decision had been made to hire computer professionals so that it could take on commercial work in order to fund its AIDS activities.

6.2.3 Epistemic problems

A number of knowledge-process problems were evident in the study, some internal to NGOs and the voluntary sector and some affecting the communities in which they worked.

Within NGOs, the concept of knowledge, although current in NGO and development jargon, was often interpreted in a limited way and in some cases there was little sense of how knowledge differed from information or what kinds of activities, resources and outcomes fell within the sphere of knowledge activity. In educational contexts 'knowledge' was often interpreted as something like book or rote learning – being able to reproduce or recognise a right answer but without necessarily understanding it. Knowledge was also contrasted with practical abilities and skills – the failure of a programme to teach pupils how to use a condom was not interpreted as a knowledge failure, for example. Similarly 'knowledge management' was seen in one organisational development NGO as essentially document or information management, the domain of the librarian running the resource centre.

Capacity building – a largely knowledge-based process – was widely recognised by donors and development professionals as a need in smaller NGOs. The provincial government was assisting with capacity-building workshops and wanted to do more, having problems with some NGOs' inability to produce reports and keep accounts. At the time of the research it was considering appointing one major NGO or NGO consortium to deliver capacity building in smaller NGOs. Already, however, many of the urban AIDS NGOs were concentrating significant efforts on building up local service-provider NGOs.

Organisations that engaged in capacity building found it could be problematic deciding whom to offer knowledge support to. While most NGOs appeared happy to provide *information* to individuals to the extent that resources permitted, a rather different view was taken of epistemic development and capacity building. One organisation commented that they did not see their role as capacity building for individuals in their own right but only within the framework of a support group or grassroots organisation. The organisation saw itself as having a responsibility to ensure that beneficiaries did not simply gain personal advantage but passed on benefits to others. The director commented: 'It's a problem to work with individuals. So I do it for the support groups. I will not train any individual who will not give the skill back. The members of the support groups will give back to their communities.'

In the communities served by NGOs, however, epistemic resources such as support groups and discussion forums could be in short supply. Sometimes they were seen as somewhat foreign concepts, with a worker commenting: 'support groups are more likely to be set up by white people [to deal with white people's problems]. They [white people] are not involved in AIDS so there is relatively little happening on the AIDS support group front.' Even where forums did exist, public discussion did not always lead to action and some NGOs expressed frustration with the difficulty of getting communities to make decisions and take action. One well-informed and extremely active facilitating organisation with perhaps the most extensive AIDS resource centre in the province described their experiences of speaking to church groups: 'You find everybody in the church. In the school you find only young people but in the church you find they are there with their parents, the community leaders, everybody. It gives opportunities when we are invited to give talks. On Friday I am going to a church in one of the affected areas. It's an opportunity to really encourage them. It's just that sometimes – I don't know – it's just talk, talk, talk.'

Asking educators to gain credibility through living out a message and acting as role models could also be problematic. In one project six young and single educators trained to teach prevention messages in schools produced in the course of a three-year project five babies, as a result of which local leaders requested the project be halted. Explanations from the young workers in this project were unequivocal and unapologetic and reportedly amounted to saying 'We will teach your message but we are adult and young, and after hours is our own private life.' Managers explained this as a need for affirmation and affection that transcended and overrode knowledge of the risks of unprotected sex, and also commitment to the message the educators were employed to communicate to others.

Several NGOs mentioned that they experienced difficulty in determining what and how much knowledge was required and by whom. There were issues for hospitals and clinics, for example, in deciding how much to tell people who tested HIV+ but were asymptomatic, since only palliative treatment was available. Counselling of PWAs similarly involved making judgements in individual cases about knowledge needs. NGO staff too were often felt to need support and knowledge, but determining how much and at what stage was considered problematic.

Furthermore NGOs and AIDS educators are only some voices among many in society and their messages may be in conflict with those from other sources. In South Africa, denials by the president and high ranking government ministers of a link between HIV and AIDS were seen by NGOs as having had a powerful and destructive effect on public attitudes and behaviour. In the words of one AIDS worker: 'There are reports that people stopped taking medication, people stopped using condoms. It had a real impact on people's lives. A lot of people who are positive today wouldn't have been positive if it had not.'

Problems with ICT

ICT itself raised a number of problems in NGOs. Email lists were criticised by one organisation for being urban and managerially centred rather than communications from the front line, since few fieldworkers had the access or training to participate. Even a worker in an urban NGO at the centre of a large network commented that lists contained 'lots of theory' and that she 'would have to go and study in the library before I felt I could understand and take part.' A volunteer who was highly IT-literate and who operated mainly through email complained that electronic lists were hard to find and 'the potential benefits do not seem to justify the time needed to participate'. Only two interviewees were active contributors. An interviewee from one of the best-resourced and most technologically advanced organisations commented: 'We've been a bit swamped lately. No, we read the postings, we get them. But we're not a great contributor.'

There was some resistance and resentment towards IT and the need to learn IT skills in NGOs. Several organisations felt time to be a major issue as training courses took people away from their work, and in two cases the fear was expressed that staff would spend more time in their office and less on service provision. One social worker, for example, did not see why she should acquire computer skills at all, and an NGO coordinator who was over 60 when her organisation got a computer found it taxing to have to learn a new skill at that stage.

Some NGOs that took on ICT consultancy reported stresses resulting from adopting this route. Voluntary-sector contractors did not generally enjoy any preferential treatment by government clients, and had to bid for work against commercial firms.

This in itself was an expensive and time-consuming procedure, which could have a serious impact on the NGO if the bid failed. Ongoing maintenance and updating were also an issue. One NGO was contracted to supply a web database to a public-sector client and at the time of the study the pilot had just appeared on the web. It was full of bugs and much of the functionality was lacking but trial users had to communicate with the client rather than the supplying NGO, and no one in the client organisation knew anything about the design and construction of the database or how to resolve the problems. The best that could be done was to put users in contact with the NGO programmer – hardly a solution in the long term, and one with the potential to add significantly to the NGO's workload. There was no clear plan for how the technical maintenance would be handed over to the client or who would then become responsible.

One particular area of concern for NGOs was website creation and maintenance. Volunteer offers were not uncommon but were treated with caution by some NGOs on the grounds of 'not knowing what their agendas are' and also of potentially finding an initially free offer could cost more money in the long run – for example in maintaining the site once the volunteer had moved on. NGOs were often aware of their own technical ignorance and inability to judge the implications of accepting technical assistance. One NGO had had a website created by a student but they felt that while technically competent, the site's content, style, tone and potential audience had not been properly thought out. Another NGO had had a website funded by a sponsor but the sponsor had withdrawn and the website had ceased to exist. There was little evidence of sponsors and volunteer creators transferring their skills into the organisation to ensure sustainability. Other organisations reported that cost was a minor concern and that the main issue was whether a website would be seen as essential by funders or not. In one case a funding proposal that included website development might have this aspect cut: 'It's not expensive when you calculate it. It's just that when you put in a proposal people will delete some of your stuff. So they say "cut it out".' Often website development was seen as something the organisation would aim to be able to do for itself after some form of IT capacity building had taken place. It was clearly considered a significant part of IT capacity.

Few NGOs had had a website long enough or used it intensively enough to have at this stage confronted significant issues of updating and content management. Only one NGO had a content management database. This required a high degree of professionalism within the organisation and involved collaboration between programme and technical staff. In general, database and database management was perceived as both extremely important and a major problem for NGOs. Networking organisations were frequently approached for access to their databases – one claimed to receive requests on a weekly basis. Very few NGOs had the technical resources to publish their databases on the web, however, and in many cases there were also issues of privacy and data protection involved.

6.3 THE CONCEPTUAL DIMENSION

The inclusion of a conceptual dimension is an unusual feature of knowledge capability theory, since structures of understanding are standardly seen to belong to the realm of belief rather than knowledge. However, belief can be seen as aspiring to, or a sort of provisional form of, knowledge (Williamson 2001) and like knowledge concepts have an informational basis (Dretske 1981). Furthermore, we have seen in Chapter 4 that conceptual development lies at the heart of an effective response to AIDS and that it is closely related to activism, advocacy and structural change, which in turn have implications for the other dimensions of knowledge. In the case study the conceptual dimension of knowledge emerged as one of the most interesting and at the same time most difficult areas to study owing to lack of any equivalent of the familiar terminology relating to information or processes of dialogue, research and education. Nevertheless, both interviewees and questionnaire respondents did raise many issues to do with issues of perspective, underlying understandings, models and strategies, and of and matters such as reconceptualising the problem of AIDS and the role of the organisation.

6.3.1 Conceptual work

Conceptual roles in AIDS work were found to be multiple and varied, ranging from efforts to support explanatory and causal understandings of the disease in the community, to developing intervention frameworks within the organisation, to

attempts to influence government perspectives and policy. Methods were perhaps even more diverse, including both knowledge-directed activities and some undertaken for wholly other reasons. The following paragraphs review some of the main activities found to be occurring in the organisations being investigated.

Conceptual development in the community

NGOs were aware of a need to explain the symptoms and course of AIDS and its link with other illnesses such as TB. One NGO reported that people in the community denied the existence of AIDS, saying that it was TB that was killing increasing numbers. In a sense this was strictly true but what was false was the interpretation that if TB was becoming more of a killer, AIDS could not be the reason. People lacked causal and explanatory insight – hardly surprising, given the complexity of the issue and way in which the HIV-AIDS link had become politicised in South Africa. On the other hand denialist attitudes were not consistent. The same people who maintained that TB was the killer in the case of those close to them were prepared to acknowledge the prevalence of AIDS in other communities: 'They know there is AIDS but it is not here. It is next door. They say, "Not my family, not my church".'

Dealing with denial was not easy for NGOs. Workshops were seen as an important educational method because they allowed dramatic forms of direct interaction. For example, two PWAs who ran such a workshop would regularly suggest to people who denied the existence of a viral link that they prick a finger and exchange blood with a PWA. No one had ever accepted this test of unbelief and it reportedly had a deep effect on the audience in making them question the strength of their commitment to sceptical views.

Relatively few NGOs saw their role as one of conceptual development for beneficiaries and PWAs. Mostly the goods and services they sought to provide were material, and when more educational projects were discussed it was largely in terms of basic knowledge about transmission and skills such as literacy and numeracy. Some projects did, however, recognise a conceptual dimension in tackling HIV and poverty at the community level. Tackling stigma and promoting values such as respect for privacy and non-judgemental attitudes – as mentioned above – was one manifestation of this. In another case an orphan care programme described its long-

term goal as passing on the 'cultural norms and values necessary to prevent the spread of HIV and to effectively change the existing culture of poverty.'

Conceptual translators and bridges

The multidimensional response required by AIDS meant that some organisations consciously adopted the role of conceptual go-betweens. For example, a children's rights NGO stressed the importance of not defining themselves as an AIDS organisation but instead adopting a role of support, making sure on the one hand that AIDS organisations and service providers 'always remember children' and on the other that 'people who are working in children's organisations understand the issues around HIV/AIDS'.

Questioning received wisdom

A related role to that of conceptual go-between was adopting a critical perspective on standard views and offering alternative perspectives. This was not a common role but one organisation spoke of the need to counterbalance the view that ARVs were an unproblematic answer to HIV/AIDS. This organisation stressed the intrusive and problematic nature of AIDS medication and the need to inform the public that drug therapy was not a simple matter. Critical perspectives, whether on treatment or the lack of it, were seen to be essential in this field where so little was clearcut and unambiguous.

Developing explanations and hypotheses

NGOs were found to be dealing with a number of difficult explanatory issues and issues requiring the generation of hypotheses. Three in particular stand out: how to conceive the problem of AIDS, how to decide what to do, and how to respond when a project failed.

How to conceive the problem

Many organisations were wrestling with the difficulty of conceptualising the problem of AIDS. One NGO reported how it was a trip to East Africa in 1993 had first brought home to them the need to conceive of AIDS as a problem at all – at that stage an unadmitted, almost underground issue in South Africa. In East Africa community workers saw people dying and acknowledging their HIV+ status. The trip was

arranged and facilitated by Norwegian churches, but involved local workers being exposed to a new environment which was significantly similar to their own in some ways (high rates of HIV infection) but also crucially different in others (people would admit their status).

By the time of this research it was widely recognised that AIDS was not a single problem but a whole nexus of related issues. NGOs were aware of the complexity and the difficulty of getting a grasp on all the interlinked factors: 'HIV/AIDS is linked to poverty, you know, [to] so many different issues. [It is important] to be able to get information about exactly what's happening, what conditions are linked, how to work within that, to show that to people who are maybe right out in a remote part of KZN…'

In some organisations the lack of any simple and straightforward way of characterising the issue of AIDS was a spur to thinking and hypothesising. A view developed in one hospital-linked NGO, for example, that high rates of infection in the countryside were misleading and that HIV was probably being acquired in Durban but was more visible in the countryside as people returned there when they became too ill to work. It was suggested that Durban should be considered the epicentre of the local epidemic and not some of the more outlying areas, as was sometimes believed.

Failure also often acted as a catalyst for new ways of looking at a problem. After one youth education project aimed at HIV prevention returned very mixed results, programme staff went through a period of 'soul searching' in which they re-examined every aspect of their approach. Eventually the decision was made to redefine the task not as health education but in terms of the much wider aim of helping young people to define and work towards realising life goals for themselves. HIV/AIDS was reinterpreted not as the fundamental problem but as an instrumental issue to be dealt with in terms of the context of individual lives and goals. In addition, the programme was then able to target all young people and to avoid the stigma associated with HIV-specific interventions, as well as – it was hoped – teaching skills that would be applicable in a wider range of situations.

As with the epistemic dimension, conceptual change could sometimes be brought about, or at least the possibility of it could be brought into being, by NGOs creating spaces for different perspectives to meet. One such discussion that was witnessed was an ad hoc exchange about the difficulty of dealing with a disaffected PWA group that the NGO was running. The NGO manager, a professional with international experience of PWA groups, commented: 'In other places support meetings are about social and emotional support. Here all they ever do is complain about money.' Another worker, in charge of training and from the local community, responded: 'Shame! You should not say that. They are like orphans – you cannot satisfy them. There is always something missing.' The analogy suggested a new way of approaching the PWA problem – through understanding their state as one of loss and dispossession. The orphan analogy was one that anyone working in AIDS in KwaZulu-Natal could relate to, orphan care being one of the biggest and most challenging problems.

The difficulty of how to conceive the problem of AIDS was raised as a crucial factor by government as well as NGO interviewees. Up till about 2000, government AIDS programmes were run at national and provincial level by the Department of Health, reportedly leading to 'a serious lack of enthusiasm in other government departments' which saw AIDS as 'just a health issue'. The recognition of this as a problem and of the need for an integrated response to AIDS marked a conceptual shift that brought a change in government strategy and the establishment of new, integrated structures such as the KwaZulu-Natal AIDS Action Unit, which coordinated AIDS activities at provincial level in all departments including the Department of Health. But conceptual change did not happen all at once to everyone in an organisation, especially one as complex and large as provincial government where, at the time of the interview, 'some heads of department still see HIV/AIDS as a matter for the Department of Health, but some have realised'.

Deciding what to do
Knowing what to do about the many problems caused by and related to AIDS was another major conceptual challenge for NGOs. In both questionnaires and interviews NGOs identified needs for conceptual tools such as 'strategies', 'models', 'innovations' and 'frameworks' to guide AIDS projects and interventions – see Figure

6.4. A small number of NGOs referred to specific theoretical frameworks such as, in one case, the ideas of Max Neef and Paulo Freire. This was an exception, however, and finding practical models for dealing with immediate issues such as orphan care were problematic for many NGOs. One described how researchers had advised communities to close orphanages and instead keep children in local families. However, there were fears about the impact on poor communities:

> 'The people who work down there in the community are saying, "our people are so poor, nobody is prepared to take somebody else's child". One woman keeps about 54 AIDS orphans in her home. She is not rich but she says, "What can I do, they don't have any other place to go?" She is always open and anyone who wants to come and take those children can come. But nobody comes forward. Most people are so poor. They say, "Everyone wants to feed those kids but I can't even feed myself. How can I look after somebody else's child?"'

Similar views were expressed by a number of other interviewees and many community organisations were either already providing or were planning to provide institutional orphan care because of the inability of poor communities to shoulder the burden. Few NGOs had the resources to do extensive research before starting a project but in one case four churches were able to work together to establish a registered charity to investigate local needs and plan interventions. Project workers spent two years researching models of orphan care and developing a home-based approach. In the end, however, local leaders opposed the plan on the grounds that families were too poor to support extra children and that if they were given food and money for adopted orphans these resources would be siphoned off by adults rather than used for the benefit of children, a practice already known to exist in the area.

Similarly an activist group was working to change community care models so as to acknowledge the needs of those bearing the brunt of care: 'much as we support community participation we feel that the care responsibility has been shifted to the communities and this causes problems. They are not paid for the service, they don't get counselling for the trauma they experience on a daily basis and we think those people should get something …'

CONCEPTUAL NEEDS IDENTIFIED IN QUESTIONNAIRE RESPONSES
'Successful projects we may learn from'
'Innovative programmes'
'How churches/communities are dealing with affected children'
'Programmes to address psycho-social needs of children'
'Alternative approaches to orphan care'
'Effective mobilising strategies'
'How to bring about attitude/behaviour change'
'Positive living strategies'
'Drop-in centre models'
'Best-practice models for prevention/care'
'How to make NGOs aware of AIDS as a key role'

Figure 6.4 Programmes, strategies, models and 'how to' knowledge needs identified by questionnaire respondents

An important conceptual resource among KwaZulu-Natal AIDS NGOs was that of imagination and inspiration. For NGOs facing an AIDS pandemic and with in some cases no resources at all, the idea of achieving any positive effect could seem almost beyond reason. And yet people in such circumstances continued to organise and to work against the odds. In this study it was clear that in many, probably most, groups there were strong underlying beliefs about the possibility of achieving change even in the most difficult circumstances. The outlook was exemplified in a handwritten notice pinned to the wall of one organisation (Figure 6.5).

We have but five loaves and two fishes.

> Matthew 14:17

I have not failed! I have merely found 10,000 ways that won't work.

> Thomas Edison

When the way comes to an end then change. Having changed, you pass through.

> I Ching

<u>You</u> must be the change you wish to see in the world.

> Gandhi

Figure 6.5 Inspirational notice in a rural NGO

All the quotations in the notice had a similar underlying theme: the need to change perspective when dealing with what appeared to be insuperable problems. The Biblical quotation directs attention to the story of Jesus' feeding the multitude, suggesting that conviction and faith may be more important than material resources in accomplishing seemingly impossible tasks. Edison's comment pleads for failure to be viewed with toleration, as a necessary part of discovery. The *I Ching* quotation suggests that all forms of action have some time or circumstances in which they cease to be effective, and that eventually change becomes necessary. Instead of resisting change, it is necessary to recognise the time to seek a new approach. Gandhi's words focus on the individual as the site of social change, emphasising the need for would-be reformers to change their own lives and to exemplify in their actions the behaviour they try to bring about. The NGO in which this notice appeared was professionally managed but the focus on faith, tolerance of error, change and personal development highlighted a different underlying perspective.

Several NGOs used terms such as 'visioning' and 'soul searching' to describe the process of determining a new direction or moving on from failure. Others spoke of the need to offer 'holistic' support to AIDS patients, including an emotional and spiritual component. NGO workers, too, needed such support. One NGO reported that carers (many of whom were HIV+ themselves) were exposed to so much trauma and to such overwhelming problems that they frequently lost hope or suffered mental and emotional collapse. In this faith-based organisation the role of inspirational as well as informational aspects of understanding was seen as crucial to enabling workers to come through periods of despair:

> '… we say here comes a vision, we have a vision … of how we can support one another – in terms of sharing resources, sharing information, any other relevant information, for example catching up on the latest news on HIV/AIDS. Also people share their spiritual dimension, their faith. We put five minutes aside for prayer. One day one of the workers came and shared her personal problems with the group and as we were praying she was revived. She was really at the edge of giving up everything because of her problems and she felt she had lost her faith in God because of what happened. Seeing people die every day, you can end up feeling there is no God.'

What to do when projects fail

Confronted with complex, seemingly intractable problems, with no agreed routes to success, as in the case of AIDS, NGOs may find themselves faced with a failed or underachieving programme but with little sense of how to improve matters. NGOs reported various ways of attempting to move forward, such as reviewing the literature or mining networks for knowledge and ideas. For one organisation in this study it was through conceptual development. In this case at about the same time as an educational programme started to be seen as a failure, project organisers became influenced by the 'transformational leadership' paradigm pioneered at the Harvard Business School and adopted within parts of the UK National Health Service (NHS) and KwaZulu-Natal Department of Health. A conference in 1999 brought project leaders into contact with Miriam Wiltshire of the Southmead NHS Trust in Bristol, where transformational approaches had been introduced, and her ideas subsequently became highly influential in the organisation. While informational and epistemic processes form part of the transformational approach, it is really based on the adoption of a different perspective or attitude to the information and knowledge people have. Project workers described it as having a 'future focus' but 'using the past as our teacher'. At the heart of the approach is commitment to the potential of the individual to plan and achieve the future they desire. As such, it inherently draws on imaginative and conceptual skills. Project workers spoke about the need to 'create a vision for your life' and also to make a cognitive contribution: 'thinking is there for the common good'. In this project, which was aimed at young people, adopting such an approach meant shifting the central focus away from AIDS prevention towards setting and achieving personal goals, with health behaviour treated as just one instrumental aspect of this. Project workers were highly enthusiastic about this shift since it allowed the programme to sidestep some of the stigma associated with AIDS projects, and it also dealt equally well with the needs of those who were already HIV+.

The adoption of a new paradigm is not necessarily straightforward in NGOs and funds for new approaches may be hard to obtain. In this case, convincing funders to support a radically different perspective was not easy. Transformational leadership had to be explained and the NGO had to show it had 'earned the right to be innovative'. Its case was helped by the overwhelming sense at the time that there was no known successful behaviour change paradigm ('nothing is working') and that in the absence of pre-

existing answers new ideas such as transformational leadership were as likely to succeed as anything else.

New development paradigms

None of the NGOs expressed much interest in overarching development theories and nothing so grand as a new development paradigm was mentioned. However, there was evidence of significant conceptual innovation in two more modest ways: efforts to develop local models for dealing with problems, and efforts to rethink the role and nature of the organisation.

Local models

NGO innovation did not necessarily involve large-scale paradigm shifts or the importing of ideas from abroad. In fact, closeness to the local community and intimate knowledge of the immediate environment was a more usual source of innovation. The PAAU – not uncritical of the voluntary sector – reported frequently receiving original and innovative proposals, such as a project to provide condoms and AIDS information in Durban's 3000 shebeens (drinking establishments). The recognition exists within government that a crucial factor in the ability of NGOs to innovate successfully in this kind of intervention is their social and environmental proximity to the domain. NGOs 'pick up gaps' in laid-down policy and planning: 'they are the best people because they are within the communities, they are living in the area'.

Even where ideas are brought in from outside, the role of the NGO in introducing them in locally appropriate ways, explaining them in terms that beneficiaries can relate to, and in adapting them to local needs, can be crucial. Transformational leadership, for example, was implemented through extensive workshop sessions in the local community and the NGO stressed the importance of recognising that 'communities have their own knowledge' which needed to be incorporated into the programme.

Several interviewees referred to the problem that South African AIDS interventions were frequently based on foreign models such as that of Uganda, even though these could be inappropriate for local conditions. Uganda is more fertile than KwaZulu-Natal, for example, so models based on gardening and farming projects were not

necessarily transferrable. There was also the very recent legacy of apartheid to consider. An NGO working in an extremely poor periurban area with many in the beneficiary community short of food found a great reluctance for people to become involved in community vegetable gardens because of the conceptual connection forged under apartheid between gardening and menial labour.

Foreign influences, in particular US television programmes, were blamed by some for promoting negative models and risky behaviour. Promiscuity and materialist values in particular were considered dangerous in a high-HIV environment, encouraging young people to look down on traditional standards of behaviour and engage in sex at an early age and with numerous partners. Developing local media content sensitive to AIDS was thus seen by NGOs as a critical part of combating the disease.

Reconceiving the organisation

AIDS was also putting pressure on NGOs to reconceptualise their own roles and forms of organisation. A community development NGO had recast itself as an AIDS organisation 'so that we will have some people left to develop'. For one church this meant moving beyond its religious identity to reinterpreting itself as an organising structure which could play a role in coordinating the multiplicity of AIDS initiatives that were springing up in communities: 'There are a lot of issues, a lot of initiatives, working on AIDS, and people are beginning to feel it's important to try and coordinate it all … Everyone is trying to create a network and no one is succeeding.' The church, however, was seen as being particularly well placed: 'The church in South Africa is much more than a religious base; it is actually a structure. Eighty percent of people go to church. So that's an organising structure. We have to maximise, take advantage of that structure.'

The scale and complexity of the problems caused by AIDS, and the difficulties of designing effective and realistic interventions were felt to be putting conceptual pressure on many groups. Some NGOs that were involved in supporting smaller, local-level groups spoke of the difficulty of defining specific activities and roles in dealing with a problem of the magnitude of AIDS where the risk was often of attempting too much: 'The contributing organisations, they come together and they want to do something but they don't know where to start. We help them with

identifying possible donors, defining goals, so they don't take on too much. Some people are overwhelmed. They want to do everything and in the end they don't do anything.'

A facilitating NGO aiming to encourage collaboration and mutual learning among church groups found that for some the necessity of collaboration in dealing with AIDS was a difficult conceptual shift: 'What we are calling for is … invite other people, open the invitation to the community, invite other churches … In many areas they are trying but I think that there are still those who have a problem working with other people, other teams.'

Not only the NGOs themselves, but also their relations with government and other organisations were seen by some as in flux and requiring a reconception of the NGO role, in one case away from technical health systems support and towards a more conceptual, advocacy and agenda-setting role: 'I don't think there will ever not be a role for NGOs in health systems. The role might change: maybe less support, less research, more advocacy, more communicating … at some stage there will maybe not be the need for support but more need for advocacy and pushing of issues.'

NGOs already had complex conceptual relationships with the government, coming together on some issues and moving apart, sometimes acrimoniously, on others. The TAC fought a strenuous campaign to change government policy on ARV provision but then crucially allied itself with the government in taking on the pharmaceutical industry over the local manufacture of generic drugs:

> 'The TAC was a forceful opponent of the government and then they became a collaborator against this perceived enemy. And when the court case was over the TAC and the government broke apart again because now they [TAC] are focusing on issues that they want delivery on. It is a perfect example of how relationships between government and NGOs change along the way because they recognise what each other need. And when they need to combine against an external force they will combine, but each keeping a focus on their own agenda.'

Advocacy

By far the most high profile and active form of advocacy in the sector was the campaign for treatment led by the TAC, which overtly challenged the government, drawing on a network of articulate and influential supporters both within South Africa and abroad. No other NGOs were engaged in advocacy at anything like this level, partly because of the need not to alienate the government, and with it a potential source of funding, and partly because most organisations had a more local and service provision orientation. In some cases organisations that had the resources and skills to engage in advocacy tended to avoid the role because of a feeling that little could be accomplished and that government was unreceptive.

Such perceptions were not universal, however. One community group took a very active role in lobbying government departments and informing them about local issues. This role rested on informational and epistemic work, since the same group undertook monitoring and problem-identification activities in the locality, giving it an informational basis from which to approach government.

In some cases conceptual aims such as advocacy were approached through more concrete methods, for example using service provision was as a route to enhancing trust which could then be used for advocacy purposes. In one case, an organisation involved in an international project to set up clinics, envisaged that clinics would in due course also be used as an advocacy tool. By successfully delivering a service they saw their credibility as enhanced both in the eyes of their own constituency and also in the eyes of the government who, it was hoped, would then be more inclined to listen to the organisation's views.

Advocacy was also directed at public attitudes as well as government policy. Several NGOs commented on the lack of public discussion about HIV/AIDS, despite the prevalence of media coverage. Media coverage was criticised by some for focusing on particular storylines, especially those that were emotionally charged such as the plight of orphans or individual sufferers. Many NGOs reported using or participating in media campaigns, demonstrations and events such as those around World AIDS Day (December 1), as well as small symbolic gestures such as ribbon-wearing, to raise public awareness. However, there was a sense in many cases that NGOs were not

knowledgeable enough use the media effectively. Publicity and media functions were seen as expensive professional capacities that were outside the range of most NGOs, especially smaller ones, which also resented the channelling of money away from services. Furthermore grassroots groups tended to conceptualise their public constituency in very local terms, leading to limited attempts to publicise and communicate their work to a wider audience.

Networking, although usually discussed in terms of information transfer and making connections, was also mentioned as an important activism and advocacy tool. Loose coalitions of disparate organisations could work together on issues of mutual agreement – the campaign for treatment being a case in point. Treatment Action Campaign was seen as initiating the activity but through extensive networks with other organisations was able to have its message supported, published and disseminated by numerous other NGOs, many of which were not directly concerned with treatment.

Activism was also described as arising spontaneously out of networking meetings where the primary purpose was interaction and information sharing. For instance, one NGO described how it had come to their attention that the mother-to-child transmission (MTCT) prevention programme had been delayed or halted. This was mentioned as a point of information at a networking meeting but the attendees were outraged at the news and immediately drafted a protest letter which was signed by many of those present and directly faxed to the authorities. Meetings called for informational and networking purposes could thus spontaneously turn into opportunities for collective action.

Advocacy was not only directed at the government and at policy-makers. A fundamental area of conceptual work for many NGOs was challenging and changing public attitudes and preconceptions about HIV/AIDS and in particular counteracting the widespread stigma associated with the disease in many sections of South African society. Stigma affected the way in which organisations represented themselves and their constituency to the public, with some explicitly not designating themselves as AIDS organisations because of the negative connotations of the disease, seen as a disincentive to potential members. Others organisations – even some specifically set

up to support PWAs – had extended their membership to include anyone affected by AIDS, such as family members. Destigmatisation was seen as a processes involving conceptual change on the part of both the public at large and, crucially, by those affected/infected, who needed encouragement and support to be more open, assertive and outspoken about the illness. This conceptual shift was fundamental to mobilisation, since unless people were first prepared to admit the presence of the disease in their life and community, it was impossible to enlist them in activism.

Stigma not only affected the ability of AIDS organisations to promote knowledge of themselves and their aims, but also their own ability to know and track members. Several PWA support organisations did not have official membership mechanisms because written records and formal membership lists would have been considered too compromising by people in a highly stigmatising society. This affected the ability of organisations to build a strong membership base to show to funders, draw on for membership dues, and communicate with directly. The result was a situation in which NGOs were sometimes highly active in a community but with an 'invisible' membership that could not be enlisted or mobilised in the normal way.

Some NGOs were also playing a role as representatives of voices of the poor or marginalised. One of the very poorest of the NGOs and working in an area with many social problems such as violence, unemployment and migrancy, stressed the importance of its role as a 'listener' who would take seriously the perspectives of seldom-consulted groups. It was working with Sunday schools to implement a 'programme of listening to the children' – mainly 8-13 year olds though some as young as 5. 'We want to hear from the children' they said, and argued that children's perspectives needed to be taken into account, such as that of the child who pleaded: 'Please don't separate me from my sisters and brothers. AIDS has taken my parents, now you want to take the rest of what I have.'

6.3.2 Technology and conceptual work

In this study ICT seemed to play less of a role in the conceptual dimension of knowledge work than it did in the informational and epistemic dimensions. Perhaps not surprisingly, new ideas and outlooks came first and foremost from the local environment and secondly through contacts made in conventional or face-to-face

situations. At the time of the study the preferred method of sharing skills, knowledge and information among NGOs seemed to be the workshop. No one foresaw a future in which online applications and email would do away with workshopping, though some did see the Internet as a useful supporting tool which would 'keep contact going' between workshop participants after the face-to-face sessions were over.

A few NGOs did, however, see potential in the web as a medium for communicating at the conceptual level: 'All of our experience and understanding … we aren't a big organisation and we don't want to become a big organisation but how do we share the resources that are here and approaches? … This is something we'd like to get online. We don't have a website.' One difficulty was seen to be the problem of holding a browsing visitor's attention long enough for crucial understanding to be communicated: 'They are there for 30 seconds and they should go away and know something … if they then want to know more about us they an get in touch… I'd like people to know what we do, and how anybody would work with us.'

Advocacy-focused NGOs were also able to use their websites to promote their point of view, raise awareness and develop a support base. TAC commented: 'We use it to communicate with donors. It is a hard-working site, not just "here we are". We get a lot of feedback from the website. People say, "We go on your website. How can we get involved?" It is definitely worth having. It is important internationally.'

In general, however, the use of ICT for conceptual work was less developed than for informational and epistemic work. Few NGOs published more than general conceptual statements about their approach or values, or sometimes a mission statement. As a result, some NGOs perceived a lack of conceptual content on the web. The websites most visited were those of other organisations (no one reported using web-based academic or research sites) and these were criticised by one interviewee for 'being more about the organisations than about the issues.'

The practical realities of websites could also work against conceptual insight. For example the PAAU, responsible for integrating government response to AIDS at a provincial level and explicitly *not* a department-based initiative, did (and does) not have its own website but instead has pages hosted on the Department of Health site

<u>www.kznhealth.gov.za/HIVAIDS.htm</u> giving the fallacious impression that the provincial government construes AIDS as essentially a health matter.

6.3.3 Conceptual problems

The overwhelming conceptual problem exposed in this study was the lack of any adequate overall framework for responding to AIDS, leaving it largely to communities to devise their own ad hoc solutions to increasingly desperate social problems such as care, hunger and orphaned children. As discussed above, the 'community model' of AIDS provision was seen as highly problematic in poor and fractured societies. It also excluded certain aspects of care such as treatment altogether, leading to inadequate responses to the epidemic. One NGO reported on the lack of treatment knowledge among home-based carers and on the need for a shift in perspective:

> 'All they talk about is gloves and painkillers. They don't have the information, and it's not just them. There is no treatment programme and no care programme. That means there is no talking about treatment, there is no training about treatment. So the whole area of treatment is neglected. We need to tell people about treatment: this is the treatment that is available – not obtainable – but this is the treatment that is available.'

Conflicts and tensions among network partners have been commented on above but conceptual differences were found even in some contexts where a similar worldview might be expected. A Roman Catholic organisation offering free training in AIDS work to 14 sister organisations, for example, received only three acceptances, not enough to justify the course, which was cancelled. The coordinator suggested that factors internal to the church, such as nuns belonging to different orders, severely compromised cooperation, information sharing and learning within the network.

In addition, conceptual work such as advocacy can be seen as irrelevant or a luxury in situations of immediate need. Some urban NGOs reported a lack of interest in advocacy, lobbying and conceptual development in community-level groups, suggesting a dichotomy between the immediate demands of service provision and the longer-term perspective of advocacy and social change: 'It is hard to get buy-in from

grassroots groups, which are dealing with people who are sick and dying …' One group dealt with the difficulty by defining short, medium and long-term goals, but acknowledged that when short-term needs were urgent and extreme, there were often very few resources left for longer-term initiatives.

Nor are NGOs immune from groupthink, and some uncritical endorsement of collective views was found, especially in situations where problems threatened to become overwhelming. In the case where transformational leadership was adopted, there was almost a sense of desperation to find some positive path to follow after the failure of the previous peer-education programme. While there was a clear recognition that it was uncertain if transformational approaches would succeed, and a rigorous monitoring and evaluation procedure was being implemented, no potential problems or criticisms of the new approach were mentioned.

Conceptual categories among donors and beneficiary communities were also an obstacle for some NGOs. Networks, for example, were seen not to fit donors' recognised organisational categories and were therefore excluded from certain funding sources. Similarly, the contested ontology of AIDS in South Africa at this time and particularly in communities where denial, stigma and taboo were high, posed problems for organisations. AIDS orphans, for example, were not a category recognised in many communities, a factor that was holding back attempts to record and register vulnerable children and to estimate the scale of future problems facing a community.

Conceiving technology

There was some evidence of ICT itself being subject to conceptual limitations. One interviewee pointed out that technology was sometimes alienated by language from life at grassroots level, since words for technical concepts were lacking in local languages. The Unicity database, for example, was created as a bilingual English-Zulu project, but explaining it to Zulu-speakers was problematic since no word for 'database' existed in Zulu. Similarly, lack of knowledge about ICT made it impossible for some organisations to conceptualise its potential significance. One of the most telling comments was a questionnaire response from an organisation that cited networking as its main sphere of activity: 'I would say we don't have any problems

because we have no knowledge of [the Internet] and doubt if we need this knowledge.'

There was also a widespread and powerful association made between computers and managerial, office-based work. Computer use was almost exclusively desk-based and there was little evidence of mobile technologies playing a part in project, fieldwork or community settings. In many cases, there was no conception of this as a possibility or as something with even potential benefits. When asked about community and field workers having access to computers, a programme coordinator commented: 'Most of them don't. The people that have reports to write and those people with money have all the technology … You know, we don't really need people who sit in offices with the computers because we want to help people come and tell stories, people who are involved in the community.'

The potential of ICT for promoting an organisation was also not widely recognised. One manager commented: 'I do have a computer here but I only use it for typing in data because most of the time I am doing PR work.' Another interviewee expressed an ambivalent view, seeming to imply that lack of AIDS awareness in the local community might be related to low ICT access, with ICT seen to be an instrument of powerful elites, who typically put their own interests first: 'Maybe it has to do with access to computers, telephones. The people who have access to computers, telephones, email, are the government employees and those [among them] who have HIV are just interested in their own treatment…' One exception to this was a literacy project in which materials were electronically produced and where staff felt it would transform their work to be able to communicate and supply materials electronically to workers in the field.

6.4 SUMMARY

This chapter reported the case study results in terms of the framework developed in chapter 4 through analysis of secondary literature. It showed that informational, epistemic and conceptual activity could all be identified as important aspects of NGO AIDS work, and that on all three dimensions deficits and problems existed, relating to

both the internal capacities of organisations and to features of their external environment. The role of the Internet was discussed in terms of interactions on each of the three dimensions of knowledge, although results were somewhat thin on conceptual dimension. By no means all categories identified in the chapter 4 framework were found to apply in the empirical case, however. NGOs in the study in general showed little sign of moving from service provision into information work, for example, or of local-global integration. Relatively little research activity was found and, with a few notable exceptions, advocacy was not a major area of activity.

The following chapter considers these and other inferences that can be drawn from the case study results to give an overall picture of the relationships between knowledge activities, AIDS work and Internet use, and to show how the empirical findings can be integrated into the broad theoretical perspective developed in chapter 3.

7. Discussion

This chapter is concerned with integrating the empirical and theoretical findings of the various sections of the project. It discusses the way in which case study results can be linked to theoretical propositions concerning firstly the place of knowledge in development and secondly the place of technology, in this case the Internet. Since the epistemology underlying the project is naturalistic in orientation, the empirical findings also reflect back on the theory, emphasising continuities between the descriptive and normative dimensions of knowledge. The conclusion integrates empirical and theoretical findings into a three-part answer to the to the research question.

7.1 INTEGRATING EMPIRICAL AND THEORETICAL FINDINGS

This research project set out with the aim of answering the overarching question:

What is the relationship between knowledge, development and technology?

From this question two secondary questions were generated aimed, respectively, at a theoretical and an empirical response. The theoretical question was formulated as:

How can contemporary theory of knowledge – particularly the naturalistic strand of analytic epistemology – be used to develop a philosophically grounded knowledge-based analysis of development and technology?

This question has been addressed in detail in chapter 3 where a theoretical perspective was developed bringing together an epistemology based on generic mechanisms and abilities with a theory of development based on human capabilities and functionings, and a view of technology as a way of extending human powers. The resulting theory was shown to accommodate both direct relationships between knowledge, development and technology, and indirect relationships mediated by aspects of the

social and material environment. The theory is fully described in chapter 3 and the summary diagram is reproduced in Figure 7.1 below.
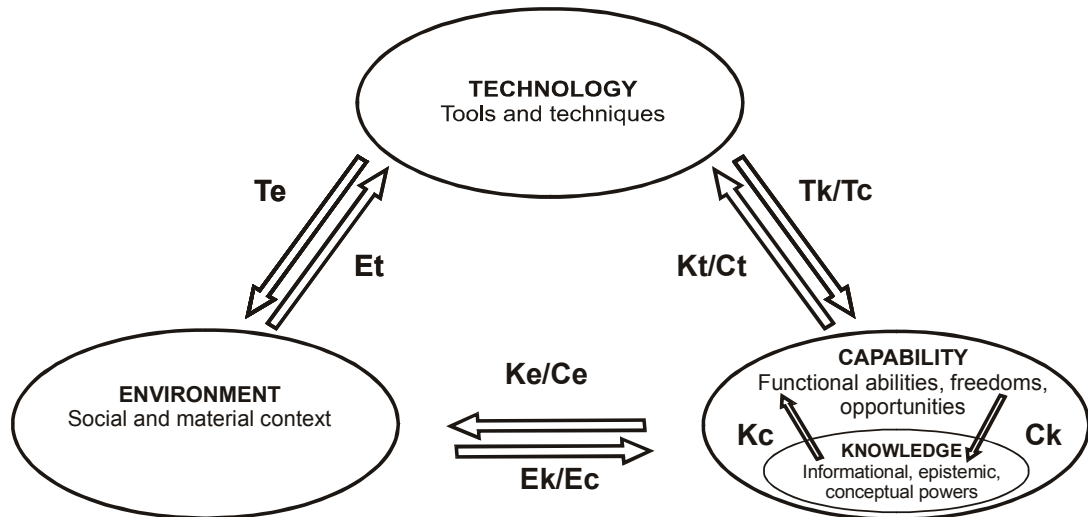
Figure 7.1 Knowledge, technology and development: a capability perspective

Having provided an answer to the theoretical question, the project then turned to investigating the empirical question, which was formulated as:

> *What role does knowledge play in civil society responses to a development challenge such as the AIDS epidemic in KwaZulu-Natal, and to what extent is the Internet a supporting technology?*

This question was addressed in chapters 5 and 6 in terms of a case study investigating Internet use among AIDS NGOs in KwaZulu-Natal. The results have already been described in detail. The following two sections now discuss the results in relation to the general theoretical propositions. Section 7.1.1 reviews the case study evidence relating to knowledge and development – that is, the informational, epistemic and conceptual dimensions of AIDS work and their interactions with environmental factors (the Kc, Ck, Ke/Ce and Ek/Ec relationships). Section 7.1.2 reviews evidence relating to Internet use and its direct and indirect interactions with knowledge capability (the Kt, Tk, Te-Ek and Ke-Et relationships).

7.1.1 Knowledge capability and AIDS work

Overall, the case study results support the relationship proposed by theory between knowledge and development, showing the expansion of capability on all three dimensions of knowledge – informational, epistemic and conceptual – to be integral to the way in which NGOs were responding to AIDS. Processes of expansion took both direct forms of intervention (Kc), such as the training of AIDS educators, and indirect forms aimed at changing social and material conditions to create a more knowledge-favourable environment (Ke-Ek/Ec), such as combating stigma which prevented people speaking about their health status. The activities also operated at multiple levels, some being directed at knowledge capability within the sector, and some within beneficiary groups or within society as a whole – as when NGOs became regular suppliers of public information and alternative views. Influences were also found to run in the opposite direction, with both capability factors such as health and environmental factors such as the availability of treatment having effects on knowledge (Ck and Ek).

The following paragraphs discuss some of the specific findings of the case study in terms of capability expansion and deficits on each of the three dimensions of knowledge. Table 7.1 below summarises findings regarding NGO knowledge capabilities and deficits in relation to the literature reviewed in chapter 4, while Figure 7.2 indicates some of the main contributions being made by NGOs to social knowledge capability and interactions occurring with the wider knowledge environment.

Informational capability

The case study found NGOs of all types, both rural and urban, to be active acquirers of information as a key aspect of their work. The type of information varied greatly, depending on the nature of the organisation, its goals and its ability to make use of different types of information. Grassroots NGOs and service providers typically accumulated detailed information about the local community – both about collective needs and problems, and about particular households and individuals. This information was often uncodified, existing within the heads of individual workers or volunteers, although some efforts were being made to create written records, for example of vulnerable children and AIDS-affected households. By contrast, urban

intermediary NGOs, which served roles within the sector rather than as front-line service providers, were much more likely to put effort into codification and storage. Where grassroots groups often possessed almost no books and frequently had only a few publications of any sort, it was not unusual for urban NGOs to have a library or resource centre. However, these organisations often did not disseminate information widely, but were mainly involved with specific partners, particularly donors and beneficiary groups. Information in both community and intermediary organisations was often process-related rather than AIDS-related, and there appeared to be widespread concern within the sector about lack of information on such critical topics as scientific and medical matters, current statistics, rights, funding and training opportunities, and the activities of other AIDS groups – suggesting that even process-related information was falling short of many groups' needs.

Another important informational role of NGOs was as providers of information and thus as contributors to the knowledge capability of beneficiaries and other groups in society. Some NGOs provided information to beneficiaries about topics such as rights, healthcare, nutrition and welfare services; others provided statistics, case studies and PWA testimony to the media; still others disseminated 'what you can do to help' or campaigning information to the public. Information outputs are of course dependent on inputs and organisations can only supply information that they already possess, and in formats which they are able to process. Groups that did not codify information of necessity provided information to others or to beneficiaries largely through word of mouth, while groups that put effort into codification also produced publications, databases and other documentary formats. A problem for the sector was that this meant local information tended to stay local, existing largely in the heads of fieldworkers in local, service-provider NGOs without the capabilities – or sometimes the desire – to codify information and disseminate it widely. Furthermore, as discussed in chapter 3, epistemic processes require particular types of information on which to operate and are only as reliable as their informational inputs. The inferential procedures of analysis, for example, require codified information on which to operate. Weaknesses at the basic informational level of encoding can therefore feed through into compromised capabilities at epistemic and conceptual levels. When local information stays uncodified it not only stays local but it stays unanalysed, unaggregated, and unable to influence public opinion or the policy agenda. It also fails

to reach other NGOs – a factor giving rise to widespread concern throughout the sector about duplication of effort, gaps in provision and lack of information about 'who's doing what'.

The ability to produce written records and to codify local information so that it can be used for policy and research is a basic form of knowledge capability in any complex society. It is also a good demonstration of the way in which capability depends fundamentally on wider social and material factors. In this case study, for instance, many NGOs were operating under severe constraints of human and material resources. Keeping accurate written records takes planning, coordination, time and skill, and requires ongoing investment in updating and maintenance – resources that many NGOs, especially small or rural ones, simply did not have. Social values, attitudes and norms may have played a role too. Many NGOs were operating in communities where oral transmission of information was the norm. Written records were seen by more than one interviewee as an unwelcome distraction from service provision.

Furthermore written information can bring problems of ownership, privacy, data protection and copyright. Records of AIDS-affected individuals or households raise problems of ethics and even of ontology in a highly stigmatising society where HIV is non-notifiable, few receive a formal diagnosis and some, not least in government, question the very existence of AIDS. Orally transmitted information, by contrast, is both off the record and enables the use of subtle cues of gesture, tone and emphasis to convey meaning without explicit statement of facts that might transgress legal, social or moral norms (in rural NGOs a comment such as 'X is *very* sick' was tantamount to saying 'X has AIDS'). Lack of written records, however, caused problems for fieldworkers, making processes inefficient and dependent on the presence of particular individuals, as well as damaging higher-level knowledge capabilities such as being able to contribute to research and policy development. A major challenge for the sector on the information level therefore appears to be how to overcome the environmental constraints and develop flexible methods of handling information that reconcile the benefits of codification with the freedom and protection of more informal systems of information storage and transmission.

Epistemic capability

In addition to informational activities NGOs were found in the case study to be engaging in many epistemic undertakings as part of their AIDS work. Some of these undertakings were internal as in the case of monitoring and evaluation, or conducting research into local conditions, but many were directed at facilitating epistemic processes in the community. Many projects thus had aims such as disseminating the testimony of seldom-heard voices, training home based carers who become reliable educators and informants in the community, or of bringing debate about AIDS into public forums such as churches, schools and community meeting places.

Furthermore, the case study results show a high degree of awareness of many factors identified as important by epistemic theory – the value placed on good knowledge of sources ('knowing who knows'), for example. NGOs that were disseminators of information showed awareness of their audiences and the need to build trust and to use appropriate media and styles; in fact they were frequently critical of efforts that they saw as inappropriate. Methods that allowed interaction and questioning were highly valued – again in keeping with theory. As receivers too, many NGOs were well aware of strategies recognised by theory, such as searching and filtering skills, media use and reliance on trusted sources and intermediaries.

Epistemic interventions were also indirect, focusing on changing conditions rather than directly building knowledge ability in the community. One notable strategy here was the importance attached by many groups to providing lived examples such as a PWA leading a fulfilling life or a youth educator practising abstinence or monogamy. In terms of theory such examples have a number of epistemic benefits that underscore the significance attached to them by project workers. For a start witnessing an HIV+ individual leading a normal life is highly reliable – the evidence of seeing such a person working, caring for her family and going about daily life is incontrovertible, and is reinforced by reports from others in the community as well as what is directly witnessed. Secondly, paying a high personal price such as revealing HIV+ status in a stigmatising environment or restricting sexual activity where having multiple partners is the norm increases belief in a person's trustworthiness and credibility since there seems to be no personal benefit to be derived from propagating the message.

The case study also highlighted the value-based nature of epistemic processes such as research, as suggested by theory. While research is often thought of as requiring large amounts of funding and skills, the case study shows that useful research can be undertaken even in poor organisations and communities. Research is value driven in that it depends on a high priority being placed on the generation of knowledge and understanding in a local context. Organisations that did research showed commitment to such ideals and this seems to have motivated them even when resources were extremely limited. Interestingly, groups actively engaged in research tended also to be quite activist – suggesting perhaps that epistemic values and commitments are tied in to other value systems and not independent of them.

The case data thus suggest that the NGO sector can rightly be seen as engaging in significant epistemic work and making both direct and indirect contributions to knowledge processes in society. However, there are some reasons to be cautious. In particular, it was not clear that NGO efforts were always systematic or widespread enough to constitute more than temporary or local capability gains. Certainly there were individual projects and organisations fulfilling important epistemic roles, but these roles were very unevenly distributed in the sector and in the communities served. NGOs frequently implemented programmes such as 'listening to the children' or teaching negotiating skills to women, for example, and where they existed these programmes may have made a real difference to the epistemic status of individuals and groups. The difficulty is that institutional weaknesses meant that such activities tended to be fragmented, temporary and piecemeal, with NGOs reporting lack of knowledge mechanisms within the sector, ignorance about one another's activities, fears of duplication, and very little sharing of project evaluations. On a view of knowledge that says what matters is access to reliable and systematic mechanisms of forming true beliefs, the prevalence of ad hoc and project-focused approaches thus has serious weaknesses as a strategy for building epistemic capability throughout society.

There were however, some signs of structural and systematic changes that gave reason for optimism. Some NGOs managed to implement stable and relatively longstanding programmes such as education and skills training, or to establish ongoing resources such as libraries and meeting places. Churches in particular were well placed, having a secure presence in almost every community of any size – an advantage they were

frequently acutely aware of and keen to capitalise on. Some organisations such as TAC had become focal points for knowledge, critical discussion and campaigning, drawing in civil groups at all levels from grassroots to international networks. Certain generic project types had also become widespread throughout the sector, such as the provision of home based care, orphan care, vegetable gardening projects, and the training of counsellors and community outreach workers. To a greater or lesser extent all such activities provided communities with additional epistemic capacity in the form of expanded routes of communication, access to specialist information, practical skills and new educational opportunities.

Conceptual capability

Evidence from the case study suggests that conceptual work is a fundamental and highly demanding part of NGO knowledge activity, with capability expansion found at a variety of levels ranging from the development of new models of intervention within the organisation to the introduction of alternative conceptions of AIDS into public discourse. There was also evidence of efforts being made to change social and material conditions in ways that would provide conditions favourable to conceptual development – for example, women's rights and stigma reduction programmes leading to participation in collective problem-solving and forums of idea generation.

While NGOs sometimes lacked language for speaking about the conceptual dimension of their work, they were by no means inactive on this front. Internally, NGOs were found to be employing a wide range of strategies for conceptual development. In some cases (often spurred on by failures) attempts were made to reconceive the problem of AIDS and to develop new explanations, hypotheses and local models. Analogical thinking was used to aid problem-definition; field trips and exposure visits took staff to different environments; 'visioning' exercises were employed to foster creative thinking. These observations have clear parallels with theory and reflect the long-standing problem of 'logic of discovery', that is, that while there is no reliable method for successfully coming up with new theories or concepts, creative thinking and problem solving are not arbitrary but do employ particular techniques. Many of the techniques recognised by theory, such as modelling and analogical thinking were in evidence in the case study. Also bearing out theory was the recognition that discovery depended upon particular attitudes and values – and

that those attitudes could appear to run counter to commonsense, requiring a shift of perspective, as exemplified in the notice reproduced in Figure 6.5 on page 259. It is possible that the inspirational and religious activities that played such an important part in many NGOs – it was not uncommon to start a meeting with prayer, for example – could also have knowledge-functional properties such as encouraging persistence in the face of apparently insuperable odds.

Conceptual work was, however, relatively little acknowledged and was often not recognised for what it is – as shown for example by the number of responses that interpreted strategies, models and programmes as information needs. In this, NGOs reflected the general emphasis on information in popular, practitioner and academic literature, and the limited or nonexistent attention paid to conceptual dimensions of knowledge – among epistemologists as much as anyone else. Interview responses provided corroborating evidence of significant deficits on this dimension, with many organisations reporting difficulties over matters such as how to conceive the problem of AIDS, how to plan an intervention, how to come up with new ideas when a project failed, or even how to understand the role of the organisation itself.

Many of the conceptual difficulties experienced by NGOs highlighted the role of environmental factors such as weak AIDS policy and implementation and poor institutional linkages. Among academics and at government and international agency level AIDS was widely agreed to require a multilevel, multisectoral response. The organisations in the case study were for the most part very far from operating within any such integrated framework, however, and there was no evidence of effective top-down coordination or overall multisectoral planning and cooperation. Even within the NGO sector collective problem-solving and strategising appeared to be rare with many organisations expressing frustration over lack of knowledge and coordination with other groups, even those active in the same area. Many projects were supply-led rather than demand-led and attempts at coordination were generally local, small-scale, bottom-up initiatives. There was little sharing of evaluations, lessons learned and intervention strategies, bearing out findings in the literature such as Kruse, Kyllönen et al. (1997).

Despite the lack of an integrated AIDS response strategy[43] there were a number of more specific frameworks of understanding and intervention well established in the sector, such as home-based care and counselling. The role of intermediary NGOs appeared to be central in communicating these frameworks through workshops, publications and train-the-trainer programmes, bearing out the importance attached in theory to social factors such as institutional linkages and interaction opportunities. Even where frameworks were not well established or were problematic and contested, as in the case of behaviour change programmes and orphan care, intermediary NGOs and NGO networks were important sites for discussion and exploration of problems.

Somewhat more ambiguous were the empirical findings on the role of experts. Interviewees expressed two kinds of reservations. Firstly, they were concerned about the motivations and attitudes of researchers, whom they perceived to be pursuing an agenda unrelated to that of the community and without respect for the knowledge already existing in the community. Secondly, a knowledge problem was identified, with academic researchers seen as ignorant of local realities and committed to inappropriate models of intervention, for example prescribing community orphan care to communities teetering on the brink of collapse. According to theory, expertise in the epistemic community ought to increase the knowledge capability of society as a whole. The case study findings, however, highlight the way in which other environmental factors such as low levels of trust and perception of shared interests, and perhaps the rather self-contained structures within which research occurs, can offset what ought to be an important capability gain.

Despite this, some NGOs were able to derive conceptual gains by tapping into networks of expertise. The most striking example was the introduction of the Harvard Business School's transformational leadership approach in a rural child survival project through conference contact with a British expert. This case was unusual, however, and it is worthwhile noting that the new paradigm was adopted in the context of a serious project failure and feelings that came close to despair ('nothing in the world is working').

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[43] The absence in reality – there were of course plenty of paper strategies such as the five year strategic plan. Capability theory, however, requires us to look at the actual situation and not expressions of intent.

Changes in observed reality, both social and material, were also reported to be drivers of conceptual change. A change in public expectations about the role of NGOs was attributed to the coming of web and email technology, for instance, and the existence of openly HIV+ people maintaining productive and worthwhile lives was counted one of the most important stigma reduction techniques.[44] An effective approach to conceptual change may therefore be not to aim directly at introducing new ideas in the abstract but rather at changing the environment or providing lived examples. It appears that even relatively simple interventions such as PWA role models may have significant effects. This is in keeping with the cognitive role accorded in capability theory to external conditions – for example, the way in which oppression and poverty can diminish conceptual horizons and deprive people of even the ability to conceive a life differently lived. And it is not only the poor who suffer from conceptual limitations and who might be reached in this way – weak advocacy and the use of lived examples was an important campaigning strategy. A major part of TAC's success, for example, has been the example of the founder Zachie Achmat, who refused antiretroviral medication until the government reversed its decision not to provide drug therapy.

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[44] To the extent that one interviewee reported cases of uninfected people claiming to be HIV+ in order to obtain jobs with AIDS agencies. Material realities it seems can overcome even such powerful conceptual barriers as the stigma attaching to HIV.

	IDENTIFIED AS IMPORTANT IN LITERATURE (See Ch 4, Table 4.1)	IDENTIFIED AS CAPABILITIES IN EMPIRICAL CASE
INFORMATIONAL ROLES	Acquisition, recording, storage of information Provision/dissemination of information Setting up new information services Access to/strengthening of existing information sources/resources Building information awareness and skills Campaigning for information access, rights Creating and sustaining information linkages across and within sector Mobilising and coordinating activity 'Weak' advocacy	Ability to access local information Dissemination to beneficiaries, media, public, partners Provision of libraries, resource centres Building community information resources, e.g. HBC networks Emergence of information networks and networking roles, especially among partners
INFORMATIONAL PROBLEMS	Limited awareness Overload, lack of resources Partial – poor use of secondary data, silent voices Power – 'misinformation' Lack of access to key information Inappropriate presentation Overemphasis on information	Lack of codification, aggregation, resulting in information staying local and failing to impact on policy and research Inability to access/generate some essential information Focus on process rather than task information Dissemination to partners rather than sector, community generally
EPISTEMIC ROLES	Processing and analysis of information Initiating or supporting local knowledge processes – dialogue, testimony Education Research Experimentation and innovation Monitoring and evaluation Methodological innovation Promoting knowledge in the sector Training in research, monitoring, evaluation, information processing skills Correcting errors and misconceptions Change material conditions to enable knowledge processes	Ability to determine local relevance, needs, priorities Facilitating testimony in the community e.g. of children, PWAs; provision of public forums and debate Training educators Research into local conditions Trial and error learning e.g. in behaviour change programmes Variety of M&E methods in use; emergence specialist NGOs Workshops, informal discussion, hand-on learning, electronic forums Specialist NGOs only; emergence of technical specialists in sector Challenging popular misconceptions and government policy Address hunger, material needs before or alongside knowledge activities Ability to build and use trust relationships Awareness of audiences; skilled media use

EPISTEMIC PROBLEMS	Implicit methods Routinised techniques Lack of rigour and resources	Inability to implement widespread, sustainable and systematic processes across sector M&E often donor-driven; little transparency
	Donor demands vs innovation, diversity Lack of causal analysis Trust vs multiple linkages Need for technical training	Tensions expressed between local needs and donor/partner requirements Lack of sharing of evaluations and research outputs Lack of NGO integration into wider research community
CONCEPTUAL ROLES	Conceptual development in the community Acting as 'translators' Developing explanations and hypotheses	Dissemination of conceptual frameworks e.g. in workshops; efforts to change public perceptions Awareness of need to reconceive problem of AIDS; ability to generate frameworks for specific interventions e.g. HBC, counselling; development of generic strategies for problem-solving, reconceiving, modelling, creative/inspirational thinking
	Developing new development paradigms Changing social/structural attitudes Advocacy	Tackling stigma, women's rights Capability in specific NGOs, limited in sector as a whole
CONCEPTUAL PROBLEMS	Unrecognised need Weak theory Lack of causal, structural view Static conceptualising Lack of participant involvement Conflict avoidance Change is difficult, threatening	Lack of awareness/language to speak about conceptual dimension Lack of strong, shared or conflicting frameworks e.g. on AIDS strategy Very limited analysis Some possible evidence of groupthink Lack of established methods for problem-solving, strategising

Table 7.1 NGO knowledge capabilities: case study findings in relation to literature
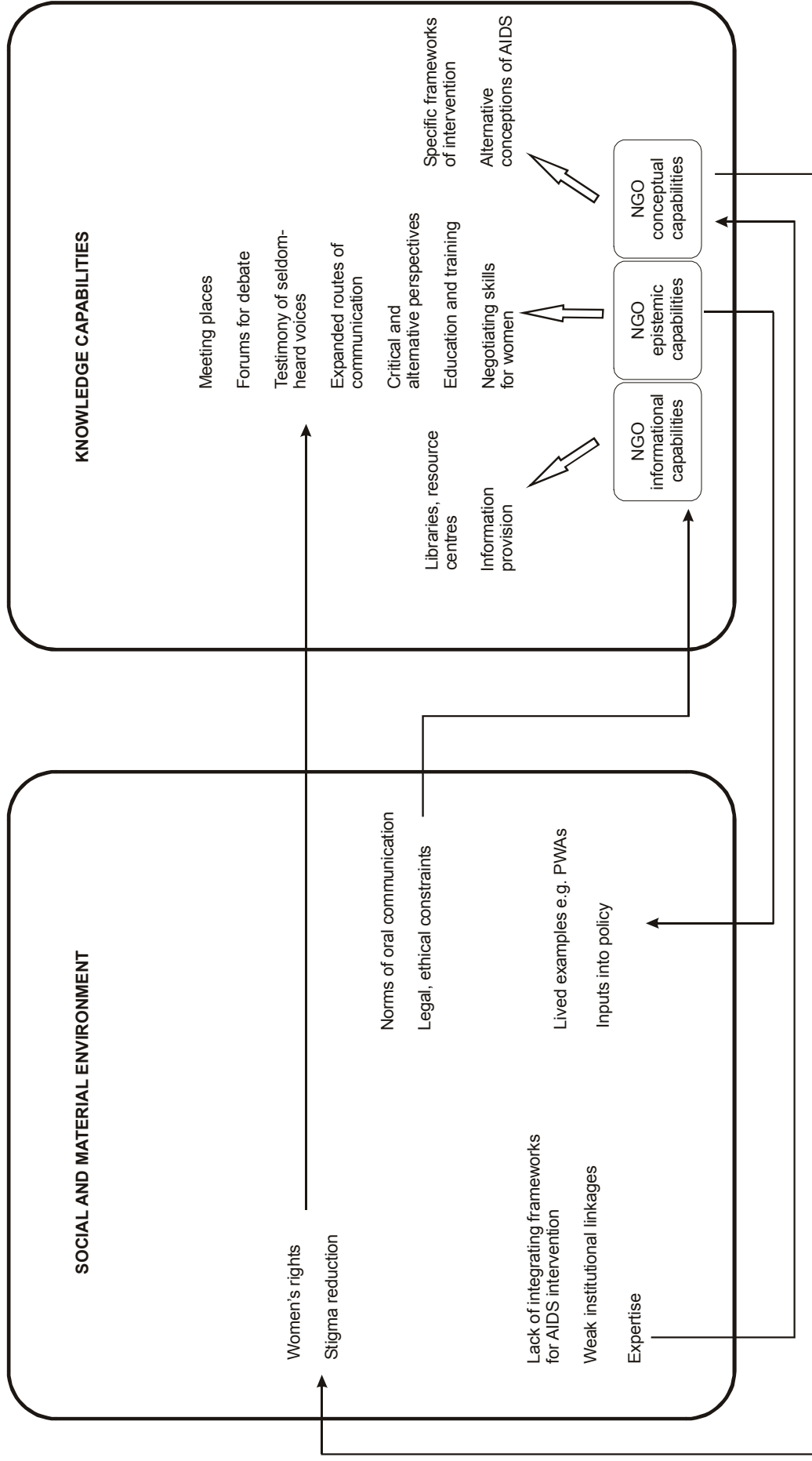
Figure 7.2 NGO contributions to knowledge capability and interactions with the wider knowledge environment

7.1.2 Internet use and knowledge capability

According to the theory, technology can support the expansion of knowledge capability through the extension of informational, epistemic and conceptual powers (Tk) and also through bringing about changes in the wider environment (Te) which have knowledge-positive effects (Ek). There is evidence in the case study results for both these relationships, although in certain contexts such as networking a sharp distinction between capability and environmental effects is difficult to maintain. Case study findings also emphasise the way in which Internet use is determined by existing knowledge capability (Kt) – and indeed capability generally (Ct) – and by environmental conditions such as material conditions, infrastructure and communication patterns (Et). Furthermore, environmental factors such as institutional history and social norms may be important determinants of conceptual factors such as how the role of the organisation is understood and thus of how technology is used and how well it is able to support knowledge capability (Ek-Kt-Tk). Major findings are discussed in the following paragraphs and summarised in Figure 7.3 on page 294.

The case study results suggest that the most effective use of ICT was occurring not necessarily among the best-resourced organisations but among those with significant skill and expertise (not necessarily in technical areas), and perhaps even more importantly among those with broader and more positive views of technology. Three distinctive patterns of Internet access and usage were found among NGOs. At one extreme was a small number of organisations with very little access and making almost no use of email or the web. At the other was a small number with extensive skills and professional-standard technical competencies, running sophisticated web publishing or email list services, and in some cases engaging in commercial work or ICT capacity building in other organisations. In the middle were a large number of organisations with some access to computers and the Internet, and making limited use of email and the web for communication, publicity and information-seeking purposes. Overall the picture that emerged was one of a sector in which a moderate level of technical competence was becoming widespread, and with a small but clearly identifiable set of specialist organisations providing important services within the sector. What stands out is the way in which existing levels of knowledge/capability determined the use of technology (Kt/Ct). As extreme example was the NGO that had no knowledge of the technology and concluded that it had no need for it. Clearly there

is a certain fundamental requirement to conceive of a technology as at least potentially useful before effort will be put into acquiring it and making it actually useful. It was striking that organisations making sophisticated use of the Internet such as web publishing, list management, campaigning and networking were by no means always well resourced or even technically skilled to begin with. In fact a more common model seems to have been to recognise a use for the technology and then to acquire the necessary skills either through development within the organisation or by drawing on volunteers or outside help.

Many NGOs did conceive of the Internet as useful to their work, most commonly in terms of providing information resources. In fact there was some overestimation of these, with a tendency to assume that more and better information existed than was in reality the case, and that NGOs' ability to access it was the problem.[45] The ability to contact donors and potential volunteers, and to exchange information with other AIDS organisations through email and the web were also seen by many NGOs as significant advantages of Internet use. Fears were raised by some interviewees, however, that through closer linkages within the NGO sector, and particularly with urban and international NGOs, electronic communication would weaken ties to the beneficiary community.

In addition, while ICT clearly was changing patterns of interaction and making it easier and cheaper to copy and disseminate at least some types of information, there was little evidence that it was doing anything to diminish the costs involved in generating, recording and codifying information. Some basic information, such as detailed and reliable statistics, appeared simply not to exist. The NGO sector was not badly networked and yet a recurring theme in the case study was the lack of knowledge about other NGOs and the fear of duplication. In this case environmental factors such as the historical and competitive nature of the sector in South Africa were possibly exerting a stronger influence than the existence of networking technology.

There was, however, also a keen awareness of the challenges that effective use posed

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[45] In fact, AIDS data are surprisingly poor and difficult to come by, as a number of researchers have observed (see for example Badcock-Walters, Desmond et al. 2003; Allen and Heald 2004; Barnett 2004) .

to knowledge capability, for example in terms of developing efficient searching strategies and mechanisms for filtering and dealing with information overload. Where achieved, electronic records and databases were highly valued but they were considered extremely demanding for NGOs to set up and even larger organisations found it a struggle to maintain them. Nor did having records in an electronic form mean that sharing would occur. Confidentiality and technical incompatibility were cited as restrictions on sharing, and some databases were sold for money. While there was talk of a project to set up standard records of OVCs across the sector that might provide aggregatable data this was nowhere near implementation at the time the research was carried out.

Similarly, very few NGOs were publishing locally appropriate content or contributing to email lists or websites. With a few notable exceptions, such as TAC and HST, which had developed significant technical and communication skills, NGOs with websites tended to use them for publicity rather than for content – a fact that some commented on negatively in the sector. This was not so much because the information did not exist – NGOs frequently gave locally appropriate advice and instruction on matters such as nutrition, rights and care – but because of the resources needed for codification and publication, and the fact that face-to-face methods such as workshops were still the dominant model of information transmission – again making the point that knowledge is not a closed system and that perceptions and established practices and expectations are at least as powerful as technical considerations in determining the way in which knowledge resources will be deployed. Even on the informational dimension then, which is arguably the least complex of the three aspects of knowledge capacity, the case study demonstrates significant limitations to the contribution that can be made by ICT when generic knowledge capability is lacking. The reality remains that many NGOs are failing to find, generate and publish crucial information. The failure is less a technological one than a lack of basic informational and communicative capabilities.

A similar point can be made about conceptual capability. A clear theme emerged in the case study of computers consistently being associated with managers, bureaucrats, theorists and powerful people, and remote from the real lives of fieldworkers, communities and of those infected and affected by AIDS. So strong was this

impression, that some interviewees expressed a fear of corruption: should computers become more widespread, it was felt, NGO workers would become sucked into the world of media and international agencies, losing touch with beneficiaries and the local community.

There was also a marked lack of Internet use for advocacy or activism – again with the notable exception of TAC and a handful of smaller organisations. This cannot be accounted for by a lack of technology since activism requires only the most basic hardware and software. It does, however, reflect the generally low level of such activities within the sector and particularly at community and grassroots level. The reasons were not explored within the case study but environmental factors such as the historically apolitical and charitable status of such groups, the dependency of some on government funding, and the enormity of immediate needs such as food, health care and orphan care, may have led to a focusing on service provision. In terms of the broad theoretical framework this can be seen as demonstrating the extent to which environmental features influence knowledge capability which in turn influences the use that is made of ICT (Ek-Kt).

Technology, however, also affects social and material conditions in ways that impact on knowledge capability (Te-Ek). The pre-eminent example of this in the case study was the emergence of networks and networking as dominant models of interaction, and the reshaping of networks around electronic communication. Different communication channels differentially constrain and enable different forms of interaction and while the Internet does not dictate a networking model it provides an infrastructure which significantly reduces the difficulties and costs of networking in other media – especially on a global scale (see for example Bonchek 1997). At the time of the case study Internet access and email were fast becoming standard among donors and urban NGOs. As they perceived this change in the communication environment, networking and information-based NGOs were joining and in some cases participating in or even starting their own email lists and discussion forums. In theory electronic networks can have important epistemic properties, supporting multidirectional and interactive contact between members separated by time and space, and providing a basis for epistemic processes such as testimony and dialogue. Such networks can also increase reliability, since communications can be seen by

many people and inaccuracies commented on and corrected. Networks furthermore allow members to build up mutual knowledge of one another over time. They provide platforms of interaction that can be both open and flexible and at the same time relatively stable in terms of membership, common goals and sphere of activity.

The case study results show widespread recognition of networking and linking activities as core NGO functions. Networks were represented as important mechanisms of information transfer, coordination, collaboration, discussion and debate, problem sharing and solving, and of contact with experts and the international AIDS community. Some organisations that stressed their networking role made no use of ICT at all but had extensive face-to-face and conventional linkages within the community and the wider AIDS sector. Others – probably the more prevalent model – made use of email to support and maintain network linkages, supplementing opportunities for face-to-face interaction and enabling remote members to join in.

Email-based networks tended to intersect and to some extent to be laid down over conventional networks, changing their structure and patterns of interaction. The overall effect appeared to be an increase in volume and frequency of messages from central sources (mainly urban-based experts or activists), which were disseminated through intermediary organisations to community and grassroots groups, from where they entered into non-electronic networks. The flow of information was markedly one-directional, however, with very few community-level groups ever posting messages to email lists and even intermediaries acting largely as filters and routers of content rather than as originators. Email networks were therefore largely serving information roles rather than acting as forums for discussion, problem-solving or conceptual development, with even the activist TAC taking pains to distinguish its networking from its social movement identity.

Nevertheless, the case study suggests that the development of information and communication networks, often supported by ICT, has been a very significant feature of the sector. Email was clearly reshaping communication and interaction patterns and thus expanding knowledge and associational capabilities among AIDS organisations. Linking roles were identified as a major sphere of activity by 40% of questionnaire respondents, second only to service provision, and a number of organisations had

been or were being set up specifically to act as network hubs. CINDI runs a highly successful network of children's groups in the Pietermaritzburg area. HST maintains active public and private email discussion lists that tap into multiple non-electronic networks. TAC has been able to mobilise a powerful local and international support base through expert use of media and technology, establishing email lists that have in a relatively short period become widely relied upon not only for information but perhaps more significantly as a conceptual resource, providing an forceful alternative vision to government policy.

Evidence was also found of environmental influences affecting the ability of the sector to develop effective knowledge networks, with several interviewees commenting on institutional difficulties in creating a successful network. The relative lack of interactive epistemic and conceptual activity in electronic networks can perhaps also be at least partly attributed to the lack of sector-wide linkages and organising structures. Capability factors also played a role in the way in which NGOs made use of electronic networking. Perhaps most notable was the emergence within the sector of individuals and groups acting as intermediaries and performing knowledge services on behalf of others, in particular filtering and forwarding messages to community and grassroots groups, allowing them to derive benefits without active participation. This role demands a high level of epistemic capability and evidence from the case study suggested that intermediaries needed to have good knowledge of both speaker groups (typically medical experts, policy makers and campaigners) and audience groups (typically smaller local and community groups) as well as of the topic.

The emergence of intermediaries was not a wholly positive development, however, since it meant that email networks remained largely urban and theoretically dominated with very little local-level input. While there is a clear need for intermediaries, and it would be foolish to suggest that every community group should become an active online participant, it is also important to recognise that lack of two-way communication and of local content diminishes the range and diversity of resources in the knowledge system, and increases vulnerability. Panos (1998) cautions against reliance on third-party intermediaries and advises NGOs to consider developing internal capacity, while Castells (2001) sees exclusion from computer-based networks

as highly damaging. The NGO director who actively monitored email lists for content of interest to local groups, and who supplemented messages with additional information, has now left her post. Possibly network members have taken on message-processing roles for themselves, or possibly another member of staff has stepped in – but it is equally possible that network members simply do not receive content of the standard that they once did.

Use of trusted intermediaries is one audience strategy identified by theory, but in reality it seemed that for many smaller and less well resourced NGOs in the study it was more or less the only strategy, particularly where electronic media were involved. The network intermediary model fits with the theory in that it shows the epistemic significance of values such as trust and reputation. However, it also shows up a tension in the theory which at the same time upholds the importance of mutual speaker and receiver knowledge. In ICT-based networks it can be impossible for audiences to identify the original authors of messages, especially when messages pass between different networks, or are filtered and forwarded in different formats – and sometimes with altered content – by intermediaries. In such cases trust may come to replace experience and personal judgement, with potential associated risks.

Perhaps an even greater concern is that the intermediary strategy works for testimony but not for argumentation and still less for problem-solving or other types of conceptual development. Intermediaries work where speaker and receiver groups are clearly distinguished – this is, for example, the standard model on which conventional publishing and editorial functions are based. Intermediaries in the case study typically filtered messages in one direction only, transmitting ideas and expertise from central, urban sources to rural and local receivers. As far as could be ascertained, there was almost no electronic interaction occurring in the opposite direction, making the interactive and multidirectional potential of the medium largely redundant. It is possible that with time networks will lead to the development of a wider base of skills, knowledge and technical expertise in the sector but the case study evidence did not suggest that this was happening to any great extent at the time. Very few organisations were active online communicators and it seems that, as with information generation, participation in electronic forums for dialogue, problem solving and agenda setting remained beyond the capability of a large part of the sector.

INTERNET DEVELOPMENT AND USE

Technical properties

Available products and services

Penetration

Limited interactivity

Restricted forms of use

Reliance on intermediaries

Shape of networks

Patterns of access and use

SOCIAL AND MATERIAL ENVIRONMENT

Institutional weaknesses

Existing patterns of interaction

Urgent needs

Material resources

Reduced costs of message reproduction and transmission

Increased range, speed, volume of transmission

New media types

Changed patterns of communication, interaction

NGO KNOWLEDGE CAPABILITIES

Lack of capability to generate content

Lack of skills and expertise

Limited conceptions of ICT

New/reshaped networks

Enhanced communication with donors

Some advocacy, publishing activity

Emergence of technical NGOs

Access to information resources

Increased connectivity, interaction

Broadened epistemic community

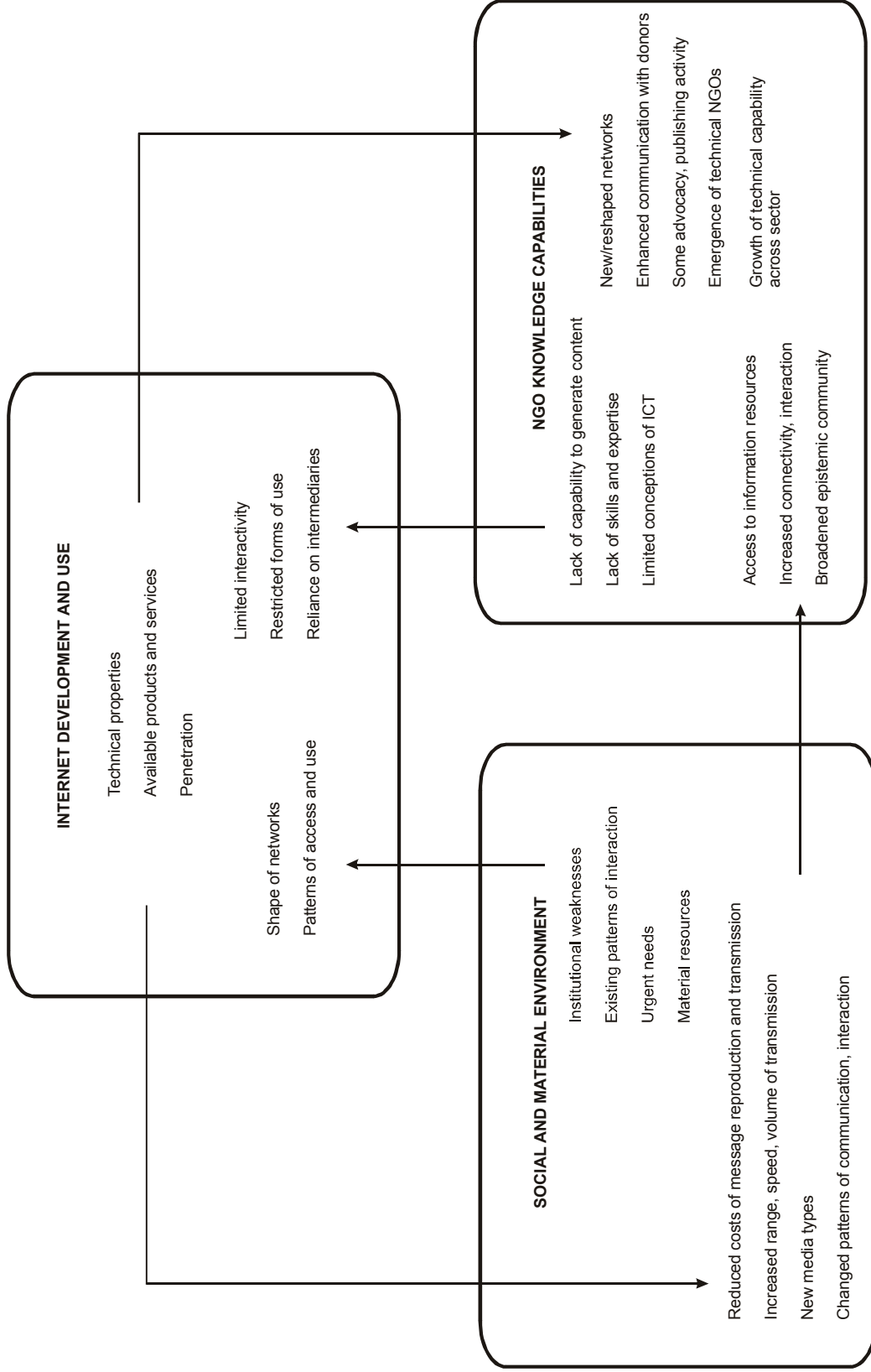Growth of technical capability across sector

Figure 7.3 Direct and indirect interactions between the Internet and NGO knowledge capabilities

7.2 KNOWLEDGE CAPABILITY AS AN ANSWER TO THE RESEARCH QUESTION

We are now in a position to reflect on the kind of answer that the theory of knowledge capability developed in chapter 3 and applied to the empirical case in chapter 6 provides to the overarching research question with which the project began: What is the relationship between knowledge, development and technology? In keeping with the naturalistic orientation of the project a full answer to the question needs to bring together the theoretical and empirical components of the work. What emerges is an answer with three core components: a philosophical analysis of knowledge that is closely related to a capability view of development; an account of what is required for technology to be considered developmental; and a recognition of the profound role played by environmental factors in capability and its expansion through technological means. The following paragraphs briefly summarise the distinctive position of this project in terms of these three components, while the following chapter discusses some of the contributions, applications and limitations that derive from this way of answering the research question.

7.2.1 Knowledge and the capability view of development

The first distinguishing feature of the answer that has been provided to the research question is the finding of both theoretical and empirical support for a close relationship between a capability view of development and the informational, epistemic and conceptual processes that were identified in chapter 3 as constitutive features of knowledge. Theory shows close conceptual linkages between the concept of capability and that of knowledge – to the extent that knowledge can be considered a subset of capability, with both having underlying normative features which can be realised in multiple ways at the descriptive level. Because of this structure, empirical findings cannot be treated simply as instantiating the underlying theoretical structure but need also to be seen as extending its descriptive dimension, showing how knowledge processes operate in a specific empirical situation. From a naturalistic perspective such continuities between philosophical and empirical studies are to be expected – in this study for instance factors not obviously associated with knowledge, such as hunger or spirituality, are shown to have epistemological implications. In general, the case demonstrates activity on all three knowledge dimensions to be

integral to responding to the specific development challenge of AIDS, playing a vital part in NGO efforts both in terms of organisations' own functional capabilities and in terms of contributing to knowledge capabilities in wider society. This appears to provide evidential support for the three-dimensional analysis of knowledge and also for the role accorded to knowledge in versions of capability theory such as those of Nussbaum and Finnis.

The underlying theories on which the project is based are also normative and within the case study judgements about knowledge functioning were made by many participants. The level of functioning achieved across the NGO sector was extremely patchy, with many groups reporting enormous deficits in terms of systematic knowledge capabilities. There were consistent and widespread difficulties throughout in generating and accessing information, in participating in forums of discussion and collective problem-solving, and in developing local models and shared frameworks of understanding or intervention. There was evidence of potentially unreliable methods such as dependency on intermediaries and perhaps the rather uncritical adoption of new conceptual frameworks. Aspects of the broader social landscape, such as stigma and the views of political leaders, were also found to be having knowledge-negative effects. These findings does not undermine the link between knowledge and development, however, since knowledge problems were matched by equally large difficulties in dealing with AIDS. The general proposition that development involves the expansion of capability, and that the three dimensions of knowledge constitute important parts of capability, therefore forms the central core of an answer to the primary research question.

7.2.2 Technology as an instrument of development

The second component of the response to the research question is a particular account of the role of technology. When knowledge processes are understood as key constituents of development, the relationship of technology to such processes becomes inherently a relationship to development. This is not to say that all instances of knowledge matter for development – clearly they do not – but it is to say that the expansion of knowledge *capability* is inherently a progressive and developmental process. Technology can thus be considered an instrument of development ('IT for development') to the extent that it supports capability expansion and not just singular

instances. It can be considered an instrument of specifically knowledge-enabled development to the extent that it supports informational, epistemic or conceptual capability expansion.

As with knowledge processes in general, the role of technology is a matter of empirical and not a priori judgement. Fallibilism means that we are not looking for certainty but for the development of more rather than less reliable knowledge processes. Case study evidence regarding Internet use in AIDS NGOs presented a somewhat mixed picture with respect to knowledge capability. Clearly email was having a radical effect on communication within the sector and particularly between urban NGOs and the donor community. Websites were giving NGOs a public face, and email lists supporting some effective exchanges of information and some networking and coordinating activity at international level. Some of these functions had become so entrenched in the sector that they could be considered stable and reliable mechanisms of information transfer, dialogue and advocacy – that is to say, genuine *capability* effects and not just instances of knowledge being supported by technology.

The positive effects of Internet use were, however, very unevenly distributed and tended to be felt mainly by organisations that already had more developed capabilities, highlighting another distinctive feature of knowledge capability – the recognition that lines of influence run in both directions between capability and technology (or indeed any development intervention). A high proportion of rural and community groups had almost no technical capacity, a factor that not only deprived them of potential knowledge gains, but had the effect of keeping local knowledge, perspectives and priorities out of wider circulation, entrenching the lack of such inputs into processes such as policy and research. The main differences between those who benefited from technology and those who did not were not essentially technological, but rather knowledge and general capabilities – communication and inferential skills, sectoral knowledge and contacts, resources of time and money, and, crucially, positive concepts, attitudes and values associated with technology. According to the theory developed in chapter 3 the ability to use technology emerges out of existing capabilities, including knowledge capability. Development is thus as much instrumental to technology as technology is to development.

7.2.3 The role of the environment

The third component of the answer to the research question is its externalism and the recognition given to the role of the environment in the technology–knowledge relationship. From many different directions, the work in this thesis has converged on the view that a wide range of social and material factors fundamentally influence the capabilities that individuals are able to develop and express. Material deprivation can, for example, affect the relevance of information; the prevalence of computers in office contexts can lead to people forming narrow conceptions of technology; and the social status of women can fatally affect their susceptibility to AIDS. In thinking about knowledge work and knowledge interventions we should thus not focus too narrowly on the mental realm: food, travel and lived examples may be just as important inputs into knowledge as ideas and explanations.

Moreover, since in an externalist epistemology the environment is to some extent constitutive of knowledge/capability, we should not expect to find a sharp boundary between process and context. In none of these cases is a straightforward determinism or a negation of individual agency suggested. Rather the perspective that emerges is one in which agency develops out of interactions with the environment. Agency and environment are not separate interacting spheres but developmentally linked: when squatters are too desperate to care about AIDS or women too downtrodden to negotiate the terms of sex, some fundamental aspect of humanity has been diminished. Knowledge and health are indeed linked, and far more intimately that was envisaged at the start of this research. They are linked because they are both basic aspects of the freedoms and opportunities – capabilities – that underlie a life worth living, and because the ability to realise them depends on the environment in which that life is being lived. It is not coincidental that two leading authorities on AIDS invoke Sen's capability perspective in order to 'move away from the dominant Western account of health and poverty as aspects of the individual' (Barnett and Whiteside 2002:350) and towards a more environmental vision based on public health, solidarity and social relationships. Thgis project shows that an almost exactly similar point can be made about knowledge.

Nor should we expect the process and context aspects of the technology–knowledge relationship to be sharply distinguished. Both theory and case study findings point to a

multiplicity of situational factors that can mediate relationships between technology and knowledge. We therefore need a perspective on technology that acknowledges both its direct or process interactions with knowledge and its indirect or contextual interactions. The dual perspective is important because without it contextual factors are all too easily overlooked. However, direct and indirect interactions are probably better seen as poles on a continuum rather than as absolutely distinct categories. Empirical evidence on networking, for example, makes it clear that in this area at least hard and fast distinctions between capability expansion on the one hand and changes in social arrangements on the other are impossible to maintain.

7.3 SUMMARY

This chapter reviewed key findings from the empirical case study and showed how they could be integrated into the theoretical framework developed in previous sections, interpreting the findings in terms of the core relationships identified by theory between knowledge, technology and development. The case study results were shown to bear out a number of key propositions of the theory, and the three-dimensional analysis of knowledge in terms of informational, epistemic and conceptual aspects was shown to provide a useful framework for the analysis of knowledge activity, technological intervention and knowledge deficits and limitations.

The framework also enabled case study results to be compared with findings from NGO literature analysed in chapter 4. Multiple points of congruence became apparent but so too did some notable differences, such as the relative lack of advocacy and policy work in the KwaZulu-Natal context. Findings from the case study were also shown to call into question some assumptions of the NGO literature, such as the juxtaposition frequently made between information work and service provision. It was shown that in fact underlying theory is able to account for the interdependence of the two that was observed in the empirical research.

Finally, this chapter discussed knowledge capability as a distinctive answer to the primary research question, with core commitments such as naturalism and externalism underlying the three key components of the response: firstly, a deep connection

between knowledge and capability; secondly a specification of what it is for technology to be an instrument of development; and thirdly a rich account of the role of the external environment.

Having reviewed these core features of the response to the research question provided by the theoretical and empirical components of the project, we turn now to the implications for theory and practice of this response. Chapter 8 presents a discussion of contributions, limitations and directions for further study.

8. Conclusion

Having discussed the answers provided by this project to the research question, it is now time to take a step back and consider the undertaking in its wider context. This final chapter opens with a review of contributions made by the project and some tentative implications for practice and policy. This is followed by a discussion of limitations and of directions for further study.

8.1 RESEARCH CONTRIBUTIONS

The aims of this project were partly to develop theory and partly to begin the process of testing it by developing and applying analytic tools to an empirical case. To the degree that the research has been successful, a range of contributions can be identified. Most of these are tentative and reflect work at a relatively early stage of development: a emerging general theory of knowledge, development and technology, and an example of empirical application.

8.1.1 A general theory of knowledge, development and technology

The theory developed in this project, referred to as 'knowledge capability' (KC), takes the form of a framework describing a set of relationships between knowledge, development and technology. Unlike other approaches to the subject, the theory is grounded in contemporary epistemology[46] and inherits a number of distinctive features from this philosophical orientation, such as naturalism, externalism and fallibilism. These features emphasise continuities between philosophical and empirical studies of knowledge, and between descriptive and normative dimensions. Furthermore, by adopting an analytic approach to knowledge, it has been possible to show profound conceptual linkages between reliabilist epistemology and capability theory, and also to important features of the 'mind tools' theory.

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[46] There are of course significant portions of empirical content in the details of the theory, particularly in the details of reliabilist epistemology where accounts are given of how knowledge processes work and the factors that affect their reliability. Capability theory has a closely analogous structure, being based on a normative ethical insight, but with the mechanics of social processes and their empowering or disempowering effects being a matter of empirical investigation.

Being based on foundational philosophy, knowledge capability is an extremely general theory. This is both a strength – in that it has the potential for widespread application – and a weakness in that it requires significant 'bridging' work before it can be usefully applied in empirical situations. Thus in this project chapter 4 showed how the general framework could be applied to yield narrower theory in the domain of NGO knowledge work. With effort, other applications could be developed in other domains to establish relationships between the domain and level of investigation and the underlying general theory. In principle the theory should be applicable to a wide variety of contexts and levels of analysis from that of the individual to groups, organisations, regions, networks or even societies.

As a general theory, KC is better seen as an integrative rather than an alternative account to theories that deal with particular types of knowledge or particular development domains. Castells's theory can, for example, be seen as focusing on the way in which knowledge enables the use of technology which in turn expands capability (Kt-Tk-Kc and Kt-Te-Ec) while the World Bank approach can be seen as focusing on institutional structures to support knowledge which will in turn enable capability growth (Ek-Kc). Similarly approaches based on specific technologies, such as Vikas Nath's Internet-enabled knowledge networking or the telecentre movement, can be seen as focusing on the relationship between technology and aspects of the social landscape such as information resources and interaction and communication patterns, and between these and knowledge which supports capability expansion (Te-Ek-Kc). Social constructionist analyses can be seen as focusing primarily on the Et relationship and interpretivist studies on the Kt relationship, particularly its conceptual or sense-making component. KC thus recognises and accommodates multiple approaches to the study of interactions between knowledge, technology and social arrangements. However, it does so within substantive and normative theories of both knowledge and development, providing a basis for evaluation as well as description.

From this perspective a very broad range of approaches, interventions and activities can be seen as having a potential claim to being part of a 'knowledge for development' or 'ICT for development' agenda. And there is at least a theoretical basis on which to compare such claims – that is, in terms of capability outcomes. It is

also clear, however, that the phrases 'knowledge for development' and 'ICT for development' are somewhat misleading. Knowledge, seen as a set of capabilities, must be considered the target as much as the instrument of development: 'knowledge *as* development'. ICT for its part requires capability as much as contributing to it. KC accommodates the view that technology matters and that exclusion from some technologies may be a form of impoverishment, but at the same time it recognises that access alone is not a sufficient condition for knowledge or other capability gains since both existing capability levels and a wide range of situational factors need also to be taken into account.

8.1.2 Accounting for observations and contradictions

The development of a general and conceptually grounded theory points the way towards explanations that might be given for observations and assertions made by other writers. Brown and Duguid (2000), for example, criticise as 'information fetishism' the idea that technology can replace the need for human interaction. The theory developed in this project shows precisely what is wrong in knowledge terms with such a view: over and above information, knowledge involves processing and conceptual thought, and on all three of these dimensions social interactions play a crucial role. Technology may provide access to information, but if social processes such as dialogue and collective problem solving are weak this on its own will bring limited knowledge gains. KC thus provides a theoretical underpinning for the critiques that are frequently made of database-driven initiatives such as the Development Gateway, as opposed to interaction and communication-based networking. Databases can certainly provide access to important information, but they are of little benefit on the crucially important epistemic and conceptual dimensions of knowledge. For these we require interaction-supporting as well as information-supporting technologies.

The emphasis placed in KC on environmental factors such as trust in knowledge relationships also has explanatory power. The Development Gateway was launched into an already politicised environment and in such a way as to undermine rather than promote trust within the development community. Similarly, the externalism of KC shows why van der Velden (2002) is right to emphasise the rootedness of knowledge in particular social and material contexts. KC does suggest, however, that alongside

diversity and pluralism at the conceptual level there needs also to be interaction and competition between different ways of understanding so that stronger frameworks can emerge for action in development contexts such as AIDS. The case study shows that the lack of strong established frameworks can be a very significant handicap for development organisations. This is an area in which interactive and communicative ICT applications could have an important role to play but which has so far received little attention.

Clarifying the concept of knowledge and recognising the components and processes that are involved also allows KC to account for some contradictions in the applied literature – such as the claim on the one hand that knowledge 'easily travels the world' (World Bank 1999) and on the other that it 'takes intellectual effort' (Panos 1998). Two aspects of the theory help to explain this paradox. Firstly, the three-dimensional view shows how some types of knowledge gains may involve much more demanding forms of activity than others; knowledge acquisition across conceptual boundaries or involving complex forms of inference is likely to be more difficult than knowledge acquisition within existing conceptual structures or with simple inferential demands. Understanding HIV transmission is simpler if you have the concepts of 'virus' and 'immune system' than if you do not. Secondly, capability theory emphasises the multiple situational factors that influence people's ability to use resources and take advantage of opportunities to develop their knowledge. As the case study showed, extreme poverty can downgrade the relevance and usefulness of health information; a history of oppression and demeaning labour can stop people from learning to garden; social stigma and political denial can undermine grassroots AIDS education programmes.

8.1.3 Tools for analysis

Since KC rests on an epistemological theory it has methodological as well as theoretical applications. One core distinctive feature of the theory is its emphasis on social processes such as testimony as genuine routes to knowledge but within a realist conception of truth. This distinguishes it on the one hand from traditional epistemologies which have frequently been suspicious of social routes for seeming to lack the direct relationship to states of affairs possessed by processes such as perception and introspection, and on the other from constructionist and consensualist

views which reject a mind/language-independent truth criterion. Methodologically, reliabilism thus allows researchers to use testimony as evidence subject to the constraints it imposes on all epistemic processes that they are more reliable in some situations than others and that reliability in addition depends on the quality of informational inputs – clearly there are some circumstances and some subjects where any individual will be unreliable. Where knowledge is the subject of investigation, individuals may well be highly reliable in describing their information needs, their communication networks, even many of their problem-solving strategies. However, they may be much less reliable in giving accounts of where new ideas come from or how they assess information sources. This need have nothing to do with deliberate deception but may just reflect the fact that knowledge processes are often opaque to knowers. In investigating knowledge, then, we can legitimately use testimony but we also need to accept that it may be necessary to go beyond testimony. In the case study conducted in this project, for example, testimony was used alongside observation to generate inferences about features of the NGO knowledge landscape such as groupthink, limited conceptual frameworks relating to ICT, and the possible epistemic significance of prayer – all of which are far removed from any accounts given by knowers themselves or possibly even likely to be recognised by knowers.[47]

In addition to a distinctive methodological approach, KC can be used to develop tools for the analysis of knowledge in a range of particular circumstances. For example, it suggests that the well-established approach of 'information needs assessment' might benefit from being supplemented by assessments of epistemic and conceptual needs. The case study found that while there were clear informational needs in the KwaZulu-Natal AIDS sector there were if anything greater conceptual needs, such as for successful models and intervention strategies. Equally, in the sphere of organisational knowledge the three-dimensional model could be used to develop a broader range of approaches including alongside databases and collaboration tools, the encouragement of analogical and imagistic thinking, exposure to new physical environments, and the cultivation of an attitude to error similar to Edison's 'I have not failed! I have merely found 10,000 ways that won't work.'

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[47] A parallel debate can be found within philosophy of mind over the validity of 'folk' psychology. Reliabilism can be seen as accepting a limited folk epistemology while also accepting the need on occasion for non-folk or technical accounts given in terms that knowers would not recognise.

Some first steps towards analytical tools are developed in Table 3.1 above, which sets out some core capabilities involved in each of the three dimensions of knowledge, and some of the associated social, material and technological factors that influence the ability to develop and realise them. Table 4.1 shows how a three-dimensional view of knowledge can generate an analysis of secondary NGO AIDS literature from a knowledge perspective. These are tentative and exploratory frameworks, however, and do not pretend to be complete or definitive. In fact, hoping for a definitive list is likely to prove futile: knowledge is part of an open system in which causation occurs in multiple directions between material, social, technological and cognitive phenomena. The task of delineating these interactions and describing the factors that lead to greater or lesser knowledge capability on the part of particular individuals or groups is necessarily a multidisciplinary and ongoing undertaking. This is not to say that analytical tools cannot be developed and improved upon, but only that it is important to remember that the tools are not the same as what they attempt to capture – the factors that generically influence people's ability to form more accurate representations of reality.

The three-dimensional model can also help to analyse *failures* to form accurate representations, a dramatic case in point being AIDS denialism within the South African government. This has on occasion been represented as failure of 'political will' although the explanatory weakness of this concept has already been commented on (see chapter 5). The perspective of this project allows a different type of analysis. In the terms of KC, a weakness in knowledge capability at the level of national leadership can be seen to have resulted in policies which failed to deal with the epidemic, which in turn severely damaged every aspect of capability, from people's ability to earn a living to their ability to form relationships to, ultimately, their ability to stay alive. The concept of political will appears to refer to a freestanding commitment to action; whereas capability theory, while it does indeed recognise an irreducible element of freedom in human action,[48] looks first to other explanatory factors – and in this case it seems that knowledge capability may be one of those factors. The failure does not appear to be informational so much as epistemic – the

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[48] All theorists in this tradition emphasise that capability is a necessary but not a sufficient condition for functioning; individual freedom and motivation always remain important in determing what actual outcomes will be quite apart from capability and situational factors.

failure to evaluate explanations and evidence, the promotion of bizarre conspiracy theories, the ignoring of local medical expertise, the disputing of discomfiting statistical findings and the insistence on local trials for already tested medicines are just some of the many epistemic disorders that have been diagnosed (for a full account see van der Vliet (2004)). A conceptual dimension may also be involved: it has been suggested that President Thabo Mbeki's denialism may have its origins in his 'African Renaissance' vision and consequent desire to refute negative stereotypes of Africa.[49]

8.1.4 An approach to intervention

As well as critique KC offers a new, dual perspective on knowledge interventions. From a capability point of view, it is the empowerment of agents – the expansion of substantive freedoms and opportunities to live as they wish – that lies at the heart of development. This imposes dual requirements, on the one hand for the building up of skills and abilities in individuals and groups, and on the other for the creation and maintenance of an empowering environment. In the case of knowledge capability specifically, we are concerned in the first case with the development of informational, epistemic and conceptual skills, and in the second with creating an environment that supports their development and expression. Furthermore, KC requires that in evaluating interventions we look not just at their technical features but at the role played by environmental factors such as social structures, political context and cultural norms, and also at the role of existing capabilities, in determining their effectiveness.

Where overall effectiveness is low it may be that any or all of the three aspects need to be addressed; it cannot be assumed that a technical solution is either necessary or sufficient. As an example, consider the wide variety of information deficits reported by NGOs in the case study. A straightforward approach to intervention would appear to be provision of Internet access; after all, there is undoubtedly a vast amount of information available on the Internet. However, when we look at the results from NGOs with Internet access we see that the capability to make effective use of the technology was often lacking, with time and information searching skills reported as

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[49] I am indebted to Professor Tony Barnett for this insight, which is based on a comment of his at a one-day workshop, HIV/AIDS: Why the Policies Do Not Work, London School of Economics, 14 February 2004. A similar explanation is offered by van der Vliet (2004).

key limitations. NGOs tended to assume that the information they required did exist and was available on the Internet if only they could find it. In fact, however, secondary literature reveals that AIDS data on South Africa is surprisingly limited, a fact that hampers even academics with developed research skills. South Africa is not a backward country in terms of research capability so it is necessary to consider features of the broader environment. Here we find a variety of possible explanations including a historical reluctance on the part of policy-makers to engage with AIDS, a somewhat self-contained and careerist research community, and a charitable and service-provision rather than policy and advocacy ethic within NGOs. In planning an intervention to address information needs in the NGO sector we may well include Internet access as an important factor but a KC approach would also require the development of information skills within NGOs as well as efforts to overcome barriers to the generation of relevant information such as perhaps the forging of stronger links between the NGO and research communities.

This approach differs in important ways from those that focus on 'managing' or 'transferring' knowledge. Such approaches tend to conceive of knowledge as a product, resource or asset of some sort, a *thing* that can be created, stored, moved, even sold. KC by contrast asks us to think of knowledge in terms of *processes* – complex forms of functioning that depend upon a range of individual, social and material factors. KC stresses that it is not particular knowledge instances that we should be concerned with but rather the generic abilities to engage in informational, epistemic and conceptual processes.

Capability approaches could perhaps be developed for particular knowledge domains, reflecting specific sets of abilities found to be conducive to scientific discovery, language learning, child care, organisational development or more or less any other sphere of human activity with a significant knowledge component. To some extent this is just what educational and skills development programmes aim to do. KC, however, insists that we look also at the environment and the support it provides for informational, epistemic and conceptual capabilities. Both the theory and the case study suggest that these may require very different types of interventions: the problem of stigma cannot be approached in the same way as monitoring and evaluation or record keeping.

From a capability perspective a more appropriate model than knowledge management or knowledge/technology transfer is therefore one based on education and personal development on the one hand – such as the teaching of strategies and methods, and provision of opportunities for social interaction and learning – coupled with the creation of an enabling knowledge environment on the other, which means as well as direct support for knowledge, also supporting appropriate values and institutions for discovery, truth-telling, information sharing, debate and so on.

This is not to say that all interventions will need action on all fronts. By recognising the complexity of knowledge processes and the many (knowledge and non-knowledge) factors that can influence them, knowledge capability suggests that different knowledge interventions will be appropriate in different circumstances. Where concepts and forms of inference are well established and widely agreed upon, information processing approaches may yield quick and cheap knowledge gains. For example, in the HIV/AIDS community there is little disagreement as to what 'prevalence' is or how best to calculate it every year from new antenatal data. In other situations, however, where shared frameworks of understanding do not exist, where trust is low, or where some groups are excluded from social knowledge processes an approach based on information processing will be hopelessly inadequate. Thus deciding how orphans are to be cared for is an altogether different matter from ascertaining prevalence. At the time of the case study concepts of community care were poorly defined and variable, influenced by ideology, and often applied without due regard for local conditions. The contrast between the two cases shows that some types of knowledge may be much easier to transmit in some circumstances than other types in other circumstances.

Convergence on a model of orphan care may of course occur with time, particularly given sufficient development of knowledge capability in the AIDS sector. Strong competing models are rare and at the time of the case study the problem was not a plethora of strong models or a lack of agreed norms but rather a lack of models themselves, and of mechanisms of model development, evaluation and comparison. One of the advantages of knowledge capability theory is that it is broad enough to deal with such widely differing situations and to offer an explanatory framework that goes some way to suggesting how the differences may be accounted for.

8.1.5 Understanding of KwaZulu-Natal AIDS NGOs

This project contributes an empirical case to the body of literature on civil society organisations in development, and on the use of ICT in the work of those organisations. Most empirical case studies in this field focus on individual organisations, and there is little research that aims to capture sectoral dynamics. This is understandable since, unlike the public and private sectors there are few sector-wide institutions and little aggregated data on NGOs. However, certain issues that are relevant to knowledge capability, such as patterns of communication and the concentration of technical capacity, arguably need to be studied at a level above that of the individual organisation. Studying the sector as a whole also allows a greater diversity of organisations and knowledge relationships to be incorporated.

The result is a case study that captures something of the variety and complexity of knowledge work being undertaken by NGOs. With the exception of health education AIDS is not obviously a knowledge issue and yet a vast amount of NGO time and effort goes into a very diverse range of activities with informational, epistemic or conceptual goals. Some of these goals are internal to NGOs or integral to their functioning – such as information exchange with donors, monitoring and evaluating projects or developing new ways of conceiving the problem of AIDS. Others are outward-facing aimed at building knowledge capabilities beyond the organisation, such as channels for communicating local priorities to policy makers or negotiation strategies to empower women in sexual relationships.

The empirical study furthermore adds to the literature on ICT within the sector, indicating the complexity and diversity of the processes involved – for example, the rise of specialist technical NGOs on the one hand and the stagnation of ICT capacity in some rural settings on the other. Taking a sectoral view allowed the diversity of ICT use to emerge and showed up the difficulty of making generalisations. Even in terms of relatively simple issues, such as hardware or email access, participants reported vastly different experiences and difficulties, some finding willing donors and others barely being aware of technology at all.

The empirical findings have many points of contact with NGO literature and it is impossible to discuss them all. One aspect, however, seems worthy of special

mention. Contrary to a powerful strand of thought in NGO literature (see chapter 4) the case study found little evidence of organisations moving away from project work and into either information goods and services or advocacy and activism. A few highly sophisticated information-based and campaigning NGOs did exist, notably TAC, but these were a tiny minority. In general, the NGOs in the study tended to think of themselves as information needers rather than information suppliers. Relatively few groups active at local or community level reported making deliberate attempts at acquiring and storing local information, and while many clearly had access to good sources, information remained largely uncodified and was not thought of as a formal resource, far less made available in any systematic way to outside agencies. In many cases, it took some persuasion to get NGOs to consider the kinds of informational resources and roles that they could potentially provide in the wider community.

Furthermore, the juxtaposition of project work and informational services does not appear to be a particularly helpful way of understanding the work of these NGOs. As one interviewee succinctly put it, in the context of AIDS information provision, 'Hungry people do not make good learners'. In poor communities there may be little point in looking at information provision as a role separated from service provision to address basic needs. The case study found extremely close connections existing between information and service provision, with information transfer to the community often taking place within the context of material service provision such as visits by home-based carers, and in one case a proposal to set up a clinic designed ultimately to become an advocacy tool. In general NGOs were acutely aware that a powerful role could be played by material provision in establishing epistemic resources such as trust and credibility – and interestingly the need to establish trust and credibility *before* offering information services.

These and some other tentative suggestions for policy and practice arising from the case study are outlined in Table 8.1.

SUGGESTIONS FOR POLICY AND PRACTICE	CASE STUDY EXAMPLES
Shift from knowledge *for* development to knowledge *capability as* development. Interventions to build: • **Generic/systematic knowledge abilities** • **Enabling environment**	Home based carers becoming part of the community knowledge system. Combating stigma to support testimony. Inability to record and share local information and lack of strong conceptual frameworks damaging ability to respond to AIDS.
Establish and build on trust	HBC volunteers gaining a reputation for trustworthiness and adopting general information provision roles.
Develop and communicate locally appropriate models	Expressed needs for effective and appropriate models; criticism of government and NGO programmes as speculative, resource-driven, wasteful. Pervasive lack of ability to share knowledge that had been acquired.
Develop basic knowledge capability across NGO sector, especially rural groups	Reliance of rural and grassroots groups on Internet intermediaries, leading to lack of participation and local content, low interactivity and chronic underdevelopment of rural capability.
Generate knowledge of the sector	Limited sharing of evaluations, lessons learned and intervention strategies. Fears of duplication. No sector-wide mechanisms of knowledge sharing.
Recognise the conceptual dimension	Conceptual needs misinterpreted as information needs. Narrow, deterministic conceptions of ICT limiting forms of participation and use. Donor categories preventing networks being funded. Lack of attention to ICT support for conceptual development.
Build links between civil society and the research community	Lack of civil participation in setting the research agenda. No mechanisms for public dissemination of research results. Mistrust between NGOs and researchers.

Table 8.1 Implications for policy and practice

8.1.6 A contribution to critical realism in Information Systems

Despite signs of growing interest, there have to date been very few critical realist case studies in Information Systems. Even though this project was not designed as an exercise in critical realism it shares similar underlying commitments and orientations (see chapter 2), and may perhaps be considered a contribution in the spirit of this emerging metatheoretical perspective. For a start there is in KC an acceptance of unobservables – including human intentions, motivations and meanings – as legitimate causal entities within a scientific ontology: freedoms, capabilities, beliefs, values, norms and concepts are all accorded explanatory roles in this project.[50]

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[50] Connections between Sen's capability theory and critical realism have recently been made by Martins (2005).

Secondly, there is an insistence on the openness and non-deterministic nature of the systems under investigation. Knowledge capability is causally affected by and causally affects a vast range of material, social and technological factors, but like all capability perspectives it accords a central place to freedom and human agency. Not only do capabilities and environmental factors not fully determine outcomes in terms of functionings, but central to functioning itself is – at least in Sen's account – the notion of exercising freedom, particularly the freedom to determine and pursue goals that are personally meaningful.

Finally, both KC and critical realism are *critical* theories, concerned not only with understanding but with the evaluation and improvement of human life. Goldman's social epistemology is explicitly critical in orientation, its basic project being to evaluate social arrangements in terms of knowledge and to suggest knowledge-positive interventions. Capability theory rests on an ethical conception of the purpose and value of human life, and a concern about the way in which social arrangements either support or blight the realisation of human potential and lives worth living. Views of technology such as those of Dahlbom locate it firmly within the sphere of human action and thus fundamentally related to ethical concerns at both the individual and social level. In terms of knowledge capability theory, a critical approach is inscribed in the theoretical framework in terms of the indirect or environmental routes to development (see Figure 3.2 on page 126) – that is, interventions which seek capability expansion through altering aspects of the social and material environment. In the case study, for example, approaches to AIDS were found to include advocacy, women and children's rights, the tackling of stigma and opposing government denialism, as well as the more direct routes of capability expansion such as health care, income generation and education.

8.2 LIMITATIONS

8.2.1 Limitations of the theory

Despite having roots in classical philosophy both reliabilism and capability theory are relatively new developments, and both have significant work still to do. They have been used in this project because they appear to the researcher to embody the right

kind of approach, but it is also important to recognise that they are very much work in progress and that many of the details of either may need to change. Some readers will have more profound disagreements and find some of the theoretical commitments unacceptable – to truth realism, naturalism or the existence of capabilities, for example. It is probably impossible for theories dealing in any explicit way with concepts such as knowledge and development to have universal appeal but an explicit framework does at least provide a basis against which alternative views can be defined.

It is beyond the scope of this project to discuss in any detail the future development of epistemology but areas of further work may perhaps include the incorporation of a conceptual dimension within epistemology and as part of this the provision of a (naturalistic) normative criterion for conceptual processes. This could provide the basis for an better understanding of the part that ICT can play in conceptual development. Furthermore, we need a better account of non-linguistic knowledge in epistemology. This area is somewhat undertheorised but is clearly important, especially in the context of ICT and the growing use of image and audio applications. The epistemic dimension of capability theory also requires development, particularly in terms of the constitutive role of the social and material environment. Sen's work has for example been criticised as 'presocial' (Gasper 2004).

In addition, it has been impossible in this project to develop all aspects of the theory equally. The thesis has concentrated on explicating the core conception of knowledge and the overall architecture of the knowledge-development-technology relationship, leaving a number of topics relatively undeveloped. These include proper consideration of the issue of a logic of discovery, the relationship of knowledge to other capabilities, the distributive aspect of capability, and a more developed view of the relationship between technology and empowerment.

Perhaps most importantly there are questions about agency and responsibility for development. KC can provide evaluation tools and suggestions for interventions but it is not a political theory and does not attribute responsibility for change; nor does it do much to tackle conflict. Sen has always avoided policy prescriptions and Nussbaum, although she identifies empowerment of the poor and oppressed as asserting a moral

claim (Nussbaum (2000)), does not make it clear upon whom exactly. Capability theory has much to say about policy and the construction of opportunity, freedom and enabling environments, but less about how situations of gross inequality come about and are maintained, and the resistance of powerful groups to change. It is an essentially optimistic view of human nature based on reason and the pursuit of rational goods. It accepts that the oppressed may require capability expansion before they are in a position to appreciate these goods and to recognise their own exploitation but it has yet to provide an equivalent account of how *oppressors* are to become enlightened. Some suggestions have been made: Grisez, Boyle et al. (1987) for example argue that immoral choices always rest on a failure to take all the relevant information into account (Alkire 2002). But as we have seen in this project, the use people can make of information depends on more complex processes of reasoning and conceptual development. In the case of Thabo Mbeki's AIDS denialism, for example, and South Africa's fatal delay in treatment provision – widely condemned as immoral and by some even as genocide (Terblanche 2003) – it does not appear that access to information was the main deficit, but rather epistemic and conceptual capabilities. How these deficits are to be overcome among powerful elites remains to be addressed.

8.2.2 Case study limitations

The main limitations of the case study relate to data. There were very limited sources of information available on the sector as a whole, and the one directory that existed and that formed the starting point for making contact did not include the smallest and most grassroots groups. Many of these simply did not have points of contact that were readily accessible outside the local area and in fact their existence only gradually became apparent through discussions with community organisations operating in rural and peri-urban areas. These groups typically sprang up as informal offshoots of churches, hospitals or community projects, many without any formal organisational presence at all. This level of activity is therefore underrepresented in the study.

Another limitation was the lack of opportunity to speak to beneficiaries. There are a number of reasons for this. Stigma means that very few people are prepared to put themselves forward as recipients of help from AIDS NGOs and the researcher was unable to spend long enough with any group to get to know beneficiaries personally. Going out with NGOs on fieldwork puts a researcher in the role of NGO-associate

and, while it provided very useful insights into NGO-beneficiary interactions, did not enable beneficiary views to be heard outside of this context. The fact of being white and unable to speak Zulu also increased the distance. Finally, the difficulty was compounded by the controversy at the time over South Africa's AIDS policy, which was bringing large numbers of researchers and journalists to badly affected areas, all looking for PWAs to interview and causing some resentment. Because of these difficulties first-hand beneficiary views are not represented in the study. The PWA interviewees were individuals working or volunteering within NGOs and cannot be assumed to be representative of the community.

The currency of data is also an issue. Most of the data for the case study were collected during 2000-2002, and caution needs to be exercised in extending inferences to the current situation in KwaZulu-Natal. Some updated data has been included for comparison, for example relating to web presence in 2004. This shows some progression of ICT capability in urban organisations but none in rural settings. Nevertheless, it would be wrong to assume that change is not occurring even in rural areas.

Finally, it was not possible to judge directly the quality of many processes that NGOs reported, such as research, monitoring and evaluation, or message filtering. There were few opportunities to watch individuals performing such tasks, and research outputs were seldom publicly available. Nevertheless, it was possible in interviews to gain some understanding of how the processes occurred and of the people and methods that were typically involved.

8.3 DIRECTIONS FOR FURTHER STUDY

This project set out to explore the usefulness of analytic philosophy in developing a theory of knowledge, technology and development. The results show that the approach is a useful one, which can yield interesting findings. Nevertheless, as observed above, both the theory and the analytical instruments derived from it are at an early stage and need further development. Three areas in particular suggest themselves:

8.3.1 Tools for knowledge-based analysis and intervention

The analytical tools developed in this project, for example as summarised in Table 3.1 and Table 4.1, are a first attempt to develop useful applications from the theory and have many rough edges and omissions which could be improved by further research. While the basic framework of the theory is not empirical but conceptual, there is a large empirical component in the aspects of the theory that describe the detailed functioning of particular knowledge mechanisms. These aspects of the theory and the tools derived from it therefore need continual updating in the light of new empirical findings. Furthermore the findings can be expected to come from many different disciplines – animal behaviour, linguistics, cognitive psychology, technology and many other social and natural sciences can all make significant contributions to our understanding of knowledge processes and their relation to external conditions. It has not been possible to survey the full range of relevant literature in this project; it is rather to be considered as an ongoing task.

Criticisms of capability theory frequently focus on the difficulty of operationalising the key constructs (see for example Alkire 2002). This project has tried to show how a detailed focus on a specific capability such as knowledge can perhaps provide a way forward. It would now be useful to develop a method for conducting knowledge capability analyses in particular development contexts based on this framework. This is envisaged as a three-stage process:

1. Identification of specific knowledge needs.
2. Identification of underlying informational, epistemic and conceptual deficits.
3. Investigation of social and material factors causally impacting on knowledge capability.

For instance, in this project it was clear that mutual knowledge of NGO activities was often poor, even among groups active in the same area. Identifying such a lack would form part of the first stage of a knowledge capability analysis. The second stage would look at the underlying capability deficits: the difficulties NGOs experience in generating and disseminating information about themselves, and in accessing information about one another. The third stage would look at relevant social and material factors, possibly including problems of communications and transport in

rural areas, norms of informal and oral information exchange, or communication patterns based on organisational partnerships or funding linkages rather than geographical proximity.

For projects aimed at intervention as well as analysis a fourth stage would be added, in which strategies would be developed to address the direct and indirect factors identified in stages 2 and 3.

8.3.2 Conceptual capability and ICT

The theory of knowledge developed in this project is unusual in including an explicit conceptual component. However, it has not been possible to cover in any detail the topic of idea generation and the nature of the capability and environmental factors on which it depends. A fuller account of this would need to draw in much greater depth on a range of disciplines from psychological studies of conceptual development and change, to theory generation in science and applied studies of creativity and problem-solving. Based on this it would then be possible to develop a critical analysis of the potential role to be played by ICT in conceptual development, something that has so far been very much eclipsed by the focus on information.

A second strand of research would be the empirical investigation of conceptual activity within NGOs. Thomas, Chataway et al. (1998) identify weak theory and static conceptualising as problems in the sector and the case study suggests that even though there is evidence of innovative approaches to conceptual development NGOs remain severely handicapped by a lack of models, strategies and strong collective frameworks for intervention. There is clearly a need for better understanding of idea development within the sector, and for a consideration of whether ICT applications such as online forums or access to expertise could help to overcome some of the problems.

8.3.3 Technology, agency and empowerment

Finally, the least developed area of the theory as it stands is the relationship between technology and capability. Many of the resources needed to develop such a theory already exist. There is, for example, a large empirically based literature on the use of technology in specific empowerment-related domains such as in education, health, women's rights and democratic participation. There is also a smaller but growing

theoretical literature that addresses the development of agency (and the closely related concepts of power, freedom and responsibility) from a psychological, political and philosophical perspective. Capability theory is one obvious case in point; Philip Pettit's (2001) theory of discursive control is another, as is Daniel Dennett' recent attempt to provide a naturalistic account of human freedom in *Freedom Evolves* (Dennett 2003). The task now is to bring these two very different sets of ideas together in order to develop an integrated account of technology in terms of its ability to support human agency and empowerment. Chapter 3 shows what the structure of such a theory might look like, and some of the content, at least relating to the Internet, but this is a sketch only. An elaborated general account of technology, agency and empowerment has yet to be constructed.

8.4 CONCLUSION

This thesis has been concerned with the two major issues of knowledge and development, and with their relationship to technology. At its heart lie an epistemological and an ethical theory, reflecting two of the oldest human and philosophical concerns: what we know and how we are to live. The two theories have deep structural and substantive congruencies, and both have been shown to support normative analysis of technology in terms of its ability to contribute in one case to knowledge and in the other to a better life. Both theories are grounded in a naturalistic philosophy in which human beings and their values and virtues, meanings and understandings are all part of the natural world, with normative properties seen to arise from descriptive properties.

Chapter 1 began with a quotation suggesting that it is knowledge that matters first and foremost for development. We have seen how intimately knowledge is in fact related to human wellbeing, and the part that technology is able to play in promoting wellbeing through promoting knowledge directly and indirectly. We have seen how contemporary epistemology can support such a theory, and how it can be used to generate not only description but also critical evaluation and possibly knowledge-positive interventions. Readers will judge for themselves how successful the result is and, regardless of their feeling for the particular theory developed in this work, the

degree to which a philosophical foundation may contribute to empirical and practical purposes. What cannot be doubted is that knowledge matters for development, or the multiple ways in which knowledge work is integral to the ability of a society to respond to a development threat such as AIDS. The case study furthermore shows how tragically inadequate in many cases are the knowledge capabilities available to individuals, organisations and communities wrestling with a disaster on such a scale.

As this thesis draws to a close in early 2005, South Africa remains in the grip of an epidemic of immense proportions. An estimated 5.3 million South Africans are HIV+ (UNAIDS 2004), of whom 800,000 are already seriously ill and just 33,000 are receiving treatment (Nolen 2005). On any view of development this represents a disaster, but a capability approach reminds us that it is also a tragedy and that behind the statistics lie shattered lives and obliterated life chances, freedoms and opportunities – the total abnegation of human flourishing – for individuals, households and even whole communities. This is all too real for anyone who does research in the field. In the course of this study it was common to find children bringing up children, women living in nightly fear of rape, people existing in mud and dust, without running water, without bedding, without doors and windows they could secure, and sometimes almost without food. Volunteers were battling AIDS with rubber gloves and cough mixture. There were tales of starvation and of people too weak to fight off rats.

But alongside the misery there were orphaned children laughing and dancing; outreach workers delivering food day after day; hospital reinventing themselves as community centres; PWAs living open and productive lives; volunteers praying and singing together; churches turning themselves into counselling centres. People respond creatively in even the most dire circumstances. The case study shows how large a part knowledge plays in this, but also how many informational, epistemic and perhaps most of all conceptual deficits hold back the response to AIDS. The deficits can be seen at every level, from lack of records in grassroots NGOs to failures of national policy. Capability expansion has happened but it has had to confront not just AIDS but the legacy of decades of systematic impoverishment and brutalisation under apartheid. When capability has been so comprehensively undermined, even the most determined and creative response may not be sufficient to stave off disaster.

Set against matters of life and death, and the collapse of whole communities, studying the use of ICT easily starts to seem an irrelevant indulgence. Technology has, however, begun to play an important part in the NGO response to AIDS, perhaps most of all in the emergence and reshaping of networks, and in the ability to link multiple local and remote contexts. But ICT takes knowledge and other capabilities to use and these are unequally distributed. The case study found NGOs lacking the skills and resources to generate and exchange information, and to make use of interactive forums and access to expertise. The greatest challenge, however, was not informational or epistemic, but conceptual. Where motivation and perception of purpose existed even very small NGOs were often able to access or develop the skills and resources they needed make good use of technology. Where deterministic views prevailed of computers as tools of the rich and powerful, or of interactive forums as talking shops for urban theorists, participation was lower and modes of use more restricted. The first step towards a genuinely empowering ICT may need to be to change such perceptions.

But it is not only the poor, the rural and the marginalised, who suffer from knowledge and particularly from conceptual deficits. Powerful 'uppers' have at least as much to learn. Government denialism is one case in point. The blindness that can beset researchers is another. Perhaps the most personally troubling finding in this project was the discovery that practitioners not uncommonly viewed academic researchers as self-interested and misguided, and that there appeared to be no systematic and appropriate mechanisms for disseminating publicly funded research results among communities and organisations bearing the brunt of the epidemic, even where the research concerned such urgent and practical matters as orphan care.

Chambers (1994) suggests role-reversal as a cure for knowledge failures in powerful uppers. He is thinking of participatory methods of analysis and planning, but there is perhaps also a deeper, conceptual lesson to be learned.

> 'He was a hero. He wanted people to know ...'

These words, spoken over the body of a young activist who chose to have an AIDS education funeral (Mendel 2001:88) assert the value not just of knowledge itself but

of knowledge *sharing*. Furthermore, unlike research training, with its emphasis on methods and actions, they emphasise the *character* of the knowledge bringer. It is hard to imagine anything more different from the careerist researchers reported on by some interviewees in this study. It is perhaps time we supplemented our concern with the 'how' of research with an equal concern for the 'who' – for the kind of people we are and the nature of our motivations. Reliabilism provides epistemic rationale for this too in terms of trust and the importance of an authoritative reputation.

Furthermore in knowledge capability theory we are not only one another's knowledge environment, but we partially constitute one another's capability – or lack of it. Researchers have at least as much to gain from the field as to contribute conceptually. A starting point might be to enrich the capability perspective with the profoundly *social* humanism of the African concept *'ubuntu'*. The idea of *'ubuntu'* has been used as conceptual underpinning for the truth and reconciliation process in South Africa (Marks 2000; Villa-Vicencio and Verwoerd 2000; Murithi 2003) and as the basis of a plea for global solidarity against AIDS (Barnett and Whiteside 2002). Bishop Desmond Tutu describes it in the following terms:

> '[*Ubuntu*] speaks to the very essence of being human. When you want to give high praise to someone we say, *"Yu, u nobuntu"*; he or she has *ubuntu*. This means that they are generous, hospitable, friendly, caring and compassionate. They share what they have. It also means that my humanity is caught up, is inextricably bound up, in theirs. We belong in a bundle of life. We say, "a person is a person through other people" (in Xhosa *Ubuntu ungamntu ngabanye abantu* and in Zulu *Umuntu ngumuntu ngabanye*). I am human because I belong, I participate, I share.' (Tutu 1999:34-35)

It is through participation and sharing that we build our individual and collective knowledge capability, and it is through supporting such participation and sharing – our ability to be and to *know* through other people – that ICT at its best becomes an instrument of knowledge and through knowledge of human flourishing.

Appendix I: Interview guide and questionnaire

A. INTERVIEW GUIDE

Could you tell me a bit about your organisation – how it started, how big it is, who funds it? What kind of organisation is it?

When started

Size/structure

Full-time, paid/voluntary staff

Funding

Relation to other organisations e.g. municipal health, NGOs, churches

What are the main things you do?

(Counselling, advocacy, support, training, information roles?)

Contact with other organisations? How?

Dept of Health, govt

NGOs

Media

Universities

Medical research

Donors

How do you find out what people in other groups are doing?

How do they keep in touch with you?

What kinds of information do you give to the people you help?

What information to you give to other organisations, the media etc?

Are there special kinds of knowledge in your organisation that can help people in other organisations?

Is it part of your role to pass on ideas and priorities from the grassroots to the government, media, research community etc?

How do you do this?

Do you use computers to help you get information or communicate with other people and groups?

How many

Who uses, what for

Software

Plans to get computer, use more, future development

Problems – support, funding, training

Do you use email?

Who do you communicate with

What for (information exchange, collaboration, fundraising, advocacy)

Has it changed what you do/how you do it

Do you belong to any E-mail lists and discussion groups

Which lists (AFRO-NETS, local, InterAIDS?)

Contribute or read only

e-AIDS conferences

How useful

Problems (overload, time, not useful)

Do you use the Internet?

What kind of access – direct, indirect, none

Do you get information from the Internet? Good sites/search engines?

Is the information useful/appropriate; do you pass it on/adapt it?

Is there information you need but can't get?

Problems (finding information, not appropriate, not reliable, out of date)

Have you got a website or plan/want to get one?

Own/on other organisation's site/network – URL

Who built/hosts/maintains site

Responses to site

Purposes of site – successful?

Plans for expansion/changes

Problems

Does having a computer change the way you work/what you do? Could it if you had the right resources? What would you want to do if you had the resources?

What are the main problems? E.g. training, support, cost, time?

Do you think there is a need for IT capacity-building in the non-profit sector? What kind of interventions would be most useful to your organisation?

Any other general issues for NGOs, AIDS work?

B. QUESTIONNAIRE

Name of organisation:

Contact person and position:

Street/postal address:

Tel: Fax: Email:

Do you have a website? If so, please give URL:

Do you have web pages hosted by another organisation? Please give URL:

Brief mission statement and/or description of your work:

Main spheres of activity (children, legal, networking, advocacy, counselling etc):

Any types of people/organisations you would be specially interested in making contact with?

Do you have any particular information needs?

Is there any special knowledge, experience, expertise in your organisation that you can share with others?

Do you have any particular problems using email, Internet or information technology generally in your organisation (cost, skills, time etc?) and would you identify IT capacity-building as a need?

Do you want a more extensive write-up about your work on KZNAIDSLINK (as well as just a listing)?   Yes / No

If yes, what text and images can you supply?

How can we contact you?

Appendix II: Study participants

A. INTERVIEW PARTICIPANTS

ORGANISATION	INTERVIEWEE POSITION	PLACE	DATE
NGO INTERVIEWS			
AIDS Foundation (AF)*	Director	Durban	Sept 00
	Grants officer	Durban	April 01
	Project officer	Durban	April 01
	IT specialist (VSO volunteer)	Durban	Oct/Nov 01
Bergville Child Survival (BC)	Director	Bergville	April 2001
	AIDS intervention officer	Bergville	April 01
CARE Centre, Durban North (CC)	Pastor and centre manager	Durban North	April 01
Chatsworth Child and Family Welfare Society (CW)*	Project worker	Chatsworth	April 01
Child and Family Welfare Society of Pmb (CM)	Director	Pmb	April 01
Children's Rights (CR)	Director	Durban	April 01
Children in Distress Network (CINDI) (CI)*	Coordinator	Pmb	Sept 00 April 01
Clermont Community Resource Centre and Claremont Social Action Group (CL)*	AIDS coordinator	Claremont	April 01
	PWA outreach worker	Claremont	April 01
	PWA outreach worker	Claremont	April 01
Diakonia (AIDS Programme, AIDS Network) (DI)*	AIDS network coordinator	Durban	April 01
DramAide (DA)	Director	Ulundi	April 01
Durban Children's Society (DS)*	AIDS programme coordinator	Durban	April 01
Edutrain International (EI)	Virtual volunteer	Toronto	
Family Literacy Project (FL)	Projects coordinator	Durban North	April 01
God's Golden Acre (GG)*	Director	Cato Ridge	Oct/Nov 01
Health Systems Trust (HS)	Information manager	Durban	Sept 00 April 01
Khanyisa Centre, St Aidan's Hospital (KC)	Database project manager and medical doctor	Durban	Oct/Nov 01
KZN Churches' AIDS Network (KZN CAN) (KA)	Director	Durban	April 01 Oct/Nov 01
National AIDS Council of SA (NACOSA) (NC)	Regional organiser	Durban	April 01
National Association of People Living with AIDS (NAPWA) (NA)	Provincial coordinator	Durban	April 01
Olive (OL)	Director	Durban	Oct/Nov 01
	Publishing and distribution manager	Durban	Oct/Nov 01
	Resource centre manager	Durban	Oct/Nov 01

St Mary's Hospital Community Outreach Centre (SM)*	Publicity and website manager	Mariannhill	Oct/Nov 01
	Human resources/marketing manager	Mariannhill	April 01 Oct/Nov 01
	Nursing sister in charge of HBC	Mariannhill	April 01
Sinikithemba (SI)	Coordinator	Durban	April 01
Treatment Action Campaign (TAC) (TA)	Regional organiser	Durban	April 01
Training and Resources in Early Education (TR)*	Director	Durban	April 01
uMngeni AIDS Centre (UA)*	Director	Hilton	April 01
Underberg Community Development (UN)	Director	Underberg	April 01
	Training consultant	Underberg	April 01
Unkulunkulu Unathi (UU)	HBC organiser	Hlabisa	Oct/Nov 01
Vusimpilo (VU)*	Manager	Hlabisa	April 01 Oct/Nov 01
	HBC organiser	Hlabisa	Oct/Nov 01
	HBC trainer	Hlabisa	Oct/Nov 01
	Deputy manager	Hlabisa	Oct/Nov 01
NON-NGO INTERVIEWS			
Centre for HIV/AIDS Networking, University of KwaZulu-Natal (HIVAN) (HI)	Network researcher	Durban	Nov 03
	Media and communications officer	Durban	Nov 03
	Project manager	Durban	Dec 03
Durban Chamber of Commerce, HIV/AIDS Desk (DH)	AIDS officer	Durban	Oct/Nov 01
Durban Unicity Council (DC)	Database project manager	Durban	Oct/Nov 01
Global Development Gateway (World Bank) (GD)	Content director	Washington	April 01
Health Economics and AIDS Research Division (HEARD), University of KwaZulu-Natal (HE)*	Senior researcher	Durban	April 01
Hlabisa Hospital (HH)	Medical doctor	Hlabisa	Oct/Nov01
	Medical doctor	Hlabisa	Oct/Nov 01
Medical Research Council (MRC) (MR)*	HIV/AIDS programme researcher	Durban	Oct/Nov 01
Natal Witness (NW)	Journalist	Cato Ridge	Oct/Nov 01
Provincial AIDS Action Unit (PAAU) (AA)	Director	Pmb	Oct/Nov 01
University of Durban-Westville (UD)*	Academic	Durban	Sept 00 April 01
	Research student	Reservoir Hills	April 01
University of Natal, Pmb (UP)	Researcher	Pmb	April 01

* Also completed the questionnaire

NGO INTERVIEWS

Interviews = 47

Organisations = 28 (11 of which also completed the questionnaire)

People = 42 (5 interviewed twice)

NON-NGO INTERVIEWS

Interviews = 15

Organisations = 10 (3 of which also completed the questionnaire)

People = 15

Note: Non-NGO respondents have been excluded from all quantitative data used in the study.

B. QUESTIONNAIRE RESPONSES

ORGANISATION	CODE	LOCATION
NGO RESPONSES		
African Enterprise	AE	Cascades
AIDS Foundation	AF*	Durban
Blessed Gerrard's Care Centre	BG	Mandeni
Built Environment Support Group	BE	Pmb
Chatsworth Child and Family Welfare Society	CW*	Chatsworth
Childline Family Centre	CH	Overport
Children First	CF	Durban
Children in Distress Network	CI*	Pmb
Clermont Community Resource Centre	CL*	Clermont
Diakonia	DI*	Durban
Diocese of Natal, HIV/AIDS Programme	DN	Durban
Doctors for Life	DL	Kloof
Duduza Care Centre	DU	Wasbank
Durban Children's Society	DS*	Durban
Farmer Support Group	FS	Pmb
God's Golden Acre	GG*	Cato Ridge
Hillcrest AIDS Centre	HA	Hillcrest
Holy Cross AIDS Hospice	HC	Gingindlovu
Ingwavuma Orphan Care	IO	Ingwavuma
Isisekelo Sempilo	IS	Wasbank
Lawyers for Human Rights	LH	Pmb
Lethimpilo Youth Organisation for HIV/AIDS	LY	Emondlo
Life Line, Pmb	LL	Pmb
Mduduzi Wethu	MW	Pongola
Mgwelezana Hospital AIDS Unit	MH	Empangeni
Nakekelisizwe Network	NN	Ingwavuma
Nobuhle Project	NP	Edendale
Project Gateway	PG	Pmb
Rehoboth	RH	Port Shepstone
RC Church, Madadeni	RC	Madadeni
St Mary's Community Outreach Centre	SM*	Mariannhill
St Thomas's Home for Children	ST	Sydenham
Salvation Army	SA	Newcastle
Salvation Army Joseph Baynes Children's Home	SJ	Pmb
Sekugile Youth Organisation	SY	Madadeni
Shalom Training	SH	Greytown
Sizakancane AIDS Programme	SP	Tugela Rail
South Coast Hospice	SC	Port Shepstone
Thandanani Association	TH	Pmb
Training and Resources in Early Education	TR*	Durban
uMngeni AIDS Centre	UA*	Hilton
Vusimpilo	VU*	Hlabisa
NON-NGO RESPONSES		
Psychological Services, Durban South, Dept of Education	PS	Durban
AIDS orphan adoptive parent	GR	Parkhill
Health Economics and HIV/AIDS Research Division	HE*	Durban
Medical Research Council	MR*	Durban
University of Durban-Westville researcher	UD*	Reservoir Hills

* Also participated in interviews

NGO QUESTIONNAIRE RESPONSES

Organisations = 42 (11 also participated in interviews)

NON-NGO QUESTIONNAIRE RESPONSES

Organisations/individuals = 5 (3 also participated in interviews)

Note: Non-NGO respondents have been excluded from all quantitative data used in the study.

INTERVIEWS AND QUESTIONNAIRES COMBINED

59 NGO

11 non-NGO

Appendix III: Numerical data and statistical analysis

A. DATA FROM QUESTIONNAIRE ONLY (2001-2002)

Total number of questionnaire responses: N=42

Responses from rural NGOs: $N_r = 16$

Responses from urban NGOs: $N_u = 26$

A1: Activities identified as central to NGOs' missions (Table 6.2)

TYPE OF ACTIVITY	RURAL	URBAN	ALL
Service	11	18	29
Linking	5	12	17
Capacity	3	5	8
Policy	2	3	5
Research	2	0	2

A2: Desire for further web presence among NGOs with different levels of existing exposure (Tables 6.6 and 6.7)

EXISTING LEVEL OF EXPOSURE	NO FURTHER WEB DESIRED	FURTHER WEB DESIRED	DON'T KNOW/ NO OPINION
None	5	13	4
In development	2	2	1
Hosted	2	1	1
Own website	4	6	1
Any exposure	8	9	3

A3: ICT needs identified by NGOs (Table 6.8)

ICT NEEDS	RURAL NGOS	URBAN NGOS	ALL NGOS
Material, physical	7	9	16
Human	6	9	15
Software	0	1	1
Email	0	4	4
Unspecified needs	3	1	4
None	4	8	12

B. DATA FROM INTERVIEWS AND QUESTIONNAIRE (2000-2002)

$N = 59$

$N_r = 22$

$N_u = 37$

B1: NGO access to email (Table 6.3)

EMAIL	RURAL	URBAN	ALL
None	10	6	16
Personal	4	3	7
Shared	3	2	5
NGO's own	5	26	31
Any email*	12	31	43

*Sum of personal, shared and NGO own email.

B2: NGOs with different levels of web presence (Table 6.4)

WEBSITE	RURAL	URBAN	ALL
None	16	16	32
In development	1	5	6
Hosted	2	2	4
NGO's own	3	14	17
Any web presence*	6	21	27

*Sum of in development, hosted and NGO own website.

C: DATA FROM WEB SEARCH (2004)

$N = 59$

$N_r = 22$

$N_u = 37$

C1: Web presence in 2004 (Table 6.5)

WEBSITE 2004	RURAL	URBAN	ALL
None/in development	17	16	33
Hosted	1	1	2
NGO's own	4	20	24

D: COMPARISON OF WEB PRESENCE IN 2000/2 AND 2004

$N = 59$

$N_r = 22$

$N_u = 37$

D1: Web presence in 2000/2 and 2004 (Table 6.5)

WEBSITE	RURAL		URBAN		ALL	
	2000/2	2004	2000/2	2004	2000/2	2004
None/in development*	17	17	21	16	38	33
Hosted	2	1	2	1	4	2
NGO's own	3	4	14	20	17	24

*Figures combined as 2004 web search could not distinguish.

E: STATISTICAL SIGNIFICANCE

Numerical data were collected in this study primarily as a way of describing the civil society AIDS sector in KwaZulu-Natal, and not for the purpose of making comparisons between different types of organisation or of organisations at different times. Nevertheless, some comparisons seemed natural to make, such as between rural and urban NGOs, and between the situation in 2000-2002 when the interviews and questionnaires were conducted, and the final writing up in 2004.

In order to test the strength of any differences in comparative data between two groups such as rural and urban NGOs or NGOs in 2000-2002 and in 2004, it is necessary to use a test of statistical significance. Where small numbers are involved, Fisher's test of exact probability (Fisher 1934) is preferred to the simpler but less accurate chi square test (Langley 1979; Gillham 2000).

Fisher's test allows for two methods of calculating probability (P). The conventional approach is considered conservative and the alternative 'mid P' value is advocated for theoretical reasons by statisticians such as Armitage and Berry (1994) and Swinscow (1997). Using the mid P approach a number of results in this study can be shown to indicate statistically significant differences at a confidence level of 95% or greater,

corresponding to a mid P value of 0.05 or less. These results are described below. Other apparent correlations in the numerical data must be treated as too weak to attach any confidence to.

Statistically significant findings (Fisher's test, mid P value < 0.05)

FINDING	P
No email in 10 of 22 rural NGOs (45%) compared with 6 of 37 urban NGOs (16%).	0.010080
Organisational email address in 26 of 37 urban NGOs (70%) compared with 5 of 22 rural NGOs (23%).	0.000253
Web presence in 21 of 37 urban NGOs (57%) compared with 6 of 22 rural NGOs (27%).	0.016064
Own website in 14 of 37 urban NGOs (38%) compared with 3 of 22 rural NGOs (14%) in 2000-2002.	0.025818
Own website in 20 of 37 urban NGOs (54%) compared with 4 of 22 rural NGOs (18%) in 2004.	0.003712

Appendix IV: Biomedical aspects of HIV/AIDS

While epidemics are always about far more than biology, the basic natural history of HIV and its relationship with AIDS is an essential part of the picture. This appendix therefore briefly describes the history and current status of biomedical knowledge about HIV/AIDS.

The first indication among the medical profession that a new disease might be emerging came in 1979-81, when doctors in the United States began to report unusual patterns of illness in homosexual men and then in other groups including recipients of blood transfusions and injecting drug users. In 1982 the pattern of illness was formally defined and given the name acquired immunodeficiency syndrome (AIDS). Within a few years cases were being reported across the developed and developing world, including east and central African states such as Uganda, Tanzania, Rwanda and Zaire (see for example Kaleeba et al. 2000, Hooper 1999, Hooper 1990).

In medicine a syndrome is a set of symptoms that together characterise a particular disease. In the case of AIDS, symptoms take the form of infections and cancers that occur as the result of underlying damage to the immune system. In 1983-84 the underlying cause of AIDS was discovered by French researchers to be a virus that attacked cells of the immune system, subsequently named human immunodeficiency virus (HIV). The virus was found to be passed on through the exchange of body fluids such as blood, semen, saliva or breast milk. Heterosexual and homosexual sex, childbirth, breastfeeding, intravenous needle sharing, contaminated blood products, organ donation and needle-stick injuries in health workers have all been identified as routes of transmission, but HIV is not a contagious disease – that is to say it is not spread by casual social contact such as working, eating or sharing a home with an infected person.

HIV belongs to the family of retroviruses, which encode their genetic material as ribonucleic acid (RNA), not deoxyribosenucleic acid (DNA) as found in human cells. When infection with HIV occurs the virus enters cells of the host's immune system

where it releases an enzyme, reverse transcriptase, that causes the host cell to generate a DNA copy of viral RNA. The viral DNA integrates into the host's own DNA, creating a DNA version of the virus known as a 'provirus', which causes the cell to produce large numbers of virus particles. These eventually burst out of the cell, destroying it in the process and entering the bloodstream from where they go on infect new host cells. Since HIV attacks immune-system cells such as CD4+ T cells, which organise immune system responses, and macrophage cells, which identify and destroy invading organisms, the replication of the virus over time progressively destroys immunity, leaving the infected person increasingly vulnerable to other infections.

After initial infection with HIV, the virus replicates rapidly and the person is said to have a high 'viral load', meaning there is a large number of virus particles in the blood, making this a potentially highly infectious stage. The person may experience a brief flu-like illness but often there are no reported symptoms. At this stage the body has not mounted a full immune defence and tests that rely on detecting antibodies to identify exposure to the virus will yield a false negative in this so-called 'window period'. Recently viral-load tests have been developed that detect the presence of the virus itself. These are more reliable in the early stages and show that a recently infected person can have thousands of viral particles per millilitre of blood.

As the infection progresses and the body produces antibodies, the viral load tends to fall. In an otherwise healthy person the immune system may keep the virus under control and the viral load at a low level for many years, although never managing to eradicate it – partly as a result of the way the virus integrates itself into the host's own DNA. The person typically feels well and experiences no obvious symptoms. However, through this period the underlying infection slowly damages and destroys immune system cells. As the number of CD4+ T cells falls, immunity weakens and the person begins to experience symptoms such as fever, weight loss, fatigue, skin complaints and swollen lymph nodes, marking the onset of AIDS. Eventually opportunistic infections occur such as meningitis, pneumonia, cancer and tuberculosis (TB) and one of these is usually the immediate cause of death. In sub-Saharan Africa TB is the major killer, responsible for about a third of all AIDS deaths. The time from infection with HIV to the development of AIDS symptoms (usually when the person has fewer than 200 CD4+ T cells per mm^3 of blood) varies among individuals. In the

absence of treatment with antiretroviral drugs about five to ten percent of people with HIV infection develop AIDS within the first few years, and the vast majority within eight to ten years.

Two types of HIV have been identified, HIV-1 and HIV-2. They are thought to have different origins, genetic analysis of HIV-1 suggesting it may have evolved in chimpanzees, whereas HIV-2 is closely related to SIV (simian immunodeficiency virus) found in sooty mangabey monkeys (Adler 2001). Transmission to humans may have occurred through blood contact in hunting these species for food. An alternative view of the origins of AIDS links it to mass polio immunisation campaigns conducted in Africa in the 1950s (Hooper 1999). Wherever HIV first evolved, it is now found in every part of the world.

Significant numbers of HIV-2 cases have been found only in West Africa, and HIV-1 makes up by far the majority of cases worldwide. Both HIV-1 and HIV-2 are transmitted through sexual contact, blood transfusion and from mother to child, and both cause AIDS, but HIV-2 is thought to be less infectious and to take longer to develop into AIDS. There are also a number of HIV subtypes, and combinations of subtypes, with some differences among them in terms of patterns of transmission, adding to the difficulty of developing vaccines, diagnostic tests and treatments.

The causal link between HIV and AIDS has sometimes been disputed but within mainstream science the evidence from a range of different tests has for a decade been accepted as conclusive (National Institutes of Health 1995). These include the standard Koch test for identifying a microbe as the cause of a disease, the correlation of clinical AIDS with positive HIV antibody or viral tests, and observations of haemophiliacs who went on to develop AIDS after receiving blood later shown to have been HIV-contaminated while those who received only HIV-screened blood remained AIDS-free. Immune deficiency can, however, be acquired from sources other than HIV, for example in patients receiving certain cancer or immune-suppressing transplant drugs, but these are a tiny number by comparison with the numbers of HIV+ people developing AIDS. There is also a small number of people who have been infected with HIV for 12 years or more without developing symptoms or showing reduced counts of CD4+ T cells (National Institutes of Health 2004).

In different parts of the world and at different periods different patterns of HIV transmission predominate. Initially most cases were found among men, and in North America and Western Europe were transmitted through sex between men and through needle-sharing by drug users. In the developing world, HIV is spread mainly through heterosexual sex and affects more women than men; in some African countries young women have rates of infection five times as high as men[51]. Emerging epidemics in Eastern Europe appear at present to be related to injecting drug use. The epidemic seldom remains confined to a single group, however, and the evidence is that patterns of infection can change markedly over time. In Britain, for example, between 1993 and 2003 heterosexually acquired HIV rose from 15% to 58% of all new cases, while cases among injecting drug users and homosexually active men declined from 11% to 2% and 64% to 26% respectively (Health Protection Agency 2004).

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[51] Women are more vulnerable than men to infection during heterosexual sex for a range of biological reasons and because of greater likelihood of untreated STIs (see for example, Lamptey, Wigley et al. 2000).

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