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Author

Buckland, Michael

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The Expansion of Bibliography: Dog-stone, Antelope, and Evidence

Michael K. Buckland

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French translation: <https://dlis.hypotheses.org/2457>

Summary

Bibliographical techniques to provide sophisticated access to printed publications were developed long ago. Access to other media has been slower to develop. Two anomalies with respect to the scope of bibliography are considered. Donald F. McKenzie wrote that bibliography should be extended to all media including culturally significant landscapes, for example a stone associated with a legend. Librarian Suzanne Briet and her student Robert Pagès asserted that an animal in a cage can be a document. These examples are examined in relation to the history and theory of bibliography, the relationship between bibliographies and other reference works and their powers (affordances). It is concluded that for some areas of bibliography these examples are irrelevant. But these examples call into question the limitation of bibliography to printed materials.

Introduction

In 1892 Paul Otlet published his first paper on bibliography, entitled “Un peu de bibliographie” (A little something on bibliography). In it he drew attention to inadequacies of bibliography at that time. It began :

La débauche de productions de toutes sortes à laquelle donne lieu de nos jours la culture des sciences dites morales, sociales et politiques, n'est pas sans effrayer ceux qui se préoccupent de la qualité plutôt que de la quantité (Otlet 1891-92, 254).

The debasement of all kinds of publication resulting from the modern cultivation of the so-called moral, social and political sciences is alarming to those who are concerned about quality rather than quantity (Otlet 1991, 11-24).

Otlet outlined a vision of what he thought was needed and this vision became his life's work. Our objective is more limited. We consider two anomalies with respect to the scope of bibliography. Both are cases where highly respected bibliographers asserted that bibliography should extend to include objects beyond printed materials: Donald F. McKenzie's example of the Gnoilya Tmerga stone and Suzanne Briet's antelope in a zoo. They are intriguing examples. In each case a rationale is provided. Yet these suggestions seem rather odd, if not absurd. Both proposals have been widely-known for more than thirty years and yet practical proposals to accommodate them within bibliography have been lacking.

Donald McKenzie and the Gnoilya Tmerga stone

Donald F. McKenzie (1931-1999) was a New Zealander with impeccable credentials in historical bibliography. In 1985 he presented the first Panizzi lecture at the British Library. It was entitled “Bibliography and the sociology of texts” (McKenzie 1999). He argued that bibliography had been too narrowly applied. Adopting a very broad sense of ‘text,’ he asserted the need to extend the application to forms of text beyond those printed on paper. Texts, he wrote, “include verbal, visual, oral, and numeric data, in the form of maps, prints, and music, of archives of recorded sound, of films, videos, and any computer-stored information ... There is no evading the challenge which those new forms have created” (p. 13).

To illustrate his argument he cited a stone in the center of Australia associated with an ancient Aborigine legend in which a dog’s territory was invaded by another dog. They fought over a female dog. The dog killed the invading dog but was severely injured. He laid down and changed himself into a stone. Rubbing the stone in the right way can make other dogs become fierce. This story illustrates the close association of physical landscape with Aborigine culture. McKenzie states “... landscape has a textual function . [...] It is the narrative power of the land, its textual status, which now supports a political structure dedicated to the belated preservation of the texts which make up a culture. [...] The argument that a rock in Arunta country is a text subject to bibliographical exposition is absurd only if one thinks of arranging such rocks on a shelf and giving them classmarks.” (1999, 41; cf Grenersen, Kemi & Nilsen 2016).

The challenge is made more urgent because the cultural status of the landscape is the primary defense against development encroaching on traditional cultural heritage. With the expansion of the town of Alice Springs, the Gnoilya tmerga stone is now surrounded by urban development. Its site is now in Railway Terrace near a pizza parlor (*Mparntwe* 2004).

The Antelope of Suzanne Briet

Suzanne Briet (1894-1989) was a distinguished French librarian who established and managed the reference and bibliography hall at the French national library. She was a prominent leader of the documentation movement that advocated the development of specialized libraries and information centers. In 1951 she published a manifesto entitled *Qu’est ce que la documentation* (Briet 1951), but it received little attention until the 1990s. An English translation *What is documentation?* appeared in 2006 with added commentary and biographical background (Briet 2006).

Briet quotes, with approval, a statement by an unidentified bibliographer that “a document is a proof in support of a fact” (“Un document est une preuve à l’appui d’un fait”). The best known passage asserts what could and could not be considered a document:

Une étoile est-elle un document ? Un galet roulé par un torrent est-il un document ? Un animal vivant est-il un document ? Non. Mais sont des documents les photographies et les catalogues d’étoiles, les pierres d’un musée de minéralogie, les animaux catalogués et exposés dans un Zoo (Briet 1951, 7).

Is a star a document? Is a pebble rolled by a torrent a document? Is a living animal a document? No. But the photographs and the catalogues of stars, the stones in a museum of photography, and the animals that are catalogued and shown in a zoo, are documents (Briet 2006, 10).

Briet continues with an antelope as an example. A wild antelope running free in Africa is not a document. But if it is captured, positioned in a taxonomy, placed in a zoo, and examined, it has been made into a document. Briet provides little explanation or justification for her assertions (Buckland 1997; forthcoming).

Briet's lack of explanation adds interest to the work of Robert Pagès (1919-2007). In his youth, Pagès was a clandestine anarchist activist using the pseudonym Rodion. Later he became an eminent specialist in social psychology. Between those two careers he was a student in the program of professional education documentation founded by Suzanne Briet and others at the Conservatoire National des Arts et Métiers in Paris. (In 1951 this program became the present Institut National de Techniques de Documentation.) Pagès was, then, one of Briet's students. In 1947 he completed a thesis, entitled "Transformations documentaires et milieu culturel" [Documentary transformations and cultural context] which was published as an article in 1948. This article discussed a gorilla in a cage, Napoleon's hat, and an unidentified Egyptian mummy as examples of documents. It not only includes many of the ideas that appeared later in Briet's manifesto but also it provides more explanation (Pagès 1948; Buckland 2017).

A short history of the word "bibliography"

The word *bibliography* is from the Greek and literally means book writing. In ancient Greece and in Europe until the seventeenth century, *bibliography* meant the writing out of texts on papyrus, parchment, and later paper. However, in the seventeenth century a new and different meaning began to emerge: writing *about* books. The earliest identified use of *bibliography* for the description of books was in a Benedictine abbey in Paris around 1620. The abbey's rules stated that the library is to be managed by a monk versed in scholarship and bibliography: *Bibliotheca praeficiatur frater aliquis in scientiis et bibliographia versatus* (Nestler 2005, 5). The first printed use of *bibliography* in this new sense seems to have been in 1633 in the title, *Bibliographia politica*, of a literature review by Gabriel Naudé. Gradually this new use of *bibliography* entirely replaced the earlier meaning (Balsamo 1990; Blum 1980; Nestler 2005).

Gabriel Naudé (1600-1653) was a librarian. At that time *librarian* denoted a position not a profession. It was the era of the "scholar-librarian", when the scholar's personal erudition and familiarity with the collection provided intellectual access. The scholar-librarian was an individual who was familiar with published scholarship, the *historia litteraria*. In a library of any size this demanded significant erudition. The entry for Librarian in the famous encyclopedia of Diderot and d'Alembert states :

Bibliothécaire. [...] Il y a peu de fonctions littéraires qui demandent autant de talens. Celle de bibliothécaire d'une grande bibliothèque, telle, par exemple, que celle du Roi, suppose la connoissance des langues anciennes & modernes, celle des livres, des éditions, & de tout ce qui a rapport à l'histoire des Lettres, au commerce de la Librairie, & à l'Art typographique. (*Encyclopédie* 1752, 228)

Librarian. [...] There are few literary roles which require so much talent. That of librarian of a large library, such as, for example, that of the King, assumes knowledge of ancient and modern languages, of books, publications, and everything related to the history of letters, the book trade and typography.

However, the role of the scholar-librarian is problematic. Every human has a limited capacity and library service is at risk if that individual becomes forgetful, dies, or moves to another library. These limitations became increasingly severe with the growth of knowledge, the number of publications increased, and the size of library collections steadily grew. It was to reduce dependence on scholar-librarians that in the nineteenth century Martin Schrettinger, Melvil Dewey, and others developed catalogs, classifications, and other bibliographical aids to enable readers and library staff alike to find what they wanted (Buckland 2017b).

In 1892 the Bibliographical Society was established in London. In his inaugural address the founding President, Walter Arthur Copinger (1847-1910), spoke with enthusiasm of advancing both “intellectual bibliography” (access to ideas) and “material bibliography” (the study of physical books) (Copinger 1893). The Society’s members chose to concentrate on material bibliography, but others elsewhere advanced intellectual bibliography. Paul Otlet and Henri LaFontaine established the International Institute for Bibliography in Brussels. Herbert Field established the Concilium Bibliographicum in Zurich, the Royal Society struggled to produce its catalogue of scientific literature and there were numerous other initiatives (Burke 2014). A golden age of bibliography had begun.

Many varieties of bibliography

The word bibliography is ambiguous. It can denote an activity or a product. Experts are agreed that the product – a bibliography – is a list, although a list may have a very complex structure. On the other hand, there is much less agreement on the activity. In addition to listings of many different kinds, there have been diverse bibliographical activities under different names, including analytical, descriptive, enumerative, historical, intellectual, material, subject, systematic, and textual bibliography.

Georg Schneider (1876-1960), a leading authority on the theory and practice of bibliography, concluded that, while the activities associated with bibliography were quite varied, there were three discernible emphases (Nestler 2005, 2).

1- The study of books themselves.

This was sometimes very narrowly defined, especially in the so-called New Bibliography associated with members of Bibliographical Society. W. W. Greg, for example, excluded even the binding of a book from bibliography. It was against this narrowness that McKenzie was protesting in his Panizzi lecture. He and others, including influential French investigations known as “histoire du livre,” drew attention to social context as is now seen in the activities of the Society for the History of Authorship, Reading and Publishing.

2- Practical aid for scholars: Making and using bibliographical lists.

3- The relationship between printed texts and knowledge.

An example is Gilbert Varet, *Bibliographie et savoir: Introduction théorique à la bibliographie* (1956).

Areas for development in bibliography

There is plenty of work in progress which can be divided into three areas :

1-Technical methods: The use of cards, computers, standards, and so on.

2-Extension to additional media, sometimes with distinctive names, such as discography and filmography.

3-Theory of bibliography : The examination of the nature of bibliography as an activity.

The first two are receiving a lot of attention. Our concern is with the third. It includes four issues:

- Bibliography beyond printed books. How can the principles of bibliography be extended seamlessly without creating entirely separate initiatives such as discography and filmography;
- Access to evidence, rather than book or text. Recall Briet’s bibliographer’s statement, noted above, that “a document is a proof in support of a fact” (“Un document est une preuve à l’appui d’un fait”);
- The status of text and narrative relative to each other and to bibliography;
- Bibliographies as a species of reference work.

Methodological concerns

There is a good French principle: Reculer pour mieux sauter ! (Step back in order to jump forwards better.) In theorizing bibliography, we have to step a long way back. We need to emphasize the following points :

1-Distinguish names and things. Individuals like Conrad Gesner (1516-1565) were making bibliographies before they were called bibliographies.

2-Terminology is not stable. As already noted, the term *bibliography* has already changed substantially with respect to purpose, process, and medium.

3-Figurative language very common and deceptive. For example, we speak metaphorically of documents “carrying” meaning.

4-We find repeatedly in cultural and social matters that even when types are clearly different there is a continuum of intermediate cases and no clear frontier between them. For example, a typical dictionary is clearly different from a typical encyclopedia, but there are intermediate forms on a continuum between dictionary and encyclopedia (McArthur 1986).

5-Definitions are inherently problematic and do not work well in areas concerned with culture and social behavior, like bibliography and information science. Freer (1954) reviewed fifty definitions of *bibliography*. Similarly with Information Science, contemplate the many attempts to define *relevance*. The lesson to be learned is that definitions are inherently unsatisfactory in some contexts. It is unscholarly to use tools that do not work. One should prefer descriptions since descriptions allow for overlap and the absence of clear-cut boundaries. The historian Marc Bloch denounced definitions. He refused to define *history* :

Il ne définit pas l’histoire. Parce que toute définition est prison. Et que les sciences, comme les hommes, ont avant tout besoin de liberté. [...] Définir, mais n’est-ce point brimer? [...] A bas les cloisons et les étiquettes ! C’est la frontière, un pied en deçà, un pied au delà, que l’historien doit travailler librement. Utilement (Febvre 1953, 424-425).

He does not define history. Because any definition is a prison. And because the sciences, like men themselves, need freedom above all else. [...] Definitions – are they not a kind

of bullying? [...] Down with all barriers and labels! At the frontiers, with one foot in each side, that is where the historian has to work, freely, usefully (Febvre 1973, 31).

6-Similarly, comparison is useful, but a natural tendency to formulate dichotomies should be resisted.

Documents : Only printed books ?

The central issue in our two cases – the dog-stone and the antelope – is the relationship between each and bibliography. This issue is reflected in discussions of the status of “documents”. Two examples can illustrate the issue.

The distinguished French bibliographer Louise-Noëlle Malclès (1899-1977) took a strict line that is reflected in her textbooks. For example, in her *Les sources du travail bibliographique*, she states: “Nous employerons ‘bibliographie’ pour le texte imprimé seul ou toute reproduction assimilée” (“We use ‘bibliography’ for printed text only or any similar reproduction.”) (Malclès 1950, I, 3). Her restriction of bibliography to printed books, however, is pragmatic. It is a convenient and sensible expedient, not one of principle, to include printed texts but exclude manuscript texts.

In contrast, the historian Lucien Febvre rejoiced in including any signifying evidence as a document, even prehistoric pollen :

Dans les marais bourbeux du Nord, il y a des millénaires, le pollen des arbres forestiers est tombé. Un Gradmann [...] l’examinant au microscope, en tire le fondement de ces études [...] de peuplement antique, que la science de l’habitat humain doit s’avouer impuissante à mener à bien – même en ajoutant aux données des textes l’études des noms de lieux ou celle des vestiges archéologiques. Un document d’histoire, ce pollen millénaire. L’Histoire fait son miel avec lui (Febvre 1934, 103).

In the muddy marshes of the North, millennia ago, the pollen of forest trees fell. A Gradmann [...] examining it under the microscope, draws the foundation of these studies [...] of ancient settlement, that the science of the human habitat must admit to being powerless to complete – even adding to the data of the texts of the study of place names or archaeological remains. *A history document, this thousand-year-old pollen*. History makes its honey with it.

Lucien Febvre was an historian, rather than a bibliographer. With Marc Bloch he led the *Annales* school of historiography. But is worth noting that the *Annales* historians had a view of documents that appears to be identical to that of Briet and Pagès.

The question of what constitutes a document can be illustrated by an entry in a dictionary of information science and documentation :

Document. Support d’informations enregistrées à titre permanent et susceptible d’être classé et consulté [...] et éventuellement reproduit. Un document est ce qui enseigne, renseigne, permet de démontrer et qui donc fait office de preuve ou de titre (Lamizet & Selem 1997, 200).

Document: Support of permanently recorded information that can sorted and consulted ... and possibly reproduced. A document is what teaches, informs, demonstrates, and therefore serves as evidence or a claim.

Note the Boolean form of this definition. Two different elements, a material requirement and a functional requirement, are both stipulated. What happens, we may ask, if one were to dispense with the first element? We would be left with a functional definition without the material form specified: An object that “teaches, informs, demonstrates, and therefore serves as evidence or title.” Is it still a *document*? If not, then what is it to be called? And would a list of them still be a bibliography? Also, if we are concerned with evidence, what if we do not require that an object have a permanent recording ?

Data and documents

Data is often seen as somehow different from other records. Jonathan Furner has provided an excellent analysis which concludes: “a dataset is made up of documents; and the dataset is a species of document” (Furner 2016, 287). Data management can be seen as a form of bibliography (Buckland 2011).

Graphic and non-graphic documents

An exclusive emphasis on printed texts leads to the exclusion of diagrams, drawings, and other images if not included in the printed book. Some authors, notably Jesse H. Shera, sought to mitigate this loss by expanding the scope of bibliography to include these categories of expressive works under the term *graphic records*. Expressive records might be better. Paul Otlet is noted for extending this category to sculpture as a three-dimensional document. Nevertheless, extending the notion of documents to include graphic records remains a conservative position compared with the semiotic or phenomenological position of Briet, Pagès, and the *Annales* historians.

Initial and derived documents

Briet makes a distinction between an initial document and derived documents in her manifesto. Articles, lectures, newsreels, and other material *about* the antelope are derived from it, she argues. The antelope, in contrast, is simply itself, an initial document. (Briet 1951, 8; 2006, 11). Pagès had already made the point in more detail and used the term *auto-document* for an object that is simply and only illustrative of itself. His examples are Napoleon’s hat and a unique meteorite. A descriptive document describing either is secondary or derived (Pagès 1948, 60).

This use of a distinction between initial and derived documents is noteworthy in two ways: First, this is the practice in biological taxonomy. Establishing a new species requires a specific, initial specimen (a holotype), a secondary document describing it, and a suitably formed name. Second, the relationship of the derived document to an initial document brings a proper emphasis on provenance and evidence. “Fake news” is characterized by the absence of an initial document.

Particulars and specimens

Pagès combines his discussion of initial and derived documents with a further distinction between particular objects that are unique and specimens that can be seen as representative of a type (Pagès 1948, 60). His analysis seems rather arbitrary. He treats a gorilla in a cage and an unidentified Egyptian mummy as specimens. They are, presumably, regarded as illustrative of gorillas and Egyptian mummies respectively. In contrast, Napoleon’s hat and a unique meteorite are treated as unique particulars. A more satisfactory treatment would be state that this is a matter of perspective. Any material object can be regarded a unique particular. Certainly any gorilla or mummified Egyptian is, or was, a unique person whether or not they are also regarded

as a specimen of their type. In the other direction, it takes little imagination to view any particular as a specimen of some kind. Napoleon's hat, even if he only had one, is a specimen of French headware of the period and it is also a specimen of Napoleon's clothing.

Any descriptive detail applied to a unique object makes it a specimen of the set of objects associated with that descriptive detail. Selection and retrieval systems operate on the basis of ascribed descriptions (metadata). So, strictly speaking, they can only retrieve specimens of whatever set is specified. Once retrieved, any specimen can also be regarded as a unique particular.

The increasing role of documents

The role of documents has been increasing and will continue to increase. There are three reasons:

1-Social and economic development has been characterized by a division of labor. The division of labor depends on collaboration. Effective collaboration depends on communication, which could be direct but tends increasingly to be indirect, through documents (Buckland 2017c).

2-New technology enables new media and so new forms of documents for us to experience. Instead of a direct personal experience, we can have a "quasi-experience" indirectly by experiencing a representation of it through radio, film, or other medium.

3-The widespread "documentification" of ordinary situations as seen in tourism. For example, a village such as Rocamadour is presented as much more than a mere village. It becomes a living educational illustration of France's medieval past that is worth a visit and generates an educational experience. Through tourism and other means new experiences are created (Pagès 1948).

Knowing and believing

Descartes and others distinguished and contrasted direct experience (*l'expérience vécue*) with bookish learning (*l'héritage livresque*; second-hand knowledge). This raises important questions about whose narrative to believe. What are we to make of such "second-hand knowledge"? (Wilson 1983; Tricot, Sahut & Lemarié 2016; Sahut & Tricot 2017).

There is also the challenge of making sense of our own experience or of the narratives of others. This was an area in which Briet cited Pagès as insightful. He wrote a book and a novel on this theme (Pagès 1962, 1964). In this our preferences are influential. If we are motivated to believe something – "May I believe it?" – we are liable to require little or no evidence and even disregard evidence to the contrary. If we do not want to believe it – "Must I believe it?" – we are like to require more evidence and perhaps no amount of evidence will be enough. (Ditto & Lopez 1992; Loewenstein 2006).

James Michener, the novelist, wrote an autobiography. In it he described how he amused himself when young by masquerading as a fortune teller. He found that if he invented many insights about a person, a very few would happen to be valid and these would dominate the attention of the person whose fortune he was telling. In the end he abandoned fortune telling because he found that subjects commonly wanted to believe fraudulent predictions and they would sometimes go to extraordinary efforts to make the prophesy come true (Michener 1992, 403-411).

We already noted that Briet quoted with approval a statement that “a document is a proof in support of a fact.” (“Un document est une preuve à l’appui d’un fait”). *Proof* in English seems to have a stronger and narrower meaning than *preuve* in French. Whether or not that is the case, the statement does appear too restrictive and that, at least in English, a more inclusive sense of evidence, such as “makes evident” should be preferred (cf. Frohmann 2012).

“Documentification”

The deliberate use of documents to influence belief and behavior was addressed by Pagès (1948). He starting with the dichotomy between lived experience (l’expérience vécue) and bookish learning (l’héritage livresque) which he associated with Descartes and others. But, he argued, that separation was increasingly diminished especially during the nineteenth and twentieth centuries by intermediate forms of persuasive evidence. The increasing popularity of scientific experiments can be regarded as the artificial creation of experiences. New media technologies, such as printing, photography, cinema, radio, and television, were increasingly used. They too created new experiences that were lifelike (“d’expériences originales perceptives presque intégrales”). It was not simply the reproductive capacity of the new media technologies to generate additional documents, but the ability of creating new and different experiences by composing collages and sequences (“symbolismes combinatoires”; “combinatorial symbolisms”). Cinema illustrates the possibilities very well.

At the same time, Pagès argued, the combination of the rise of the nation state and of developing technologies was leading everywhere to an increasingly totalitarian society. Mass production in factories, mass consumption guided by skillful marketing in mass media, the rise of large and influential powerful political parties, military conscription, and total war were changing society. The increasingly suggestive power of media and the increase in vicarious experiences presented through radio, film, and television blur the distinction between lived experience and second-hand knowledge. Mass marketing, museums, expositions, and the tourist industry were making everyday objects culturally meaningful. The cumulative effect was to fill the space between lived experience and bookish learning. The distinction between two were increasingly unclear. The document-experience dichotomy had become a continuum. Experience since 1948, especially with the rise of social media, has validated Pagès analysis.

In addition, the increased range of persuasive media was also eroding the previously preeminent status of the printed word. Whether or not a document was printed on paper was becoming increasingly irrelevant. That, in turn, calls into question the privileging of printed materials when organizing access to evidence.

Text and narrative

The dog-stone is significant because of the narrative associated with it. The same kind of association occurs with souvenirs. In my home I have a mollusk shell. It looks rather like a large oyster shell. In March 1972 my family and I moved from England to Indiana in the United States. Soon after our arrival we enjoyed a picnic in a lovely park on the banks of the Wabash river where I picked up this shell. I do not know what species it is and it is not an elegant object. The reason I have keep it for more than forty years is that it reminds me of a happy event that marked an important stage in our lives. It is a souvenir. Its significance for me is the narrative associated with it. It documents for me a happy memory. It has a special and personal meaning for me that it does not have for others.

Places become cultural heritage sites because of narratives associated with them. A striking example is Masada in Israel. Masada is an isolated rock plateau in the Judean desert overlooking the Dead Sea. It is a spectacular site with a flat top and very steep sides all around. Herod the Great built a palace and fortifications on it. Josephus the historian described how 960 rebels against Roman rule took refuge there and committed mass suicide rather than be captured by the besieging Roman army. Masada and this associated story have been used to promote a heroic narrative to inspire loyalty to the new state of Israel. It has been used, for example, as a location for the ceremonial induction of new soldiers into the army. Less well known is that the archaeological evidence provides no support for and seems to contradict Josephus' story of a massacre (Ben-Yehuda 1995).

The cognitive construction of meaning ("sense-making") generates narratives concerning whatever is of interest. Perceptions about books are not necessarily derived from reading them. Individuals associate *Mein Kampf*, the constitution of the USA, the Koran, and other famous documents, with narratives even if they have never read them. And if reading is not necessary for meaning, why limit bibliography to texts, unless, of course, it is the text itself that is of interest as it is in the case of textual scholarship.

Bibliographical theory: basics

The basic bibliographical act is to mention a document and a list of such mentions is a bibliography. The mention may simply be an allusion or it could include a detailed description. *Refer* and *reference* derive from the Latin verb *ferre*, which means to carry, and the prefix *re-* meaning "back." *Relate* and *related* derive from the irregular past participle (*latum*) of the same verb. They indicate an already established referring and so *related* means that one thing has been referred to another. Referring, mentioning, and alluding do not necessarily convey meaning. However, using a name and the manner of referring tend to generate meaning.

Bibliographical work is usually thought of as including representing, describing, or documenting. Copying might be considered an extreme case of representing. Visualization is an advanced form of representation. Describing is a matter of listing characteristics of what is being described. A natural consequence of this process is that all documents with any given characteristic constitute a set. Searching for that characteristic assembles that set.

A list of one or more references is a bibliography, but lists come in many forms other than a simple list. A narrative on a topic that mentions related documents is a bibliographical essay. Whenever one document mentions even one other document, it becomes to that extent bibliographical.

Enumeration is the determination of what is included and an enumeration is a listing of records which is the usual sense of a bibliography. The extent of descriptive detail varies greatly as do the forms of presentation and visualization.

Six bibliographical powers

Patrick Wilson's *Two kinds of power: An essay on bibliographical power* (1968) is a penetrating examination of the nature of bibliography. He distinguishes two different but related kinds of "power." One power is the provision of descriptions of items listed; the other is the ability to exploit those descriptions to select the best documents for some purpose. More recently academics speak of *affordances* rather than *powers*. Affordances are commonly spoken of

figuratively. For example, one might say that a speed bump in the road slows cars down. That is not literally true because an asphalt bump is incapable of operating an automobile. Rather, when automobiles are driven at speed over a bump there is discomfort for the passengers and possibly damage to the car. In consequence, drivers choose to reduce speed whenever speed bumps have been installed. One can think of affordances as the consequences of the existence of something. Affordances enable or facilitate some actions and hinder or prevent others. [Ralentisseur : surélévation de chaussée]. Here we follow Wilson and use *powers*. Our purpose is different from his and accordingly we have expanded his two into six as follows :

1-Description: Descriptions are used to inform. This power corresponds with Wilson's power of description.

2-Disambiguation: Bibliographical lists are expected to distinguish between different items that might appear to be the same. Disambiguation is closely associated with description because a common way to disambiguate is to provide additional description until the two descriptions diverge and thereby reveal a difference. But disambiguation and description are not the same and disambiguation can be achieved by other means, such as assigning a unique identifier.

3-Surrogacy: Sometimes a bibliographical record can act as a substitute for original, which may not be conveniently available. For example, one might want to verify publication details and consider the record sufficiently trustworthy.

4-Discovery: Bibliographies, including the special case of library catalogs, are a primary resource for search and selection of documents. This was Wilson's second power.

5-Relationships: Both descriptions and references allow relationships and thereby networks to be established and explored.

6-Analyses can be made of any of the above. There is, for example, the highly developed quantitative field of citation analysis. Also, qualitative inspection of the list of references at the end of a document reflects the scope, content, and perspective of that text.

Perspective

How we see and understand anything is influenced by our perspective. Theory relating to information has been heavily influenced by the mathematical model of data communication developed by Claude Shannon and others and known as Information Theory. This model of the reliability of data transmission has been very important in some technical areas but since it is not concerned with meaning it is of little relevance to our concerns with knowing and understanding. Transmission involves the sending of a message from a source to a recipient and can be represented as a directed line from a source to a destination. By extension we can think of communication more broadly as the sending of messages broadcast from a source to any number of destinations, which can be represented by points (sources) with multiple centrifugal lines radiating outwards. This implies that there are destinations receiving inward-coming (centripetal) lines coming to them. These models serve some purposes, but for the situation that concerns us they are misleading. This is because becoming informed is a cognitive act. A human individual is not a passive recipient of incoming messages, but is actively engaged with selecting, examining, and interpreting such evidence as is perceived. This activity would be better represented by a diagram showing centrifugal arrows radiating out than by centripetal arrows pointing in.

Summary of theoretical assumptions

We can summarize our theoretical assumptions:

- 1-Meaning is constructed. We take a semiotic approach.
- 2-Constructing meaning (sense-making) combines evidence and reasoning.
- 3-Evidence is perceived and regarded as signifying something.
- 4-Meaning is formed into as narrative. For example, observation of an antelope leads to an account of antelope behavior.
- 5-Meanings and narratives are commonly associated with an object. The dog-stone is an example. It is the associated narrative that makes the dog-stone or a souvenir significant. Books are not different in this regard.
- 6-A bibliographical reference cites a document and a bibliographical record describes a document. If we change the definition of document we change the meaning of bibliography or we require a new name.

Bibliographies and other reference works in practice

At a more practical level, if one were to consider an antelope in a zoo (or a stone with a legend) to be a document, how would one construct a record for it? The *Chicago Manual of Style* provides great detail on bibliographical style but gives no guidance for representing antelopes. Library cataloging code rules for 3-D objects and realia exist, but they do not seem suitable for an antelope or a stone. On the other hand many other well-developed specialized reference genres do already exist: atlases, biographical dictionaries, directories, encyclopedias, chronologies, manuals, etc. (Reference works collectively have received less theoretical attention than bibliographies, but see Bates (1986) and Mann (2010)).

If the antelope is a document perhaps using the Darwin Core or some other standard designed for describing biological specimens could serve as a bibliographical record. In this case, the *Encyclopedia of Life* record for the pronghorn (*antilocapra american*) at <http://eol.org/pages/14483/overview> provides an attractive model.

Similarly, could a place name gazetteer (toponym directory) record for a cultural object in the landscape (e.g. the dog-stone) be a bibliographical record? *The Oxford Illustrated Literary Guide to Great Britain and Ireland* lists locations associated with authors, publications, and events described in literary works (Eagle 1981). Is it bibliographical? It is, because it provides information concerning books. But it is biographical also because it provides information about people. And it is also geographical, historical, and literary, which indicates that bibliographies are not fully separable from other reference genres.

The affordances of reference works

We already identified six powers or affordances of bibliographies. What are the affordances of dictionaries, encyclopedias, biographical dictionaries, chronologies, and other references genres? One can take diverse examples of reference works, such as a biographical directory, a field guide to wild animals, a catalogue raisonné of artworks, or a chronology of events. In every case, they appear to have the same affordances as bibliographies, or could have if the records were detailed enough.

- Revealing: Descriptions are used to ascertain, verify, learn.
- Disambiguation: Records distinguish similar but different objects.
- Surrogacy: Records can be used as an alternative to finding and inspecting the original.
- Discovery: Entries and indexes support search and selection.
- Relationships: Referring creates relationships, networks.
- Analyses: Qualitative and quantitative analyses can be made of the records and their relationships.

The arrangements and the ingredients of reference works

The different genres of reference works are typically shelved in different areas by subject area: biography, geography, history, and so on. Further, each genre is typically arranged internally according to the terminology of the subject matter. Biographies are ordinarily arranged by persons' names; geographical works by place name; and historical works by date or time period. In their external arrangement as volumes on shelves and in their primary internal arrangement, then, the genres of reference works are quite different. One genre would not be mistaken for another.

The descriptions inside reference works, however, are a very different story.

– A library catalog subject main heading is usually a thing, an object, but there may well be a geographical component (subdivision) and a temporal one (chronological subdivision). Occasionally a person is involved.

– A place name gazetteer (toponym directory) is ordinarily arranged by place name, but there is also a “what”: island, city, lake, castle, or whatever. Also the location is stated by latitude and longitude. And, with best practice, since both places and their names change, the time when that name was in use should be stated. Depending on the amount of detail provided the name of a person important for that place might be mentioned.

– A biographical dictionary of the “Who’s who” type is arranged by persons' names. But the entry is composed a multiplicity of events involving combinations of actions, objects, places, dates, and other individuals.

One could continue by examining other examples, but the conclusion is clear. All genres of reference work, depending on their completeness of detail, are composed of the same kinds of ingredients. Skill in using a reference library includes assembling details in different ways. Within each entry, the body of the entry brings additional contextual understanding; and tracing the same topic across different reference works, especially in different genres of reference work expands the range of examples found. Facilitating such connections in the Web is mission of the Semantic Web initiative. As one simple example, a library catalog will show the literature on lighthouses and a place name gazetteer may show the precise locations of lighthouses. Linking the two facilitates our learning.

Different genres necessarily draw, ultimately, on the same pool of knowledge, although differences in purpose and design and the extreme selection and distillation of the entries make that less than obvious. This fundamental unity is reflected when discrepancies between reference works are found. Any discrepancy is regarded as an error that needs to be investigated.

Summary on reference works

Reference works share the same fundamental characteristic of being a list arranged for consultation. Reference works are generally divided by genre but they have the same ingredients (details of what, where, when, how, etc.), the same powers (affordances), and, ultimately, draw on the same body of knowledge. We can add that they are evaluated by the same criteria: purpose, scope, currency, cost, authority, objectivity, accuracy, frequency, and so on. Bibliographies are a species of reference work. Standard bibliographical practice is not currently adequate for describing an antelope in a zoo or a legendary stone, but practices in other types of reference work are or could be.

Overall summary

It is important to emphasize that our concern is with becoming informed rather than with communication or information. One effect is to change perspective from communicating to learning. Another effect is to change emphasis from author to reader. We assume a distinction between evidence (things) and sense-making (process). This allows consideration of any form of evidence an individual chooses to regard as signifying.

A characteristic of the objects of interest is that they can be discussed by using description and examples but definitions are often unsatisfactory. Definitions entail inclusion and exclusion. This does not work well in subjective and cultural matters because characteristics are commonly not clear-cut and there is usually a continuum between varieties, not borders. There is a varied landscape rather than an archipelago of islands.

Understanding involves some narrative, an explanation understood by someone. Given an emphasis on narrative, there is no necessity for an emphasis on text. And given an acceptance of associated narrative, objects can take their place in cognitive activity.

Bibliography is inherently historical, constructive, and interpretive. It is also philosophical in the sense that it is about knowledge. All other reference works share these attributes. Bibliographies are reference works and so a fuller understanding can be expected from theorizing reference works collectively rather than a limited theorizing of bibliographies.

Conclusions and terminology

Our reflections so far lead to the following conclusions:

- We can validly use *document* to denote any object considered signifying.
- Printed books are a species of document.
- We can focus on a distinction between examination of books as objects (material bibliography) and books as evidence of (or for) scholarship (intellectual bibliography).
- If we are concerned with becoming informed, the default position should be access to all forms of evidence. There is no a priori reason to exclude specific types or forms of evidence.
- All reference works, including bibliographies, can be treated as a single universe, unless there is a reason to specialize.

Terminology

Given a preference for using the term *document*, we should consider avoiding use of word *bibliography* and preferring *documenting* and *documentation*. However, *bibliography* has multiple meanings. In terms of Georg Schneider's three principal emphases within bibliography, subject bibliography, the representation of knowledge and of evidence, and the making and using of lists could both become *documentation* and *documentography* (a term used by Malclès and Pagès). The study of books themselves could well be called *bibliology*, as several bibliographers have suggested.

But changes in terminology have been resisted and it is more likely that *bibliography* will continue to be used simultaneously as a synonym for documentation, for the documentation of graphic records, for printed documents only (paralleled by filmography, discography, etc.), and to denote study of the physical book. Perhaps the continuing multiplicity of meanings of the word does not matter much if we can avoid confusing word and thing.

Finally

What are we to make of the dog-stone and the antelope? In terms of Schneider's trinity, when we consider the study of books themselves (bibliology), the dog-stone and the antelope are irrelevant and would be anomalies if included. In relation to the making and using of bibliographical lists, the dog-stone and the antelope appear irrelevant. But when it comes to subject bibliography (intellectual bibliography) and the representation of evidence, the anomaly is limitation to printed documents.

We began with the first words of Paul Otlet's essay, *Un peu de bibliographie* and we can end with its final words :

Telles sont quelques-unes des idées venues à notre esprit quand, après enquête, nous avons réfléchi sur ce que pouvaient être la Bibliographie et le travail collectif pour l'avancement des Sciences sociales (1892, 271).

Such are a few of the ideas that have come to mind when, after some investigation, we ponder what Bibliography and collective endeavour could achieve in advancing the social sciences (Otlet 1990, 20).

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