d·i·e

50 Years | 1964–2014

Deutsches Institut für Entwicklungspolitik

German Development Institute

Discussion Paper 18/2014

Knowledge for Development

A Literature Review and an Evolving Research Agenda

John Emeka Akude

Knowledge for development

A literature review and an evolving research agenda

John Emeka Akude

Bonn 2014

Discussion Paper / Deutsches Institut für Entwicklungspolitik
ISSN 1860-0441

Die deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar.

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available in the Internet at http://dnb.d-nb.de.

ISBN 978-3-88985-638-8

John Emeka Akude, Senior Researcher at the German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE), affiliated to the directorate

E-mail: John.Akude@die-gdi.de

Tulpenfeld 6, 53113 Bonn
☎ +49 (0)228 94927-0
🖷 +49 (0)228 94927-130
E-Mail: die@die-gdi.de
www.die-gdi.de

Abstract

This paper undertakes an extensive review of the literature dealing with the newly evolving field of knowledge for development and its management. Using the process-tracing method, it sees the origins of the emergence of knowledge management for development in the management sciences of the 1950s and 1960s and traces its journey from there to the development studies of the 1990s and 2000s. It maintains that, since its arrival in the domain of development studies, practice and research on the issue are evolving in three dimensions, namely: the micro, the meso and the macro dimensions. The micro dimension concentrates on the individual level, the meso on the organisational level, and the macro on the global systemic level. The first two dimensions constitute the area designated as 'knowledge management for development' (KM4D) and the last dimension is designated as 'knowledge for development' (K4D). If one adheres to this differentiation, one arrives at three fundamental findings:

- While there are plenty of analyses dealing with the micro and meso dimensions, there is a lack of analysis and prognosis for programmatic action on the macro dimension.
- Following each of these dimensions in isolation leads one to different programmatic action.
- There is, for this reason, a need to balance the three.

Based on the above, this paper criticises the monoculturality in the production of global development knowledge that is primarily Western, as well as the inadequacy of existing information and communications technologies (ICT). It argues that the opportunities of joint knowledge creation between the global North and South and of more inclusive knowledge dissemination in the South offered by the ICTs are not being optimally utilised. It then charts a research course that adequately covers the three dimensions mentioned above, while specifying clear research questions aimed at ameliorating the inadequacies of global cooperation in knowledge production and highlighting necessary corrections tailored to specific inadequacies in specific global regions.

Contents

Figures

Abbreviations

ABG	Academia, business and government
ALNAP	Active Learning Network for Accountability and Performance
APEC	Asia-Pacific Economic Cooperation
BRICS	Brazil, Russia, India, China, South Africa
CoP	(Epistemic) communities of practice
DFID	Department for International Development (United Kingdom)
DIKW	Data, information, knowledge and wisdom
ECA	United Nations Economic Commission for Africa
ECI	Economic complexity index
ECOSOC	United Nations Economic and Social Council
GDP	Gross domestic product
ICT	Information and communications technology
IDRC	International Development Research Centre (Canada)
IFIs	International financial institutions
INGOs	International non-governmental organisations
IT	Information technology
K4D	Knowledge for development
KBF	Knowledge Brokers Forum
KDID	Knowledge-driven international development
KDMD	Knowledge-driven microenterprise development
KM	Knowledge management
KM4D	Knowledge management for development
LBDA	Learning before, during and after
M&E	Monitoring and evaluation
MDG	United Nations Millennium Development Goals
NGOs	Non-governmental organisations
OECD	Organisation for Economic Co-operation and Development
SAP	Structural adjustment programmes
SDC	Agency for Development and Cooperation (Switzerland)
SECI	Socialisation, externalisation, combination and internalisation
USAID	United States Agency for International Development
US	United States
WB	World Bank
WDR	World Development Report

1 Introduction

The issue of knowledge for development has become topical in development studies and discourses since the 1990s. This is traceable to a number of factors, chief amongst which is the application of knowledge to the successful development of Asian, especially Southeast Asian, and other emerging economies; the organic relationship between knowledge and development (although the World Bank realised this fact relatively late); and the World Bank's desire to retain customers that are progressing from being developing to being emerging economies. However, in the initial stages, the significance of knowledge for development (K4D) purposes was the concern of researchers working on Asian development. But with the declaration of the World Bank (WB) that it had officially become a 'knowledge bank' in 1996 (ostensibly under the influence of Asian and other emerging economies), the situation changed substantially: discourses on and practices of knowledge management for development have since been on the rise.

The WB has consequently taken a series of actions to underline its declared intention of becoming a knowledge bank and has thereby scaled up the relevance of knowledge management for development. These actions include internal restructuring, lectures, studies, publications and internet-based knowledge platforms. But the unique selling point of the WB lies in its position as an important partner to all states and international organisations concerned in one way or another with the issue of development. Thus, it has declared itself a willing connector (or broker) between producers and users of development knowledge, as well as a producer and customiser of the same (World Bank 2011).

Encouraged by the WB, some donor states have launched similar programmes geared towards promoting the production, exchange or implementation of knowledge in the interest of socio-economic development – the British Department for International Development (DFID), the Dutch Development Organisation, the Swiss Agency for Development and Cooperation – to mention only a few. Some of these states have explicit policy guidelines for their activities in the 'knowledge for development' sphere (Canada, UK, Switzerland) and others do not (Germany for example). However, almost all donor states have some activities in this area and for those donor states without an explicit policy on knowledge for development, most of their activities have been undertaken under the rubric of capacity development.

Since its emergence as an issue for development studies, the reach of knowledge for development has been expanding and this expansion has been expressed in subsequent publications.[1] The influence of knowledge on development has led Hidalgo and Hausmann (2009) to even propose the economic complexity index (ECI) as the new measure of development which is superior to the simple measures such as gross domestic product (GDP) per capita. The ECI is based on the diversity of countries' cultures and the ubiquity of their products. It calculates complexity by measuring the accumulated knowledge as well as formed networks in an economy expressed in the economy's industrial composition. Complexity refers to the number of capabilities required to produce a particular product while ubiquity refers to the presence of that product in other countries. The higher the complexity, the lower the ubiquity and therefore the more a country earns.

1 For recent publications on the relevance or relationship of knowledge to economic development, see Mokyr 2002; Warsh 2007; Beinhocker 2006.

Knowledge management has become a substantial part of almost all development organisations as well as some ministries, agencies and implementing organisations. The practitioners have their own professional organisations – KM4Dev, Knowledge Brokers Forum, Knowledge Star, etc. Whereas the initial publications have stressed the dominance of ABG (academia, business and government) cooperation in the process of framing and propagating the use of knowledge to develop societies, subsequent publications have preferred to stress the activities of civil society organisations in the process. Still, more recent publications have raised issues of epistemology, political economy and power and how they relate to the generation and use of knowledge for development. But, by far the most prolific area has been publications relating to the application of information and telecommunication technology (ICT) to K4D.

Furthermore, recent global developments make the issue of knowledge for development even more relevant. Firstly, globalisation and technological innovations, especially in the area of information and communications technology, make the world more complex and more integrated. Secondly, the Cold War political constellation is becoming increasingly obsolete in the light of new alliances occasioned mainly by these global developments. Thus, new forms of organisation such as the G20 (group of 20 major economies) and the BRICS (Brazil, Russia, India, China, South Africa) emerge. Thirdly, for the first time since the industrial revolution, developing and emerging economies are growing faster than industrialised economies. Consequently, the number of the rich in poor / developing / emerging societies is increasing while the number of the poor in the rich industrialised societies is increasing. Therefore the hitherto distinction between donor and recipient societies appears increasingly anachronistic. For example, Angola (a poor African economy) and Brazil (an emerging South American economy) are currently bailing out their former colonial master, Portugal (a rich industrialised European economy). Additionally, a lot of transborder issue areas arise that require coordinated global approaches. These include climate change, financial crises, state fragility, terrorism, migration, international crimes. etc (see Messner / Scholz 2005 for further details). To find appropriate solutions to these problems, we not only need timely and accurate knowledge about their driving forces and development trajectories but also research on new forms of cooperation and promising approaches to collective provision of global public goods. Achieving these goals demands collaborative efforts from both the North and South in knowledge production.

In laying the foundations for this study, I find it expedient to start with the two existing literature reviews on the subject matter, Hovland 2003; and Ferguson, Mchombu and Cummings 2008, as points of departure for mine. It immediately becomes clear to me that most of the reviewed literature emphasises the organisational dimension of knowledge management to the neglect of the broader issues. That is, if the dimensions of knowledge intervention are to be identified thus: the micro (individual), meso (organisational) and macro (global, dealing with the *modus operandi* of global cooperation), it is remarkable that most of the literature deals with the meso dimension; the micro dimension receives some mention, while the macro dimension is hardly mentioned at all. This proportion is equally increasingly replicated if the literature review is extended to include other publications which look at the general implications of accentuating knowledge for development cooperation.

In the practice of the knowledge management for development (KM4D), the picture is similar. For whatever reasons, there is an apparent divergence between the macro dimension

on the one hand and the meso and micro dimensions on the other. One could observe that considerations that emphasise the meso and micro dimensions lead to programmes that neglect the macro dimension and vice-versa. It is however the view of this paper that for the promises of K4D to be fully realised, these three dimensions should be equitably emphasised. This paper thus wishes to contribute to research that aims at reconciling these three dimensions.

My selection of literature is guided by an interest in emerging issues that stress necessary changes in the understanding and delivery of development cooperation as a result of accentuating knowledge as the development factor *par excellence.* A study of the literature hence reveals certain deficiencies:

- A lack of emphasis of the need to correct the infrastructural deficits of Southern States so they can gain massively from the advantages provided by information technology.
- The issue of lack of research institutes in Southern States that could translate research findings into daily useful products was hardly raised.
- Similarly, enlarging the institutions of global development policy to include academic and research institutions was hardly to be seen anywhere.
- Necessary reforms of capacity-building programmes to facilitate the (massive) uptake of lessons of K4D were scarcely noticeable. This also applies to programmes that adequately address the micro, meso and macro dimensions of knowledge management.
- Finally, literature dealing with how development organisations could emphasise the social nature of knowledge creation and integrate the innate relationship between development and knowledge in their works was rare. It is thus the objective of this paper to contribute to filling these gaps through the formulation of a new research agenda.

Additionally, the contents of knowledge intervention would appear to be supply-driven instead of demand-driven. All these coalesce with the negligence of broader issues dealing with the *modus operandi* of the delivery of global development cooperation. I suspect that this negligence of the broader issues in development cooperation – as well as the emphasis on the organisational dimension of knowledge management – can be traced to the fact that most of the authors have their professional backgrounds in (development or business) organisations.

Consequently, it is the objective of this paper to complement the literature by charting a research course that is guided by questions relating to the implications of accentuating knowledge for development with reference to the inadequacy of participating institutions especially in the area of knowledge co-creation; the paucity of knowledge infrastructure in the global South; the anachronism of the Northern mindset; the reconciliation of the three diverging dimensions; and, in general, the lopsided nature of global development cooperation.

The ensuing research will be conducted within the framework of a theoretical statement that considers development and knowledge as intrinsically bound together and that they occur as human beings cooperate and collaborate to solve problems of human existence, using their immediate physical and biological environments. That is: living together in

contiguous spaces disposes people to cooperate and collaborate in order to solve the problems of human existence. In this (production) process, they co-create their reality and learn equally together. Learning thus becomes a social enterprise. Therefore, interventions that seek to further the knowledge of a society have to be effected horizontally and collaboratively: the contents of knowledge interventions have to be communicated to needful societies on the basis of equality and in the process of working together with their members. The need for a particular knowledge has to arise in this productive cooperative process. If not, the people may not feel addressed by it and would consequently ignore it. Is this the case in knowledge intervention in development cooperation? Thus, part of the thesis of this study is that the irrelevance of the supplied knowledge to the immediate needs of the people has contributed to the non-realisation of the potentials of knowledge for development in improving the lots of poorer people in poorer states.

To fulfil the aims and objectives of this study, it is pertinent to review extant literature with a view to highlighting issues already raised and to subsequently concentrate on those not. This done, the thesis of this paper emerges, namely: that knowledge for development has affected the individual and organisational dimensions of global development but not yet the macro dimension and that further research is needed to complement the neglected area and reconcile the three.

In order to appreciate the direction of the evolution of the literature in this area, it is necessary to trace the history of the development of the phenomenon as well as its political framing and economic successes. Consequently, some guiding questions become necessary: Where did knowledge management originate? How and why did it gain ground in development studies and discourses? What is missing, or has not been adequately treated? Which issues feature in the evolving research agenda? And finally: Are there any recommendations for international development, especially German development policy? This article will try to give answers to these questions.

It will do so by initially using the process-tracing research method to identify the historical origins of the concept of knowledge for development. The choice of this method is justified by the fact that, when properly applied, it is about the best qualitative method that establishes clear and comprehensible linkages between the past and the present of historical phenomena. It is a method of analysis that has its advantages in drawing descriptive, evaluative and causal inferences. Collier (2011, 823) sees process-tracing as *"a systematic examination of diagnostic evidence selected and analyzed in light of research questions and hypotheses posed by the investigator"*. Thus, when establishing the genesis of knowledge management for development, one has to go back to the origins of that terminology and trace the historical and intellectual trajectories. This is followed by an extensive review of literature aimed at highlighting the dominant issues in the discourse on 'knowledge for development' and fleshing out what may be missing. Finally, semi-structured interview techniques as well as spontaneous and unstructured discussions with experts at conferences and workshops complete the information-gathering process of this paper. These techniques will be put together to chart a research programme that is informed by the thesis that development and knowledge are organically bound together and take place in concerted production processes. The aim of the research agenda is to find out how best to produce and disseminate knowledge in a horizontal concert of the North and the South.

2 The historiography of knowledge management for development (KM4D)

The origins of knowledge management for development are to be found in post-World War II management sciences in which knowledge was accentuated as a production factor and became recognised as an important dimension of human capital in organisations. This has to be understood against the background of the previous epoch in which, for the average worker in the production process, manual dexterity was more relevant than knowledge as firms defined themselves more through tangible and less through intangible products. The doyen of management studies, Peter Drucker, was the first to capture this development in his 1959 publication "The landmarks of tomorrow" (Drucker 1959). He foresaw that significant changes in science and production would be brought about by information while asserting that knowledge had become the major production resource. This was because, as he predicted, firms and entire economies would shift from having success because of their ability to craft products to having success because of their ability to produce and use knowledge. He then introduced the concepts of the 'knowledge worker' to depict a new type of employee whose main asset was his/her intellectual capability and the 'knowledge industries' to refer to a new type of industry that produces ideas and information instead of goods and services. Thus, the characteristic that distinguishes the knowledge worker from the manual worker is the relatively high level of education of the former. He saw this new set of workers as the central asset of firms and, as such, the performances of such workers should be maintained and improved through continuing education and further training.

Other Western and Japanese authors latched in on this to spawn a whole body of literature on the effects of knowledge on production and society (Machlup 1962; Umesao 1963; Lane 1966; Touraine 1969; Bell 1973; Porat 1976; Nora / Minc 1979, etc.). In the course of this process, the focus shifted from the individual to the society, as knowledge was seen as the ultimate driving force of socio-economic development. Thus, the concepts of the 'knowledge worker' and 'knowledge industry' gradually made way for the concept of the 'knowledge society' and 'information society'. The concept of the 'knowledge-based economy' came much later on from the OECD (1996) and APEC (1998).

These postulations of Drucker represent an attempt to academically capture and digest the effects of the emerging computer and information technology on production and management which were seen as the dawn of a new age in the production process. The American sociologist, Daniel Bell, aptly represented this viewpoint in his book, "The coming of the post-industrial society" in which he stated that *"the post-industrial society, it is clear, is a knowledge society"* (1973, 212). He saw a transformation from industrial to post-industrial society in which theoretical knowledge was the major factor responsible for economic growth and identified two indicators for its emergence: 1. the sources of innovation are increasingly derived from research and development, and 2. the weight of the society – measured by a larger proportion of gross national product and larger share of employment – is increasingly in the knowledge field (ibid).

From the 1960s into the 1990s, the idea held sway in the West and Japan that knowledge was the road to a better economic future. Consequently, several national governments declared their intentions of leading their societies down this road. With these declarations, the promotion of the emergent knowledge society took prominent positions in the economic programmes of those governments with support from their private sectors. In

line with the logic of this development, it became necessary to frame the concept. In her study of how this concept became a major political programme of the United States, Japan and the European Union, Hornidge (2010) takes a constructive theoretical approach to the sociology of the terminology and sees its emergence as a production of fortuitous corporatism (cooperation between the academic, business and government elements) in those societies. Having argued that the terminology is virtually vague (Hornidge 2007), she states that the construction was effected by means of framing the knowledge society

> *"as a product of technological developments in the information and communication sector as well as economic development in the service and knowledge intensive sectors. Governments of many countries embarked on the creation of knowledge societies as stages of national development and legitimized their actions by referring to the perceived necessity to guide, guard and monitor ongoing technological developments." She concludes that it is "a global hype with local consequences"* (2010, 90).

This framing was later to have consequences for development as the concept entered into development studies because knowledge would initially be mainly understood in terms of application of information and communications technology. However, this framing did not obliterate the fact that those economies framed as such actually flourished.

The governments that initially expressed the intention of making their economies knowledge economies were mainly the United States, Japan and several Western European states. However, starting from the 1990s and into the 2000s, several Asian states – South Korea, Singapore, Vietnam, Thailand, and Indonesia – joined this bandwagon of states framing their economies as knowledge economies and consequently developed their economies in that fashion (Menkhoff et al. 2011b). The enormous successes of these states in economic development, especially South Korea, Singapore and Vietnam, contributed to further establishing the pursuit of a knowledge society as a sure avenue to economic development. In this way, a concept that originated in management sciences has become firmly rooted in the heart of development studies. Furthermore, as these states grew and developed economically, their need for capital was becoming increasingly replaced by their need for knowledge as they required information to further guide their economies. To avoid becoming an obsolescent partner to these states, the leading global development institution – the World Bank – was forced to take up the issue of knowledge as a new focal point.

In 1996, James Wolfensohn, the then President of the World Bank, declared the intention of the WB to become a knowledge bank and thus initiated the evolution of the WB in that direction. This was underlined by a restructuring of the WB: as a result of the failure of the initial attempts of the WB in this direction, namely, the codification of knowledge in databases, the 'networks initiative' was introduced with the launching of the Human Development Network in the same year. This was followed by the Environmentally and Socially Sustainable Development Network; the Finance, Private Sector and Infrastructure Network; and the Poverty Reduction and Economic Management Network. The duty of these networks was to address emerging development issues and ensure the flow of knowledge throughout the WB. Between 1998 and 1999, the WB's annual World Development Report dwells on the issue of 'knowledge for development'. The report discusses the deleterious effects of knowledge gaps and information problems in the developing countries and states that it is the duty of international development to find solutions to these problems. It further analyses the opportunities as well as the hazards of the global information revolution with a conclusion that financial, technical and medical information is necessary to improve the lives of people in poor societies. The WB's

Development Committee Report of 2000 with the title "Poverty reduction and global public goods: issues for the World Bank in supporting global collective action" states that the sharing of knowledge is one of its focal areas and recommends that the knowledge role extend beyond country clients (World Bank Development Committee 2000).

The year 2003 saw the upgrading of knowledge products to the status (at least on paper) of lending products. Consequently, the WB is constantly allocating more funds to core knowledge work. *"In 2011 this came to 31% of the WB's budget, compared with 24% in 2002"* (World Bank 2011, 2). From 2003 to 2007, activities of the WB were evaluated with the aim of capturing the full potential of the WB in operating as a global knowledge bank. Another evaluation in 2008 finds that clients prefer the WB's reports to those of other institutions and, accordingly, the WB resolved to strengthen the impacts of the its reports by continuously keeping track of them even after delivery. In 2009, the Knowledge Strategy Group was set up to supervise the development of a knowledge strategy for the WB. This was followed in 2010 by the launching of the "Open data, open knowledge, open solutions" programme in which the WB resolved to make its databases available to the public. The knowledge and learning council was equally established the same year. Between 2011 and 2012, the WB – in concert with its donor partners – established six knowledge platforms to facilitate knowledge sharing amongst experts on selected issue areas. All these culminated in the publication of the WB's first Knowledge for Development Report 2011 (World Bank 2011). Hence, fortuitous corporatism in some states and the WB's need to remain relevant to the emerging economies contributed tremendously to embedding the issue of knowledge in the development studies of the 1990s and the 2000s. But what *is* knowledge, and what makes it relevant to development?

3 Epistemology and definition of knowledge

This paper has already identified three major dimensions to the 'knowledge for development' issue: one is the micro dimension (dealing with the improvement of knowledge at the level of the individual); the second is the meso dimension dealing with knowledge management in individual development organisations and the lessons drawn therefrom; while the third is on the macro dimension (dealing with the impact of this concept to the overall issue of knowledge production and sharing for a better global development). Mirroring the state of the body of literature on this issue, this paper will initially focus on the meso level and later deal with the micro and macro levels (in the evolving research section).[2]

Probably due to the fact that the initial authors writing on knowledge management for development have been, or still are, knowledge management practitioners, the issue of epistemology has been playing a subordinate role in the literature at best. There have hardly been any attempts at theorising about knowledge. But the issue of 'what we know' and 'how we know it' have occupied almost all great philosophers of the East, West and beyond; they have tried to find out whether it is at all possible to know anything. Some of them have been concerned with whether knowledge is natural (existent at birth) or cultural

2 The reason for this is that the literature on knowledge for development has not dealt with the issue of improving knowledge levels at the global level (macro) and not really dealt with the issue of improving the knowledge level of the individuals in the developing societies (micro).

(acquired through life experience). To illustrate this, in ancient Greece, the concept of 'philosopher kings' elucidated by Plato (428–347 BC) clearly refers to the importance of knowledge in the governing of human beings. In several traditional societies (the Igbos of Nigeria to mention just one), leadership is a responsibility of the aged simply because they are expected to know more as a result of experience gathered in the process of life. That is, it is assumed that a human being acquires his/her knowledge in the process of interaction with his/her environment. This makes knowledge (or is it wisdom?) personal. Of course, the instruments we require for this are our senses. Is this assumption correct and universally accepted? How do we generate knowledge actually?

3.1 The epistemology of knowledge

Systems thinking is fundamental to knowledge management for development as well as to the overall issue of knowledge production for better global development, and this systems thinking evolved out of the efforts of European enlightenment philosophers to establish how we generate knowledge. Consequently, a discussion of the epistemology of knowledge as we know it today should reflect the European intellectual development during the Enlightenment.

It is worthy of note that the conception and generation of knowledge is not monolithic. Greek philosophers of antiquity conceived knowledge differently. For example, Plato opined that knowledge acquired through the senses is confusing and contaminated because what humans sense is a deficient copy of the real essence of things, the forms; he went on say that the forms have their own independent existence (Van Doren 1991). His pupil, Aristotle disagreed with him and stressed the functionality of the senses in the process of gaining knowledge. To him, form and matter (our interpretation of it) have to come together before creating things. That is, the material and immaterial realities have to affect each other before reality can be created and grasped. This is similar to Buddhist philosophy. In Igboland (Eastern Nigeria), one says that 'knowledge (wisdom) is like a handbag; everybody carries his/her own'. This underscores the individuality of knowledge conceptions. My understanding is that, though forms and essences may have an independent existence, what matters to the human is the perception of them – and this perception is often individual, and by extension societal. This becomes a problem for the generation of knowledge, especially in intercultural relations such as international/global development.

In this vein, the Renaissance period in Europe made a tremendous contribution to the epistemology of knowledge by introducing the scientific method: knowledge is derived through facts which are observable, measurable and empirical pieces of evidence that constitute firm and reliable foundations for scientific knowledge (Chalmers 1999). And through accretion in bits and pieces, knowledge is built. Acquiring knowledge becomes a process and, by applying the rigors of the empirical scientific method to that process, the idiosyncratic is disciplined out of us and the process of generating that particular knowledge can be cross-checked, confirmed or refuted. Although the arguments between the deductive logic (Aristotle) and inductive logic (Bacon) have not been settled in today's social sciences, one is left with the impression that the empirical scientific method is relatively reliable as a source of some sorts of knowledge. Albeit it is rather unfortunate that these forms of knowledge – empirical scientific ones – have in the course of time become considered as superior to other types, such as the tacit one, but we will deal with this later on.

This method was also enriched by the subsequent arguments and controversies surrounding it. One major controversy related to Hume's critique of the inductive method of the empiricists in which he asserted in his "An inquiry concerning human understanding" (1777) that the arguments of the empiricists are infinitely regressive because of the fact that they use inductive logic to justify inductive logic (Hume 1975). In his opposition to Hume and other rationalist empiricists (that knowledge could only be derived out of observable facts), Kant (1781) suggested that our understanding of the world around us is not solely based on experience but also on *a priori* concepts. He then showed how reason determines the conditions under which experience and knowledge are possible. His amalgamation of analytic-synthetic (*a priori*/*a posteriori*) postulations – while weakening the propositions of the empiricists – is, in combination with empiricism, an advancement in the methods of acquiring knowledge. It also constitutes the background to the major differences between tacit and explicit knowledge (Kant 1991).

The Kantian critique of pure reason has equally been criticised by Hegel through his dialectical logic. Hegelian dialectics asserts that human understanding consists of a thesis and an anti-thesis and that both clash to produce a synthesis which is a refinement of the characteristics of the thesis and anti-thesis. This process, he states, is indefinite. What this implies for knowledge generation, amongst others, is that knowledge has to be constantly reviewed, revised and advanced. Hegelian dialectics has been very fruitful: it is the basis of Marxian analysis as well as the foundation of system theoretic thinking which is very influential to knowledge management as we know it today.

In furtherance of this controversy, Whitehead and Russel in 1910 proposed symbolic logic as the basis of scientific knowledge (Whitehead / Russel 1910). In opposition to Kantian and Hegelian idealism, while sidestepping Marxian materialism and sharpening the reductionism of rational empiricism, *"they asserted that all mathematical truths could be derived from logical propositions made of symbols"* (Faucher /Everett / Lawson 2008, 45). This assertion gave birth to 'logical positivism', a philosophy that sees knowledge as derivable only from logical inference grounded in the use of symbolic language and experience.

Michael Polyanyi (1958) criticised logical positivism for its failure to recognise the importance of tacit knowledge and imagination (Polyanyi 1958). He proposed the idea of personal knowledge, stating that the scientific method is just a tool for gaining insight into objective truth and not the final objective truth itself. Karl Popper (1959) opposed logical positivism while striving to find a solution to the problem of induction raised by Hume (Popper 2002). He therefore came up with the suggestion that all scientific ideas are falsifiable, and induction is thus unreliable, as deduction is the basis of scientific inquiry; a piece of knowledge is thus never true, just superior to its predecessor. The fact that any piece of knowledge is falsifiable leaves the adherents of falsificationism with a problem of explaining the reliability of theoretical knowledge.

Thomas Kuhn's (1962) solution to this problem was to divide scientists into different paradigms (Kuhn 1962). He suggested that scientific knowledge is characterised by a succession of periods of 'normal science' and periods of 'great revolutions'. In the periods of normal science, scientists hold on to their theories and paradigms despite the anomalies, whereas in the periods of great revolutions, major conceptual changes are achieved. In this way, reliable theoretical knowledge exists only in periods of normal science while great revolutions take the frontiers of science further. Even though this postulation reminds one of

Hegelian dialectics, it fails to explain the advancement from normal to revolutionary periods, probably because it does not explicitly rely on Hegelian dialectics.

Lakatos (1977) sought to solve the problem by proposing the replacement of Kuhn's paradigm with a two-piece research programme: an inner hard core and an outer shell (Lakatos 1977). The hard core would consist of the fundamental principles which are unquestionable to the scientists while the outer shell would consist of peripheral principles. Changes in peripheral principles are responsible for the apparent failure of a research programme. If a research programme remains cohesive and leads to predictions that are confirmed, it is progressive, he states. Hence, Lakatos understands Kuhn's revolution as the replacement of a degenerative research programme with a progressive one. And with Lakatos, we come to the issue of coherence in research programmes which is significant because it aims at moving away from linear thinking to a more holistic approach that recognises diversity in knowledge, an essential character of the object of this discussion – knowledge for development. This is further relevant because *"cohesiveness is central to systems thinking, and is increasingly used in knowledge management"* (Faucher / Everett / Lawson 2008, 46).

We thus see that there is not yet any final agreement on the essence and generation of scientific knowledge. However an additional justification for this discussion was to demonstrate that we have a rich tradition to lean on in the process of knowledge production, and that this is a tradition that respects scientific as well as tacit knowledge while accepting that knowledge is diverse and not monolithic. Having said that, the variety of this tradition appears to be falling into oblivion as current research mostly leans on the empirical. It is part of the author's concern to constantly take recourse to this tradition by bringing the empirical and the tacit (the predominantly Northern and the predominantly Southern, respectively) together in the subsequent research on this issue.

3.2 Defining knowledge

There are several definitions of knowledge in the relevant literature and most of them relate knowledge to action, expertise and experience while observing that facts, data, information and wisdom are constituents of knowledge. Plato defined knowledge in 369 BC as 'true belief with an account' but then acknowledged that this definition was inadequate (Faucher / Everett / Lawson 2008, 52). This acknowledgement notwithstanding, his definition depicts two important characteristics of knowledge, namely, conviction and experience; or rather, conviction resulting from experience. Unfortunately these days, experience is hardly acknowledged as a method of knowing, ostensibly because of its tacit nature.

In more modern times, knowledge has been defined as the capacity for effective action (Argyris 1993). Sveiby (1997, 37) sees it as *"a capacity to act"*. For Applehans (1999), knowledge is the ability to turn information and data into action. Stacey (1996) considers knowledge as consisting of social acts while for Ackoff (1989, 40), *"knowledge is know-how"*. Knowledge has further been defined from a rather tacit perspective as *"a higher level of abstraction that resides in people's minds"* and that it *"includes perception, skills, training, common sense and experience"* (Awad / Ghaziri 2004, 37). A more comprehensive definition that stresses the contextual component of knowledge has been offered by Liebowitz and Wilcox (1997) in which they define knowledge as the entire set of insights,

experience and procedures that are considered correct and true and therefore guide the thoughts, behaviour and communication of people. All these definitions, though not directly related to development policy, share similarity with the position of knowledge in development policy because it is assumed that with better knowledge, better policies are made. But how does knowledge relate to data, facts, information and wisdom – the constructs and constituents of knowledge?

Before discussing the relationship between knowledge, data, facts, information and wisdom, it is first necessary to explain this taxonomy of constructs relevant to its conception singly. Scholars of knowledge management have long been concerned with specifying the meanings of these terminologies. Faucher / Everett / Lawson (2008, 50) offers a table that shows the origins of these terminologies in recorded history and it is thus possible to trace their etymologies. According to its Latin origin, 'data' used to mean something that is given, and later on became used as a synonym for gift. However, modern science changed all that. Researchers initially used the term for something that is considered to be given, and then it becomes a synonym for a fact, something that is known to be true. However, it has also been considered to be a representation of a number, fact, word, image, picture or sound (Liebowitz / Wilcox 1997). For Davenport and Prusak (1998, 2), it is *"discreet objective facts about events"*. Data have also been defined as measurements (Applehans / Globe / Laugero 1999). Ackoff (1989, 3) defines them as *"symbols that represent properties of objects, events and their environments."* However one looks at them, data are real, representative and unprocessed. They are often numerical representations and supposedly free of the idiosyncrasy of the gatherer or reporter and are thus credited with a higher level of objectivity and accuracy. 'Facts' are simply things that are true and real.

Faucher /Everett / Lawson (2008, 51) state that 'information', from its Latin origin, relates to the action of making, conceiving or forming an idea. Similar to data, this original meaning has shifted in the course of time to relate to the concept of data. The new meanings have been linked to the origin, purpose or utility of information. So Drucker (1995, 109) defines it as data *"organized for a task, directed toward specific performance, applied to a decision"*. Smith (2001, 302) offers a more comprehensive definition of information as *"data that has relevance, purpose and context"*. It is also *"the result of a human's interpretation of data"* (Lueg 2001, 152) or *"structured data useful for analysis and decision making"* (Thierauf / Hoctor 2006, 4). The differences in definitions notwithstanding, information could simply be understood as purposefully processed data. To put it differently, it is data that has been made meaning of, that is, interpreted or given a context; and talking about meaning and context gives information a social dimension because meaning is derived in contact with people who then constitute the context. It is this, then, that calls the pervasive practice of knowledge management into question, namely that it is ICT-based and lacks a human or social component. It also questions the practice of transferring knowledge produced in the North to the South without initially adapting it to Southern contexts.

It is relatively hard to find definitions of 'wisdom' in the literature on knowledge management but the existing definitions are much clearer than the foregoing. Ackoff (1989) defines it as 'evaluated understanding'. For Matthews (1998), it is the critical ability to use knowledge in a constructive way and to discern ways in which new ideas can be created. It is also *"the highest level of abstraction, with vision, foresight and the ability to see beyond the horizon"* (Awad / Ghaziri 2004, 40). Thierauf and Hoctor (2006, 4) define wisdom as

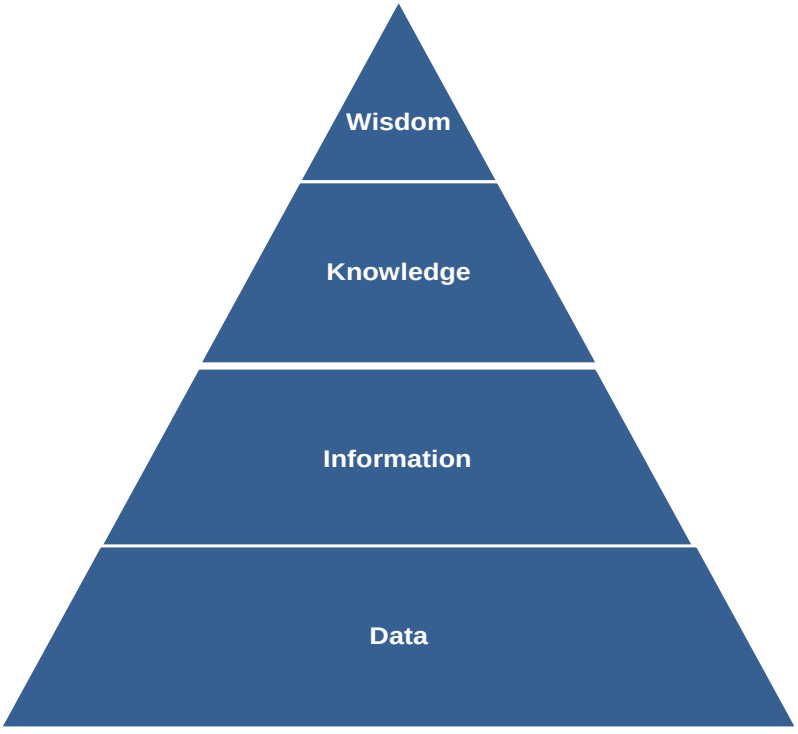
"the ability to judge soundly over time". Thus, wisdom exists at a higher level of abstraction than the others, is processed, to be issued in action, and has a relatively longer life. I will consequently argue that where action is guided by knowledge, decision is guided by wisdom. So how do these concepts relate?

3.3 The relationship between data, information, knowledge and wisdom

In 1987, Zeleny presented the 'knowledge management' literature with a pyramid that demonstrates the relationship between data, information, knowledge and wisdom – DIKW. It shows data at the base and wisdom at the very top, with information immediately above data, and has since become known as the DIKW pyramid. The pyramidal structure suggests that data is more available than information and that information is more abundant than knowledge which is still more abundant then wisdom; i.e., they become less abundant as one goes up the pyramid. It further suggests that the top is superior to the base. Finally, one gets the impression that these constructs are separate and that one does not flow into the other, suggesting a linear relationship between these properties of knowledge.

In 1989, Ackoff introduced a modified pyramid of five terminologies, retaining the traditional four and adding 'understanding' between knowledge and wisdom.

Figure 1: The traditional knowledge pyramid

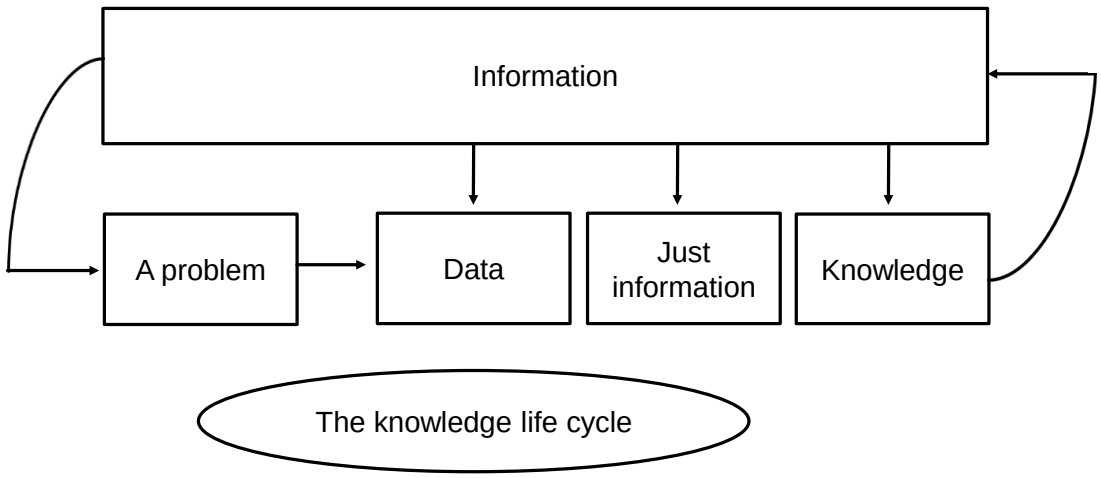


Source: Zeleny 1987 (culled from Faucher / Everett / Lawson 2008, 55)

There have been several criticisms of these models and suggestions to the modification of the pyramid. Matthews (1989) suggests that the pyramid be replaced with a circle or helix to

demonstrate that one construct flows into the other (Matthews 1989). He further suggests adding 'creativity' after wisdom and 'innovation' thereafter. Some went further to question the constructs and their role in knowledge creation. As time went on, researchers felt the need for new models and they were not hard in coming. Apparently influenced by the suggestions of Matthews (1989), Firestone and McElroy (2003) presented a circular model which is based on a knowledge life circle that had been previously presented by McElroy in 2000. This model sees data, information and knowledge as different types of information that interact in a circle of problem solving and information-creation and thus demonstrates the importance of feedback loops for knowledge use and generation. For them, 'data' is a type of information with a conceptual content which offers a structure for data with the purpose of representing reality; 'knowledge' is a subset of information because it is processed information with positive evaluation results, thus verifying the truthfulness; and 'information' is simply processed data or data with conceptual commitments and interpretations. It could also just be these conceptual commitments and interpretations. This model deliberately omits 'wisdom' for the fact that the authors consider wisdom to be either a form of knowledge about the right course of action (and therefore a form of information) or a type of decision. In as much as the added value of this model lies in its accentuation of a more holistic relationship between the constructs, its argument is circular and the relationship between data and information unclear.

Figure 2: The circular model of the knowledge life cycle

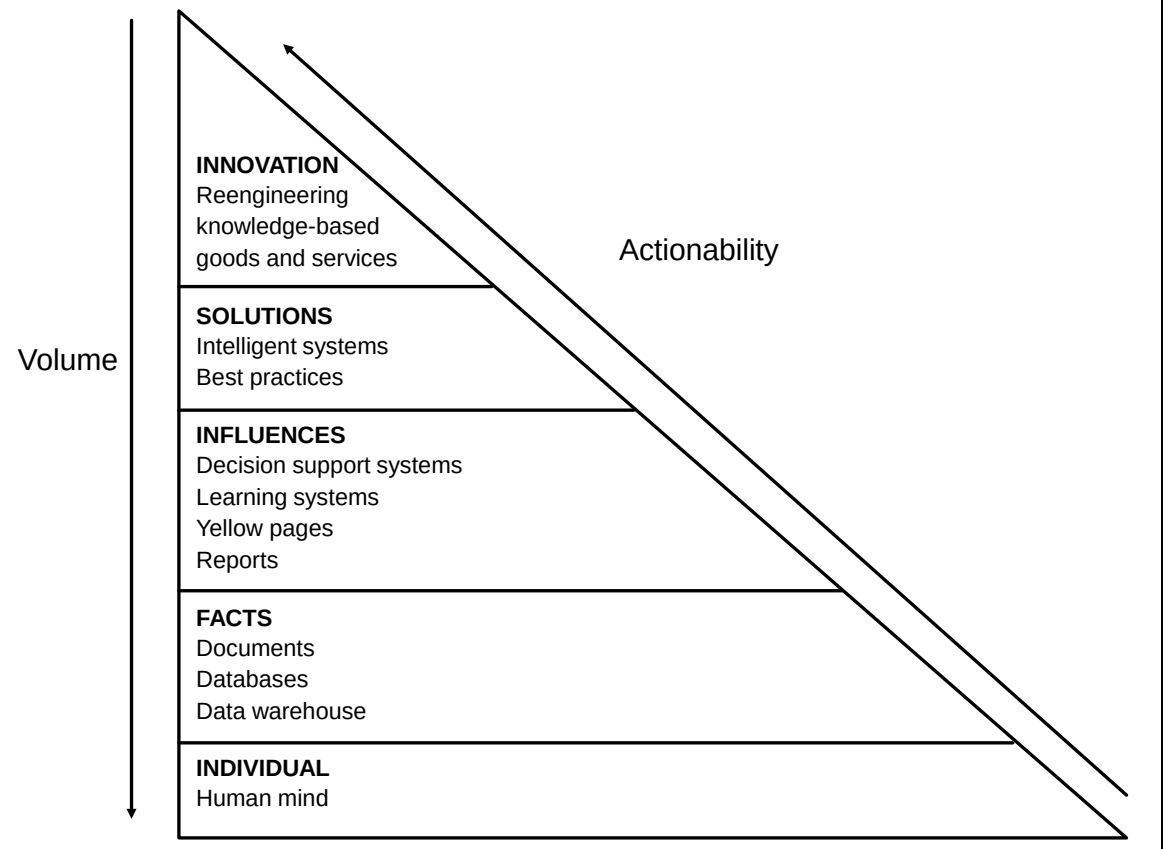


Source: Firestone / McElroy 2007 (culled from Faucher / Everett / Lawson 2008, 62)

One other model that is worthy of mention here is the five-tier knowledge hierarchy by Hicks, Dattero and Gallup (2006). Their aim was to correct some of the anomalies of the traditional knowledge pyramid by adding a novel two-tier category of personal knowledge to the traditional four: the individual and the innovation tiers. Their model concentrated on the three traditional constructs of data, and information and knowledge. Similar to Firestone and McElroy, they omitted wisdom. Stressing that individuals create, use and maintain information and knowledge – what they term 'codified knowledge tiers' – they placed the individual at the base of their hierarchy. The next position in ascending order is given to 'facts', 'influences' and 'solutions'. Innovation is placed at the pinnacle of the pyramid because it already integrates all tiers in the sense that it uses strategy to exploit both personal and codified knowledge assets. Using facts, influences and solutions to replace data,

information and knowledge in that order; they defined individual knowledge as *"knowledge contained in the mind of a person"* (Hicks / Dattero / Gallup 2006, 21), akin to Polyanyi's tacit knowledge. Facts are *"atomic attribute values about the domain"* (ibid, 22). Influences are *"data in context that has been processed and or prepared for presentations"* (ibid, 24). Solutions are *"clear instructions and authority to perform a tax"* (ibid, 24) while they define innovation as *"the exploitation of knowledge-based resources"* (ibid, 24–25). I think the major difference between this and the traditional DIKW pyramid is that knowledge is handled here solely from the perspective of problem-solving. And this explains why they termed knowledge 'solutions'. However, although problem-solving may be one of the most important utilities of knowledge, there is definitely more to knowledge than that.

Figure 3: The five-tier knowledge management hierarchy



Source: Hicks / Dattero / Gallup 2006 (culled from Faucher / Everett / Lawson 2008, 64)

The essence of the above discussion is to show how one can think about knowledge, while highlighting the fact that, although scholars agree that these constructs are all parts of knowledge, they neither agree on the meanings nor on the manner of interaction of these constructs. Nonetheless, some issues could be claimed to be clear from the foregoing: 'data' constitute raw facts and are often expressed in numbers. Their most distinctive quality is that they have an objective character. That is, if two or more people employ the same methodology of data-gathering, the data they gather will be very similar, if not exactly same. For 'information', the most distinguishing characteristic is the interpretation; i.e., meaning has been made of it. Thus, it is simultaneously idiosyncratic and social because the meaning we give it depends on our individual understanding of our social contexts. By implication,

what constitutes information is thus different between individuals and across societies. 'Knowledge' is information in action; i.e., information becomes knowledge if we base our action or decision on it. We thus make our findings and draw our inferences in the realm of knowledge. Repeated use of information on how to act or decide over a period of time and in similar circumstances endows us with 'wisdom'. Wisdom deals with gaining insights and drawing inferences for a certain length of time and thus of developing a feeling for the situation that makes actions or decisions relatively easier the next time around. It is a product of repeated experiences and thus imbues us with the shortcuts to actions and decisions in life. As an illustration: if I am having a party and invited fifty guests amongst whom five are vegetarians, the number 5 is the data and their being vegetarians is the information. If I use this information to prepare meals for my guests, this information becomes knowledge. To conclude the discussion on the constituents of knowledge, two other issues that remain to be touched on are the typology and creation of knowledge.

3.4 Knowledge: types and creation

The idea that knowledge could be tacit or explicit goes back to Polyanyi (1966) who used the terms to differentiate between knowledge that has been openly expressed and communicated (explicit) and knowledge held in human minds (tacit) because the human mind has a 'tacit' power to discover and hold information. He therefore remarked that *"we can know more than we can tell"* (Polyanyi 1966, 4).[3]

Working within those categories and with the aim of better knowledge management for corporate bodies through a discussion of the differences in management cultures of Western and Japanese corporations amongst others, Nonaka and Takeuchi (1995) introduce a model that has dominated the knowledge management literature ever since. Their point of departure is that in the West, firms are considered as knowledge processing organisations. Contrarily in Japan, they are considered to be living organisms with a capacity to learn. Nonaka and Takeuchi went further to say that the Western management tradition understands knowledge inevitably as something that is systematic and formal; and therefore explicit; explicit knowledge can be expressed in words and numbers and can be effortlessly communicated by means of scientific formulas, specific methods and universal principles. Knowledge in the West is therefore equivalent to a computer code or a chemical formula. This partially explains the apparent superiority of scientific knowledge over tacit knowledge.

Japanese firms, however, consider knowledge to be something primarily implicit. Implicit knowledge, they say, is very personal and is not subject to formal expression: it is extremely difficult to communicate. Subjective insights, presentiments and intuitions constitute implicit knowledge. Moreover, it is deeply anchored in an individual's actions and experiences as well as in his/her ideals, values and feelings. Because only explicit knowledge could be useful to the organisation, implicit knowledge has to be converted to explicit knowledge before becoming operative in an organisation. They maintain that only

3 Later on, Day (2005) divided tacit into tacit- and implicit-types of knowledge but because this is linguistically inappropriate and has not been well received in the literature, we ignore it here and stick to the two Polyanyian categories of 'tacit' and 'explicit'.

individuals can create knowledge and, accordingly, the creation of knowledge in organisations is to be understood as a process through which personally produced knowledge is strengthened and anchored in the knowledge net of the organisation.

Nonaka and Takeuchi then present a model that depicts knowledge creation through conversion of implicit to explicit knowledge and vice-versa – the spiral of knowledge creation – because these two dimensions of knowledge constantly interact. This involves four steps: socialisation, externalisation, combination and internalisation (SECI). 'Socialisation' involves the direct exchange of explicit knowledge between two employees: for example, a master and an apprentice. This is done through observation, imitation and practice. The exchange of experiences that arise pools the knowledge of the two together. 'Externalisation' refers to the process whereby implicit knowledge becomes explicit. Through this process, the implicit knowledge of the whole organisation is documented and made useful for the organisation. This process could be characterised by three main features:

- The workers are supposed to understand things intuitively through the use of metaphors and analogies. Their creativity should be increased.

- It is noteworthy that only individuals create knowledge. Implicit personal knowledge is converted to explicit organisational knowledge through interaction in the groups' dialogues, discussions and conversations about experiences and observations.

- Knowledge is born out of chaos. Ambiguity could give an impetus to a new idea and redundancy has positive effects in a dialogue and communication amongst one another. Redundancy leads to a better spread of new explicit knowledge and the externalisation of knowledge leads to conceptual knowledge.

'Combination' deals with explicit to explicit and describes a knowledge-creation process in which the new explicit knowledge is connected to the already existing knowledge in the organisation. New knowledge emerges from a rearrangement or restructuring of the existing information which could be accomplished through screening, addition, combination and classification. 'Internalisation' describes the process of generating new knowledge from explicit to implicit. A valuable knowledge capital in the form of know-how and corporate mental models arises through the internalisation of experiences which is acquired through socialisation, externalisation and combination. Similar to 'learning by doing', explicit knowledge is internalised in this process. The newly acquired knowledge gradually becomes an implicit knowledge of the employee through repeated application. Nonaka and Takeuchi describe this process as the spiral of knowledge creation.[4] But what actually is knowledge management?

3.5 Knowledge management defined

It is possible to have discerned what knowledge management refers to from the foregoing discussion. However, for reasons of clarity, attempts should be made to offer a working definition that guides this undertaking. Basically, the terminology of knowledge manage-

4 For a discussion of problems associated with a simplistic understanding and application of these concepts, see Akude (forthcoming): Knowledge management for development: what's hot and what's not.

ment is a misnomer because knowledge does not easily lend itself to management. Rather, knowledge management substantially deals with creating an enabling condition for the exchange of knowledge amongst staff of an organisation/organisations. Thus, a more accurate terminology might be 'knowledge environment management'.[5]

Faucher / Everett / Lawson (2008, 49) traced the history of knowledge management from philosophy, cognitive science and systems theory and state that the term was introduced in 1986 by Kellog although it had been used earlier by Apte (1982) and Jarayaman (1984). Following Jasimuddin 2006, knowledge management is a new label for the systems and processes used for the management of organisational knowledge, based principally on the works of artificial intelligence and expert systems. It has 'knowledge engineering', 'knowledge acquisition' and 'knowledge-based systems' as its antecedent denotations. He then defined it rather vaguely as a multi-disciplinary field linked to information systems, organisation theory, strategic management, and human resource management (Faucher / Everett / Lawson 2008, 49). Luthra and Pan (2010, 422) offer a much better definition in which *"knowledge management is the deliberate attempt by organizations to capture, manage and leverage their knowledge resources to help the organization remain competitive and maintain competitive advantage"*. This comprises four common processes: 'knowledge generation', 'knowledge capturing', 'knowledge sharing' and 'knowledge utilisation' (Zheng 2005). Information is sometimes used as a synonym for knowledge as we have noted in the earlier discussion. In this vein, Sanchez (2006) defines information management more comprehensively as a process of capturing, storing, categorising, retrieving and disseminating information that an organisation generates in the course of executing its function (in Ferguson / Mchombu / Cummings 2008, 13). Knowledge management therefore regards the whole organisation as a learning organism and its purpose is to help the organism generate, retain and retrieve knowledge when and where it is needed. Applied specifically to development, knowledge management involves processes and practices concerned with the use of knowledge, skills and expertise within the development field (Ferguson / Mchombu / Cummings 2008, 8). From a practitioner's perspective, knowledge could be considered a purposeful application of information to action or to decision-making.

Pasong (2011, 212) identifies three types of knowledge management (KM) in international development:

- KM for the macro-economic planning of national, regional and global development as practised by governments and intergovernmental organisations such as the World Bank or the Organisation for Economic Co-operation and Development (OECD).
- KM for strategic management and organisational development as practised in the corporate and public sector.
- KM for social development as practised by national and international development agencies and civil society in various fields, including those of poverty reduction, health, education, the environment, etc.

5 I wish to express my gratitude to Mr Johannes Schunter, the Knowledge Management desk officer of the United Nations Development Cooperation, New York, for bringing me to this point.

The terminology of 'knowledge management' has been criticised now and again in the development policy field (Talisayon / Suministrado 2011; Nonaka 2008). Scholars maintain that it is not knowledge that is managed *per se* and therefore propose the term 'knowledge-based' management which they define as management or governance premised on the observation that intangible assets such as knowledge have become more important in the creation of wealth than tangible assets (Talisayon / Suministrado 2011, 326). Other terminologies have been created to capture the management of intangible assets. For example, 'intellectual capital management' has been suggested. This consists of three categories: 'human capital', 'structural capital' (process or internal capital) and 'stakeholder capital' (relationship capital or customer capital) (ibid).[6] An aspect of knowledge management that is less emphasised but very important to practitioners is knowledge sharing. Thus, knowledge management is not solely concerned with the creation, storage and retrieval of intangible assets but also with the sharing of same.

4 Prevalent themes

So much has been published since the introduction of knowledge management to development studies that it is almost impossible to do justice to it all in a review exercise. Fortunately, in the last ten years, literature has been reviewed twice in this subject-matter and prevalent themes exhaustively discussed. I thus consider it rational to start with these two: Hovland 2003, and Ferguson / Mchombu / Cummings 2008, and then extend the review to relatively recent literature. However, in doing this, care will be taken to fulfil the basic demand of a literature review, namely to capture all currents of ideas in the body of knowledge and possibly identify a missing niche, if any.

Initially, the authors focused mainly on the use of information and communications technology (ICT) in promoting economic development, the knowledge needs of Northern and international NGOs (non-governmental organisations), knowledge management of bilateral and multilateral donor organisations, and the knowledge management publications of the World Bank which often focus on the application of ICT compatible gadgets to knowledge management. Latterly, there have been publications on the diversities of knowledge, issues of politics and power as they relate to knowledge management, and other publications focusing on the differential uses and effects of ICT in other parts of the world, for example, Africa.

Equally important has been the organisation of the Knowledge for Development epistemic communities of practice (CoP) whose activities have been impacting the fast-evolving field of knowledge for development. Among these are the KM4Dev group that publishes the KM4Dev journal; the ikmemergent.net that monitored the research programmes in this field (ended 2012); the Knowledge for Development group that regularly discuss issues on a LinkedIn portal; the undp.teamworks.org. that offers members the opportunity to share experiences; as well as the knowledge-driven international development (KDID) portal which is an initiative of the knowledge-driven microenterprise development (KDMD)

6 Lucie Lamourex, one of the leading personalities in the KM4D epistemic community, expressed in an interview that 'knowledge management' in the development field is synonymous with, and therefore a euphemism for, 'knowledge sharing'.

project of USAID. Others include (but are not limited to) the Knowledge Brokers Forum (KBF) of the I-K-Mediary Network jointly sponsored by the Canadian International Development Research Centre (IDRC); the Swiss Agency for Development and Cooperation (SDC); and the British Department for International Development (DFID); the Knowledge Star*; as well as the Community of Practice on Communities of Practice, namely, the Learning Alliances. However, these CoPs have slightly different areas of focus. For example, while the KM4Dev concentrates on individual knowledge sharing to improve the assignments of knowledge managers in organisations, the KBF focuses more on knowledge sharing between research communities and between organisations. The ensuing literature review starts with the review of literature on knowledge management *per se* (mainly by corporate bodies) and then concentrates on the narrower knowledge management for development literature.

As an academic discipline, the evolution of (corporate) knowledge management has been driven by waves. However, the identification of these waves has not been uniform across several researchers. Snowden (2002) identifies three waves: 1. Structuring information for decision support and computerisation of business processes. 2. Conversion of tacit to explicit knowledge. 3. Context, narrative, stories, content management: all these build on complex adaptive systems theory. Laszlo and Laszlo (2003) identified three generations: The first generation was marked by the distribution of organisational knowledge through technology and focuses on standards and benchmarks. The second generation concentrates on knowledge creation to satisfy organisational needs, organisational learning and value creation, while the third deals with the knowledge of evolution. That is, knowledge related to corporate citizenship and its impact on global development and participatory forms of creating meaning.

Koenig (2005), on the other hand, identifies four stages: The first stage is centred on Information Technology (IT) and deals with the codification of intellectual capital, the furnishing of the internet and intranets as well as the capturing of best practices. Stage two deals with the introduction of human and cultural capital, the learning organisation, tacit knowledge and intra-organisational communities of practice. Stage three is concerned with management content and taxonomies, while the fourth stage emphasises the importance of extra-organisational sources: situated, contextual knowledge and inter-organisational communities of practice. Huysman et al. (2007) identify two waves. The first wave is characterised by epistemic objectivism and IT-determinism and the second by social embeddedness, immersion in practice. Coming closer to global development, Ferguson and Cummings (2007) identify three stages or generations of knowledge management: The first deals with the production of knowledge as a commodity, the application of ICTs, the building up of knowledge databases, portals and clearing houses. The second stage is mainly concerned with knowledge sharing, case studies as well as best practices, while the third stage is associated with a people-centred, practice-based approach, the embedding of knowledge processes in organisational processes and international communities of practice. Hovland (2003, 3) further remarks that the second generation focuses more on organisational processes and the creation of new knowledge with the purpose of keeping an edge over competitors.

The authors' attempts at capturing developments in the field of knowledge management presented above reveal a shift from an ICT-based approach of knowledge codification to a people-centred approach that stresses narrative, context, process and communities.

Secondly, it shows a shift from supply-driven to demand-driven evolution.[7] Ferguson / Mchombu / Cummings (2008, 13) were therefore right to state that *"this reflects an epistemological shift, from an objectivist perspective to a practice-based perspective"*. Supporting the three-generation postulation and summarising them, Bedford (2012) comes up with ten facets of knowledge management with each facet having a different focus and scope. These include knowledge technologies, knowledge asset management, knowledge assessment and evaluation, intellectual capital management, communities and collaboration, culture and communication, knowledge operations, organisational learning, knowledge leadership and strategy and finally knowledge architecture.[8] Knowledge management is thus a multidisciplinary academic endeavour that draws effective theories and methods from other disciplines.

The implementation of knowledge management in phases (discussed above) led Pan and Leidner (2003) to propose a model that has become relatively influential in the literature on knowledge management. Mirroring this development, their model consists of three phases in which each phase lays the foundation for the next phase. Phase one relates to the establishment of an overall infrastructure which involves the erection of fundamental technology for exchange – the phase of ICTs. The second phase refers to the provision of effective linking mechanisms amongst people and communities. This phase places emphasis on bringing people together to produce and share knowledge and, in the process, the differences in values and cultures of different segments of an organisation become increasingly recognised and this recognition is reflected in the knowledge strategy of the organisation. The third phase concentrates on systematic support to sharing in communities based on common knowledge rather than cultural or geographical commonalities. Here, cross-organisational global knowledge sharing in specific issue areas becomes possible. To facilitate this process, inter-organisational global networks are built. Although this model is based on knowledge management in the private sector, it is relevant to knowledge management in development spheres because knowledge sharing on a global scale between different organisations is one of the fundamental reasons for knowledge management in development. Some international development organisations are already working on this. Ferguson / Mchombu / Cummings (2008, 11) mention the Dutch Development Organisation and the United Nations Development Programme as examples. One might add the British Department for International Development (DFID) and the Swiss Agency for Cooperation and Development (SDC).

It has been remarked that the emergence of the information age in the 1990s coincided with the remarkable upsurge in the numbers and relative influence of Northern non-governmental organisations (NGOs) in international development (Hovland 2003, 5).[9] In her detailed review of literature on knowledge management, Ms Hovland did justice to this development by structuring her literature review in a) Northern NGOs/INGOs (international non-governmental organisations), b) bilateral and multilateral donors, c) Southern institutions, d) research institutions and think-tanks; and I will align this review accordingly.

---

7 'Demand-driven' refers to the demands of the knowledge management practitioners.

8 I do not intend to discuss these further for want of time and place.

9 The bibliography offered by this publication makes it impossible for it to be ignored in a review of literature on knowledge management, at least until and into the beginning of the 2000s.

As a result of the aforementioned changing roles of these NGOs, it becomes necessary for the Northern NGOs to reflect on how best to perform these new roles. Ms Hovland further notes that this self-reflection led to a great deal of research and publications, most of them on monitoring and evaluation (M&E); for example, Mardsen / Oakley / Pratt 1994; Korten 1984. Others include Powell (2003) on individual organisational guidelines, BOND (2003) on surveys of NGO learning and Davies (1998) on academic attempts to develop a coherent theory of learning. Korten (1984) identified a 'learning process approach' in which organisations see errors as sources of information that, if well managed, could lead to an improvement in performance. Still on M&E for performance improvement, Mosse, Farrington and Rew (1998) propose new M&E criteria that capture intangible outcomes such as policy impact and institutional change.

After noting that the whole issue of knowledge management and learning within Northern NGOs has resulted in the focus on internal organisational needs instead of a concentration on the enormous knowledge deficits of Southern NGOs, she (2003, 6) leans on different authors to present a list of internal organisational characteristics of Northern NGOs. These are:

- Geographical distance between headquarters and field officers which frequently leads to information gaps and learning tensions.
- The geographical range of NGOs could be an asset because it gives them a comparative advantage to broker information simultaneously at the local, national and global level.
- The difference between the ultimate 'customers' and 'beneficiaries' of the NGOs to the NGOs' donors lead to different knowledge demands in relation to different groups.
- The usually high need for success stories to legitimise the activities of NGOs may hinder learning;
- While NGOs continually try to bring about change in their environment, they are themselves often characterised by internal 'change fatigue', stemming from information overload and the continuous demands for adaptation and response.

Next, she treats bilateral and multilateral agencies. On bilateral relationships, mention has already been made of the Canadian, British, Dutch and Swiss development agencies that have clear-cut policies on the joint (North/South) production of knowledge for global development. The multilateral agencies that have been active in this area have been the World Bank and the United Nations Development Programme. Since staff at the DIE (German Development Institute / Deutsches Institut für Entwicklungspolitik) are relatively conversant with the activities of the World Bank (see, for instance, Section 2 of this paper), I intend not to dwell long on this here. Suffice it to say that the approach of the World Bank to knowledge for development has elicited some criticism. Chief amongst them is the fact that the WB appears to be shifting from a people-centric approach (as was adumbrated by the World Development Report 1998/99) to a technology-centric approach (exemplified by the WB's use of computer-driven technology as the medium for the dissemination of its knowledge products).[10] Further research undertaken in the process of preparing this paper reveals that the WB has up till now not succeeded in incentivising knowledge services in order to motivate staff to share more.

10 See Hovland 2003, for a short summary of other criticisms.

On Southern institutions, Hovland remarks, in a striking way, that organisations function in different ways within different cultural, political and economic contexts: *"The best knowledge management, learning and evaluation strategies in the UK are not necessarily the best KM, learning and evaluation strategies in Uganda"*. She discusses the context and peculiar challenges facing Southern NGOs and re-echoes the meanwhile popular critique of non-Western researchers to the effect that Western-type institutional models do not automatically translate into a new context without adaptation and modifications. Citing Rondinelli (1993), Hovland maintains further that Southern public-sector institutions have been generally excessively control-oriented and top-down, thereby cutting off the possibility of learning. The excessive emphasis placed on a coherent national development plan by donors is responsible for this problem. Focusing on the tension between external institutional models and indigenous organisational forms, she drew from Dia (1996) to underline the point that the institutional crisis affecting economic management in Africa is due to structural disconnect between these different institutional settings. The remedy, Dia (1996) proposes, is an institutional reconciliation paradigm.

In her review of the Southern non-governmental sector, Hovland shows how Hailey and James (2002) built on the case studies of nine successful South Asian NGOs in order to illustrate how NGOs learn, namely by means of a 'learning leader'. She also bemoans the negative effects of donors' demand for proof of impact on the Southern NGOs: it denies those organisations the opportunity to learn from a neutral M&E process. As Horton and Mackay (1999) put it, evidence of impact is *"something which is most frequently requested by funding agencies, most frequently promised by evaluators and least frequently delivered in evaluation reports"* (Hovland 2003, 10). Donor fatigue was further cited as one of the major problems of Southern NGOs.

The next issue she discusses is technology in Southern institutions and criticises the imprudent promotion of ICT as the solution to most of the information and communications problems of Southern organisations. ICT projects in the global South either fail frequently or function only for a short period as a result of the gap of between the Northern IT systems and the reality of Southern institutions. These gaps have to do with the differential level of technological infrastructure, local skills base and contextual stability (Heeks 2002). Moreover, organisational structures and processes can hinder ICT from functioning (Volkow 1998). Another problem of technology in the global South has to do with the fact that ICT innovations and applications are aimed at the Northern private sector, while in the South the main client is the public sector (Moussa / Schware 1992). The public sector cannot adopt the same IT systems as the private sector because they have different requirements for handling information in relation to policymaking, consultation and reporting processes.

Hovland concludes her literature review with an assessment of publications on KM and issues of learning by research institutes and think-tanks with an observation that there was very little on the issue at the time, 2003. Besides, research institutes play an interesting role in the field of international development as the field opens up. They have the potential to *"capture the political imagination"* (McGann 2002) and could provide constructive advice in support of policymaking. She then links her appraisal to Fowler (1992) who notes that due to the increasing dependence of international and Northern NGOs on credible relationships with Southern partners, NGO Centres for Study and Development can help NGOs build viable relationships, transfer knowledge, and engage in international

development debates. In this context, they could produce policy relevant analyses in accessible forms. To increase the effectiveness of such work, think-tanks and research institutes should form networks and alliances and work together on issues of common interest (Struyk 2000). This could enable them to take on policymakers more deliberately (Maxwell 2002). This makes a focus on strengthening the research capacity of the South vital (KFPE 2001), which is possible because developments in IT have opened up new possibilities for collaboration between researchers across different parts of the globe (Song 1999). March (1991) introduces the issue of strategy. This refers to the purposes of knowledge management and the means of achieving them. He states that the knowledge could be reprocessed unchanged or continually renewed. The former he calls the 'strategy of exploitation' and the latter he terms the 'strategy of exploration'. While exploitation seeks to reprocess existing knowledge, exploration seeks to develop new knowledge.

Though this review comprehensively treats issues of phases of knowledge management in development organisations, differences and diversities in management and knowledge cultures and the evolving roles of the NGOs, it substantially exhibits a neglect of the issues we have earlier on identified, namely: issues of the *modus operandi* of development cooperation; the Southern information technology gap; and the balanced treatment of the macro and micro dimensions of KM, to mention only a few. Indeed, while Heeks 2002 talked about the inappropriateness of Northern technology for Southern needs, our concern here with ICT goes in a different direction. Furthermore, there have been no changes to the practices often criticised. For example, despite the criticisms of Horton and McKay (1999) regarding the inappropriateness of demanding proof of impact by donor organisations, the practice continues unabated.

Another literature review that has made its mark in the discipline of knowledge for development is "Management of knowledge for development: meta-review and scoping study" by Ferguson, Mchombu and Cummings, 2008. The study traces the origins, conceptual background, stages of development and models of knowledge for the development paradigm. But of utmost relevance to this review is their meta-review of major literature in the field: they began by criticising Hovland's review on the grounds of two flaws in the theoretical angle. First is the misrepresentation of knowledge management and learning as analogous concepts. They maintain that, although both are closely related, knowledge management is broader in scope than organisational learning.

> *"The former involves the consideration of the core organizational processes, what strategically relevant knowledge is required throughout these, and what management structures can support its optimal generation and sharing; whereas the latter involves an operationalization of knowledge management approaches throughout the organization"* (Ferguson / Mchombu / Cummings 2008, 17).

The second relates to the learning model Ms Hovland proposes which does not entirely match the implicit epistemology she was putting together.

Ferguson, Mchombu and Cummings then divided the hitherto publications in the field of KM into the following categories: embedding learning interventions in a coherent KM approach; towards a mutual learning approach; knowledge management – for development?; the need to profile KM programmes; finding the right approach; and exploring power dynamics and hierarchies of knowledge. In the first category, they cited Hovland (2003) and Pasteur (2004) to underline the importance of organisational learning in terms of improving development performance and impact. Demonstrating ideas that come close to the position

of this paper, Pasteur presents the development process as *"non-linear, unpredictable and poorly understood"* (2004, 5) and as such, a lot of improvisation is demanded of practitioners. For instance, this demands innovation capabilities in order to translate knowledge into new insights and actions; and through partnerships and collaborations, more profound insights can be gained, states Pasteur. She is credited with making important contributions to a more adequate understanding of different approaches to knowledge and learning and their relevance to development organisations. However, Ferguson, Mchombu and Cummings criticise Pasteur for concentrating too much on organisational learning which is just one aspect of knowledge management while neglecting the link to the broader organisational strategy.

With regard to the second category of 'towards a mutual learning approach', they selected Ramalingam's study of (2005) with the title of "Implementing knowledge strategies: lessons from international development agencies". This is a study of 13 short cases that explores 8 core issues of KM on a continuum. This continuum starts with the theoretical introduction of knowledge and learning, and goes on to organisational embedding and external issues relating to knowledge strategies. These issues then coalesce to form a comprehensive Knowledge Strategy Framework which clearly depicts organisational knowledge, organisational links, organisational contexts and external factors. One of the major findings of this work is that becoming a learning organisation is something that one always aspires to but never accomplishes. The effort is thus marked by permanent dissatisfaction due to continuous drive that is at the heart of the efforts. Another reason for this is that there are several other issues competing for the organisation's resources and attention. Ramalingam raised credible issues from our research perspective – mainstreaming knowledge management in organisations – and it would be rational to see how we could supplement that.

On the other hand, Ferguson, Mchombu and Cummings praise the study for making an important contribution to development organisations' understanding of the purpose and complexity of knowledge management for development; and furthermore, for not being a 'how-to' guide but rather an outline of main issues which organisations should consider and use as a yardstick to tailor an approach to the unique demands of the organisation. This they justify on the grounds that there is no one-size-fits-all solution to organisational knowledge management and learning. This, they say, has two important theoretical implications. First, Ramalingam introduces mutual learning as a condition for successful knowledge management. This involves a two-way knowledge transfer which respects the autonomy of the recipients; and has three important consequences: first, it allows for epistemic diversity; second, it has the tendency to overcome the adverse effects of asymmetries of power inherent in epistemic relationships; and third, through mutual learning, stakeholders gain a more thorough understanding of the cultural and socio-economic environment of the intended beneficiaries. The overall conclusion they draw here is that it is self-evident that mutual learning with Southern stakeholders is a key success factor, not only for knowledge management but also for development interventions generally. They remark, however, that it is not yet clear whether mutual learning has led to an improvement of development cooperation and raise the question of what indicators could account for this. In order to get at evidence-based answers to the contributions of knowledge management, they recommend the exploration of such issues as inclusiveness, responsiveness, mutual learning, and epistemic diversity.

On the third category of knowledge management – for development?, they zeroed in on "Knowledge sharing – a review of literature" by Jeffrey Cummings which is a report of the

Operations Evaluation Department of the World Bank (Cummings 2003). The concern here is the governance of knowledge sharing in the WB: Cummings identified five primary contexts for a successful knowledge sharing after adopting the perspective of knowledge-intensive firms and exploring the implications of this perspective in a development context. These are: the relationship between the source and the recipient; the form and location of the knowledge; the recipient's learning disposition; the source's knowledge-sharing capability; and the broader environment in which the sharing occurs. Three variables affect these five primary contexts: the form and location of the knowledge; the managerial practices determining the flow of knowledge; and the specific knowledge-sharing activities. With this, the authors say, Cummings responds to the gap which Pasteur (2004) and Hovland (2003) neglected, namely, how to link knowledge management to organisational learning. However, they criticise the weak link of Cummings' review to the development context. In as much as this deals with the over-emphasised meso level of development cooperation, it should not concern us much. However, it has revealed that even in the overemphasised meso dimension, there are still problems of implementation.

On the fourth category of 'the need to profile KM programmes', they mention Sarah Cummings' (2006) "Knowledge management in large development organizations". Here, they maintain that, despite the WB's self declaration as a knowledge bank, the impact of the WB's knowledge initiative has been minimal. Cummings identifies the inability of the Bank to translate its pioneering role into relevant practice or to maintain the high-level support and leadership as being responsible for this. Additionally, she names the following factors as prerequisites for a sustainable knowledge management policy: identifying clear internal and external motivations; addressing geographically dispersed and diverse knowledge sources; creating clear linkages between learning and knowledge management; and ensuring the fostering of a knowledge-sharing culture. Ferguson, Mchombu and Cummings (2008) identify further findings of Cummings' study: Knowledge management at the WB is often losing out in its competition with IT budgets due to KM's preoccupation with tools and methods. Secondly, there is a lack of systematic comparison of which tools are in fact most effective for organisational learning and, at a higher level, for achieving organisational goals. Thirdly (though not addressed by Cummings): if an organisation wants to be recognised as an important 'knowledge management for development' actor, it has to profile its strategy to the internal as well as external audience. Apparently, the WB failed to do this to its internal audience. Even for the much written-about organisational KM, the hitherto management culture has to change fundamentally to allow for serious KM.

Their fifth category addresses 'finding the right approach' which they based on a study by ALNAP (2002). This study was an annual review of the organisation ALNAP (Active Learning Network for Accountability and Performance in Humanitarian Action) which is dedicated to exploring how knowledge and learning has contributed to improved performance. The urgency that the work of this organisation demands requires that knowledge be quickly shared. This makes effective knowledge management extremely important. However, the report focuses on just one particular approach to knowledge sharing, namely, LBDA – learning before, during and after. This system is a mixture of various learning methods that are repeatedly introduced at different stages of an intervention in order to ensure the inclusion of a learning component in all organisational processes. Ferguson / Mchombu / Cummings however, criticise the authors for neither showing what ALNAP has learnt through this method nor explaining why they favour this approach over the others.

Their last and final category dealt with is 'exploring power dynamics and hierarchies of knowledge'. Here their focus is on Perkin and Court's (2005) 'Networks and policy processes in international development'. The major analytical revelation is that, although networks have enormous potential to help civil society organisations influence international policy, the inherent pitfalls of networking make it difficult to realise this. These inherent pitfalls refer to participation, representation, power dynamics, sustainability, etc. After exploring the characteristics of successful networks' influence on policymaking, they present ten keys to success. Respect for context specificity, ensuring a detailed understanding of options before choosing, and communicating grass roots research to policymakers are some of these keys. Ferguson, Mchombu and Cummings commend the authors for emphasising the need to include localised knowledge in networks and, secondly, for recognising the importance of power dynamics and hierarchy in networks. However, they criticise the authors for being so naïve as to put idealism over pragmatism.

Another issue that found critical mention in Ferguson, Mchombu and Cummings was the dominance of Anglo-Saxon (and with that Western) tradition in the discourse on knowledge management. Citing Robert and Annik (2005), they state that dominant Anglo Saxon literature has a strong tendency to focus on practical aspects of knowledge management, such as tools and methods, deriving from good practices. Japanese literature for example, they say, reflects a philosophical dualism between the balancing of dynamic forces. Since they explained this with Nonaka's 'spiral of knowledge creation' which has been discussed in this paper under types of knowledge, I will avoid a further discussion of it here. However, they state that, similar to the Japanese, Latin discourse of KM is more metaphysical, namely with a focus on the philosophical and the exploration of concepts. They identify the key issues in Latin discourse as 'capitalisation' and 'valorisation' while making the point that the English language is insufficient to capture the meaning and depth of these terminologies. This, they say, is a handicap to the English language-dominated KM discourse. They maintain that these concepts comprise a far richer connotation than their Anglo-Saxon counterparts would suggest: namely, capitalisation and valorisation. They use Genevieve George (2006) to illustrate the insufficiency of the English language as regards terms of knowledge and knowing. The English verb 'to know' connotes being acquainted or familiar with something – as in French *connâitre* – as well as having a firm understanding of something – as in the French *savoir*, whose etymological roots lie in *sagesse*, wisdom. These differences in key terms depict the depth of differences in discourses. After reviewing the counter-arguments of George (to the effect that the differences do not lie much in Latin vs. Anglo Saxon, rather in the lack of overall clarity in central themes of knowledge management) and Robert's (to the effect that Latin literature on knowledge management is intrinsically different from that of Anglo-Saxon because through its philosophical approach, Latin literature takes into account more strongly the specific context and larger environment instead of going for pragmatic, standardised approaches (Robert 2005, 73–74, cited in Ferguson / Mchombu / Cummings 2008, 30), Ferguson / Mchombu / Cummings identify three implications of this semantic argument.

Firstly, they express the need to question established discourse which invariably reflects asymmetries of power which development interventions precisely seek to overcome. Secondly, they stress the need to account for epistemic diversity. This refers to the simultaneous existence of different types of knowledge and discourses, thus giving a human face to knowledge management. Finally, they emphasise the need for mutual learning. In this context, it has been expressed that the West equally needs to learn from the South, as

Western development is neither infinitely progressive nor is it static. We may return to these issues later when we discuss this author's preferred research focus. Suffice it to say for now that the review so far underlines the importance of this study because the issues raised in the objectives for this study have not been redeemed. And this has to do with the fact that much has been written on the organisational dimension of knowledge management and too little on broader issues such as the *modus operandi* of development cooperation and the adequacy of participating institutions, etc. However, justice has been done to emphases of organisations on hierarchy; the issue of power asymmetry between North and South; the dominance of Anglo Saxon language in KM discourses; the need for context specificity; as well as taking epistemic diversity into consideration.

4.1 Recent publications

The above review of literature covers virtually all currents of ideas to be found in this area of study. A continuation of this review is solely aimed at updating the review to include more recent publications but without a fundamental change to the issues already raised. One relatively recent publication is the already mentioned Menkhoff et al. (eds.) "Beyond the knowledge trap: developing Asia's knowledge-based economies" (2011a). This anthology is the product of a conference of the University of Bonn's Centre for Development Research and concentrates on the following questions: the role of knowledge as an engine of growth for Asia's increasingly knowledge-centric economies; the robustness of the knowledge architectures and national information and communications frameworks of those economies; the role of the state and governments in the transformation of those economies in terms of knowledge governance as well as technology and innovation management; the effects of multicultural knowledge contexts in the interaction and collaboration of different ethnic groups; the effectiveness of present knowledge governance systems in Asia in the sense of managing knowledge traps; and, finally, the possibility of mutual learning amongst Asian societies. The studies contained in the book were focused on several knowledge-intensive sectors of South Korean, Malaysian, Thai, Vietnamese, Indonesian, Singaporean and Uzbek economies.

Menkhoff et al. (ibid.) found out among other things that knowledge is a very important factor of production in those economies and that the global digital divide and knowledge gap are widening between industrial and developing societies as well as within individual states. The tendency of globally operating experts couples with the marketing strategies of large corporations to undermine local knowledge, they say, and this contributes to the widening knowledge gaps. They then recommend the taking into account of ethical and human rights issues and the safeguarding of the right to education and information in order to ameliorate those gaps. Furthermore, they recommend high investments in ICT in combination with local knowledge production and dissemination. Finally, they advise policymakers to seriously consider establishing knowledge hubs, as these have positive effects on the development of a knowledge economy.

Still on regional studies, the Knowledge Management for Development Journal dedicated a special issue to effective knowledge sharing in Africa in 2006 (El Halady et al. 2006). The report reiterates the need for knowledge sharing and its potentials for improving the economies of African states. It regrets the negligence of local knowledge by hitherto development interventions and stresses the need to upscale the same. Lack of resources still

hinder this endeavour as it is difficult to get funders to support such ideas. The report mentions networking as an instrument of successful knowledge sharing but regrets the fact that although networks and similar initiatives are emerging, they are still local and knowledge sharing has been increasingly marred by a dearth of communication technology. Information and telecommunication technology deficiency is a recurrent issue in the discussions on knowledge management in Africa. This problem may be very acute in Africa but nonetheless exists in other parts of the developing world as well. Coupled with the problem of technology is the problem of capacity. As a result, knowledge management experts have tried to make recommendations to improve the situation. Wenger, White and Smith (2007) suggest *"community technology stewardship"* as a panacea. Technology stewards are people with enough experience of the workings of a community to understand its technology needs, and enough experience with technology to take leadership in addressing those needs in the communities. According to them, the typical duty of a technology steward is the selection and configuration of technology, as well as supporting its use in the practice of the community.

Contrarily, a recent joint publication of the World Bank, the African Development Bank and the African Union with the title "The transformational use of information and communication technologies in Africa" (2013) documents tremendous progress being made in Africa in the area of information and communications technology. It shows a remarkable improvement in furnishing Africa with broadband undersea cables to speed up the internet and mobile telephony. The report exemplifies this with the fact that, just a few years ago, Africa's internet connectivity was less than that of the tiny state of Luxemburg. But this has changed with the laying of 68,000 km of submarine cable and over 615,000km of national backbone networks in the last few years. *"The internet band width available to Africa's one billion citizens grew 20-fold between 2008 and 2012"* (Yonazi et al. 2013, 14). Although African states have not been forthcoming with economic plans that frame their economies as knowledge economies (with the exception of Rwanda and Kenya), African entrepreneurs are already utilising the improved situation to their advantage by setting up local ICT development clusters. Two local ICT clusters – iHub and Nailab – have already evolved in Nairobi, Kenya; also two clusters – Hive CoLab and AppLab have emerged in Uganda. Others are Activspaces in Cameroon, BanktaLabs in Senegal, Kinu in Tanzania and InfoDev's mLabs in Kenya and South Africa. A social media – Mxit – that has more subscribers on the African continent than Facebook has emerged in South Africa. With headquarters in Nairobi and a regional office in Dakar, Senegal, an African Virtual University has emerged with the aim of using ICT to improve the quality of tertiary education in Africa. With e-learning institutions in over 30 sub-Saharan African countries, it graduated 43,000 students in 2012. Another improvement is recorded in the innovative uses of mobile phones which the report says has revolutionised communication in Africa. Esoko, a mobile platform to support farmers in Ghana with relevant information, exemplifies such innovative use. More research is required to demonstrate the contributions of these developments to the overall economic development of those states in particular, and Africa in general.

The report further mentions other highly promising innovations in the ICT area such as radio frequency identification tags for tracking livestock in Namibia; the use of ICT sensor networks for water management in Egypt; and the use of ICT to fight corruption in Nigeria, etc. Other sectors of the economies of African states where the use of ICT is making great impacts include health, education, climate change, financial services, regional trade and integration, as well as ICT-competitiveness. With such innovations emerging, solutions to problems of knowledge sharing and networking may already be on the way. These

developments are even more appreciated if one recollects that part of the knowledge management problems in Africa has to do with the fact that it is extremely difficult to collect statistical data or keep records in Africa. Capturing and up-scaling these developments will be laying solid bases for credible statistical data-gathering in Africa. However, the report regrets the lack of systematic monitoring of the effects of ICT on myriad sectors of the economies of different African states. It further bemoans the fact that several African governments have not keyed-in on these developments by systematically improving their economies. One area where this could be promising is the coordination of regional economic activities, the report says.

Using science and technology to deliver sustainable development was the theme of this year's Annual Ministerial Review of the United Nations Economic and Social Council (ECOSOC) held in May 2014. Papers presented at the conference regret the poor links between science and NGOs while suggesting that funders of research and development should support collaboration jointly. The papers stress the importance of science for development by maintaining that much of the knowledge that feeds into development projects is from the natural sciences and that ICTs are changing the modalities of the NGOs' work as well as their achievements. One paper presented by Harry Jones, a researcher from the Overseas Development Institute in London, complained of under-investment in delivering the lessons of science to those who actually need it – the science of delivery – and argued that the promotion of the uptake of science is too focused on the national and policy level. Another report saw delivery as a missing link in development because of the fact that there are plenty of technologies and science-based innovations but they often go unused because putting them in the hands of people who need them is difficult (Lissac 2013). These reports offer suggestions on how to help the needy to benefit from the lessons of science and the products of technology. One such suggestion is that NGOs should help communities build local capacity. Another suggestion is that they could help convey scientific consensus, uncertainties and controversies to local communities.

This section on literature would definitely be incomplete without a return to the issue of knowledge and power by shortly reviewing "Knowledge, policy and power in international development : a practical guide" by Jones et al., a group of DFID researchers. This book is a kind of manual for knowledge management practitioners in development work with the aim of making them aware of the power potentials of their assignments. Because it is naturally difficult to cover all possible experiences that the practitioners may encounter, the book is thus relatively abstract. It analyses how the interactions of knowledge, policy and power can affect content, inclusivity and the process of policymaking. It sees the possession of knowledge in a sense as the possession of power and warns knowledge brokers to be aware of this quality of knowledge especially in the process of using knowledge to influence power. The authors developed what they called the knowledge-policy interface which they describe as *"a critical point of intersection between life-worlds, social fields or levels of social organisation, where social discontinuities, based on discrepancies in values, interests, knowledge and power are most likely to be located"* (Long 2001, 243 cited in Jones et al. 2012, xi). It is consequently *"the arena in which information is filtered, brokered and transmuted through several lenses, whether these be political, social or economic, into a set of related decisions that eventually result in concrete plans or negotiated agreements"* (ibid, 1). The book, which sought to impress by introducing a series of terminologies, did a good work of analysing how context, value and political economy

could impinge on the process of using knowledge to influence policymaking and thus affect the quality of the policy.

The book starts by recasting the historical evolution of the thinking on the knowledge-to-policy process. It criticises the 'linear' policy process model of the 1950s and 60s for envisioning a regular cycle of agenda-setting, formulation, implementation and evaluation, driven and informed by knowledge and untainted by other issues. With the normative goal of increasing the influence of research on policymaking, this linear model was replaced by the evidence-based model which in itself has the weakness of susceptibility to *"the political and epistemological dynamics of the production and use of particular sources of information"* (ibid, 5). This awareness shifted the research focus from the supposedly value-free concept of evidence to the concept of knowledge which is evidently value-laden, and combines this with the power-laden question of 'Whose knowledge counts?'. This shift, they state, spawned a lot of models which not only emphasised power but extended its analysis to non-state actors, as well as networks. All these offered insights that made a comprehension of the total political context including power relations of policymaking important. The authors note how new models reflect this new thinking and how, from the 1990s onwards, work on the links between research, policy and practice emerged that consequently emphasise the user's need for knowledge and also of developing new structures to facilitate the knowledge flow across different groups of actors. This emphasis on knowledge interaction necessitated the need to forge partnerships between knowledge producers and users that are aware of their co-construction of policy knowledge, and also to develop a common understanding of what questions to ask, how to answer them, and how best to interpret the responses.

Putting all the above together allows us to draw the lesson that there are four critical dimensions for analysis: political context; the values, beliefs and credibility of the actors involved in policymaking; different types of knowledge; and the roles of knowledge intermediaries. The definition, selection and promotion of knowledge in policy are not just based on rationality and problem-solving considerations; they are rather highly volatile processes that are concerned as much with power and politics. Thus, the guide to practitioners of the knowledge-policy interface is to understand the links between knowledge, policy and power in development, to define political context properly, to understand the behaviour of different actors (ostensibly through a political economy analysis) and to integrate different types of knowledge, while simultaneously facilitating knowledge interaction.

Similarly, the issue of *"Whose knowledge counts?"* has earlier been treated by Hans N. Weiler (2009), who argues that the debate on the relationship between knowledge and development is inadequate as it reveals particularly well how profoundly the notion of knowledge and the practice of its creation and its use are affected by political forces. As is generally well known, these political forces are essentially Western or function in the interest of the West. He has earlier on argued that discussion of knowledge in Europe and North America suffers from three major deficits:

- It does not take a sufficiently critical view of what 'knowledge' means, and of the fundamental changes that the concept of knowledge has undergone in the course of the 20th century.
- It fails to address the political conditions and consequences of the production and use of knowledge – in other words, it is largely oblivious of the politics of knowledge.

- It does not adequately address what kind of structural changes in higher education would follow from acknowledging both the epistemological and political transformation of our contemporary knowledge culture.

As stated in the introduction to this text, this literature review reveals an emphasis on knowledge management practice in development organisations, agencies and NGOs. It is essentially focused on organisational learning and how to improve on it. The issue of diversities of knowledge (stressing the individuality as well as the social context of knowledge) features equally adequately, and this goes for ICTs as well as the regional dimension of knowledge for development studies. However, there is less concern with the bigger issues, the macro dimension which deals with the question of what we need to change or supplement if the lessons of knowledge for development are to be taken seriously. Although the issue of translating research to daily use was raised, the modalities of this transition have hardly been dealt with. Academic institutions (in both the North and the South) have not been taken into consideration as possible institutions of development cooperation. Furthermore, discussions on the difficulties associated with the uptake of research results in the global South did not say much about the infrastructural qualities of schools in the global South, especially in Africa, where decades of structural adjustment programmes (SAP) as well as the Millennium Development Goals have led to a general neglect and therefore undermining of the promotion of education, and higher education in particular.

A literature review of this kind may be incomplete without Ben Ramalingam's "Aid on the edge of chaos" (2013). This book aligns itself to the thinking behind this study by treating the bigger issue, namely, the *modus operandi* of development cooperation. The book opens with a demonstration of how wrong the pedestal is on which development cooperation is built, namely, that since a + b led to c in Western Europe, developing states seeking c should just put a and b together. In such an equation, the relevance of context specificity is undermined. Using the complex adaptive systems theory as a basis, the book achieves three things well:

- It shows that the reductionist thinking and over-simplistic approaches that have been dominant in development cooperation are not only wrong but have the potential to damage lives and societies.
- It shows that it does not have to be this way, as there are other ways.
- It presents several cases of how new ideas are already improving the delivery of development cooperation, if only piecemeal.

Using stories drawn from the field of development cooperation as illustrations, Ramalingam demonstrates in several cases the inappropriateness of hitherto project planning paradigms in development policy as well as the faultiness of corresponding theory of action. He also shows how development cooperation could be made to function better, if the possibility of adaptation to changing circumstances were provided for in the project planning. Though Ramalingam has been criticised for not spelling out his own recommendations on how to improve development cooperation, I beg to disagree with this criticism because, if someone goes as far as he does to show how to make things work or how things have worked better, clear recommendations could be inferred from those illustrations.

Since the end of the Cold War and increasingly, observers and analysts of global development appear to have discovered complexity theory as the guiding theoretical framework for empirical inquiries into, as well as the explanation of, diversity and social

change in international development context. It has mostly been used in explaining cases of failure of development interventions. However, one wonders why there is this recent preoccupation with the theory? I think this has to do with the necessity of correcting something that has gone wrong: In Western academic thought, the search for a general theory in the social sciences has led to the reduction of complex phenomena to simple ones. The universalisation of the European experience of economic development is one such reductionism. However, failures of development interventions based on such reductionisms have impressed upon us the need for an epistemological framing of a new scientific inquiry that is capable of explaining non-linearity, uncertainty, and lack of teleology. And complex adaptive systems theory has proven to be up to the task. Thus, if we assume a spectrum that stretches from 'ordered and predictable' at the extreme left side and ends with 'disorderly and complicated' at the extreme right, complex adaptation is somewhere in the middle. The theory simply tells us that life cannot be predetermined with certainty and that only the ability, readiness and willingness to adapt to changing circumstances could guarantee us success in life's endeavours. So, in place of the self-regulating equilibrium of the general systems theory, we have non-linear transformations. Furthermore, where the traditional systems theory is oblivious of its environment, complex adaptive systems theory takes cognisance of the boundaries and their possible effects to the system.

The basic principle of complex adaptive systems theory as sketched above is actually the major lesson of human development which development policy has rather undermined for a very long time. To think that results of development interventions could be planned and realised more or less exactly according to plan, irrespective of spatial and temporal differences, and to believe that the successes or failures of development interventions could be monitored and evaluated within a specified period without adaptation to local contexts constitute some of the wrong pedestals on which global development cooperation was erected. Lessons of knowledge for development are mandating us to rethink such ideas.

Though the review shows concerns with the needed changes in the culture of organisations in order to establish the practice of knowledge management, five years after the last review, knowledge managers in development organisations are still complaining of working as 'lone rangers' with little or no support from top management. Additionally, though development organisations have programmes on human capacity development (the micro dimension) and organisational learning (the meso dimension) while neglecting the macro dimension, the literature review hardly raises the issue of reconciling these three dimensions in a programme geared towards reaching as much of the masses in the developing societies as possible. Rather, the few programmes in the micro dimension are very elitist. In the section of this paper that deals with the emerging research agenda, attempts will be made to design a research programme that addresses these issues.

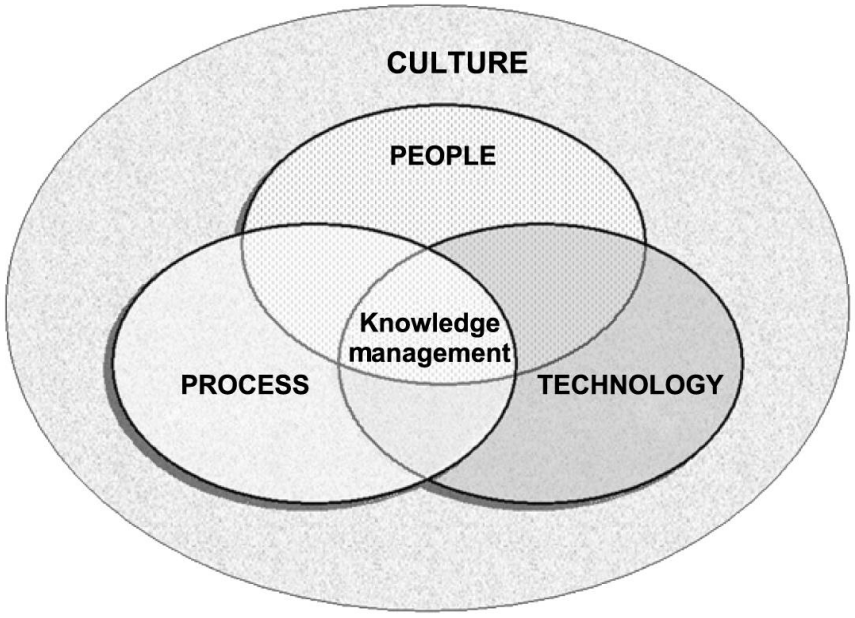
4.2 Conclusions

One major revelation of this literature review is that it is extremely productive to frame knowledge as a driver of a developing economy. In accordance with the experience of Asian economies, this framing – supplemented with the necessary policies as well as investments in ICTs – has had exponential economic results. In as much as this experience stresses the primacy of national governments, it should definitely have implications for international development cooperation, and we will get to that shortly.

This literature review has further revealed the evolution of knowledge for development studies as having four major dimensions: epistemology, people, processes and technology. 'Epistemology' relates to issues of types and locality of knowledge as well as epistemic diversity, evidence-base, power discourses, knowledge components and the taking into account of the overall development context of a society. 'People' refers to the human element for the basic and simple reason that humans are the repositories of knowledge and must be brought into constant contact with one another for knowledge to flow. 'Processes' refer to the nature of human contact: communities of practice, networks, discussion portals etc. 'Technology' issues refer to modalities and technical means of facilitating these contacts as well as those of building up and storing data. ICTs have been the major means of doing these. They have made the building of bridges between North and South, simultaneous (cooperative) local and international production of knowledge and networking possible.

As indicated in Figure 4, experts opine that knowledge management takes place at the interface of people, process and technology in an overall learning culture. That is, for effective knowledge management to take place, these three elements must be present. However, depending on the local context, the mix might be different.

Figure 4: The location of knowledge management



Source: http://www.emeraldinsight.com/content_images/fig/1190120202001.png (accessed 28 Jan. 2014)

The state-of-the-art in the area of epistemology is that knowledge should better be produced in a concert of North and South and that this production should be based on evidence while paying attention to issues of power (in all its ramifications) and the values and interests of actors. Through M&E, and better still: double-loop learning, improvements are made. The state-of-the-art in the area of people and processes refers to the building of networks of experts between North and South to tackle specific issues of development while the state-of-the-art in technology issues relates to the fact that technology (ICT, of course) should be tailored to the needs of the users, possibly with the help of **technology stewards**.

It has also been realised that governments cannot fulfil all knowledge needs of their citizens and that this is an area that could best be covered by civil society, perhaps in concert with research institutions. However, the link between research and civil society has been poor. This is allied to the problems of knowledge generation and research uptake and therefore calls for a deeper and more serious collaboration between research institutes, knowledge brokers and the NGOs of the North and South.

Indeed, one issue that has not been adequately addressed in the reviewed publications as well as in meetings and workshops is the import of these developments in the area of knowledge for development for overall global development cooperation. And this is what I would like to concentrate my future research endeavours on.

5 The evolving research agenda

A major lesson of the above review is that knowledge has acquired a new and important role for global cooperation and that this role is expanding. Although this role consequently constitutes a challenge to global development cooperation, it has the potential to ameliorate some fundamental problems of global development cooperation: the systemic level. This section will focus on two of these: monoculturality (specifically Western-centred) in knowledge generation, and the inadequacy of technology in delivering the results of scientific research to the most needy – the poor.

5.1 Monoculturality in knowledge production

Since the inception of international development policy following the declarations of the then US President, Harry S. Truman, in January of 1949, the nature and direction of development knowledge has been Western. The fact that international development was launched by the United States as part of its policy to forestall the spread of communism to other parts of the world played a significant role in this direction and has had negative consequences for international development, especially for the Southern part of the globe. One major consequence of this development has been the universalisation of the Western development experience, i.e. due to lack of knowledge of an alternative, Western scholars and policymakers consider the Western experience as the ultimate or sole experience and have sought to tailor the development experiences of the ex-colonies in that way.

Until the end of the Cold War, the Western understanding of development as articulated by mainly US American development scholars (epitomised by W. W. Rostow's *Stages of growth*) has expressed this universalism of the Western experience which *ipso facto* gave the West the right to develop (or should one say civilise?) the rest. The fact that the West held on to such views irrespective of their historical and methodological myopism and, most importantly, of the fact that the policies emanating from those views were not bringing the promised development to the poorer parts of the World, made the rest see the West as dominant and arrogant and perhaps correctly so.

Although this Western arrogance (Messner / Faust 2013) has been changing since the end of the Cold War, unfortunately enough, it is basically still persistent. The point is that culture is such an intricate thing that, no matter how well one studies a foreign culture, it remains

often difficult to think from the perspective of this new culture. The difficulty associated with intercultural understanding has been raised and discussed by Max Weber in his doctrine of *verstehen* (understanding). It is thus relevant to bring in people of other cultures other than the Western one in the production of development knowledge.

In the meantime, history has proven that development policies that grew out of this frame of mind were not only wrong but contributed to the destruction und further underdevelopment of certain parts of the developing world. A case in point is the implementation of the structural adjustment programmes (SAP) in Africa in the 1980s and into the 1990s. Despite the criticisms voiced by African scholars in those days (Claude Ake, for example) to the effect that the SAP is an anti-development programme, the Western-dominated international financial institutions (IFIs) – the World Bank and the International Monetary Fund – forced African leaders to implement the SAP by making the adoption of SAP the basic condition for granting credits that the African states were in dire need of. The result, among others, has been the economic and political destabilisation of African states up to the breakdown of states' institutions and the outbreak of civil wars in some African states (Akude 2008). The deleterious effects of the SAP on African economies have been documented by various studies. Recently for example, the Executive Secretary of the United Nations Economic Commission for Africa (ECA), Carlos Lopes (2014), cites a 2011 ECA study which shows that African states recorded the lowest growth rates in the SAP era. In 2013, a World Bank study shows that African states recorded average annual growth rates of 4.7% from 1961 to 1970. However, with the introduction of SAP, the annual growth rate of African states fell to 2.7% between 1980 and 2000, and rose to 4.6% between 2000 and 2012 (World Bank 2013). This failure of the SAP, coupled with the writings of postmodern scholars, has tended to engineer a rethinking of hitherto development knowledge generation in the West.

Since development thinking evolved out of this mainstream of Western social science, **it has become one of the major assignments of K4D to change this mostly unconscious mindset**. A number of reasons make this change extremely necessary:

- To avoid policy mistakes such as the one cited above, it has become necessary to generate global development policies in a system of interculturality that combines Northern and Southern researchers. History has proven that there is no universal path to development, as societies are very different. This lesson of history and current affairs demands respect from all; most especially from global development organisations, ministries and agencies.
- Mistakes of global development policies have contributed to the quasi-illegitimisation of global development; nay: the Western world in the minds of some people in the South. Recruiters of Islamic terrorists often try to convince their suicide bombers with arguments of the West being responsible for almost everything wrong in their societies and they are never short of examples. And if one juxtaposes this argument with the fact that both Christian and Moslem religions emphasise the necessity of martyrdom, the chances of success for such arguments become clearer. Thus, intercultural generation of global development knowledge could be a major and durable contribution to combating terrorism.
- A further reason for the intercultural generation of global development knowledge is the growing self-confidence of some Southern states. This is a psychological consequence of two parallel global developments: the rise of the emerging economies and the gradual decline of the West. On the one hand, economic success of the emerging economies has

contributed to convincing the nationals of poor states that their states could make it too. On the other hand, the lingering economic problems of some Western states have tended to convince nationals of poor countries that the West does not have a magic wand to development. Thus, they are apparently no longer ready to swallow Western policy suggestions hook, line and sinker.

- Relative to the above reason is the fact that a series of global problems overburden national states and thus demand global cooperation. This global cooperation is not possible without the developing states. Thus, developing states have to be involved in the generation of knowledge and implementation of measures to curb such problems. Messner and Scholz (2005) identify such problems as poverty and social polarisation, state fragility, the marginalisation of some regions of the world, transnational terrorism, etc.
- Additionally, the availability of the technical means of joint knowledge production irrespective of the geographical dispersion of researchers and research institutions, namely ICT, has the capability to facilitate the generation of collaborative knowledge. This has been happening in the context of e-learning and other computer-supported methods of collaborative teaching and learning.

Negotiations on the post-MDG (post-Millennium Development Goals) agenda that are going on now at various different global development fora offer an ample window of opportunity to centralise knowledge and learning in development interventions through the collaborative generation of development knowledge for a better global development policy in the near future. However, it is worthy of mention that some universities, foundations and research institutes in the West have already realised the necessity of correcting this imbalance through research collaboration with Southern universities and research institutes.[11] But these efforts are still few and far between.

5.2 The inadequacy of existing ICT

The above literature review has shown that, although ICTs have been developing fast and facilitating knowledge sharing, they are still inadequate. This is to be seen in two fundamental areas: ICT access for the poor; and the ICT-facilitated global network for development. Although the major means of development information dissemination has been the internet, an overwhelming majority of the people in the poorest continent of the globe do not have internet access.[12] For the very few with internet access, shortage of electric power supply is a handicap to internet access. Thus, they have not been able to avail themselves of the much-needed information. For example, the Internet World Statistics show that only a paltry 7% of Africans are on the internet (IWS 2013).[13] If the vast majority of the African poor are to gain from the developments in ICT, more Africans have to get connected to the net. Similarly, the World Energy Outlook 2010 shows that 24% of people

11 The LAG (country study groups) of the German Development Institute and the "Wissenschaft-Entwicklungsprogramm" of the Humboldt Foundation count among such academic collaborations in Germany.

12 Let it be said here that this viewpoint (and almost all other of my viewpoints) are naturally influenced by the fact that I was born an African.

13 See online: http://www.internetworldstats.com/stats.htm (accessed 14 Sep. 2013).

in developing countries have no access to electricity. For Africa, the statistics are even worse at 57%.[14]

Moreover, although one might be right in saying that the internet is inundated with platforms and portals for knowledge sharing in the field of global development, a *global* ICT-facilitated platform for global development (the macro level) is still missing. We thus need a global infrastructure for the communication and sharing of knowledge. This could be in form of a virtual library for development that is also accessible to people of the Southern hemisphere. Apparently, this was the idea behind the World Bank's creation of Knowledge Platforms. Unfortunately enough, these platforms are not delivering what they promised. In fact, current discussions with knowledge management experts seem to confirm the trend that creating platforms is one sure way of putting a death knell to a brilliant knowledge-sharing idea. This statement is vindicated by the fact that there are no human components to the knowledge platform databanks. Data often raise as many questions as they give answers to, knowledge management practitioners say, and if there is no human being with whom to discuss questions arising from the data, the databanks become relatively useless.

Based on new evidence that emphasises the inadequacy of databases (such as knowledge platforms) for knowledge sharing, it has become pertinent to supplement databases with networks. The point is that knowledge lives in individuals and only gets shared when individuals communicate. That is, it might be necessary to have a database on an issue but that does not guarantee that knowledge will be shared. Quite to the contrary, because the establishment of databases creates the (wrong) impression that knowledge gets shared with this often not actually happening, it has become counterproductive to create databases, unless they are supplemented with human communication – in other words, networks. **An ICT-supported global network on global development is most timely now.**

Contiguous to the necessity of establishing an ICT-supported global network is perhaps **the establishment of a virtual university network on global development**. This suggestion is justified by the fact that, although a lot of universities and research institutes are producing knowledge on development and in the context of collaboration as well, there is hardly any means of getting to the knowledge produced in this regard by non-participating researchers, universities and institutes. Most often, researchers do not even know who is researching what, unless they stumble on such information per chance. The use of open knowledge resources has not been able to solve this problem as one has to initially know who is researching what in order to know on whose homepage one has to check. Having a virtual university library complemented with a virtual university network on global development would go a long way to bringing development knowledge together and laying it at the disposal of users. An additional advantage of such a network would be that it breaks down the dominance of contact with international development officials by government officials. Having grown up in Africa, I know that having current knowledge about what your peers are thinking and doing in the West has the potential to unleash a creative power never imagined before.

Ancillary to the above suggestion is **the establishment of civil society groups that specialise in the translation and adaptation of research findings to the daily needs of**

14 http://www.worldenergyoutlook.org/resources/energydevelopment/globalstatusofmodernenergyaccess/#d.en.8609 (accessed 14 Sep. 2013).

the poor. Admittedly, such civil society groups already exist but they are basically inadequate, especially in Africa.[15] One of the findings of the above literature review relates to the dearth of such civil society organisations (and research institutes) that would establish and strengthen the link between research findings and the life of the average poor in the poor societies. With these suggestions in place, we would have a global communication on development based on a global knowledge infrastructure with an epistemology that integrates the knowledge of the North with that of the South and lays them at the disposal of the needy.

5.3 New perspectives for international knowledge cooperation

The question that arises from the foregoing discussion is what this up-scaling of knowledge would mean for global development cooperation if we were to take is really seriously? Apparently, the issue of K4D raises challenges for global development on three dimensions: the first refers to the micro dimension (focusing on individuals with the purpose of improving human capacity to learn, retain, update and use knowledge); the second is the meso dimension (focusing on individual development organisations, ministries and agencies) with the purpose of gradually improving knowledge management in those organisations; while the third refers to the macro dimension (focusing on the import of knowledge for overall global development) with a somewhat new approach that may be considered radical in comparison to the hitherto approaches to development cooperation. Still, the implications of these dimensions raise the question of how to guarantee a balanced approach that does justice to all three simultaneously.

5.3.1 The micro dimension

The improvement of the educational level of the individual has always been an aim of classical global development policy. Nevertheless, the accentuation of knowledge as a development factor has increased the relevance of development work in this area. The use of ICTs has brought rapid changes to learning, and even educated individuals have a problem coping with these changes. Thus, continuing education and all forms of on-the-job training are becoming more relevant to workers in order to enable them to adapt to these rapid ICT-driven changes. For the relatively less educated (or even the uneducated) – and these constitute the majority in some developing states – the problem is more acute.

Furthermore, one of the major consequences of the neoliberal-doctrinaire dominance of the global political economy in the last thirty years in a host of developing states has been the steady neglect of infrastructure, especially educational infrastructure. Consequently, academic institutions from the primary to the tertiary levels fundamentally lack basic educational infrastructure. ‘Brain drain’ has additionally contributed to a reduction in the quality of education in those states. Unfortunately however, global development has not

15 The new vocabulary of ‘infomediary’ is now used to refer to those information workers in the context of development whose assignment it is to communicate research findings or current information on issues to local people who lack either the means or the opportunity to access such information. See Narayanaswamy 2013, 1071 for more details on this concept.

adequately reacted to these developments (if at all). As already denoted earlier, some development ministries and agencies have some specific programmes in this direction, but they are very elitist and participants are very few.

5.3.2 The meso dimension

There is no gainsaying the fact that good knowledge management has the potentials to improve the work of development organisations. Consequently, those organisations should try to optimise their organizational learning and knowledge-sharing policies and activities. This could imply improvements in knowledge management systems in the classical areas of development cooperation, namely project implementation, capacity-building, etc. Such a KM system must also involve the civil societies as a pillar as recognised by German development cooperation and participate actively in field work from where the newest lessons are learned. This way, the making and implementation of development policy gets improved.

5.3.3 The macro dimension

Subsequent to the lessons of the literature review, the import of the discussions on and, most importantly, the positive effects of the practice of knowledge for development, the focus and *modus operandi* of global development cooperation demand a radical transformation. This is because the cardinal revelation of the impact of knowledge on development as exemplified by the emerging Asian economies is that states that explicitly frame their economies as knowledge economies develop very well and relatively fast. This is a lesson that global development will ignore only at its peril. Consequently, global development should jettison the hitherto *modus operandi* of development cooperation whereby 'experts' are sent from the donor to the recipient societies. In its place, development cooperation should emphasise cooperation in the generation and use of knowledge for development, made possible by the now available ICT. This way, global development will be helping the poor countries to groom their own experts who will be better suited to tackle problems of poverty because they will bring a home touch to the solutions to the problems. This suggestion will have far-reaching implications for global development:

- Global development cooperation should mainly fund knowledge mainstreaming and sharing. Developing states should be encouraged to transform their economies to knowledge economies while taking cognisance of the realities of their factor endowment. For the donor states, development cooperation should be extended beyond the classical institutions to include academic institutions. Ministries and agencies in the donor societies should encourage and fund cooperation between academic institutions in the North and South and reap from the mutual fertilisation of ideas that will definitely result from that**. In Germany for example, this means that research institutions, especially those with the mandate of translating natural science research results into tangible products, such as the Fraunhofer Institutes, should become part and parcel of German development policy.** To streamline relationships between Germany and her partner countries, it might be advisable to stimulate the establishment of such institutes in those countries. Should this practice establish itself and even become emulated by other donor countries, **it could become a specific added value of the German**

development thinking to global development. In this way, knowledge cooperation would then be arranged according to the principle of comparative advantage: donor states should focus on areas where they are comparatively better than others. To illustrate this: Germany has a leading position in the global production of low carbon energy and has equally a fantastic tradition in the area of state functionality. It might therefore need to focus on these in its development cooperation with its partners. In all policy reactions to climate change, by the way, it is necessary to combine current lessons of scientific research with the tacit knowledge of developing societies because some of their cultural behaviours arose as a result of reactions to climate changes many years ago. Great Britain and France appear to have an advantage in the area of conflict management, probably as a result of their long-lasting colonial experience. This might then be their focus. This suggestion offers an added advantage: the unbridled proliferation of development cooperation would be curbed.

- This further implies that **the intensive regulation of development cooperation, as demanded by the Paris Declaration, would automatically have to be reversed** as a natural consequence of fundamentally focusing development cooperation on (or should I say reducing development cooperation to) knowledge cooperation. Result-oriented controls of development cooperation become irrelevant if poor societies develop the capacity to run the projects. This way, development cooperation would be promoting self-reliance and self-control. And this is actually what development is all about.
- With **self-reliant development and a higher level of self-control of development projects**, one of the purposes of the Paris Declaration of 2005, namely, the ownership of development processes by the recipient states, would be achieved. The joint production of development knowledge would take the knowledge of developing societies into account and projects that would arise out of that collaboration would equally emphasise the capabilities of developing societies. Thus, the hitherto alienation of developing societies from the development projects being implemented solely by Northern experts in their societies (which amongst others led to the issue of ownership in the first place) will automatically disappear.
- This approach of focusing on knowledge cooperation would definitely alter our understanding of development; and rightly so. This is justified by the observation that our understanding of development influences our development cooperation and subsequently constitutes the basis of judging the efficaciousness of development projects. In the last sixty years, our understanding of development has been shifting from economic growth and structural modernisation through social development, satisfaction of basic needs, freedom and expansion of choice to sustainable development and back again to growth and then to fighting poverty, which is defined as living below one dollar, respectively one and a quarter dollars, a day. As a result of the confusion surrounding the meaning of development, most authors prefer in recent times to abstain from defining it. However, none of these understandings captures the very essence of development because they are all basically relative. Development is so fundamental to human societies, it just cannot be relative. Every human society is in a constant state of development, sometimes for better and sometimes for worse. **We thus need an understanding of development that is absolute and is applicable to even the 'most primitive' of all human societies. Thus, development is here considered to refer to improvements recorded by human societies as a result of applying lessons learned in the process of using their immediate (and distant) biological and physical environments to solve problems of human existence.** This definition offers some

advantages over the hitherto definitions of development, chief amongst which is the fact that this definition emphasises 'learning by doing' and thereby accentuates the organic relationship between development and knowledge. It further underlines the context-specificity of development processes and consequently, knowledge produced in concert with researchers that are not only deeply aware but are also part of the social context that is being researched should be more promising in solving problems of development that are in their very nature embedded in local contexts.[16]

6 Statement of the problem/framing the research direction

From the foregoing, a series of research questions become necessary and I intend to focus on searching for answers to these questions in the course of further research on this issue. I think it is necessary to state here that the ensuing questions can neither be answered in a research endeavour nor are they intended to be. Rather, these questions would constitute the guide for a broad research programme on the new role of knowledge for global development cooperation. Self-evidently, the questions will traverse the three dimensions sketched above and will, as the case may be, concentrate on transformations in the aid philosophy and infrastructure of the donor states, those of the recipient states, as well as in the modalities of their cooperation. Generally, the central questions are: How should we think about development in order to accentuate the intrinsic bond between development and knowledge? What opportunities has ICT opened up for us? And: How could we harness these tools to improve development cooperation? What are the obstacles to mainstreaming knowledge management for development in development organisations and how could we surmount them?

6.1 In relation to Southern States

- Based on the findings that the **declaration of economies as 'knowledge economies'** has unquestionably yielded positive results: In which concrete ways could Southern states be encouraged to frame their economies as knowledge economies?
- Realising that the declaration is not actually the issue, rather the **policy reforms coupled with enormous investments** that underline that declaration: Is there any role for global development policy in convincing ruling groups in Southern states to go down this road and take it seriously?
- It has become apparent that **structural and epistemological changes in the education system of most Southern** (especially African) **states** are necessary as a result of the epistemological and political transformation of the knowledge culture. How do we find out what actually needs to be structured, in what way, and in which particular states? After all, we know that the needs of the Southern states in this regard are definitely not uniform. Which innovative learning methods could be appropriate here?

16 This is not to imply that external contexts do not have an influence on local contexts in the process of development. They definitely do. However, the extent and direction of their influence is often determined by local contexts.

- How are the **much-needed investments in ICT** in the developing states to be arranged: Should they be state- or private sector-driven or a combination of both depending on the specific contexts of individual states?
- Most current research evidence shows a **dearth of civil society activism** in the area of making research information available to the broader society. How best could communities in developing states be helped to build local capacities to solve this problem?

Most developing states do not have **natural science research institutes with the specific mandates** of translating research findings to useful products. How could global development policy help in stimulating the establishment of such institutes?

6.2 In relation to Northern States

- What are the likely **problems associated with concentrating development cooperation on knowledge**: production, sharing, dissemination and application?
- Are there structural and systemic **impediments to up-scaling research institutions and universities to the position of classical global development policy institutions**? If yes, what are these and how can we counter them? Is it utopian to envisage a future situation in which these educational institutions would become primary institutions of global development policy?
- What concrete reforms are needed to **transform capacity-building projects** from elitist projects involving a handful of selected individuals into a broader contribution to the transformation of mass education systems in developing states?

6.3 In relation to North-South Cooperation

- How could **joint knowledge production cooperation** be best arranged between donor and recipient states? Are there roles for civil society here?
- Recent research evidence shows that the demands of knowledge sharing are not served just through the establishment of data bases, rather that **databases should be complemented with regular human communication**. Based on this lesson: How could effective networks between the global North and the global South be arranged, taking special cognisance of the necessity of tapping into the tacit knowledge of Southern communities in the process?
- **In which ways could the power differentials between North and South be balanced** with the instrumentality of knowledge?

6.4 In relation to the epistemic community of knowledge managers

- Knowledge management is what knowledge managers in development organisations do. Contacts with them demonstrate a very high level of dedication to duty on their part. However, they still operate as ‘lone rangers’ in their individual organisations. This is

proof of the fact that not many development organisations take knowledge management seriously, despite paying lip service to it. This raises the question of **how to mainstream knowledge management in development organisations.** Is advocacy probably needed in this effect? This question becomes relevant if one takes a cue from the history of relatively novel themes in development cooperation such as human rights or gender issues. If advocacy is a necessary step towards the mainstreaming of novel themes in development cooperation: Who should champion the advocacy of knowledge management for development? And: To whom should the advocacy be directed?

7 Final conclusions

Global development policy was launched on a wrong pedestal, dictated mainly by Cold War politics and informed primarily by a myopic tradition of Western social science. This has led to it being misunderstood, misused and abused. No wonder the results have been less successful than could have been hoped for. However, the search for improvements in policy has led to an accentuation of knowledge as a development factor. This provides a window of opportunity to correct the inappropriate direction to which global development policy was led as a result of its historical origins. Unfortunately, we have not gone far enough with these necessary corrections. ICT offers further chances of improving the delivery of global development cooperation. But how could we best utilise these opportunities? The foregoing sketch is an initial contribution to ideas and research aimed at making the best out of these opportunities.

Bibliography

Ackoff, R. L. (1989): From data to wisdom, in: *Journal of Applied System Analysis* 16, 3–9

Ake, C. (1978): Social science as imperialism : the theory of political development, Ibadan: Ibadan University Press

– (1996): Development and democracy, Washington, DC: Brookings Institution

Akude, J. E. (2008): Governance and crisis of the state in Africa : the context and dynamics of the conflicts in West Africa, London: Adonis Abbey

– (forthcoming): Knowledge management for development : what's hot and what's not, in: *Knowledge Management for Development Journal*

ALNAP (Active Learning Network for Accountability and Performance in Humanitarian Action) (2002): Humanitarian action : improving performance through improved learning : ALNAP annual review, London

APEC (Asia-Pacific Economic Cooperation Economic Committee (1998): Towards an information society : developments in APEC, Singapore: APEC Secretariat

Applehans, W. E. / A. Globe / G. Laugero (1999): Managing knowledge : a practical web-based approach, Reading, PA: Addison Wesley Longman

Apte, C. (1982): Expert knowledge management for multilevel modeling with an application to well-log analysis : technical report, Piscataway, NJ: Rutgers University, LCSR

Argyris, C. (1993): On organizational learning, Cambridge, MA: Blackwell

Awad, M. A. / H. M. Ghaziri (2004): Knowledge management, Upper Saddle River, NJ: Pearson Education

Bedford, D. A. D. (2012): The role of knowledge management in creating transformational organizations and transformational leaders, in: *Journal of Knowledge Management Practice* 13 (4), 32–44

Beinhocker, E. D. (2006): The origin of wealth : evolution, complexity and the radical remaking of economics, Boston, Mass.: Harvard Business School

Bell, D. (1973): The coming of post-industrial society, New York: Basic Books Inc.

Bennett, A. (2010): Process tracing and causal inference, in: H. E. Brady / D. Collier (eds.), Social inquiry : diverse tools, shared standards, New York: Oxford University Press, 207–291

BOND (British Overseas NGOs for Development) (2003): Learning from work : an opportunity missed or taken?, BOND Survey, London; online: www.bond.org.uk/lte/think.htm (accessed 12 Jun. 2014)

Byrne, D. (1998): Complexity theory and the social sciences, London: Routledge

Chalmers, A. F. (1999): What is this thing called science?, 3rd ed., Victoria, Australia: Macpherson's Printing Group

Collier, D. (2011): Understanding process tracing, in: *Political Science and Politics* 44 (2), 823–830

Cummings, J. (2003): Knowledge sharing : a review of the literature, Washington, DC: World Bank

Cummings, S. (2006): Knowledge management in large development organisations with a focus on bilateral donor organisations : desk study commissioned by DGIS, Ministry of Foreign Affairs, The Netherlands

Davenport, T. H. / L. Prusak (1998): Working knowledge : how organizations manage what they know, Boston, MA: Harvard Business School

Davies, R. (1998): Order and diversity : representing and assisting organizational learning in non-government aid organizations, Swansea: Centre for Development Studies, University of Wales (PhD Thesis); online: www.mande.co.uk./docs./thesis.htm (accessed 12 Jun. 2014)

Day, R. E. (2005): Clearing implicit knowledge : implications for knowledge management, information science, psychology and social epistemology, in: *Journal of American Society for Information Science and Technology* 56 (2), 630–635

Dia, M. (1996): Africa's management in the 1990s and beyond : reconciling indigenous and transplanted institutions, Washington, DC: World Bank; online: http//www.wds.worldbank.org (accessed 12 Jun. 2014)

Drucker, P. F. (1959): The landmarks of tomorrow, New York: Harper and Brothers

– (1995): Managing in a time of great change, New York: Penguin Press

– (1999): Management challenges for the 21st century, Oxford: Butterworth-Heinemann

El Halady, D. et al. (2006): Editorial : effective knowledge sharing for development in Africa, in: *Knowledge Management for Development Journal* 2 (1), 5–7

Faucher, J-B. / A. M. Everett / R. Lawson (2008): What do we know about knowledge, in: A. Koohang / H. Keith / J. Britz (eds.), Knowledge management : rheoretical foundations, Santa Rosa, Calif.: Informing Science Press, 41–77

Ferguson, J. / S. Cummings (2007): Knowledge management in practice : the case of international development, in: A. Koohang (ed.), Knowledge management, Santa Rosa, Calif.: The Informing Science Press

Ferguson, J. / K. Mchombu / S. Cummings (2008): Management of knowledge for development : meta-review and scoping study (Information and Knowledge Management (IKM) Working Paper 1); online: http://wiki.ikmemergent.net/files/080421-ikm-working-paper-no1-meta-review-and-scoping-study-final.pdf (accessed 12 Jun. 2014)

Firestone, J. M. / M. W. McElroy (2003): Key issues in the new knowledge management, Boston, MA: Butterworth Heinemann, KMCI Press

Fowler, A. (1992): Prioritizing institutional development : a new role for NGO centres for study and development, in: IIED Gatekeeper Series 35, London: International Institute for Environment and Development

Geneviève, G. (2006): Étude sur les changements d'attitudes nécessaires à la réussite de la connaissance dans le secteur des ONG : Méthodologies et technologies pour un développement durable, Bruxelles: COTA

Hailey, J. / R. James (2002): Learning leaders : the key to learning organizations, in: *Development in Practice* 12 (3/4), 398–408

Heeks, R. (2002): Failure, success and improvisation of information systems projects in developing countries, Manchester: Institute for Development Policy and Management, University of Manchester Development (Informatics Working Paper 11); online: http//idpm.man.ac.uk/wp/di/index.html (accessed 12 Jun. 2014)

Hegel, G. W. F. (1929): Science of logic, Vol. 1–2, London: Allen and Unwin

Hicks, R. C. / R. Dattero / S. D. Gallup (2006): The five-tier knowledge management hierarchy, in: *Journal of Knowledge Management* 10 (1), 19–31

Hidalgo, C. A. / R. Hausmann (2009): The building blocks of economic complexity, PNAS; online: http://www.pnas.org/content/106/26/10570.abstract (accessed 12 Jun. 2014)

Hornidge, A.-K. (2007): Knowledge society : vision and social construction of reality in Germany and Singapore, Munster: Lit Verlag

– (2010): An uncertain future : Singapore's search for a new focal point of collective identity and it's drive towards 'knowledge society', in: *Asian Journal of Social Sciences* 38 (5), 785–818

– (2011): 'Knowledge society' as academic concept and stage of development, in: T. Menkhoff et al. (eds.), Beyond the knowledge trap : developing Asia's knowledge-based economies, London: World Scientific Publishers, 87–127

Horton, D. / R. Mackay (1999): Evaluation in developing countries : experiences with agricultural research and development, in: *Knowledge, Technology and Policy* 21 (4), 364

Hovland, I. (2003): Knowledge management and organizational learning : an international development perspective, London: Overseas Development Institute (Working Paper 224)

Hume, D. (1975): An enquiry concerning human understanding, 3rd ed., Oxford: Clarendon Press

Huysman, M. et al. (2007): Organizing multi-level embeddedness of networks of practice : proceedings of OLKC 2007, Canada: Learning Fusion

IWS (Internet World Statistics) (2013): Internet usage statistics; online: http://www.internetworldstats.com/stats.htm (accessed 23 Jun. 2014)

Jarayaman, S. (1984): Knowledge management and problem solving in textiles : doctoral dissertation, North Carolina State University (UMI 85-07002)

Jasimuddin, S. J. (2006): Disciplinary roots of knowledge management : a theoretical review, in: *International Journal of Organizational Analysis* 14 (2), 171–180

Jones, H. et al. (2012): Knowledge, policy and power in international development : a practical guide, Bristol: University of Bristol Policy Press

Kant, I. (1991): The critic of pure reason; online: http://www.gutenberg.org/etext/4280) (accessed 12 Jun. 2014)

Kellog, C. (1986): From data management to knowledge management, in: *Computer* 19 (1), 75–84

KFPE (Swiss Commission for Research Partnerships with Developing Countries) (2001): Enhancing research capacity in developing and transition countries, Berne

Koenig, M. E. D. (2005): KM moves beyond the organization : the opportunity for librarians, World Library and Information Congress : 7th IFLA General Conference Council, "Libraries: A Voyage of Discovery", Aug. 14–18, Oslo

Koohang, A. / H. Keith / J. Britz (2008): Knowledge management : theoretical foundations, Santa Rosa, Calif.: Informing Science Press

Korten, D. (1984): Rural development programming : the learning process approach, in: D. Korten / R. Klauss (eds.): People-centered development : contributions towards theory and planning frameworks, West Harford, CT: Kumarian Press

Kühne, W. (2013): Westafrika und der Sahel im Sog der organisierten Kriminalität und des internationalen Terrorismus – Zum Start der UNO-Mission in Mali, Zentrum für Internationale Friedenseinsätze, Berlin (Policy Briefing)

Kuhn, T. (1962): The structure of scientific revolutions, Chicago: Chicago University Press

Lakatos, I. (1977): The methodology of scientific research programmes, Cambridge: Cambridge University Press

Lane, R. E. (1966): The decline of politics and ideology in a knowledgeable society, in: *American Sociological Review* 5 (31), 649–662

Laszlo, K. C. / A. Laszlo (2003): Evolving knowledge for development : the role of knowledge management in a changing world, in: *Journal of Knowledge Management* 6 (4), 400–412

Liebowitz, J. / L. C. Wilcox (1997): Knowledge management, Fort Lauderdale, FL: CRS Press

Lissac, P. (2013): Science and NGO : facts and figures; online: http://www.scidev.net/global/capacity-building/feature/science-and-ngo-practice-facts-and-figures.html (accessed 22 Jul. 2013)

Lopes, C. (2014): Structural adjustment policies and Africa : a reply to Shantayanan Devarajan, in: T*hink Africa Press* 3 Jun. 2014; online: http://thinkafricapress.com/economy/structural-adjustment-programmes-and-africa-reply-shantanayan-devarajan (accessed 3 Jun. 2014)

Lueg, C. (2001): Information, knowledge and networked minds, in: *Journal of Knowledge Management* 5 (2), 51–159

Luthra, P. / S. L. Pan (2010): Implementing knowledge management in a geographically dispersed organization : the case of an NGO, in T. Menkhoff et al. (eds.), Beyond the knowledge trap : developing Asia's knowledge-based economy, London: World Scientific Publishers, 421–436

Machlup, F. (1962): The production and distribution of knowledge in the United States, Princeton, NJ: Princeton University Press

March, J. (1991): Exploration and exploitation in organization's learning, in: *Organization Science* 2 (1), 71–87

Mardsen, D. / P. Oakley / B. Pratt (1994): Measuring the process : guidelines for evaluating social development, in: Oxford: International NGO Training and Research Centre (NGO Management and Policy Series 3)

Marx, K. (1979): A contribution to the critic of political economy, London: Maurice Dobb

– */ Engels, F.* (1969): The manifesto of the communist party, Moscow: Progress Publishers

Matthews, P. (1998): What lies beyond knowledge management : wisdom creation and versatility, in: *Journal of Knowledge Management* 1 (3), 207–214

Maxwell, S. (2002): Development research in Europe : towards an (all) star alliance?, Bonn: European Association of Development Research and Training Institutes (EADI Newsletter 3)

McElroy, W. M. (2000): Integrating complexity theory, knowledge management and organizational learning, in: *Journal of Knowledge Management* 4 (3), 195–203

McGann, J. (2002): Think-tanks and the transnationalization of foreign policy; online: https://pfpconsortium.org/system/files/Think Tanks and the Transnationalization of Foreign Policy.pdf (accessed 12 Jun. 2014)

Menkhoff, T. et al. (2011a): Beyond the knowledge trap : developing Asia's knowledge-based economies, London: World Scientific Press

– *et al.* (2011b): Introduction : strategic aspects of developing Asia's knowledge economies, in T. Menkhoff et al. (eds.): Beyond the knowledge trap : developing Asia's knowledge-based economies, London: World Scientific Press

Messner, D. / I. Scholz (2005): Zukunftsfragen der Entwicklungspolitik, in: D. Messner / I. Scholz (eds.): Zukunftsfragen der Entwicklungspolitik, Baden-Baden: Nomos, 15–38

– */ J. Faust* (2013): Schluss mit Arroganz und Almosen, in: *DIE ZEIT* 20 Oct. 2013; online: http://www.zeit.de/2013/42/faust-messner-ministerium-globale-entwicklung (accessed 28 May 2014)

Mokyr, J. (2002): The gifts of Athena : historical origins of the knowledge economy, Princeton: Princeton University Press

Mosse, D. / J. Farrington / A. Rew (eds.) (1998): Development as processes : concepts and methods for working with complexity, London: Overseas Development Institute / Routledge

Moussa, A. / R. Schware (1992): Informatics in Africa : lessons from World Bank experience, in: *World Development* 20 (12), 1737–1752

Narayanaswamy, L. (2013): Problematizing 'Knowledge for Development', in: *Development and Change* 44 (5), 1065–1086

Nonaka, I. / H. Takeuchi (1995): The knowledge-creating company : how Japanese companies create the dynamics of innovation, Oxford: Oxford University Press

– (2008): Strategy as distributed phronesis : knowledge creation for the common good, in: Knowledge Management : From Brain to Business, proceedings of the international productivity conference 2007, Bangkok, Thailand, 18–19 Jan. 2008, Tokyo

Nora, S. / A. Minc (1979): Die Informatisierung der Gesellschaft, Frankfurt a. M.: Campus Verlag

Organisation for Economic Cooperation and Development (1996): The knowledge-based economy in 1996 : science, technology and industry outlook, Paris

Pan, S. / D. Leidner (2003): Bridging communities of practice with information technology in pursuit of global knowledge sharing, in: *Journal of Strategic Information Sharing Systems* 12, 71–88

Pasong, S. (2011): Practicing knowledge management : Thailand's experience, in: T. Menkhoff et al. (eds.), Beyond the knowledge trap : developing Asia's knowledge-based economy, London: World Scientific Publishers, 421–436

Pasteur, K. (2004): Learning for development : a literature review, Brighton: Institute of Development Studies (Lessons for change in policy and organizations 6)

Perkin, E. / J. Court (2005): Networks and policy process in international development : a literature review, London: Overseas Development Institute (Working Paper 252)

Pirozzi, G. (2013): Making space for science in NGO practice; online: http://www.scidev.net/global /editorial-blog/making-space-for-science-in-ngo-practice.html (accessed 22 Jul. 2013)

Polanyi, M. (1958): Personal knowledge : toward a post-critical philosophy, London: Routledge

– (1966): The tacit dimension, New York: Doubleday

Popper, K. (2002): The logic of scientific discovery, New York: Routledge

Porat, M. (1976): The information economy, Stanford: University of Stanford Press

Powell, M. (2003): Information management for development organizations, Oxford: Oxfam

– */ S. Cummings* (2010): Progress to date of IKM emergent research programme : synthesis, understandings and lessons learned, in: *KM4D Journal* 6 (2), 132–150

Ramalingam, B. (2005): Implementing knowledge strategies : lessons from international development agencies, London: Overseas Development Institute (Working Paper 244)

– (2013): Aid on the edge of chaos, Oxford: Oxford University Press

Robert, S. / O. Annik (2005): Le Capital mémoire : Identifier, analyser et valoriser l'expérience dans la institutions, Répères méthodologiques pour la capitalisation de l'expérience, Paris: Editions-Diffusion Charles Léopold Mayer

Rondinelli, D. (1993): Development projects as policy experiments : an adaptive approach to development administration, London: Routledge

Rostow, W. W. (1962): The stages of economic growth : a non-Communist manifesto, London: Cambridge University Press

Smith, E. A. (2001): The role of tacit and explicit knowledge in the workplace, in: *Journal of Knowledge Management* 5 (4), 311–321

Snowden, D. (2002): Complex acts of knowing : paradox and descriptive self-awareness, in: *Journal of Knowledge Management* 6 (2), 100–111

– (2011): Naturalizing sense making, in: K. L. Mosier / U. M. Fischer (eds.), Informed by knowledge : expert performance in complex situations, New York: Psychology Press

Song, S. (1999): Guidelines on the use of electronic networking to facilitate regional or global research networks, Ottawa: International Development Research Centre; online: www.idrc.ca/books/focus/890 /15aSong.html (accessed 12 Jun. 2013)

Stacey, R. (1996): Complexity and creativity in organizations, San Francisco, CA: Berrett-Kohler Publishers

Struyk, R. (2000): Transnational think-tank networks : purpose, membership and cohesion, Washington, DC: Urban Institute

Sveiby, K. E. (1997): The new organizational wealth : managing and measuring knowledge-based assets, San Francisco, CA: Berrett-Koehler

Talisayon, S. D. / J. P. Suministrado (2011): Knowledge for poverty alleviation : a framework for developing intangible assets of low-income communities, in: T. Menkhoff et al. (eds.), Beyond the

knowledge trap : developing Asia's knowledge-based economy, London: World Scientific Publishers, 325–360

Thierauf, R. / J. Hoctor (2006): Optimal knowledge management, Hershey, PA : Idea Group

Touraine, A. (1969): La Société Post-Industrielle, Paris: Denoel

Umesao, T. (1963): Information industry theory : dawn of the coming era of the ectodermal industry, Osaka: Hoso Asahi, 4–17

Van Doren, C. (1991): A history of knowledge, past, present and future, New York: Ballantine Books

Volkow, N. (1998): Strategic use of information technology requires knowing how to use information, in: Avgerou, C. (ed.), Implementation and evaluation of information systems in developing countries : proceedings of the fifth international working conference of the International Federation for Information Processing, Working Group 9.4, Bangkok, 18-20 Feb. 1998

Warsh, D. (2007): Knowledge and the wealth of nations : a story of economic discovery, New York: W.W. Norton and Co.

Weiler, H. N. (2009): Whose knowledge matters? : development and the politics of knowledge, in: T. Hanf / H. N. Weiler / H. Dickow (eds.), Entwicklung als Beruf, Baden-Baden: Nomos, 485–496

Wenger, E. / N. White / J. D. Smith (2007): Digital habitats : stewarding technology for communities, Portland, Oregon: CPSquare

Whitehead, A. N. / B. Russel (1910): Principia Mathematika, Cambridge: Cambridge University Press

World Bank (2011): The state of the World Bank knowledge services, Washington, DC (Knowledge for Development Report)

– (2013): African development indicators 2012/13, Washington, DC

World Bank Development Committee (2000): Poverty reduction and global public goods : issues for the World Bank in supporting global collective action, Washington, DC

Yonazi, E. et al. (2013): The transformational use of information and communication technologies in Africa, Washington, DC: World Bank / African Development Bank

Zeleny, M. (1987): Managing support systems : towards integrated knowledge management, in: *Human Systems Management* 7 (1), 59–70

Zheng, W. (2005): A conceptualization of relationship between organizational culture and knowledge management, in: *Journal of Information and Knowledge Management* 4 (2), 113–124

Publications of the German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE)

Studies

81 *Holzapfel, Sarah:* The role of indicators in development cooperation: an overview study with a special focus on the use of key and standard indicators, 237 pp., Bonn 2014, ISBN 978-3-88985-588-6

80 *Pietschmann, Elena:* Forgotten or unpromising? The elusive phenomenon of under-aided countries, sectors and sub-national regions, 147 pp., Bonn 2014, ISBN 978-3-88985-587-9

709 *Vidican, Georgeta et al.:* Achieving inclusive competitiveness in the emerging solar energy sector in Morocco, 198 pp., Bonn 2013, ISBN 978-3-88985-586-2

[Price: EUR 10.00; publications may be ordered from the DIE or through bookshops.]

Discussion Papers

17/2014 *Lema, Rasmus et al.*, Innovation paths in wind power: insights from Denmark and Germany, 76 pp., Bonn 2014, ISBN 978-3-88985-637-1

16/2014 *Lundsgaarde, Erik:* Bureaucratic pluralism in global development challenges for Germany and the United States, 47 pp., Bonn 2014, ISBN 978-3-88985-635-7

15/2014 *Chaudhary, Ankur:* Electromobility in India: attempts at leadership by businesses in a scant policy space, 48 pp., Bonn 2014, ISBN 978-3-88985-634-0

14/2014 *Hausmann, Jeannine:* Turkey as a donor country and potential partner in triangular cooperation, 62 pp., ISBN 978-3-88985-633-3

13/2014 *Paulo, Sebastian:* International cooperation and development: a conceptual overview, 31 pp., Bonn 2014, ISBN 978-3-88985-632-6

12/2014 *Schamp, Eike W.:* The formation of a new technological trajectory of electric propulsion in the French automobile industry, 53 pp., Bonn 2014, ISBN 978-3-88985-599-2

11/2014 *Never, Babette:* Making energy efficiency pro-poor: insights from behavioural economics for policy design, 36 pp., Bonn 2014, ISBN 978-3-88985-631-9

10/2014 *Camacho, Luis A.:* Understanding regime support in new and old democracies: the role of performance and democratic experience, 30 pp., Bonn 2014, ISBN 978-3-88985-630-2

9/2014 *Ashoff, Guido / Stephan Klingebiel:* Transformation of a policy area: development policy is in a systemic crisis and faces the challenge of a more complex system environment, 32 pp., Bonn 2014, ISBN 978-3-88985-598-5

[Price: EUR 6.00; publications may be ordered from the DIE or through bookshops.]

For a complete list of DIE publications:
http://www.die-gdi.de