Home	**Table of Contents**	**Titles & Subject Index**	**Authors Index**

Organising Development Knowledge: Towards Situated Classification Work on the Web

Maja van der Velden
Institute for Information Science and Media Studies, University of Bergen, Fosswinckelsgate 6, N-5007 Bergen, Norway. E-mail: majava (at) ifi.uio.no

Abstract

This paper addresses the classification of development knowledge in web-based resources. Seven categories of a marginalised knowledge domain are mapped across eleven web resources, with additional observations of classification work in India and Kenya. The analysis discusses how technological designs for web-based classification systems can become global hegemonic structures that may limit the participation of marginalised knowledge communities. The question of a more inclusive design is further explored in two offline, indigenous approaches to classifications. They suggest that a combination of both online and offline classification work, in which localised classifications are created, using local categories and tags, may enhance the participation of marginalised communities. The results of this research point to the need to design web-based resources that support the participation of diverse knowledge communities as well as the generation and representation of the diversity of knowledge. Future research may focus on the use of tags and the visualisation of the diverse ways in which an item can be categorised, in order to make web-based classifications more meaningful to marginalised knowledge communities.

Keywords

Introduction

A conflict over the categories of knowledge in international social and economic development assistance erupted in the late 90s, when World Bank president James Wolfensohn presented the idea of the World Bank as the *Knowledge Bank*. The Bank's new approach was based on a particular understanding of the relationship between economic growth and knowledge with the Bank as a neutral broker of this knowledge (Wolfensohn, 1996; World Bank, 1998; Stiglitz, 2000)[1]. One of the Bank's new knowledge initiatives was a global Development Gateway, a web-based portal for development knowledge.

The World Bank began widespread consultations on the proposed Gateway project but its technical platform and editorial structures were already in place before consultations with civil society organisations and indigenous leaders were completed (van der Velden, 2002). One of the responses of civil society to the proposed Gateway was a boycott. A group of 'knowledge workers', academics, activists, and representatives of non-governmental organisations, signed a public declaration, pledging to avoid any dealings with the World Bank's Global Development Gateway. The declaration, published on the internet as *Development Gateway: A Declaration from Concerned Knowledge Workers*[2], presented the Gateway as an attempt to control the categories of development knowledge:

> [Y]ou will not find topics on "political economy" or "inequality" or "discrimination", just concepts like "governance" and "human development". Moreover the Gateway's 130-issue taxonomy ghettoises cross-cutting issues such as gender and climate change (Turtle, 2001).

Nick Harrison, the Development Gateway's Head of Content, did not share the concerns expressed in the *Declaration*: "[D]evelopment is a mature subject, I think we do know the classifications" (Harrison quoted in Wilks, 2002).[3]

This paper takes the *Declaration of Concerned Knowledge Workers* as a starting point for an exploration of the classification of development knowledge in web-based resources for organising and sharing development knowledge. The main objective of this inquiry is to explore existing designs for development knowledge classification schemes on the internet and to reflect on designs that situate classification work in the communities that are supposed to benefit from them. First a theoretical framework is presented that guides the inquiry into the relationship between technology and society, in particular the design of web directories and ways of knowing found in the world. This is followed by a presentation of the results of an inquiry in how development knowledge

is organised on the Web and some results of the observation of classification work in one of the web resources under investigation, the *Open Knowledge Network*. Lastly, the results will be discussed and the need for future research addressed.

A technoscience approach to classification

In *Technology and Social Inclusion: Rethinking the Digital Divide*, Warschauer (2004) argues that the "ability to access, adapt, and create new knowledge using new information and communication technology is critical to social inclusion in today's era", with social inclusion understood as the ability of people and communities to fully participate in society and control their own destinies. This central premise forms the background for my inquiry in web-based classification of development knowledge. Social inclusion implies that in order to be meaningful, these classifications need to reflect the ways in which people and communities know the world.

Warschauer argues for more attention to the possible "catalytic effects" of ICT, as changes in social relations may come from the human interactions around technology use. This paper will take a closer look at a particular aspect of the relations between technology and social inclusion, namely, how ideas about the social are translated into technological designs and how these designs influence social inclusion. Feminist, anti-racist technoscience, an approach based on the work of Donna Haraway (1988; 1997), guides this inquiry. Technoscience refers to the implosion of science, technology, and society. We live in a world in which one cannot be explained without the other. Haraway's technoscience approach is self-critical, as it questions the authority of particular knowers (such as scientists and engineers), and formulates a "feminist and multicultural critique of the limited, biased forms of 'objectivity' in technoscience practice, insofar as it produces itself as 'the culture of no culture'" (1997, p. 32-33).

Haraway's approach knots knowledge, technology, and society together in a manner that is respectful to the diverse ways of knowing found in the world. Respect should not be confused with tolerance, she argues. Respect is an ethical position of seeing the 'other' without claiming to be the 'other' (Haraway, 2003). In relation to web-based classification of development knowledge, Haraway's approach supports the premise of the diversity of knowledge: that there are different ways of knowing the world and that classification should be respectful of this diversity. Secondly, Haraway's approach helps us to understand how knowledge and technology are co-constitutive of each other. Assumptions about knowledge, for example, do we divide knowledge into western scientific knowledge and indigenous knowledge or do we accept a diversity of knowledges and treat them equally, are translated into the technological designs of ICT (van der Velden, 2007). Every design facilitates some ways of knowing, while excluding others. In Haraway's technoscience perspective, technology is not neutral, nor does it determine how we can use it. Similarly, the social and cultural do not determine how we can use technology. The way to find out about the distribution of agency in the network of designers, technology, and use is through the mapping of particular technoscience practices (Haraway, 1997). One such practice is classification.

The Web Directory as Classification System

A good classification functions as a theory; it connects concepts in a useful structure. The categorisation of an item in a classification creates a conceptual frame that provides information about the item as well as shapes the user's interaction with it (Jacob, 2004). The success of a classification thus depends on its design (ibid.). Geoff Bowker and Susan Leigh Star define a classification as: "anything consistently called a classification *and treated as such* can be included in the term" (1999). They describe a classification system as "a set of boxes (metaphorical or literal) into which things can be put to then do some work - bureaucratic or knowledge production" (ibid., p.10). Bowker and Star see classification systems as integral to any working information infrastructure. They use the metaphor of a thick forest with lots of underbrush and a complex ecology to describe such an information infrastructure: "Now imagine that the forest is a huge information space and each of the trees and bushes are classification systems. Those who make them up and use them are the animals and plants, and the soil is a mix of the Internet, the paper world, and other communication infrastructures" (p.31).

The first web directory, a web-based classification structure to organise hypertext links to internet resources, was Yahoo!, which was established in 1994. Its main classification structure is the subject tree, which is based on the concept of the family tree. The relationship between its categories are organised as the members of a family, such as parents and siblings. The Yahoo! web directory design has become the dominant way of organising categories and links on the Web. Research has shown, however, that such logical structures are culturally specific (Walton and Vukovic, 2003) and that both visual literacy and cognitive style influence how people are able to access and navigate such subject trees successfully (Chen et al., 2004; Lee & Olson, 2005).

An understanding of classification as integral to an information infrastructure (Bowker & Star, 1999) enables a focus on the categories of knowledge without loosing sight of the complete classification system or the technology of the internet, the web and the databases that host and connect the classifications. Bowker and Star propose "infrastructural inversion", a kind of reverse engineering, to make an infrastructure's complex relationships visible, "recognising the depths of interdependence of technical networks and standards, on the one hand, and the real work of politics and knowledge production on the other" (ibid., p.34). In a similar vein, we propose to revive the controversy over the Development Gateway and to use it as the basis for an inquiry in the interactions between the design of web-based classifications and ways of knowing. Two questions will be addressed:

1. How is development knowledge represented, organised, and made accessible on the Web?
2. How can web-based classification work be inclusive of other ways of knowing?

Mapping categories: Findings

The first method to begin answering these questions was inspired by library scientist Hope Olson (1998). Olson uses the metaphor of the *map* to try to redress the limits of the Dewey Decimal Classification (DDC), a library classification system. Olson mapped concepts from *A Women's Thesaurus* (Capek, 1987), a marginalised knowledge domain, in the DDC. In this mapping it became clear how the categories of the DDC reflected certain values and politics and marginalised other ways of knowing the world.

We mapped the seven categories of development knowledge, as identified by the *Declaration* (see Table 1), in eleven web-based classifications of development knowledge, using the values attributed to each category in the Declaration's assessment of the Development Gateway. The Declaration did not give all seven categories the same value. The signatories of the *Declaration* argued that gender and climate change are ghettoised in the Gateway; that governance and human development should not be Gateway categories; and that inequality, discrimination, and political economy should be part of an inclusive classification of development knowledge.

Table 1. Categories and values in the Declaration of Concerned Knowledge Workers

Category	Assumed Value (in Development Gateway)	Preferred Value
Political economy	Not available	Available
Inequality	Not available	Available
Discrimination	Not available	Available
Governance	Available	Not available
Human development	Available	Not available
Gender	Ghettoised	Cross-referenced
Climate change	Ghettoised	Cross-referenced

Note: Based on Turtle (2001)

The objective of mapping these categories across a range of web resources was to look for similarities and differences in classifying development knowledge. The classifications were selected on the basis of a literature review and an analysis of the Development Gateway as an *issue* (Development Gateway, 2001; Wilks, 2002; Walker, 2003; Jha et al., 2004; Marres, 2004; Rogers, 2004; Muth & Gerlach, 2005). The following sites were mapped[4],[5]:

- The *Development Gateway* [http://web.archive.org/web/20060424054744/home.developmentgateway.org/]
- The *World Bank* [http://web.archive.org/web/20060428024319/http://www.worldbank.org/html/extdr/thematic.htm]
- *Choike* [http://web.archive.org/web/20060424103951/http://www.choike.org/]
- *Dev-zone* [http://web.archive.org/web/20060428011600/http://www.dev-zone.org/knowledge/]
- *ELDIS* [http://web.archive.org/web/20060428011600/http://www.dev-zone.org/knowledge/]
- *SciDev* [http://web.archive.org/web/20051110120844/http://www.scidev.org/]
- *Oneworld International* [http://web.archive.org/web/20060520184145/uk.oneworld.net/guides/topics]
- The *Open Knowledge Network* (http://196.201.231.147/eNRICH/)

In addition, three popular general resource web resources were also be part of this analysis[6]:

- Yahoo! Directory [http://web.archive.org/web/20060423104736/http://dir.yahoo.com/]
- Google Directory [http://web.archive.org/web/20060424105010/http://dir.google.com/]
- Open Directory [http://web.archive.org/web/20060424124006/http://www.dmoz.org/]

Below the mapping of seven categories of development knowledge is presented for each of the eleven web resources. In Table 2 the presence (available/not available) of the seven categories in the eleven web resources was explored. This mapping made clear that the OKN has none of these categories and that Google, Yahoo!, and Open Directory have the same six categories, while the other resources have between 2 and 4 categories.

Table 2. Presence of categories

Resources (Score = #)	Gender	Climate change	Governance	Inequality	Discrimination	Political economy	Human development
Development Gateway (4)	Available	Available	Available	Not available	Not available	Not available	Available
Google (6)	Available	Available	Available	Available	Available	Available	Not available
Yahoo (6)	Available	Available	Available	Available	Available	Available	Not available
Open Directory (6)	Available	Available	Available	Available	Available	Available	Not available

Eldis (5)	Available	Available	Available	Available	Available	Not available	Not available
DevZone (4)	Available	Available	Available	Not available	Available	Not available	Not available
World Bank (4)	Available	Available	Available	Available	Not available	Not available	Not available
OneWorld (2)	Available	Available	Not available	Not available	Not available	Not available	Not available
Choike (2)	Available	Available	Not available	Not available	Not available	Not available	Not available
SciDev (2)	Available	Available	Not available	Not available	Not available	Not available	Not available
Open Knowledge Network (0)	Not available	Not available	Not available	Not available	Not available	Not available	Not available

Note: Score is the number of available categories

We also mapped the Declaration's categories with their assumed values in each of the eleven resources (see Table 3). This made clear that the Declaration's claims about the Development Gateway are valid, except the claim of the ghettoisation of the crosscutting issue of gender. We found that the category of gender is well connected in the Development Gateway.

Table 3. Presence of categories with assumed and preferred value

Score (#)	Gender	Climate change	Governance	Inequality	Discrimination	Political economy	Human development
Declaration (assumed values) (4)	Available Ghettoised	Available Ghettoised	Available	Not available	Not available	Not available	Available
Development Gateway (4)	Available Cross-referenced	Available Ghettoised	Available	Not available	Not available	Not available	Available
Google (6)	Available Cross-referenced	Available Cross-referenced	Available	Available	Available	Available	Not available
Yahoo (6)	Available Cross-referenced	Available Cross-referenced	Available	Available	Available	Available	Not available
Open Directory (6)	Available Cross-referenced	Available Cross-referenced	Available	Available	Available	Available	Not available
Eldis (5)	Available Cross-referenced	Available Cross-referenced	Available	Available	Available	Not available	Not available
DevZone (4)	Available Cross-referenced	Available Ghettoised	Available	Not available	Available	Not available	Not available
World Bank (4)	Available Cross-referenced	Available Ghettoised	Available	Available	Not available	Not available	Not available
OneWorld (2)	Available Cross-referenced	Available Cross-referenced	Not available	Not available	Not available	Not available	Not available
Choike (2)	Available Cross-referenced	Available Cross-referenced	Not available	Not available	Not available	Not available	Not available
SciDev (2)	Available Cross-referenced	Available Cross-referenced	Not available	Not available	Not available	Not available	Not available
Open Knowledge Network (0)	Not available	Not available	Not available	Not available	Not available	Not available	Not available
Declaration (preferred values) (5)	Available Cross-referenced	Available Cross-referenced	Not available	Available	Available	Available	Not available

Note: Score is the number of available categories. If the category has the assumed value, the colour is light orange. The colour is light green if the category has the preferred value.

Secondly, the Declaration called for the support of 'diverse internet schemes' and 'alternative knowledge sources'. The mapping exercise made clear that none of the other development web resources (Eldis, Devzone, World Bank, OneWorld, Choike, SciDev, OKN) offers the categories and their preferred values, while the non-development resources Google, Yahoo, and Open Directory come closest by providing six of the seven categories with their preferred values).

Table 4. Grouping web resources

Group	Name of resource	Name of classification	Name of top-level categories	Number of top-level categories	Number of Languages	Editorial policy
1	Google	Directory	Categories	16	*	Centralised
	Yahoo	Directory	Categories	14	*	Centralised
	Open Directory	Directory	Categories	16	*	Centralised
2	Eldis	Gateway	Resource guides	35	2	Centralised
	Development Gateway	Gateway/ Portal	dgCommunities	8	3	Centralised
	DevZone	Knowledge Centre	Categories	20	2	Centralised
	World Bank	Web site	Topics in development	37	4 (23)	Centralised
	OneWorld	Network	Topic guides	10	8	Centralised
	Choike	Portal	Thematic fields	5	2	Centralised
	SciDev	Network	Dossiers	10	5	Centralised
3	Open Knowledge Network	Network	Folders	13	14	Decentralised

In Table 4 we present the results of the mapping of the top-level categories of each of these web resources.[7] The purpose of this mapping was to see if over the years a convergence had taken place in the categories of development knowledge. Could some of the classifications be grouped together on the basis of similar categories? At first glance, the group of eleven web resources can be divided in three groups:

1. The top-level categories of the first group, Google, Open Directory, and Yahoo! are almost identical. Google and the Open Directory work with identical schemes with 16 top-level categories. The main difference is that the Yahoo! scheme has 14 instead of 16 top-level categories.
2. The second group consists of seven development web resources that work with very different sets of top levels categories. In terms of numbers, they range from 5 (Choike) to 35 (Eldis) and 37 (World Bank). Most importantly, there is not one top-level category that is common to all these resources.
3. The third group is the Open Knowledge Network. Table 2 showed that the OKN contains none of the seven categories mentioned in the Declaration. Looking at the top-level categories of the OKN, it becomes clear that its top-level categories do not refer to subjects but to content types such as 'Events', 'Knowledge', and 'Messages'.[8]

In Table 4 we also present some of the other outcomes of the mapping of the 11 web resources, such as the names of the resource as a whole and the name of the set of top-level categories (type of classification). We also looked at the number of top-level categories, the number of languages in which the web resource is available, and finally the overall editorial policy that governs the resource. When the results of the mappings are taken together, it becomes clear that each development web resource organises its items in a unique set of top-level categories.

This is not surprising as they differ in content, but also in history, ownership, budget, sponsorship[9], and audience. The web resources also differ in the ways in which they present or market themselves. They all have unique logos and site designs and use different names for their classifications and categories. For example, the top-level categories in Eldis are 'Resource guides' and the Development Gateway calls them dgCommunities (see Table 3), but both open in a set of clickable sub-categories that organise links to other resources on the Web.

The mappings also show that the Development Gateway is not very different from the other initiatives. The seven development web resources, Choike, Development Gateway, Dev-Zone, Eldis, OneWorld, World Bank, and SciDev, offer similar services: a subject-tree-like web directory; search; email alerts; news feeds (rss); some kind of reference materials such as FAQ, manuals, maps, and statistics; and a choice in languages. The Development Gateway Draft Business Plan (Development Gateway, 2001) mentioned the need for considerable amounts of funding and resources to establish a portal for development knowledge, an investment that was expected to result in at least 5 million page views per month in 2003. One observer perceived this as a "very real danger (likelihood) of this having the result of crowding out/unfairly competing/defunding all the other 'realities' - many of which may be closer to the interests and activities of folks on the ground or in the trenches - the NGO's, the implementers, the communities, the development activists" (Gurstein, 2001). This scenario did not materialise (Muth & Gerlach, 2005). In 2005, Mike Pereira, the Content Manager of the Development Gateway, reported 1.4

million page views per month (Pereira, 2005) while other initiatives, such as Eldis, Choike and OneWorld, did not seem to loose their market segment (Jha et al., 2004).

The Open Knowledge Network

The Declaration called for the support for 'alternative sources of knowledge' without specifying where such schemes could be found. The mapping exercise above shows that in terms of different ways of organising and categorising development knowledge, the Open Knowledge Network (OKN) stands out. The mappings visualise what a possible *alternative knowledge resource* on the Web could mean in the context of web-based organisation of development knowledge. For example, none of the Declaration's seven categories of knowledge can be found in the OKN (see Table 1). The OKN uses a kind of facetted classification scheme and its opening page shows one such facet, that of 'content type'.[10] A drop-down box allows the organisation of resources by language. The OKN supports the highest number of languages (14), such as Swahili, Tamil, Wolof and Shona (see Table 3). The other facets, however, are not available on the opening page. Only a click on 'advanced search' shows the other facets by which information resources are organised:

- Subject (45 categories)
- Content type (16 categories)
- Audience (17 categories)

An important difference between the OKN and the other 10 web resources is its editorial policy (see Table 4). There is no centralised editorial policy that governs the whole collection; editorial decisions are made by the organisation that contributes resources to the OKN. Each participating organisation works with its own implicit or explicit editorial policy. New information resources are added to the collection through the work of volunteers who write short pieces that are based on particular knowledge practices found in the local community.[11] The volunteers categorise each resource in each of the five facets and upload the item to a knowledge worker based at a local or national organisation. The knowledge worker checks the categorisation of the resource, edits the text if necessary, and decides on the distribution. Some resources are only distributed within a local network of an OKN hub with its community knowledge centres, while others are distributed over all OKN hubs. The OKN thus enables a global network with multiple local editorial policies. In terms of the technological design, each of those local editorial policies can result in a unique localised classification relevant to the local community's culture, needs, and interests. The OKN is, in this sense, a space for global web-based classification work that is situated in local settings.

Classification work in India and Kenya

The practice of classification work in the Open Knowledge Network was observed during four fieldtrips to the OKN in India and Kenya[12], where we observed volunteers and knowledge workers classifying items as well as searching for information in the OKN's body of knowledge.[13] The OKN's facetted classification enables navigation and browsing through the OKN's information items in different ways. For example, one can choose to see all items that have 'fishermen' as their 'audience'. We asked OKN volunteers in Kenya how they locate an item in the OKN. Searching and navigating the system was not simple. For example, the sub-categories in each top-level category were not ordered (e.g. alphabetically) and they became only visible by scrolling down a list. Second, the 'findability' of an item was influenced by how it was categorised by the volunteer and/or knowledge worker.[14] Some items in the OKN referred to very situated practices. For example, many items in OKN-ALIN were relevant for, or referred to, the knowledge and livelihoods of pastoral people but the category 'pastoralists' does not exist. This is the case even though 18% of the people of Kenya are pastoralists. This example is indicative of the lack of localisation of the OKN default classification scheme. None of the organisations in India and Kenya had changed the default layout and classification provided by the OKN software, nor did they add local categories to the OKN's default classification system. Because the OKN was 'situated', we expected to find a variety of local classifications, however, we found that very distinct knowledge communities, e.g. a fishing village in India and a Maasai community in Kenya, used the same categories to classify their local knowledge.

Conversations with OKN volunteers, knowledge workers, and technical support staff in India and Kenya did not give a clear picture of the reasons for the lack of localisation of the default classification scheme. It appears that a constellation of issues resulted in the lack of localisation. For example, while almost all the development portals work with dedicated, and most often paid, classification workers, the OKN volunteers and knowledge workers did their classification work in addition to their usual daily tasks in the communities and organisations where they lived and worked. As classification work was not prioritised in their daily work schedule, there was no time to contemplate the classification scheme and to propose or implement changes. Classification work was neither prioritised at the level of the hub. There was often a delay, up to two weeks, between the moment an item was sent in for publication and the moment it became visible in the OKN.

Secondly, classification work in the OKN included checking and editing the resources sent in by the volunteers. In India, this aspect of classification work was complicated by the fact that the community knowledge centres and their hubs used local Tamil and Hindi text editing software based on local character encoding software and not the universal Unicode character encoding standard supported in the OKN software. Most people worked with

older computers based on a Windows-platform that does not support Unicode. As the OKN also promotes knowledge sharing in a variety of other formats, the locally produced articles were often published both in the OKN and in local newsletters and magazines. However, the local print shops also used the local Tamil and Hindi text editing software, so the preferred language fonts were those used locally and not those provided by the OKN. A lack of technical support and understanding of the issue thus resulted in a lot of extra work, including the retyping of articles. Thirdly, there was a general attitude that technical support staff (locally or abroad) would take care of such 'technical' issues. We asked some of the technical staff about this issue and none of them had given it any thought. Lastly, the OKN software itself did not provide the option to change the default settings of the classification in a simple and straightforward manner.

The Web Directory as Hegemonic Structure

In a comparison of four popular web directories, Excite, Lycos, Infoseek, and Yahoo!, Mick O'Leary (1998) explained the phenomenon of the converging web directory structure with his *Law of Merging Models*. O'Leary argued that their classification systems look much alike: "Despite the diverse content on the Web, the same topic headings in each service lead to many of the same Web sites" (ibid, p.80). O'Leary explains this resemblance as the result of borrowing popular features from each other, to resonate with user preferences, until they become similar: It is the perceived demand of the web 'market' that "jerks them into compliance" (ibid). After that it is marketing and partnerships that fuels competition.

In the mapping exercises we addressed the question on how development knowledge was represented, organised, and made accessible on the Web. They showed that all web resources, except the Open Knowledge Network, do classification work similarly:

- The knowledge domain is organised in a specific set of top-level categories
- Categories are organised in a tree-like classification structure
- Each category contains links to information resources
- The web directory is maintained in a centralised, top-down manner
- Each link in the web directory is usually located in only one category
- The inclusion of a link is based on a centralised editorial policy
- The people who do the classification work are employed by the organisations that host the web resource

Furthermore, marketing may explain the finding that each of the seven development web resources has a different name for its classification (see Table 3). Maintaining a balance between offering the same popular features and branding themselves as different, through presentation and visual design of their resources, seems to provide each portal with a particular niche, which may play a role in securing funds from international donor agencies. It may thus be more appropriate to describe Yahoo!, the first global web directory, as a "hegemonic brandscape" (Thompson & Arsel, 2004)[15], creating a global expectation of how knowledge is organised on the Web. Such an hegemonic technological design establishes the boundaries for diversity: what variations can be expressed within the design and what variations are marginalised or made invisible by it. The notion of 'hegemonic brandscape' is based on the concept of *hegemonic global structure*, which anthropologist Richard Wilk uses to describe how a form and content interact (Wilk, 1995, 2004). Wilk argues that the global structure does not promote homogeneity but controls diversity:

> [A] hegemony of form not content, which celebrates particular kinds of diversity while submerging, deflating, or suppressing others. The global system is a common code, but its purpose is not common identification; it is the expression of distinctions, boundaries and disjunctures (Wilk, 1995, p. 118).

Thus, while web resources, including the Development Gateway, started to look very much the same, the signatories of the *Declaration* clearly feared that the development sector would not see the hegemonic structures underlying the Development Gateway: over the years the conflict surrounding the Development Gateway would be forgotten and the values and ideas extended by the Gateway's classification scheme would become invisible. The mapping exercises showed that the control over the categories of development did not materialise. They did make clear, however, that the organisation of categories in subject-trees might provide control through its cultural bias. The hegemony of the Yahoo!-inspired web-based subject tree or web directory lies in its influence on new initiatives for classifying items on the internet. It has created expectations about what a web-based resource should look like.

The exception was the Open Knowledge Network (OKN), the only web resource that the mapping showed as very different from all other initiatives. Looking for the source of this difference one soon runs across the fact that the technological design of the Open Knowledge Network is quite different. The OKN is built on a hybrid peer-to-peer network in which all classification work is decentralised. The items published in this distributed network are produced, created, and stored at the local access points and hub, where also the selection, editing, and categorisation of each item takes place (van der Velden, 2005). This suggests that it is the OKN's technological design that contributes to a way of organising and classifying knowledge, which is different than the one supported by the centralised databases of the development web directories.

On the question of inclusive web-based classification work, we looked closer at the Open Knowledge Network. Observations of OKN classification work in India and Kenya showed, however, that the OKN knowledge workers and volunteers were not able to exploit the options in the OKN software to create situated classifications. The default settings of the OKN classification system thus became the OKN's own *hegemonic global structure* (Wilk, 1995) as it limited the way in which local knowers could organise and classify their way of knowing their world. While the Open Knowledge Network offered an alternative way of organising development knowledge on the Web, the practice of classification work in the OKN showed the limitations of the classification scheme in terms of its inclusiveness of other ways of knowing.

Situated Classification Work

The research results showed that the technological design of a classification scheme, such as the subject-tree of the web directory or the default settings of the OKN classification scheme, affects what and who can be included in a classification. We were not able to answer the question on design approaches to web-based classification work that are inclusive of other ways of knowing. We therefore decided to look for "clues"[16] for *situated classification work*, work that is both located in and a result from local ways of knowing.

The first example is the work of librarian Brian Deer of the Mohawk community of Kahnawà:ke. Brian Deer worked for several First Nations libraries and documentation centres and developed classification schemes from the ground up, based on the particular local collection and the local community that produced it (MacDonell et al., 2003). Deer did not try to design a universal system nor did he modify an existing system. He developed new library classification schemes to counter the marginalisation of First Nations knowledge in Canada in library classification schemes such as the Library of Congress (LC) and the Dewy Decimal Classification (DDC).

Deer's approach is different from the Euro-American approach to classification, such as DDC or LC. Ann Doyle, librarian at the Xwi7xwa Library[17], a library affiliated with First Nations House of Learning in Canada, "feels that the key concept in the Brian Deer classification system is that it tries to acknowledge and represent indigenous ways of knowing" (MacDonell et al., 2003). The library collection is not to serve research but action, reflecting the ways First Nations may use the collection. Deer did not try to map the categories of First Nations knowledges in the dominant classification schemes such as the DDC and LC, but created a new classification scheme for each First Nation community he worked with. Instead of tactical interventions in the existing library classification, Deer opted for making the excluded and marginalised knowledge visible in its own right (MacIvor, 2005).

The second example comes from the *Indigenous Knowledge and Resource Management in Northern Australia* (*IKRMNA*)[18], a project to support and develop Indigenous databases that maintain and enhance the strength of local languages, cultures and environments in Northern Australia. One of the database projects is TAMI, which stands for Text, Audio, Movies and Images[19] and is designed to be useful for people with little or no literacy skills. The database was designed to be ontologically flat, so indigenous knowledge traditions were not pre-empted by western assumptions. This meant that there was a minimal metadata structure and no pre-existing categories (Christie, 2004; Verran, 2005). The users became designers of their own classification schemes while grouping and ordering information resources. They could enter and search items in the database without metadata, give tags (metadata) to their own collections of items, and create different organisations of digital objects for different contexts. Helen Verran, one of the researcher in the IKRMNA project, speaks in this context about bringing "into 'presence' (in the design process) that which has been systematically 'absenced' and 'Othered' in database design generally" (Verran, 2005, 2006). The users create the classification in the act of mapping the digital resources.

Future research

Brian Deer's approach to classification and the TAMI database design show that classification work is *situated*, always offering a partial perspective or way of knowing (Haraway, 1988). A classification scheme and its categories emerge out of doing knowledge work, they are not pre-existing. Such participatory and situated classification work may prioritise poor and marginalised knowers. While Deer's classifications and TAMI are not web-based, they point to similar approaches on the Web, such as in collective tagging systems, e.g. del.icio.us and Flickr. These user-generated classifications or *folksonomies* are created by adding metadata in the form of tags to an information resource and allow one resource to be categorised in diverse, even contradicting, ways. With a so-called *tag cloud*, a visual representation of user-generated tags (Wikipedia, 2007), one can visualise how the minority and majority opinions of how to categorise or tag an item in a folksonomy, can exist next to each other (Golder & Huberman, 2006). The classifications and relationships that emerge from such work are situated and performative, similar to the classification work of Brian Deer and TAMI.

Collective tagging decentralises and democratises classification work but does not necessarily prioritise "the poor as site contributors, editors, and viewers", as the *Declaration from Concerned Knowledge Workers* insists. Sites such as de.icio.us do not offer off-line browsing, as the OKN offers, but require a continuous and fast internet connection and certain levels of technological and informational literacy and language skills. A combination of collective tagging with a decentralised, low-bandwidth peer-to-peer network technology such as offered by the

OKN, however, could be one way to build inclusive and situated classifications for development knowledge on the Web. If tagging was offered as an additional function in the OKN, it could support such situated classification work in the form of:

- Tagging of photos, maps, audio and other media (since they cannot be found in keyword search)
- Use of tags in keyword search
- Analysis of tags to improve an existing classification scheme, e.g. adding situated categories
- Provide connections between items not captured by the existing classification scheme through the grouping of tags

This situated classification work is not pre-empted by the assumptions of experts and technologists or the default settings of technology. In such classification work both the classification and its categories emerge from people's knowing and being in the world. Future research may therefore focus on how user-generated classifications for development knowledge can be used in the organisation of development knowledge or how they can be integrated in existing classifications such as web directories. Secondly, future research may focus on the use of tags, the role of tags in the 'findability' of items, and the role of tags in making connections between items visible; connections that are not captured by the existing classification.

Conclusions

The aim of this research was to understand the co-constitutive dynamic of technology and knowledge in web resources that organise and provide access to development knowledge. The basic premise was that these web directories and portals need to reflect the ways of knowing of the people and communities who use them and who are supposed to benefit from them.

The research shows that technology can become an hegemonic global structure, which excludes particular knowledges and knowledge communities. Secondly, examples from classification work in and by indigenous people and communities show that collective tagging and visualisation of the diverse ways an item can be categorised through, for example tag clouds, can support situated classification work.

The implications of this research are two-fold. On the level of practical implications, the designers of development portals and directories need to ask who benefits and who is marginalised by a particular design, and give more attention to how the categories of development knowledge are created, organised, and made accessible. In terms of future research, a more comprehensive inquiry into user-generated classifications may contribute to more inclusive ways of organising development knowledge on the Web.

Acknowledgement

References

- Bowker, G. C., & Star, S. L. (1999). *Sorting things out: Classification and its consequences*. Cambridge: The MIT Press.
- Capek, M. E. S. (1987). *A women's thesaurus: An index of language used to describe and locate information by and about women*. New York: Harper & Row.
- Chen, S. Y., Magoulas, G. D., & Dimakopoulos, D. (2004). A flexible interface design for web directories to accommodate different cognitive styles. *Journal of the American Society for Information Science and Technology*, 56(1), 70-83.
- Christie, M. (2004). Words, ontologies and aboriginal databases. Retrieved April 23, 2007 from from http://www.cdu.edu.au/centres/ik/pdf/WordsOntologiesAbDB.pdf
- Development Gateway (2001). *The development gateway portal: Draft business plan*. New York: Development Gateway.
- Golder, S. A., & Huberman, B. A. (2006). Usage patterns of collaborative tagging systems. *Journal of Information Science*, 32(2), 198-208.
- Gurstein, M. (2001). The global development gateway. Retrieved April 23, 2007 from http://www.mail-archive.com/gkd@phoenix.edc.org/msg00494.html
- Haraway, D. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies*, 14(3), 575-599.
- Haraway, D. (1997). Modest_Witness@Second_Millenium.FemaleManÂ©_Meets_Oncomouseâ„¢. New York: Routledge.
- Haraway, D. (2003). *The companion species manifesto: Dogs, people, and significant otherness*. Chicago: Prickly Paradigm Press.
- Jacob, E. K. (2004). Classification and categorization: A difference that makes a difference. *Library Trends*, 52(3), 488-507.
- Jha, A., Seymour, V., & Sims, S. (2004). *Evaluation of the development gateway*. London: Development Studies Institute, London School of Economics.

- Lee, H.-L., & Olson, H. A. (2005). Hierarchical navigation: An exploration of Yahoo! directories. *Knowledge Organization*, 32(1), 10-24.
- MacDonell, P., Tagami, R., & Washington, P. (2003). Brian Deer classification system. Retrieved April 23, 2007 from http://www.slais.ubc.ca/courses/libr517/02-03-wt2/projects/deer/index.htm
- MacIvor, M. (2005). Xwi7xwa Library: A branch of the University Library". *The Longhouse News*, 12(1), 1-2.
- Marres, N. (2004). Tracing the trajectory of issues and their democratic deficits on the web: The case of the Development Gateway and its doubles. *Information, Technology and People*, 17(2), 124-149.
- Muth, H. P., & Gerlach, F. H. (2005). Development gateway foundation: Independent evaluation. Retrieved April 23, 2007 from http://www.dgfoundation.org/fileadmin/templates/pdfs/ind_eval.pdf
- O'Leary, M. (1998). Web directories demonstrate an enduring online law. *Online*, 22(4), 79-81.
- Olson, H. A. (1998). Mapping beyond Dewey's boundaries: Constructing classificatory space for marginalized knowledge domains. *Library Trends*, 47(2), 233-254.
- Pereira, M. (2005). Introduction. Retrieved April 23, 2007 from http://www.africacncl.org/HIV_AIDS/initiative_activities/ict_initiative/march05_presentations/intro/DevGateway_intro.
- Ranganathan, S. R. (1931). *The five laws of library science*. Madras: Madras Library Association.
- Rogers, R. (2004). *Information politics on the web*. Cambridge: The MIT Press.
- Shirky, C. (2006). Ontology is overrated: Categories, links, and tags. Retrieved November 11, 2006 from http://www.shirky.com/writings/ontology_overrated.html
- Stiglitz, J. (2000). Scan globally, reinvent locally: Knowledge infrastructure and the localisation of knowledge. In: D. Stone (Ed.), *Banking on knowledge: The genesis of the global development network* (pp. 24-43). New York: Routledge.
- Thompson, C., & Arsel, Z. (2004). The Starbucks Brandscape and consumers' anticorporate experiences of globalization. *Journal of Consumer Research*, 31, 631-642.
- Turtle, Voice of the (2001). The development gateway: A declaration from concerned knowledge workers. Retrieved January 30, 2006 from http://web.archive.org/web/20010816115857/http://voiceoftheturtle.org/gateway/
- van der Velden, M. (2002). The end of diversity? Knowledge, ICTs, and the development gateway. In: Sudweeks, F. & Ess, C. (Eds.), *Third international Conference on Cultural Attitudes Towards Technology and Communication 2002* (pp. 485-504). Murdoch, Murdoch University.
- van der Velden, M. (2005). Programming for cognitive justice: Towards an ethical framework for democratic code. *Interacting with Computers*, 17, 105-120.
- van der Velden, M. (2007). Invisibility and the ethics of digitalization: Designing so as not to hurt others. In: Hongladarom, S., & Ess, C. (Eds.), *Information technology ethics: Cultural perspectives* (pp. 81-93). London: Idea Group Reference.
- van der Velden, M. (2009). Design for a common world: On ethical agency and cognitive justice. *Ethics and Information Technology* 11 (1), 37-47.
- Verran, H. (2005). Knowledge traditions of aboriginal Australians: Questions and answers arising in a databasing project. Retrieved April 23, 2007 from http://www.cdu.edu.au/centres/ik/pdf/knowledgeanddatabasing.pdf
- Verran, H. (2006). Software for educating Aboriginal children about place. Retrieved September 4, 2007 from http://www.cdu.edu.au/ik/pdf/HRV_for_Kritt_WinegarFINAL4-06.pdf
- Walker, L. (2003). *Startup of the development gateway*. Washington: The World Bank Operations Evaluation Department.
- Walton, M., & Vukovic, V. (2003). Cultures, literacy, and the web: dimensions of information "scent". *Interactions*, 10(2), 64-71.
- Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*. Cambridge: The MIT Press.
- Wikipedia (2007). Tag_cloud. Retrieved December 4, 2007 from http://en.wikipedia.org/wiki/Tag_cloud
- Wilk, R. (1995). Learning to be local in Belize: Global systems of common difference. In: Miller, D. (Ed.), *Worlds apart: Modernity through the prism of the local* (pp. 110-133). London: Routledge.
- Wilk, R. (2004). Miss Universe, the Olmec and the Valley of Oaxaca. *Journal of Social Archaeology* , 4(1), 81-98.
- Wilks, A. (2002). Development through the looking glass: The knowledge bank in cyberspace. *Information Development*, 18(1), 41-46.
- Wolfensohn, J. (1996). People and Development. Retrieved October 10, 2007 from http://tinyurl.com/yuxfe5
- World Bank (1998). *Knowledge for development: World development report 1998/1999*. New York: Oxford University Press.

Endnotes

1. In this paper the concept of knowledge covers different understandings. Terms such as 'knowledge for development' and 'development knowledge' refer to commodified knowledge. The World Bank (1998) understands such knowledge as 'knowledge about technology' (know-how) and 'knowledge about attributes' (i.e. information about market prices, credit, quality, etc.). The majority of the cases in this paper categorises such development knowledge by sector (e.g. health, agriculture, etc.). In this understanding of knowledge it is possible

to identify different ways of knowing, e.g. indigenous knowledge, but 'knowledge' (i.e. 'modern', scientific knowledge) and 'indigenous knowledge' are not treated equally. On the other hand, some of the authors quoted in this paper, understand knowledge as situated (Donna Haraway), performative, and emerging (Helen Verran). My research in the diversity of knowledge is based on this understanding of knowledge and I proposed to treat different knowledges, the different ways of knowing the world, equally (see van der Velden, 2009).

2. The full text of the Declaration is available on the web at URL http://www.voiceoftheturtle.org/gateway/ and in the Internet Archive at URL http://web.archive.org/web/20010816115857/http://voiceoftheturtle.org/gateway/ The Declaration is a 544 word document and the initiators are Yash Tandon, International South Group Network, Zimbabwe, Patrick Bond, University of the Witwatersrand, South Africa; Phil McMichael, Cornell University, Ithaca, NY, USA; Chris Brooke, Magdalen College, Oxford, UK; and Rutendo Kambarami, Communications Officer, Mwelekeo waNGO, Zimbabwe.

3. This position is similar to that of the ontologist of Yahoo!, another web portal: "We are Yahoo we do not have biases. This is just how the world is. The world is organized into a dozen categories" (Unidentified Yahoo ontologist and her staff paraphrased in Shirky, 2006).

4. Web portals and directories regularly change their design and organisation. I have therefore used the versions of ten sites as archived in the Internet Archive (www.archive.org). The Open Knowledge Network was never archived in the Internet Archive.

5. The Development Gateway was founded by the World Bank and is now governed by the Development Gateway Foundation. Choike (Uruguay) and Dev-Zone (New Zealand) are established by non-governmental organisations. They both have a strong regional as well as a global focus. Eldis is established by the Institute of Development Studies and is funded by the British, Swedish, Norwegian, and Swiss governmental agencies for development assistance. SciDev is a network focusing on "authoritative information on science and technology for the developing world". OneWorld International is a global network of independent media organisations and activists. The Open Knowledge Network is a hybrid peer-to-peer network for the sharing of local knowledge for local development, connecting local access points and hubs in ten countries. It has a presence on the Web but the main point of the OKN is to make all content also available for off-line browsing and editing.

6. Yahoo! was the first web directory on the internet. Yahoo! Directory and Google Directory are part of large commercial web portals offering a variety of services. The Open Directory is a non-profit web directory, entirely based on the work of volunteers.

7. The top-level categories of each classification form the set of 'clickable' categories that open in new sets of categories and/or in a set of hypertext links to information resources.

8. The OKN's classification scheme can be understood as a kind of facetted classification (Ranganathan, 1931), in which the facet of 'content type' is the main entrance point to the information resource.

9. For example, the sponsorship of a category, financially or in terms of volunteer services, can have a direct effect on the availability and position of a category, contributing to inconsistencies and bias in a classification scheme. For example, one of Eldis' top-level categories is 'Norwegian Research', a category edited by NorAgric (Norwegian Centre for International Environment and Development Studies). NORAD, The Norwegian Agency for Development Cooperation, is one of the donors of Eldis. The Development Gateway has as one of its top-level categories 'glocalization', which is edited by the Glocal Forum, a Swiss non-profit organisation. The 'glocalisation' category is based on the Glocalization Manifest of the Global Forum, and the category editors (indexers) are employed by Global Forum.

10. This results in a rather unbalanced classification because one of the 'content type' categories, the category knowledge contains all the resources that other web directories organise in several top-level categories.

11. In India, the volunteers are selected from the community in which an OKN access point is active. In Kenya, the volunteers are young people, recently graduated in journalism or media studies, who work for one year at an OKN access point.

12. In 2006 I twice visited the OKN project in India and in 2007 I twice travelled to Kenya in order to visit the OKN project in East-Africa.

13. The OKN hub in Kenya is based at the Arid Lands Information Network (ALIN) and covers a network of Community Knowledge Centres in Kenya, Tanzania, Uganda, and Ethiopia. This fieldwork took place in 2007 and by that time funding for the African section of the OKN had run out. Because the OKN is a distributed gateway, based on open source software, ALIN could continue its OKN activities within its own network without interruption.

14. How information resources are categorised is visible at the bottom of each item. It will give information

about the author of the item, the person who added it to the OKN, date, place, content type, subject, and audience.

15. Thompson and Arsel (2004) developed the theoretical framework of the "hegemonic brandscape" in their research on Starbucks, the global coffee shop brand. The authors argue that the hegemonic influence of the Starbuck brand is that it has been able to standardise, on a global level, the idea and meaning of a coffee shop. Its hegemony lies in the cultural influence on the non-Starbuck coffee shop, the way it has shaped expectations of how a coffee shop should be.

16. Sociologist Boaventura de Souza Santos (2004, p.175-176) describes a clue as an announcement of what is to come next and argues for the value and validity of clues as possibilities of the future that lie in concrete social experiences.

17. Xwi7xwa Library, URL http://www.library.ubc.ca/xwi7xwa/, accessed 23 April, 2007.

18. This section on IKRMNA is based on van der Velden (2007)

19. TAMI, URL http://www.cdu.edu.au/centres/ik/db_TAMI.html, accessed 23 April 2007.

Bibliographic information of this paper for citing:

van der Velden, Maja (2008).   "Organising development knowledge: Towards situated classification work on the Web."   *Webology*, **5**(3), Article 60. Available at: http://www.webology.org/2008/v5n3/a60.html

---

Alert us when: New articles cite this article