

WHEN KNOWLEDGES MEET WIKIPEDIA AND OTHER STORIES FROM THE CONTACT ZONE

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Beginnings

In 2000, the Local Content Working Group of the Digital Opportunity Task Force of the G8 met in Genoa and agreed to start working on an effort in support of local content creation. The working group was chaired by OneWorld International, which proposed the development of a file sharing service for the production and dissemination of local knowledge for local development. A document describing the software architecture for the new initiative, the Open Knowledge Network (OKN), mentions: 'The ambition for OKN is to be the "Napster for development"¹ achieving a scale of thousands of hubs producing locally relevant material for millions of telecenters, serving tens of millions of end users'.² In the same period another ambitious initiative was launched: Wikipedia, which aimed to provide cheap encyclopaedias to schools across the world.³ In an interview in 2004, Wikipedia founder Jimmy Wales declared: 'Imagine a world in which every single person on the planet is given free access to the sum of all human knowledge. That's what we're doing'.⁴ Wikipedia became one of the most popular websites in the world, while the Open Knowledge Network failed in its endeavour. What they had in common, however, was the idea that human knowledge can be managed in a database shared by everyone.

In this article I will explore the management of knowledge in five different stories about ordering knowledge. As an introduction I will present three stories that explore the idea that ordering affects our understanding of what is knowledge, who can be a knower, what can be known, and who will benefit from knowledge. I am particularly interested in the materialization of knowledge and knowers in the systems and practices that order knowledge. I will also further an understanding of knowledge as the result of a direct material engagement with the world,⁵ not as the result of a reflection on the world, which implies a separation between knower and knowledge.⁶ We know with and through our own bodies, other bodies (human and nonhuman), and things, such as instruments, computers, classification systems, standards, and protocols.

1. In 1999, Napster, a music file sharing service, was launched. It expanded rapidly and became a global network connecting around 60 million users until it was shut down in 2001.
2. John West, *Open Knowledge Network: Architectural Framework 0.2*, 2002, p. 14.
3. Jimmy Wales, 'Hi...', posting to nupedia-l mailing list, 11 March 2000, <http://web.archive.org/web/20010506015648/http://www.nupedia.com/pipermail/nupedia-l/2000-March/000009.html>
4. Jimmy Wales, 'Wikipedia Founder Jimmy Wales Responds, Slashdot, 28 July 2004, <http://interviews.slashdot.org/article.pl?sid=04/07/28/1351230>.
5. Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, Durham: Duke University Press, 2007.
6. Ibid. Donna Haraway, 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', *Feminist Studies* 14. 3 (1988).

Open knowledge projects such as the Open Knowledge Network and Wikipedia foreground notions of freedom and of multiple possibilities. The *regulatory agency* of the material, how the database interacts with knowledge and knowers and contributes to particular possibilities and constraints, often becomes invisible or is ignored. I will explore the agentive role of technology design in stories about classification work in Wikipedia and in TAMI, an Aboriginal database. By reading these two stories diffractively, not comparing them but reading them through each other, we might find differences that matter,⁷ and other possibilities for ordering knowledge may become visible.

Ordering Knowledge

In this section I will explore the ordering of knowledge in three different stories. Each one of them brings particular insights to the foreground, as they address the effects of this ordering in different times and places. The first story is set in the early 18th century and is about how ordering knowledge changes our ideas of what knowledge is. The second story is set in 2010, but its history extends thousands of years. It is based on my visit to Vancouver, a city built on the unceded land of the Musqueam people.⁸ The story is about finding oneself, as an Indigenous person, in an ordered collection of knowledge. The third story is based on my research into the Open Knowledge Network, which brought me to India in 2007. I followed knowledge as it was translated from a healer's embodied practice into different formats for ordering knowledge.

When Less is Better

This is another way of saying that the archive, as printing, writing, prosthesis, or hypomnesic technique in general is not only the place for stocking and on serving an archivable content *of the past* which would exist in any case, such as, without the archive, one still believes it was or will have been. No, the technical structure of the *archiving* archive also determines the structure of the *archivable* content even in its very coming into existence and in its relationship to the future. The archivization produces as much as it records the event.⁹

The first story is based on 'Description by Omission', an article written by Lorraine Daston.¹⁰ By describing a particular period in the history of science, the author provides an interesting introduction to the idea that the ordering of knowledge produces a particular understanding of knowledge. Daston starts and ends her article with the work of Swedish

7. Barad; Donna Haraway, *Modest_Witness@Second_Millennium.FemaleMan@_Meets_Oncomouse™*, New York: Routledge, 1997.
8. Musqueam Band, <http://www.musqueam.bc.ca/Default.htm>. <http://www.musqueam.bc.ca>. The territory is contested, as there are multiple First Nations claims on the land on which Vancouver is built. See <http://vancouver.ca/commsvcs/socialplanning/initiatives/aboriginal/community.htm>
9. Jacques Derrida and Eric Prenowitz, 'Archive Fever: A Freudian Impression', *Diacritics* 25. 2 (Summer, 1995).
10. Lorraine Daston, 'Description by Omission', in John Bender and Michael Marrinan, *Regimes of Description: in the Archive of the Eighteenth Century*, Stanford, CA: Stanford University Press, 2005.

botanist Linnaeus (1701-1778). Linnaeus accused his contemporaries of extravagant descriptions. He argued that he needed only four categories (number, shape, position, and proportion) to identify a plant and that the description of each category per plant needed only two words. Daston argues that this is exemplary of an important shift that took place between 1660 and 1730: while people once understood nature as irregular, as constantly changing, they began to perceive it as something to capture in a limited set of regularities.

Linnaeus objected to British scientist Robert Boyle's 'militant empiricism' with its focus 'upon singularities as the most revealing of the nature of things'.¹¹ Boyle and his colleagues looked at the anomalies of light in order to better understand it. They investigated all kinds of luminescent materials and described the differences, rather than the similarities between these materials, in order to get closer to the nature and characteristics of light. In Daston's words: 'The facts of strange phenomena simultaneously dissolved homogeneities and united heterogeneities'.¹² The customary link between light and heat was dissolved after Boyle realized that luminescent substances ranging from rotten meat, stones, and stockings all held in common that they were cold to the touch when they shone.

Daston describes how by 1730 this situation had drastically changed. In the 1720s, French chemist Charles Dufay had published some articles on luminescent materials, in particular phosphor. Dufay was interested in 'saving phenomena in scientific memory' and therefore in the replicability of facts. Rather than depending on the chance discoveries of Boyle and his contemporaries, Dufay looked at the regularities found in the different substances. In Dufay's 'inductive empiricism', regularities became the phenomena that would allow one to get closer to the nature of things such as light. Daston called this 'the new factuality of uniformity': 'by systematically obscuring the details of the phenomena new understandings of light became possible'.¹³

By 1740 the uniformity of nature was firmly established. Singularities and diversity were still around, but were no longer seen as material for the production of knowledge.¹⁴ Rather, descriptions of nature smoothed out differences. The *Rosa sylvestris alba cum rubore, folio glabro* (pinkish white woodland rose with smooth leaves) or the wild Briar Rose became *Rosa canina* or Dog Rose in Linnaeus' binomial system (genus-species) for naming species. Objects from far away places were arranged together to 'maximize resemblance rather than diversity', and species rather than individuals became the preferred type of illustration in natural history.¹⁵

11. Ibid, p. 21.
 12. Ibid, p. 15.
 13. Ibid, p. 22.
 14. Ibid.
 15. Daston.

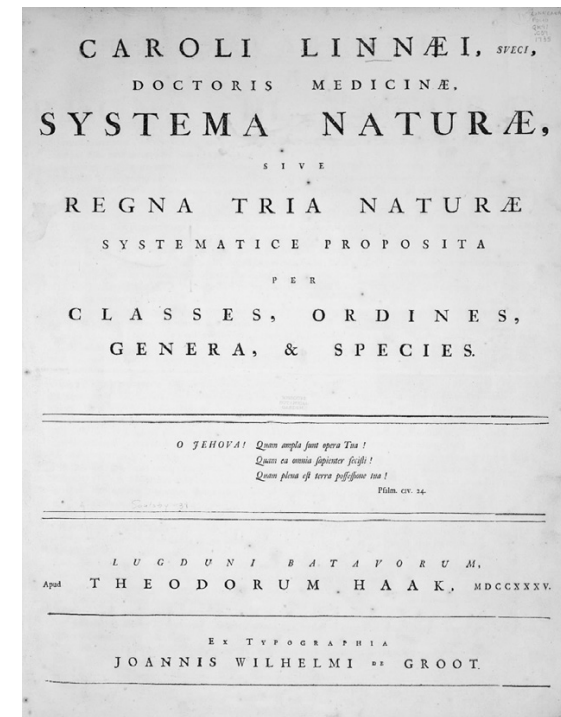


Figure 1. Cover page of Linnaeus's first edition (1735) of *Systema Naturae*.^{16, 17}

Finding Oneself

When I was small, I was called "Little Bird". When I first went to war and returned to camp, the name of "Long Horn" was given me by an old man of the camp. Then the traders gave me the name Tall-White-Man, and now, since I have become old, they (the Indians) call me Black Pipe. This name was given me from a pipe I used to carry when I went to war. I used to blacken the stem and bowl just as I did my face after these trips, and I was especially careful to do so when I had been successful.¹⁸

16. The first issue of Linnaeus' *Systema Naturae* was published in 1735 and organized the names for plants and animals in 11 pages. The text was printed on large folio pages measuring roughly 50 by 40 cm.
 17. Biodiversity Heritage Library, <http://www.biodiversitylibrary.org/item/15373>.
 18. Black Pipe's story demonstrates the principles of North American Indian naming. See Frank Exner, Little Bear, 'North American Indian Personal Names in National Bibliographies', in K.R. Robert (ed.), *Radical Cataloging*, London: McFarland, 2008, p.150.

The second story is based on my visit to the Xwi7xwa Library,¹⁹ which is part of the University of British Columbia (UBC) in Vancouver, Canada. The collections of the library focus mainly on First Nations in British Columbia, with additional materials on Canadian First Nations and national and international First Nations and Indigenous peoples. The Xwi7xwa Library collects materials written from First Nations perspectives, such as materials produced by First Nations, First Nations organizations, tribal councils, schools, publishers, researchers, writers, and scholars.²⁰

The Xwi7xwa Library staff provides its visitors support for finding similar resources in the databases provided by the University of British Columbia. They recommend the following terms to locate relevant resources in these databases:²¹

Database:	Main search term:
Academic Search Complete	Indians of North America
America: History and Life	Indians
Anthropology Plus	Indians of North America
Bibliography of Native North Americans	Indians of North America, Indigenous Peoples
Canadian Periodical Index	Canadian Native Peoples Use "Native North Americans" to find articles with an American focus
CBCA Education	Native North Americans, Native Peoples is also used for Canadian Aboriginal people
ERIC	Canada Natives, Use American Indians for articles with an American focus
MLA	Native Americans

The librarians suggest the following set of terms when doing a keyword search in the UBC databases:²²

- first nation
- first nations
- aborigin* (for aboriginals and aboriginality and aborigines),
- indian, indigenous, (or indigen* for indigeneity),
- native, native american, american native, trib* (for tribal or tribes)
- Names of specific nations: Haida, Cree*, Nisga'a, Maori, and so forth.
- Metis and Inuit (Eskimo for some Alaskan materials). Articles about Métis and Inuit aren't usually included in the previously mentioned terms.

19. Xwi7xwa Library is pronounced 'whei-wah', <http://www.library.ubc.ca/xwi7xwa/>. Xwi7xwa.

20. Xwi7xwa Library, <http://www.library.ubc.ca/xwi7xwa/library.htm>.

21. Xwi7xwa Library, <http://www.library.ubc.ca/xwi7xwa/Truncation.pdf>.

22. Ibid.

But even with all this help, one may not be able to find oneself in the library system. For example, there is no authorized subject heading for Musqueam, the name of a Canadian First Nation people, in the Library of Congress, the library classification system on which the UBC library is based.²³ The importance of this becomes clear when one realizes that the University of British Columbia is built on the unceded land of the Musqueam people.²⁴ As Ann Doyle, head librarian of the Xwi7xwa Library, remarks:

Musqueam elders are an integral part of the university; they provide support for the students and staff services, and frequently open campus events and ceremonies. Musqueam leaders serve on administrative bodies, such as the university senate. When the Musqueam people come to the library and ask, 'Where are the library materials on Musqueam? Where are all the materials written by the anthropologist, and the linguists, and the historians on our people?' I have to reply: 'There is no word for Musqueam in the library world, there is no section on the university library shelves for Musqueam.'²⁵

Lost in Translation

We'd go out in the woods to get wood for the fire or to gather plants for medicine, because the old ladies always used that. We always went out as a group of women, my mother, that old lady, and me. They showed me those places where to go. They didn't really tell me, direct me, and tell me straight out, but they always made sure that I was right there with them when they did that. They'd point out things to me. So it was always about being around the elder women. When people were sick, people would come to our house and ask my mother for that medicine, and then we'd go out in the woods and get it. She knew about different things, like heart, stomach, and lung medicines.²⁶

The third and last story is based on my visits to India in 2007. I followed knowledge while it was travelling from people to things in the Open Knowledge Network (OKN). During this research I met with community healers who lived and worked in villages in Tamil Nadu in Southern India. The healers participated in this knowledge-sharing project, because they were told that this project would help preserve their knowledge for future generations of healers.

The healers told me about the treatments they apply for different kinds of bites, wounds, pains, rashes, colds, and diseases. Some healers treated people as well as animals. They explained about seeds and roots and leaves and trees. They also talked about their role in the

23. Library of Congress, Search, http://id.loc.gov/search?q=musqueam&cs=cs%3Alcsh&Search_submit=Go. Kelly Webster and Ann Doyle, 'Don't Class Me in Antiquities! Giving Voice to Native American', in K.R. Robert (ed.), *Radical Cataloging*, London: McFarland, 2008.

24. The Musqueam people now live on a small portion of their territorial land, known as the Musqueam Indian Reserve. See <http://www.musqueam.bc.ca/Home.html>.

25. Webster and Doyle, p. 192.

26. As told by Thunder Woman, who is Ojibwa, born on a Northern Minnesota reservation. Quoted in Roxanne Struthers, 'The Artistry and Ability of Traditional Women Healers', *Health Care for Women International*, 24.4 (2003): 347.



Figure 2. Sign by American artist and scholar Edgar Heap of Birds at UBC Campus.²⁷

community and their relationship with Western, or what they called *English*, medicines and treatments. They understood their healing activities as a kind of community service. Successful treatments could be rewarded with food or cloths or other items they needed. Sometimes, while explaining a certain treatment, I could see how a healer already rubbed a leaf before it was picked or chose a particular leaf among many others.

During these conversations, a community volunteer of the local Village Information Center accompanied me. I noticed that every time a healer talked about treatments, the volunteer moved her finger across a written text in a large notebook. I asked what she was doing. She answered, 'I am checking that what she is saying now is the same as what she told me before'. I asked the volunteer what happened with the treatments she wrote down in the notebook. She told me that she would type her notes into the computer in the Village Information Centre and send these files to a *knowledge worker* based at the regional research center.

And so the journey started – from the notebook to the computer in the Village Information Center to a small research center in the same region. I visited the research center and asked the knowledge worker about the files sent from the Village Information Center. The knowledge worker showed me a file in which the names of trees and plants mentioned in the files were collected. The local names of plants and trees were ordered alphabetically, and their medicinal characteristics and applications were added. The knowledge worker's task was to find the

27. Photo by Holly Tomren, <http://www.flickr.com/photos/htomren/3666247626/>.



Figure 3. The notebook (photo by author).

global name for each of these plants and trees, the Latin name used in the International Code of the Botanical Nomenclature (ICBN). The knowledge worker also ordered the treatments by disease, translated them in English, and printed them in a report that was available to foreign visitors of the research center. Some of the treatments were also reproduced in their original language in a local community newsletter.

The small research center was connected with the main research center in a big city. During a presentation on the work of the center in the city, which includes the development of databases and managing knowledge, I asked the senior researchers where I could find the knowledge of the traditional healers I had met. The answer was clear: 'Such knowledge can not enter our databases before its validity has been established in a proper laboratory'.

The ordering of knowledge in a notebook, in a file with Latin names, and in lab reports with analyses results in a particular kind of knowledge. Crucial information, about when, where, and how to pick the leaves, seeds, roots, and bark, how to use them, and how, when, and where to apply the treatments have disappeared. The different orderings produce new knowledge, no doubt about that, but this new knowledge does not seem very meaningful for future healers.

Epilogue

The three stories about ordering knowledge give us some insight into what happens when knowledge is systematized and organized. The first story demonstrates how the ordering of things – do we order them on the basis of their similarities or their differences? – affects not only what is considered to play a role in the production of knowledge, but also what we can know about things after we have decided that they do play a role. The second story is about how the ordering of knowledge results in further marginalization. The example of the Musqueam people is especially illustrative of how the marginalization of particular forms of knowledge and its knowers is never an isolated event. There is a connection between

the Musqueam people's territorial marginalization and their marginalization in the Library of Congress classification system and, consequently, the classification system of the University of British Columbia. The last story about the translation of knowledge foregrounds, among other things, the different materializations of knowledge. Knowledge was translated from the embodied knowledge of a healer, embedded in a local community and culture, to codified and digitalized knowledge, printed in computer files, community newsletters, reports, and maybe also in databases.

The ordering of knowledge produces new knowledge, as we saw in each of the three stories, and makes some knowledge more accessible to a wider or a particular audience. The three stories show us, however, that we need to qualify such statements. Who benefits from this new knowledge? Who and what is marginalized by the new organization of knowledge? I will take these questions to the next section, where they will guide investigations in two database systems that organize knowledge: Wikipedia and TAMI.

The Matter of Knowledge (and Why It Matters)

In *The Language of New Media*, Lev Manovich²⁸ discusses the database as a new cultural form: 'the database represents the world as a list of items, and it refuses to order this list'.²⁹ Manovich sees an important difference between the database and other media for storing content, namely the separation between content and interface: in the database we can make different interfaces to the same content.

A *pure database* is 'a set of elements not ordered in any way'.³⁰ This is however never the case when we access a database. There is always already some ordering going on in the form of standards, schemata, file directories, access rights, etc., that affects what kind of interfaces can be created for the database and what kind of trajectories are possible. Even though pure databases do not exist, the *idea* of the pure database has influenced understandings of what a database is and what it can do. For example, there would be no Wikipedia if the founders did not think that it was possible to collect all items belonging to the sum of human knowledge in a database and to provide different trajectories or interfaces to access that knowledge. The idea of one database and a myriad of possible interfaces seems to fit smoothly with the instrumental perspective on technology.³¹ Technology is neutral: we can all create our own particular stories with the same database.³²

Related to the idea of the *neutral* pure database is the idea of the *immaterial* pure database. Materiality seems only to kick in when we design interfaces to organize the items in the database. Thus, the regulatory agency of the database itself – the way it regulates what can

28. Lev Manovich, *The Language of New Media*, Cambridge, MA: MIT Press, 2001.

29. *Ibid.*, p. 225.

30. *Ibid.*, p. 238.

31. Andrew Feenberg, *Transforming Technology: A Critical Theory Revisited*, Oxford: Oxford University Press, 2002.

32. In an instrumental perspective technology is perceived as neutral towards use. Only humans are considered having the agency to direct the use of technology for *good* or for *bad* applications.

be made visible in the database, how we (can) know the world, and who can be a knower – moves to the background. In this section I will explore the materiality of database design by looking at two database projects: Wikipedia and TAMI. Wikipedia's aspiration is global: it wants to organize the sum of human knowledge and make it accessible to every single person on the planet. TAMI is a local database project in Australia and includes only a few people, namely some aboriginal knowers and some researchers. Instead of a comparative reading of the two database designs, I have read the two database stories together and through each other, in what is called a *diffractive reading*. Donna Haraway uses the optical metaphors of reflection and diffraction to explain these different kinds of reading. In a reflective reading of the two database designs, the 'rays' of our analytical lens would reflect images of the two designs. What we would see are two separate unified wholes with clear, fixed boundaries. Comparing the two databases would focus our attention on the most immediate differences and would highlight differences we already know, such as size, scale, objectives, language, etc. A diffractive reading means that our analysis of one database can't be separated from the analysis of the other database. In my reading the rays of my analytical lens travel through the two designs. The resulting diffraction patterns focus our attention on the entanglement of the two databases: they intra-act and produce differences that matter.³³

Wikipedia: Fragmenting Knowledge

What is knowledge? Wikipedia's description of knowledge³⁴ mentions that there is no single agreed definition and numerous competing definitions:

Knowledge is defined by the Oxford English Dictionary as (i) expertise, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject; (ii) what is known in a particular field or in total; facts and information; or (iii) awareness or familiarity gained by experience of a fact or situation. Philosophical debates in general start with Plato's formulation of knowledge as "justified true belief." There is however no single agreed definition of knowledge presently, nor any prospect of one, and there remain numerous competing theories. Knowledge acquisition involves complex cognitive processes: perception, learning, communication, association and reasoning. The term *knowledge* is also used to mean the confident understanding of a subject with the ability to use it for a specific purpose if appropriate. See knowledge management for additional details on that discipline.³⁵

This description does not tell us anything about the materiality of knowledge. It assumes a separation between knowledge and the bodies and things with which, and through which, we come to know. Such a separation between knowledge and the knower is one of the characteristics of mainstream understandings of knowledge found in Western epistemologies.

33. Barad; Haraway, *Modest_Witness@Second_Millennium.FemaleMan@_Meets_Oncomouse*TM.

34. It is not my intention to give a complete overview of how knowledge is organized in Wikipedia or to challenge the content of the Wikipedia articles mentioned in this chapter.

35. Wikipedia contributors, 'Knowledge', <http://en.wikipedia.org/wiki/Knowledge>.

How does Wikipedia describe the knowledge found in non-Western epistemologies? How would it call such knowledge? Indigenous knowledge? Native knowledge? Traditional knowledge? Aboriginal knowledge? Wikipedia's article on Indigenous peoples mentions:

Other related terms for Indigenous peoples *include aborigines, aboriginal people, native people, first people, fourth world cultures and autochthonous*. 'Indigenous peoples' may often be used in preference to these or other terms as a neutral replacement, where such terms may have taken on negative or pejorative connotations by their prior association and use. It is the preferred term in use by the United Nations and its subsidiary organizations.³⁶

An article with the subject heading 'Indigenous knowledge' once existed in Wikipedia and was first published on 21 April 2005.³⁷ The focus of the article was to describe the different aspects of Indigenous knowledge as well as to point out some of the tensions between Indigenous and non-Indigenous knowledge and traditions. The article was published in the category Indigenous Peoples.

On 9 December 2005, a new article was published, called 'Traditional knowledge'. The article started with a description of traditional knowledge and focused on the protection of traditional knowledge using intellectual property laws and international conventions, in particular the World Intellectual Property Organization (WIPO), which uses the term traditional knowledge.³⁸ The article was published in the category Intellectual Property.

We see here two different terms for the knowledge of Indigenous peoples: *Indigenous knowledge* and *traditional knowledge*. This is at first not surprising because the two articles have different perspectives and locations in Wikipedia's taxonomy. 'Indigenous knowledge' is a topic in the category Indigenous People and 'Traditional knowledge' is a topic in the category Intellectual Property. The next day, 10 December 2005, an editor of the 'Traditional knowledge' article added a link to the 'Indigenous knowledge' article. On 11 December 2005, a Wikipedia administrator published a message at the top of the 'Indigenous knowledge' article, proposing to merge the two articles (see Figure 3). Only five minutes after this proposal was posted on the Wikipedia article, the same administrator merged the 'Indigenous knowledge' article into the 'Traditional knowledge' article. The reason cited by the administrator is *copyvio*, which is a reference to copyright violations.³⁹

36. Wikipedia contributors, 'Indigenous peoples', http://en.wikipedia.org/wiki/Indigenous_peoples, accessed 30 June 2010.

37. Wikipedia contributors, 'Indigenous knowledge', http://en.wikipedia.org/w/index.php?title=Indigenous_knowledge&oldid=12607474.

38. World Intellectual Property Organization, <http://www.wipo.int/tk/en/>.

39. Wikipedia contributors, 'Indigenous knowledge', http://en.wikipedia.org/w/index.php?title=Indigenous_knowledge&action=history.



40. Wikipedia contributors, 'Indigenous knowledge (old)', http://en.wikipedia.org/w/index.php?title=Indigenous_knowledge&oldid=30924169.

Indigenous knowledge

From Wikipedia, the free encyclopedia

This is an old revision of this page, as edited by Edcolins (talk | contribs) at 12:42, 11 December 2005. It may differ significantly from the current revision.

(diff) ← Previous revision | Current revision (diff) | Newer revision → (diff)

	<p>It has been suggested that this article or section be merged into <i>Traditional knowledge</i>. (Discuss)</p>
	<p>This May 2005 may require cleanup to meet Wikipedia's quality standards. Please improve this May 2005 if you can. The talk page may contain suggestions.</p>

Indigenous knowledge is a term applied to knowledge held in specific societies, world-wide. It is particularly used in the context of knowledge and traditions practised by indigenous peoples, and these peoples' rights to intellectual property recognition.

Figure 4. Proposal to merge.⁴⁰

As a result, none of the content of the 'Indigenous knowledge' article merges into the 'Traditional knowledge' article. Only the *term* 'Indigenous knowledge' survives the merge by being added to the description of traditional knowledge:

Traditional knowledge (TK) and *indigenous* [sic] *knowledge* generally refer to the matured long-standing traditions and practices of certain regional communities.⁴¹

The discussion page of 'Traditional knowledge'⁴² confirms that this article is more about intellectual property rights than about understanding the knowledge of Indigenous peoples. It also refers to an unsettled discussion over the Point of View (POV) of the article. The same administrator who merged the 'Indigenous knowledge' page into the 'Traditional knowledge' page proposes to merge the article with the 'Indigenous intellectual property' article.⁴³ This administrator, as his user page shows,⁴⁴ specializes in intellectual property issues, which might explain his focus on knowledge as a commodity and not on knowledge as a practice, which was the focus of the 'Indigenous knowledge' article.

41. The term 'regional communities' is not explained in this description. WIPO uses the term 'regional communities', whereas UN organizations use the term 'local communities'.

42. Wikipedia contributors, 'Talk:Traditional Knowledge', http://en.wikipedia.org/wiki/Talk:Traditional_knowledge.

43. Wikipedia contributors, 'Talk:Traditional Knowledge'. This doesn't happen because, according to another editor, we don't merge the knowledge article with the intellectual_property article, so why would we merge Indigenous_knowledge into the Indigenous_intellectual_property article?

44. Wikipedia contributors, 'User:Edcolins', <http://en.wikipedia.org/wiki/User:Edcolins>.

Another topic in the discussion of the 'Traditional knowledge' page has the title *Is 'traditional knowledge' knowledge?*⁴⁵ As a result, a new paragraph was added to the 'Traditional knowledge' article in January 2007:

"Traditional knowledge" is not recognized as knowledge by all who study it since it includes beliefs, values and practices. These critics argue that these elements cannot be considered "knowledge" because they do not constitute "justified true belief" (the definition of "knowledge"). This criticism is elaborated upon in the discussion forum.⁴⁶

About six months later, the second and third sentences were deleted.

Then, in November 2008, a new Wikipedia article was created with the title 'Traditional environmental knowledge', created in the category Knowledge.⁴⁷ On February 2009, another new article was created with the title 'Traditional ecological knowledge' and is located in the category Anthropology Stubs.⁴⁸ These articles refer to Indigenous knowledge, and both seem to represent particular academic perspectives.

After three years, the last remaining sentence doubting a knowledge status for 'Traditional knowledge' was deleted on 25 May 2010.⁴⁹ The reason for deletion seems, according to the stated motivation by the editor, purely managerial. The sentence had no citation and therefore seemed original research, thus violating one of Wikipedia's policies:

Wikipedia does not publish original thought: all material in Wikipedia must be attributable to a reliable, published source. Articles may not contain any new analysis or synthesis of published material that serves to advance a position not clearly advanced by the sources.⁵⁰

The use of an editorial policy to delete a sentence in an article can also be a tactical decision. The editor could have written a comment in the 'Talk:Traditional Knowledge' page, arguing that all knowledges, also Western science, include 'beliefs, values, and practices'. This could have started a discussion in which it would become impossible to delete the sentence without any protest.

As of June 2010, the bulk of the 'Traditional knowledge' article is still about property rights and international conventions. Any Wikipedia visitor searching for Indigenous knowledge is

45. Wikipedia contributors, 'Traditional_knowledge', http://en.wikipedia.org/wiki/Talk:Traditional_knowledge.

46. Wikipedia contributors, 'Traditional_knowledge (old)', http://en.wikipedia.org/w/index.php?title=Traditional_knowledge&oldid=102936873.

47. Wikipedia contributors, 'Traditional_environmental_knowledge', http://en.wikipedia.org/wiki/Traditional_environmental_knowledge.

48. Wikipedia contributors, 'Traditional_Ecological_Knowledge', http://en.wikipedia.org/wiki/Traditional_Ecological_Knowledge.

49. Wikipedia contributors, 'Traditional_knowledge (old)', http://en.wikipedia.org/w/index.php?title=Traditional_knowledge&oldid=364118944.

50. Wikipedia contributors, 'Wikipedia:OR', <http://en.wikipedia.org/wiki/Wikipedia:OR>.

redirected to this page with its focus on knowledge as a commodity that needs some form of protection. The 'Traditional knowledge' article is not categorized under the category Knowledge⁵¹ in Wikipedia's categorization system, which forms the basis for its taxonomy.

We can thus see how the knowledges of Indigenous peoples have become marginalized within the intellectual property discourse that forms the main theme of the 'Traditional knowledge' article. Neither do the latest additions – the articles on 'Traditional environmental knowledge' and 'Traditional ecological knowledge' – contribute to the understanding of the structures and contents of the knowledges of Indigenous peoples. They rather contribute to the further fragmentation of the topic along Western academic perspectives. The knowledge of Indigenous people is scattered among a wide variety of categories and without any meaningful relations between them. This fragmentation becomes clearer when we look at the content of the knowledge of Indigenous peoples in Wikipedia. To give one example, Wikipedia has an excellent article on *terra preta*, an ancient Indigenous soil management practice found in the Amazon basins.⁵² Several universities and companies are now investigating terra preta to enrich poor tropical soils and as a method to store carbon in order to mitigate global warming. There are, however, no links between this article and any of the articles discussed above.

The fragmentation of Indigenous knowledge in Wikipedia is also the effect of Wikipedia's classification system. Each article in Wikipedia has a particular place in the category system.⁵³ The 'Traditional knowledge' article is found in five Wikipedia categories: Indigenous People, Intellectual Property Law, Oral Tradition, and Commercialization of Traditional Medicines.⁵⁴ Wikipedia has no category to connect all articles on Indigenous knowledge. Olson and Ward⁵⁵ use the term *diasporized* when referring to the dispersion of marginalized groups in library classification systems. Similarly, we can see the diasporization of Indigenous knowledge in Wikipedia. The knowledge of Indigenous peoples is dispersed in the Wikipedia database: there is no 'interface'⁵⁶ that would enable a Wikipedia user to find a trajectory through this fragmented body of knowledge.

In my Wikipedia account I have brought the materiality of Wikipedia to the foreground. These material aspects, such as the editorial policies and the category system, regulate human knowledge by producing it through its own ordering practices. Wikipedia, as a database design, *performs* the knowledge it proposes to organize. In the next story I will zoom in on the *performativity* of database design by looking at a very small database.

51. Wikipedia contributors, 'Category:Knowledge', <http://en.wikipedia.org/wiki/Category:Knowledge>.

52. Wikipedia contributors, 'Terra_preta', http://en.wikipedia.org/wiki/Terra_preta.

53. Wikipedia contributors, 'Wikipedia: Categorization', <http://en.wikipedia.org/wiki/Wikipedia:Categorization>.

54. There is a category Knowledge in Wikipedia, but the article is not linked to that category.

55. Hope A. Olson and Dennis B. Ward, 'Ghettos and Diaspora in Classification: Communicating Across the Limits', Bernd Frohmann (ed.), *Communication and Information in Context: Society, technology, and the Professions. Proceedings of the 25th Annual Conference/Association canadienne des sciences de l'information: Travaux du 25e congrès annuel*, Toronto: Canadian Association for Information Science, 1997, pp. 19-31.

56. Manovich.

TAMI: Doing Knowledge

TAMI is a database developed in a project called Indigenous Knowledge and Resource Management in Northern Australia. TAMI is a database design for 'doing collective memory' of Indigenous communities in Australia. The project emerged within the dilemma of the compatibility of digital technologies and Indigenous knowledges on the one hand and, on the other, the need to find ways to keep the knowledge of the elderly people of the community before they passed away.⁵⁷

TAMI stands for text, audio, movies, images, and these four categories form the only dataset in the database design. Instead of developing a more conventional design, based on the 'encyclopedic archive model', TAMI's design is informed by the objective to be *ontologically flat*:

Other projects approach design as a problem of managing various givens in socio-technical contexts, rather than seeing them as philosophical and technical puzzles that take specific forms. Because of this other projects end up designing tools for managing difference so it is subordinated to a sameness that connects. This has the effect of both trivializing difference, and entrenching an on-going blindness to the profound ontological issues at stake in design.⁵⁸

TAMI never developed beyond its prototype stage, but the experiences in this project, which ran from 2003 to 2006, may provide us with particular insights in the performativity of database design.

According to the Western researchers involved in the development of TAMI, the database's limited dataset minimizes Western assumptions of how to organize knowledge, as TAMI is a database developed with and for an Aboriginal community in Australia. A Western metadata structure will determine how an object will be ordered in the overall system, thereby limiting its possibilities for its relations.⁵⁹ The researchers in the project write: 'If we assume rather that knowledge is produced at the point of performance of situated understandings we come to the conclusion that the producers of knowledge are to be inextricably involved in its production and reproduction'.⁶⁰

In TAMI, digital objects, such as a written story, a photo, a spoken story, or a video, can be uploaded and organized according to their formats (text, audio, movie, image). The objects can have file names, but they can't get tags. One can browse through the four directories that are based on the four formats and select objects by moving them into a central frame or window, a kind of workplace. By organizing a collection of objects in this central frame,

57. Helen Verran, Michael Christie, Bryce Anbins-King, Trevor Van Weeren, and Wulumdhuna Yunupingu, 'Designing digital knowledge management tools with Aboriginal Australians', *Digital Creativity* 18.3 (2007).

58. *Ibid.*, p. 132.

59. *Ibid.*

60. *Ibid.*



Figure 5. TAMI.⁶¹

knowledge is produced about a particular place and/or event. The meaning of each individual item in the central frame emerges out of its relations with the other items.

The digital objects stored in TAMI are not knowledge objects. They 'represent traces of previous knowledge-production episodes which can become useful again in new contexts of performative knowledge making'.⁶² When a story is performed, by bringing a particular set of items together in the central window, it can be saved as a collection, and metadata can be added. In that sense TAMI helps make visible the relations between Indigenous knowledge practices. It is the use of the digital objects, by making the connections between the selected objects visible, that informs the logic of the database structure.

David Turnbull, a researcher involved in similar projects,⁶³ describes three central protocols underlying database designs such as TAMI:⁶⁴

1. Autonomous local knowledge mapping: knowledge should be autonomously managed where it is created and used.
2. Local ontology mapping: the system must provide a way for each community to make explicit its own context.
3. Emergent mapping through making connections: each community must be enabled to create relations with explicit contexts of other communities. Rather than requiring that

61. TAMI, http://www.cdu.edu.au/centres/ik/db_TAMI.html#.

62. Helen Verran, et. al., p. 132.

63. See, for example, Storyweaver: <http://indigenousknowledge.org/tools-and-resources/storyweaver>

64. David Turnbull, 'Maps Narratives and Trails: Performativity, Hodology and Distributed Knowledges in Complex Adaptive Systems – an Approach to Emergent Mapping', in *Geographical Research* 45.2 (2007): 140–149.

each local context is translated/mapped into a centrally built and shared knowledge map, such as Wikipedia, connections are created by partial mappings from context to context.

TAMI and other database designs that are based on these protocols intervene in the representationalist perspective that informs database designs such as the one underlying Wikipedia. This perspective is based on the illusion that an organization of knowledge represents in one way or the other the world *out there*.⁶⁵ TAMI intervenes in this perspective by acting on the understanding that knowledge is the result of a direct material engagement with the world.

When Knowledges Meet

I have described Wikipedia and TAMI as very different database projects. A comparison of the two will therefore risk becoming a mapping of their quantitative and qualitative differences and normative statements about which is better or more successful. Continuing the diffractive reading of the two designs enables us to map the effects of their differences and where these effects appear.⁶⁶ Such a diffractive reading will generate new connections and 'communications across irreducible differences'.⁶⁷

In my descriptions of Wikipedia and TAMI, I focused on the materiality of their design. TAMI's design is understood as playing an agentive role in both the ordering of knowledge in TAMI and in the emergence of new kinds of knowers and knowledge. As a result, the materiality of TAMI is always in the foreground in the descriptions and discussions of TAMI. This is rather different in the case of Wikipedia. One factor may be that Wikipedia's informational and philosophical ontology are not perceived as conflicting. Wikipedia aspires to organize the sum of human knowledge by ordering this knowledge into an information ontology. Such an ontology is understood as representing both what (can) exist in the world and the relations between the different knowledge objects. In TAMI, knowledge doesn't exist, it *becomes*: knowledge comes into existence as the result of the ordering of objects. In Wikipedia, one *is* a knower if one's knowledge fits Wikipedia's informational ontology. In TAMI one *becomes* a knower by performing knowledge, by making connections between the digital objects in the database. The agentive and generative capacities of the database designs of Wikipedia and TAMI become clear: each design materializes particular kinds of knowledge and knowers.

In TAMI I described a designed space in which the database design and the knower meet, and knowledge is performed. It is a space in which two different knowledges, the Western-scientific knowledge underlying the design and development of digital technologies and the knowledge of an Indigenous community, meet and transform. This space is not found in the overlap between the two distinct knowledges, but should rather be understood as a third

65. John Law, *After Method: Mess in Social Science Research*, London: Routledge, 2004.

66. Donna Haraway, 'The Promises Of Monsters: A Regenerative Politics of Inappropriate/d Others', in Lawrence Grossberg, Cary Nelson and Paula Triechler (Eds), *Cultural Studies*, New York: Routledge, 1991.

67. Donna Haraway, *The Companion Species Manifesto: Dogs, People, and Significant Otherness*, Chicago: Prickly Paradigm Press, 2003, p. 49.

space or as a space in-between, a *contact zone* in which multiple ontologies meet, clash, connect, and intra-act.

Anthropologist Mary Louise Pratt first defined the concept of the contact zone and described it as 'the social spaces where cultures meet, clash, and grapple with each other, often in contexts of high asymmetrical relations of power, such as colonialism, slavery, or their aftermaths as they are lived out in many parts of the world today'.⁶⁸ Anthropologist James Clifford applied the notion of contact zone to museums.⁶⁹ He wrote that contact does not presuppose two sociocultural wholes that meet, but the meeting of systems already constituted relationally, entering new relations through historical processes of displacements. Building forth on these understandings, Donna Haraway speaks about contact zones as 'world-making entanglements'.⁷⁰

Wikipedia and TAMI are both sites of world-making entanglements, but their worlds seem utterly incompatible. The worldview of the Aboriginal community of TAMI is incommensurable with the Western-scientific worldview underlying Wikipedia. So if we take Wikipedia's calls for organizing the sum of human knowledge seriously, we may need to look at how the ontologies of Wikipedia and Indigenous knowledges can meet. Trying to fit Indigenous knowledges in Wikipedia's design would destroy precisely that what we try to keep. The question thus becomes: Can we imagine a Wikipedia in which incommensurable knowledges can meet *and stay 'alive'*?

Ordering Through Authoring

Discussion as to which connections are productive and which are to be ignored need to be made as the databases are used, not as they are constructed.⁷¹

Wikipedia describes itself as based on an openly-editable model. It is written collaboratively, and it covers 'existing knowledge which is verifiable from other sources' and 'each contribution may be reviewed or changed'.⁷² Classification work is primarily done by the people who write, edit, and administrate Wikipedia articles. Some editors and administrators are particularly interested in the overall organization of articles in Wikipedia and participate in Wikipedia-wide projects to improve the overall organization of articles.

People who are interested in the appropriate ordering and presentation of a specific topic can organize themselves by starting a WikiProject.⁷³ For example, the Anarchist Task Force of the WikiProject Philosophy/Anarchism mentions on its project page, 'The Anarchism Task

68. Marie Louise Pratt, 'Arts of the Contact Zone', in *Profession* 91, New York: MLA (1991): 33.

69. James Clifford, *Routes: Travel and Translation in the Late Twentieth Century*, Cambridge, MA: Harvard University Press, 1997.

70. Donna Haraway, *When Species Meet*, Minnesota: University of Minnesota Press, 2007.

71. Michael Christie, 'Computer Databases and Aboriginal Knowledge', in *Learning Communities: International Journal of Learning in Social Contexts*, 1,1 (2004): 6.

72. Wikipedia contributors, 'About', <http://en.wikipedia.org/wiki/Wikipedia:About>.

73. Wikipedia contributors, 'WikiProject', <http://en.wikipedia.org/wiki/WikiProject>.

Force sees that all anarchism articles are properly categorized, and that these categories are accurate, up-to-date, and streamlined for ease of use. This ensures that readers can easily research topics of interest'.⁷⁴

A similar approach to everything Indigenous would definitely contribute to a more 'streamlined' ordering of the Indigenous worlds in Wikipedia, but this ordering would still need to fit the Western ontology and taxonomy underlying Wikipedia. The two incommensurable knowledges would meet, but one will necessarily be subjugated to the other.

How to support knowledge diversity in Wikipedia? How to enable 'communication across irreducible differences'? The TAMI database design incorporated the agentive role of technology and provided tools that the Aboriginal community could use to design their own knowledge organizations. The flat ontology of the database enabled users to generate relevant and meaningful ontologies. For example, in Wikipedia we can search on the term 'wolf' to get an answer on the question *What is a wolf?* This question makes sense for some, but what if wolves are part of your daily environment? In some Indigenous cultures the important question to ask is: 'Who is a wolf?'⁷⁵ Knowledge of the behaviour of a wolf is, in such cultures, more important than a description and classification of the wolf according to Linnaeus.⁷⁶

One option might be to *undesign*⁷⁷ Wikipedia in order to make space for multiple designs. Such an undesigned design would come closer to Manovich's 'pure database', allowing individual users or communities of users to design their own interfaces and trajectories to organize the items in the database.

Another option is to redesign Wikipedia as an authoring tool instead of a container with more or less fixed compartments. Such an open, unfinished database design provides Wikipedia users the tools to perform their knowledge and at the same time design their database. The question then becomes one of making connections between these different databases. Wikipedia has decentered⁷⁸ the authoring of knowledge. Maybe we can take this decentering a step further? When we begin to imagine Wikipedia as a contact zone, we can start thinking of different Wikipedia access points connected with different modes to remix, to design and

74. Wikipedia contributors, 'Anarchism', http://en.wikipedia.org/wiki/Wikipedia:WikiProject_Philosophy/Anarchism.

75. This example is taken from Glen Aikenhead, 'Integrating Western and Aboriginal Sciences: Cross-Cultural Science Teaching', *Research in Science Education*, 31, 3 (2001): 337-355.

76. Wikipedia contributors, 'Wolf', <http://en.wikipedia.org/wiki/Wolf>.

77. Martin Brigham and Lucas Inrona, 'Invoking Politics and Ethics in the Design of Information Technology: Undesigning the Design', *Ethics and Information Technology*, 9 (2007): 1-10. Maja van der Velden, 'Undesigning Culture: A Brief Reflection on Design as Ethical Practice', *Cultural Attitudes towards Technology and Communication 2010*, Proceedings of the Seventh International Conference on Cultural Attitudes towards Technology and Communication 2010, Vancouver, Canada, 15-18 June 2010, pp. 117-123.

78. Andrew Cunningham and Perry Williams, 'De-centring the 'Big Picture': The Origins of Modern Science and the Modern Origins of Science', *The British Journal for the History of Science*, 26 (1993).

to make connections, both within Wikipedia as well as across other knowledge communities. Such a Wikipedia has the potential to become a distributed database of local ontologies – a Wikipedia in which human performances are respected and remain meaningful.

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