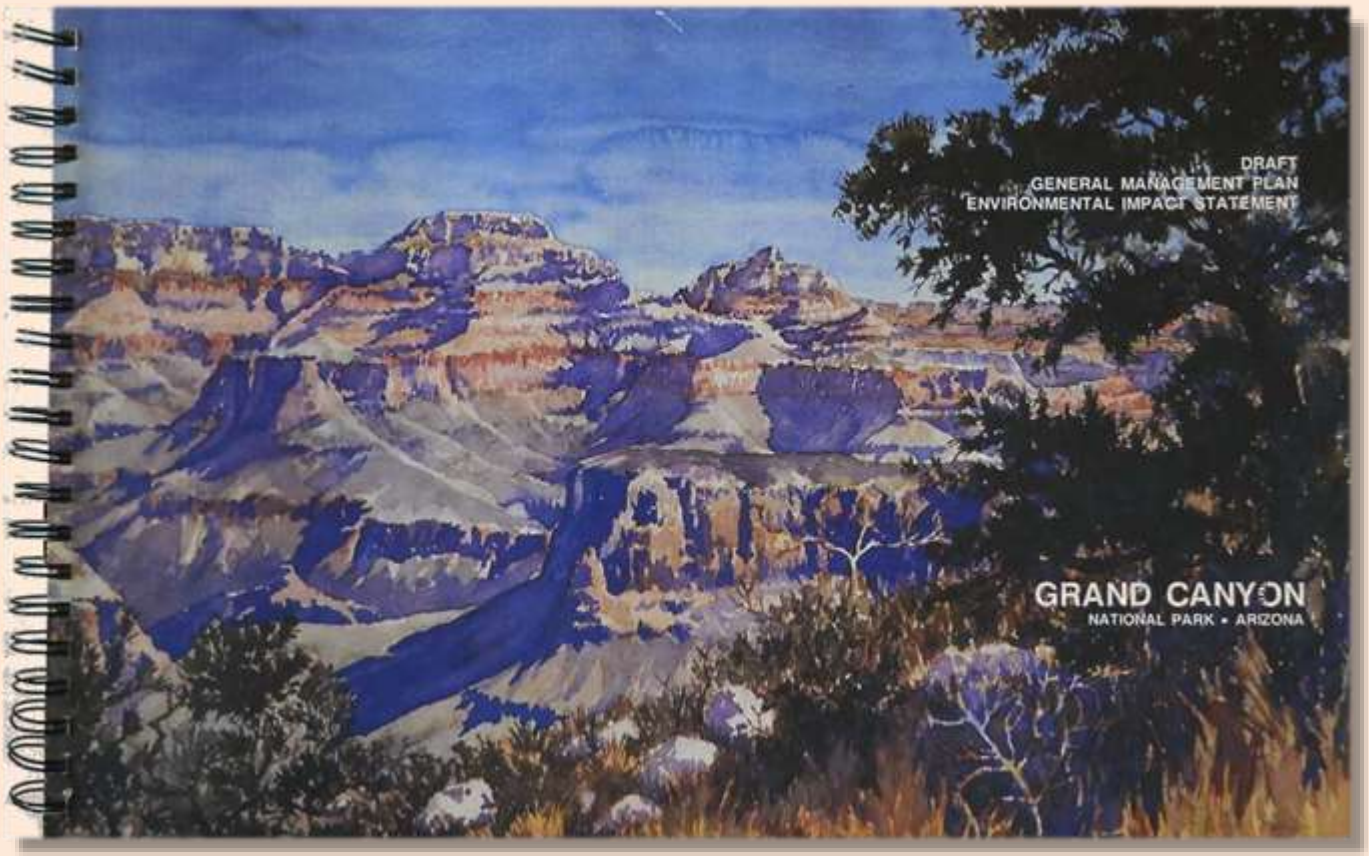
How Many Voices Unheard?
The Choir of Gray Literature in Bibliography
with examples from THE GRAND CANON

by Earle E. Spamer

RESEARCHERS of most every kind eventually meet up with "gray literature", the murky informational nebula of publications that are produced usually for limited distribution, sometimes not intended for longevity, and which seem to be cited and cataloged every which way. It is called "gray" because these documents lie outside of the usual channels of publication and distribution and confound tidy forms of cataloging and citation. Data about authorship, publisher and place of publication may not be clearly shown, at least not like as seen in conventional books and serials; even the title may be ambiguous or confused with another document, even worded differently on the cover and title-sheet. Further, some may be parts of series, and those series names may be used instead if they include separate volume numbers.

Gray literature stands out in some sections of THE GRAND CANON; such is the nature of the subject and the means by which these people and agencies communicate their opinions and findings. For this reason this essay is an excursion into the realm of gray literature, partly to relate the hidden importance of this kind of literature and partly to introduce it to those readers who may be unfamiliar with it. Gray literature is a peculiarly interesting form of publication that may not have been encountered by some readers, and for those who are all too familiar with it they may be unaware of the broad professional perspectives of it by an industrious, sometimes bewildered, community of librarians, bibliographers, and researchers.



The *Draft General Management Plan and Environmental Impact Statement* for Grand Canyon National Park, 1995. It contains a number of watercolor paintings (including the cover, *here*) by an artist who is, regretfully, not credited. Whereas some sources may know who this is, the general readership does not. (By analyzing the hasty signature, the artist is here identified as Philip Thys, whose name is listed on p. 317 as a Visual Information Specialist consultant in the National Park Service's Denver Service Center.) In addition to containing original artwork, this document measures 11 × 17 inches (shy of a yard fully opened); all in all a very unsual example of gray literature. The Final plan, printed at a more conventional 8½ × 11 inches, simply presents collated updates and refers the reader back to this Draft document, now made indispensable, for specifics; also an unusual aspect.

Color-Coding Grayness

CATALOGING DOCUMENTS may seem to be only an academic exercise, a mundane part of running a library, but it is the means by which a document can be identified and, whenever it is needed, found. The level of detail in cataloging is a function of a library's resources in staff time, expertise and perceived needs in serving its clients; despite professional cataloging standards, it can, and does, vary.

Sometimes years or decades pass before an item is called for—longer times of a century and more are not unheard of—but *a document's usefulness is not best measured in its frequency of use but in its availability*. This is in stark contrast to the

pressing responsibilities of overcrowded libraries that relegate materials rarely called for to "annexed" storage, often under warehouse conditions in a facility physically apart from the library. This material may be "called for" on request; usually a day or more passes. In some academic libraries, these off-site materials may be requested by students and faculty, but guest researchers may not have permission to request these items. Sometimes this kind of material is simply considered to be "on file"; and the "files" are often not easily browsable by a library's users.

Worse, some libraries elect to dispose of less-used materials. While such decisions are pragmatic, still one may never presume what will be of interest or use to a researcher in any place or time—and *to fail a researcher's needs is a library's greatest failing*. Unfortunately, a lot of gray literature is just the kind of material that wends its way to the annexes, re-sale bins and recycling containers. I prefer a less-used term, "fugitive information",[107] to describe the content of gray literature because it accentuates both the inherent usefulness of the material and the predicament of the gray literature genre; but researchers and librarians are more familiar with the long-standing "gray" label.

Within a library's cataloging schemes it may be a matter of *how* "gray" a document is that determines its projected usefulness to the library's clientele; whether it is accessible immediately, "on request", or not kept. In THE GRAND CANON here, the number of such fugitive citations are particularly apparent in the sections devoted to the environment and geology, so it is the researchers in these areas who will be most attracted to and impacted by the inavailability of gray literature. Whether or not all of these cited documents can be located today is a matter that is, regretfully, the burden of the researcher and the hapless librarian who assists.

Once, the medium was limited by economy, too. Many works were produced by mimeograph; even, as around the turn to the 20th century, by such arcane methods as the Edison Electric Pen process. Today, in addition to its conventional text-on-paper-sheets format, gray literature may appear as slick, professionally produced documents, as often as not in full color—and now in digital formats as well. But the "gray" remains: the creator's intentions for audience and distribution, and the ways in

[107] This term is from a web-posted document by Joanne V. Lerud and Lisa G. Dunn, "Fugitive Information on the World Wide Web: A Cost-Effective Method of Access for a Diverse Clientele", original URL http://educate1.lib.chalmers.se/IATUL/proceedcontents/fullpaper/lerud.html, relocated at http://www.iatul.org/doclibrary/public/Conf_Proceedings/1997/Dunn.doc (accessed 26 November 2011; reaccessed 9 January 2017). This web page was subsequently removed (attempted access 26 October 2017), offering a good example of the inconvenience to future researchers when web-posted materials have been moved or are no longer accessible. A startling, more pragmatic case of inconvenience is such as that of opinions of the Supreme Court of the United States, which formulate legal precedent and orders, that cite web-based materials that may no longer be accessible (Adam Liptak, "In Supreme Court Opinions, Web Links to Nowhere", *New York Times* (September 24, 2013), p. A13).

which the document is physically composed, continue to shroud the very tidy and conventional things that librarians and researchers look for when they catalog and cite these documents.

A document's size or format never determines whether it is "gray" or not; it may be one or few pages, or multiple volumes; and it may be a blurry mimeographed document or a colorful, professionally printed compendium of information. What makes it "gray" is how such literature is produced, acquired, retained, and retrieved. Some libraries receive these items as a function of maintaining their institution's internally-produced records, or by happenstance or donation, occasionally by purposeful acquisition, paid for or at no cost. Then, different librarians may follow different rules for cataloging the same document, depending upon whether the library follows established practices or its own special schemes. If the library is cataloging a document as "one of its own", produced by the staff or department of an organization or agency that it supports, it may follow different procedures than if the library were cataloging a document received from outside. Some may catalog them for inclusion on the readers' shelves; others may banish them, perhaps not even cataloged, to "reference files" whose only guides are alphabetization or enumeration.

When "gray" documents are cited by researchers or as part of administrative productions, the writers or their editors will follow standarized professional guides or house rules of style for citations; sometimes they will be creative. Citation styles vary greatly between professional journals and publishing houses; some follow one or another of separately published writing guides (for example, the *Chicago Manual of Style*, which is followed by many publishers and academics, or agency-specific guides like *Suggestions to Authors of the Reports of the United States Geological Survey*). "Forcing" a gray-literature citation to conform to one style may muddle the information contained on the title page or from other evidence within the document, a disservice to those who follow up on it. Title-pages may display a confusing arrangement of typography, title, subtitle, series name, and other information—not necessarily well arranged—while other times the same breakdown may be displayed on various pages, even the last leaf. Researchers who find citations written in one format may look for, or request through a librarian, one of these documents only to learn it cannot be located, not because the document may not exist in the repository but because the document may have been cataloged differently from the source the researcher has in hand—thus, "not found". One must wonder how much potentially useful gray literature does not find its way into a researcher's work only because a copy of a promising source could not be found.

To cut to the chase: I have followed a simple rule in THE GRAND CANON—I cite the title, author, and responsible parties for documents of gray literature, as precisely as possible from the original, gleaned from a careful examination of more than just the cover sheet (the cover- and title-sheets may differ, or authors' names can appear elsewhere in the document), and following as closely as possible the citation style used in THE GRAND CANON. Special investigatory program or contract numbers are included as notations when they are indicated in the original document. It is then up to the interested researcher to use this *verbatim* information in tandem with the cataloging schemes of libraries or other repositories, perhaps with the assistance of librarians, to establish how *those* repositories may have cataloged and stored the same item.

Pulling the Curtain Aside

GRAY LITERATURE is usually restricted to academic and political venues. In THE GRAND CANON, as we shall see, most of the gray literature appears in the environmental and geological subject areas. There is a very large proponent, too, issued from legislative branches of government, but which (as explained elsewhere in THE GRAND CANON) is probably severely undercited due to the sheer volume of material as yet unlocated; so this specific grouping will be overlooked as examples in this essay although the principles discussed here apply to it.

Furthermore, today's increasing number of general publications that are produced "on demand" follow in the same vein as gray literature. In brief, many of the on-demand publications do not display imprints as such; and as for place of publication certain central printing establishments, such as one in Lexington, Kentucky, produce works for many on-demand publishers wherever those publishers may be located; and there are other locations, too, none of which truly constitute an "imprint". The printer's date in a document—for the identical document—will vary from "demand" to "demand", too. This is becoming a perplexing problem bibliographically. THE GRAND CANON has accommodated some of these on-demand publications when they have been encountered, and the dates are those of the dates of printing, which thus far seem to represent (at least in the THE GRAND CANON's citations) the earliest known occurrences because they have not previously been available as such. As time goes by, however, it will probably be prudent to cite only these earliest known dates regardless of the variations that may appear in the product (different cover illustrations, different pagination, and so forth); but making retrospective surveys may thus be impossible if the earliest dates are unknown. This is a problem that I have not addressed since keeping apace with new appearances of on-demand titles has not

been too difficult thus far. We may yet have to discern in this special kind of gray literature a new kind of citation style, but this is a matter for the future.

The "murkiness" of the gray-literature nebula is the view from the perspective of the users of these documents—librarians and researchers. Surviving copies may be scarce to begin with, and they may be cataloged in different ways among libraries that do hold them. The problems of gray literature are neither shunned or glossed over by professionals; international conferences on the problems and issues of gray literature are held from time to time. And as a bibliographer I, too, have had to come to terms with the presence of these kinds of works, benefiting from the experiences of other researchers and librarians with whom I have worked when it comes to citing (and looking for) these productions.

In the late 1990s I wrote an essay (this one, in part) to include with what became the Internet Edition of *A Bibliography of the Grand Canyon and Lower Colorado River*; but this and other introductory materials that I had hoped to use were not added to the online presence, an editorial decision imposed by website size and maintenance charges assessed by the website designer and host. A decade and a half later, I found that the essay not only still stood well by itself, but it now offered a contrasting perspective of the topics that it addresses.

This views both an embryonic digital world of the 1990s and the present world that functions in a vastly more web-based fashion than it did even then. Many of the example citations were those that were known to me in the '90s; the fact that they are still relevant to the discussion makes it less necessary to force an updating of the essay to embrace "timely" citations from recent work. In reusing some of the text here I further recognize instructive lessons to be learned in the retention of the older citations and the attempts to relocate them a decade and more later.[108] And since the purpose of a bibliography is to record in context everything that has been done, this essay in support of the bibliography is partly historical, reflecting perspectives from a time when digitization and online resources were coming to the fore; partly a retrospective analysis of these views.

---

[108] In the footnoted references that follow in this essay I retain the original URLs that were cited in the first draft of the essay, written in the late 1990s. Where URLs were shown in 2011 to be no longer valid, I searched for the same web-posted document or website via an online search; and where updated URLs were located I so indicate them. Of course, there is no assurance that these *in turn* will remain valid. Websites or documents that could not be relocated are so indicated. [URLs have not generally been further updated for the revision of this essay in the 3rd Edition of THE GRAND CANON —purposely, to further demonstrate the futility of full reliance on them in the future, at least for that material which has not been made otherwise "permanent" or recaptured in some other format. It is a rediculous situation: future researchers may be able to re-quote the source of lost documents, but others will not be able to corroborate the information, substantiate its use, or examine the greater whole of the document. —*E.E.S.*, December 2018.]

So, the greatest frustration addressed in this essay is the demise of accessible links to web-based resources. This comes as no surprise to a researcher, but these examples expose the uselessness of web citations in historiographical work. If one of the foundations of scholarly research is the citation of references, which one then may find for themselves to reassess or to continue on a new road of investigation, how then does one travel these avenues if the work is no longer available? In the examples I cite herein, using a web address (URL—Uniform Resource Locator) from the 1990s originally, I follow through with searches for the same material to illustrate the points that are raised here. In most cases, as one shall see, the information has been relocated; but it should not be the researcher's job to hunt for the material yet again in spite of the useless URL. At best, web citations duplicate effort in the long run.

What, too, does this mean to those who created the work in the first place? And, will *any* copies, in whole or in part, survive somewhere? These are aspects that relate to what I have called "light gray literature".[109] Specifically, light gray literature comprises materials retrieved from online resources either in digital format or printed to paper, whether they represent the online resource in whole or in part. The medium is inconsequential; rather, the genre embodies a combination of the intentions of the document's creators in posting the materials online, and the intentions of those who retrieve saved copies of that material in whole or in part. At the time of their acquisition (for whatever reason) these materials may be a researcher's "Fair Use" reference copies, which clearly are available elsewhere. But in the future, this same material in one collection may then represent the sole surving relics, in whole or in part, of digital material that is no longer extant. The challenge to an archivist or librarian of that day will be to ascertain whether it is material that is still accessible elsewhere, presumably in a copyright-protected venue, or whether it is then a unique or exceedingly scarce resource worthy of retention with restrictions if copyright provisions are still in force. Eventually, all such material will fall into the public domain, which is reason enough to safeguard it should it be the only record of a work by an individual, institution, or agency. This is, after all, a loss through technological decay or mishap, probably unintended or unanticipated by the work's creator.

I consider the genre of gray literature overall just as informationally useful as is traditionally published literature; much of it is plain facts and data that publishers would not find cost-effective in production and distribution through conventional channels. (Light gray literature does not come under the purview of THE GRAND CANON,

[109] The term was first used in passing in Earle E. Spamer and Arthur E. Bogan, "Your Code or One Code?", *Systematic Biology*, Vol. 46 (1997), no. 4, pp. 748-750. I elaborated on its principles in Earle E. Spamer, "What a Woven Web: Archives, Websites, and the Coming Legacy of 'Light Gray Literature'", *Provenance*, Vol. 20 (2002) [2004], pp. 59-71.

although it will run as a current through research efforts conducted in the future; it will always be present.) There are as well problems in gray literature about the integrity and reliability of data, or biases, contained in the documents, often having not weathered the academic process of critical peer review; and for these reasons they are not always considered to be *bona fide* source materials for research. But this, too, is beyond the scope of the bibliography, whose purpose it is simply to document previous work and to provide the information by which it may be sought.

The Gray Cat at Night

THERE IS NO simple answer to the question, "What is gray literature?" There are probably dozens of definitions.[110] Most formal among them is a definition adopted in 1997 by the Third International Conference on Grey Literature, "The Luxembourg Convention on GL", which defines gray literature as "That which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers."[111] Unfortunately, this is a sanitized vision of the genre; it does not meet the complexities that produce so many problems in cataloguing (and citing) many different kinds of gray literature.

Like the proverbial gray cat at night, gray literature is hard to identify; it is difficult to find, and, when sighted, it is often described poorly. Topically these documents can appear in any venue; even "popular articles" such as those which are commercially published for the lay reader have been labeled as gray literature.[112] Some definitions of gray literature exclude "nonstandard media" such as electronic documents[113] even though in the decade since first citing this source electronic documents now fall under every acceptable aspect of publication and production, from formal to gray (and light gray).

Gray literature is simply problematical. It contains mostly useful information, but it is not distributed in channels usually used by libraries and individuals. It is difficult to obtain, hard to properly catalogue, often peculiarly cited because it is neither book nor serial, and, completing the cycle, hard to find using another person's

---

[110] D. J. Farace, with J. Frantzen and N. Stoffels, *Annotated Bibliography on the Topic of Grey Literature: A Public Enterprise in Editing and Review*. 3rd ed. (TransAtlantic, Amsterdam, 1998), 116 pp.

[111] GreyNet, Grey Literature Network Service, http://www.konbib.nl/infolev/greynet/home.html. [Revised URL: http://www.greynet.org (accessed 26 November 2011).]

[112] U.S. Geological Survey, Raptor Information System, http://www.ris.idbsu.edu/aboutris.html. [Revised URL: http://ris.wr.usgs.gov/ (accessed 26 November 2011).]

[113] U.S. National Aeronautics and Space Administration, "Support for Processing of Scientific and Technical Information (STI), Records of Inclusion in the NASA STI Database", http://www.conwal.com/nasa.html (URL not valid in November 2011; comparable web page not located).

citation. While dutifully credited in an author's list of references, gray literature frequently differs from conventional literature because it is thrown out to the reader without any help for finding it; the reader is left to his or her own wits to be as fortunate as was the author in getting hold of it. Sometimes, authors cite gray literature on the authority of other authors who have cited it. Of course, this scenario creates its own problems when the citation formats—and the information in them—are modified to accommodate the re-citation's editorial style.

Despite problems, gray literature is hardly ignored as a subject of study. Numerous articles about it have been published, there are organizations which pursue its studies, problems and attempts to organize it, and there have been international symposia on the description and management of gray literature.[114] Some libraries, such as the National Oceanic and Atmospheric Administration (NOAA) Central Library, have a specific "Gray Literature Collection"; in NOAA's case their holdings are restricted to this agency's own gray literature publications, which include "technical memoranda, reports, circulars, and in-house publications".[115] Others favor gray

[114] Some examples are:

"Review of the Gray Literature From State Reports" in *Environmental Epidemiology, Volume 2: Use of the Gray Literature and Other Data in Environmental Epidemiology*, by the Committee on Environmental Epidemiology, National Research Council (National Academy Press, Washington, D.C., 1997).

EAGLE (European Association for Grey Literature Exploitation) and SIGLE (System for Information on Grey Literature in Europe), http://www.konbib.nl/sigle/home.htm. [Revised information: EAGLE ceased in 2005 (see http://en.wikipedia.org/wiki/European_Association_for_Grey_Literature_Exploitation, accessed 26 November 2011). Revised URL for SIGLE: http://www.opengrey.eu/ (accessed 26 November 2011).]

PRAISE Gray Literature Project, http://library.kcc.hawaii.edu/praise/grayweb2.html. [Revised URL: http://praise.manoa.hawaii.edu/index.php (accessed 26 November 2011).]

The program for the Third International Conference on Grey Literature, http://www.konbib.nl/greynet/ 2.4.htm. [Revised URL: http://www.opengrey.eu/search/request?q=partner%3Agreynet+year%3A1998 (accessed 26 November 2011).]

"GIS Literature Database Project, a Collaborative Endeavor in Publishing 'Gray Literature' for GIS Conference Proceedings", http: /www/odyssey.maine.edu/gisweb/gisabout.html [URL no longer valid, title not relocated through web search, November 2011.] [Geographic Information System.]

A series of web pages that I had been able to identify only as "Soule and Ryan on Gray Literature", which addressed topics on seven separate web pages, http://www.dtic.dla.mil/summit/tb07_1.html through tb07_7.html. [URLs no longer valid. The only web search that retrieved "Soule and Ryan on Gray Literature" in November 2011 was the brief web page http://www.rmarshall.net/Desktop/Second%20level%20index/Intelligence%20Sources/Grey_literature.htm.]

"Information Storage/Maintenance and Archives, Other Major Institutions", http://www.library.american. edu/staff/bazzell/handout.htm. [URL no longer valid. A web search on the title in November 2011 retrieved one web page, wherein the "handout" is included in a document from the North American Coordinating Council on Japanese Library Resources: http://www.scribd.com/doc/22720297/Accessing-Government-Documents (accessed 26 November 2011).]

A web search "hit" on a posted email from the Rare Books and Special Collections Forum, exlibris@rutvm1. bitnet, which said only: "The Public Historian 15: 2 (Spring 93) 63ff. has an article defining gray literature and 80 pages of reviews of instances of it."

[115] http://www.lib.noaa.gov/docs/unique.html [An attempt to reaccess this URL in November 2011 retrieved the following notice from the NOAA website: "The requested resource /docs/unique.html is no longer available on

literature, such as the Demography Library in the Brown University Library, which "specializes in 'gray literature, materials which are not readily or easily commercially available'"; in their case, examples are "Chinese census reports and Guatemalan population records".[116] The Science, Technology and Business Division of the Library of Congress has a special section, Technical Reports and Standards Special Collections; they note in introductory comments that among its technical reports on file is "an extensive collection of foreign technical reports and other 'gray' literature"[117], which seems to categorize as gray only the foreign materials in what otherwise is an area that already is widely regarded as being gray. The Owens Library at Northwest Missouri State University states that "Gray literature includes pamphlets from professional associations, information provided by nonprofit organizations, and technical papers created by scholars and shared among colleagues."[118]

Regardless of what is gray literature, being neither book nor serial and often lacking an imprint in the conventional categories of cataloguing, it also usually fails to fit the usual citation schemes. For gray literature, I have adopted a scheme of citation which captures all pertinent information that could be used to catalogue it, using as much of it as possible to create a citation in the format used by this bibliography, sometimes complexly or by appending spurious, perhaps useful, data as notes. In

---

this server and there is no forwarding address. Please remove all references to this resource." The library's "Mission and History" webpage at this time did, however, notice briefly, "Gray Literature Collection: The NOAA Central Library has the most extensive collection of the agency's gray literature publications. These publications include technical memoranda, reports, circulars, and in-house publications." (http://www.lib.noaa.gov/about/mission.html, accessed 26 November 2011)]
There are many more examples from over a long period of time, and for just one view at random from the traditional, pre-digital literature see D. N. Wood, "The Collection, Bibliographic Control and Accessibility of Grey Literature", *IFLA Journal*, Vol. 10 (1984), no. 3, pp. 278-282.

[116] Patrick Moos, "In a Little-Known Library Lies a Nationally-Recognized Collection. Brown's Demography Library Holds One of the Nation's Preeminent Centers of Population Research", *The Brown Daily Herald* (http://www.theherald.org/issues/111898/library.f.html [the "theherald.org" doman is no longer valid; the newspaper's newer web address no longer posts its back issues online (http://www.browndailyherald.com/)]). The item referred to here, posted to a former version of *The Brown Daily Herald* website, noted that the story originally appeared in the issue of Wednesday, November 18, 1998. As is virtually always the case with Internet-posted documents reformatted from documents originally published in the print medium, a bibliographically proper citation cannot be made from it because it lacks page numbering of the original article; the resulting imprecision of locating quotations is at best unsettling. A related distasteful situation is the result of incomplete credits, where an author posts on a website what obviously is a previously published article but fails to fully credit its source.

[117] Library of Congress, http://lcweb.loc.gov/rr/scitech/trsover.html. [Revised URL: http://www.loc.gov/rr/scitech/sciover2.html (accessed 26 November 2011), which is revised but notes holdings of gray literature.]

[118] Northwestern Missouri State University, http://www.nwmissouri.edu/nwcourses/library/search/ evaluate.htm. [Revised URL: http://www.nwmissouri.edu/library/courses/research/EVALUATE.HTM (accessed 26 November 2011).]

turn, the user searching for the item may have to work with librarians to establish just how a particular document may have been catalogued in their—or other—libraries.

Gray literature varies tremendously also in its outward appearance, and this seems to have a kind of subliminal influence on whether it is perceived as "legitimate" or "scholarly". Some of it may be bound for durability and aesthetics; some may be held together by spiral wire, plastic combs, or heat-fused plastic strips; some of it may be drilled for use in loose-leaf binders; and some of it may be saddle-stitched, side-stapled (with or without taping around its "spine", with or without separate cover leaves), or just simply stapled in one corner. Some kinds of gray literature may be indistinguishable from memoranda; other kinds may be mistaken for books. (Readers may correctly make the point, too, that some of these descriptions can also be applied to some publications from commercial, scholastic, and private publishers, thus diffusing the physical distinction between conventional and gray literature.) There is no common denominator as to just what is a gray document other than the confusion it provides to all of the people who either store it or must find it again.

The advent of what once was called "table-top" publishing that arrived with the personal computer and printer, and the photocopier, expanded the volume of gray literature. Where before if it was not traditionally printed, it was reproduced by mimeograph or ditto machine, neither method efficient for large numbers of copies; now it can be economically and reliably run off by the thousands even without the outside help of commercial printers and business-copying franchises—although now pay attention to the burgeoning "on-demand" printing industry and the flock of authors who come into its fold, further graying the field of what is a "publication".

Gray Literature in THE GRAND CANON

IN THIS BIBLIOGRAPHY, gray literature largely includes scientific field guides produced for conventions and symposia, the results of ongoing or "final reports" of environmental or legislatively directed investigations, and all kinds of government documents that are not parts of regularly published series. Despite the label of "gray literature" I treat all of these as publications. I cannot any more look at gray literature as second-rate than I can privately published, self-distributed books, of which many are cited in THE GRAND CANON. The only screening process that I have applied is that the document must have been made available in multiple, identical copies, and made available to those who wish to have access to it (that is, officially "secret" or similarly classified productions of government agencies would be excluded; then again, they would not likely be known to me anyway). Manuscripts and memoranda do not meet this criterion. Publications posted only to Internet sources and otherwise not arranged as

discrete publications, are specifically excluded, too, because of the problems of assuring that they will always be available.

Even in the earliest stages of this bibliography, in the late 1970s, the gray literature citation was a pressing concern. Identifying just what it is was something I had to learn by doing, and only much later did I discover that in the past couple of decades it has become a widely recognized and studied concern of librarians, information specialists, and researchers. Where it was showing up in the literature seemed to have no direct bearing on its content or on its reliability; it was being cited for the most part "on the fly"; often, those who cited it seemed to have special sources for their material because it just was not showing up in the places I was turning to find it. Debachere called gray literature "a fuzzy set that is irregular and variable."[119] She continued, "On the one hand, it spills over in areas that remain uncontrollable for a long time, such as meeting reports, associative publications, or even private publications, which are clearly in the confidential or private domain. On the other hand, it enters into published literature, the existence of which is hence known by libraries, such as the proceedings of meetings."

This is not always as clear as it seems. There are the International Geological Congresses, major conventions which have met somewhere in the world about every four years since the 1880s. In one respect the congresses' *Compte-Rendu* (when the standard meeting language was French) or the *Abstracts* or *Proceedings* (when the standard meeting language became English) are serials; they are usually easily found in a library's catalogue, even if there is a cross-reference between the French and English titles, "Congrès Géologique International" and "International Geological Congress". Another example, a little less easy to find, is the *Transactions and Proceedings Series* of the U.S. National Park Service, irregular in date, which in turn encompasses many separately published volumes that can as well be catalogued by their individual titles; for example, the *Proceedings of the Third Biennial Conference of Research on the Colorado Plateau*, which in turn can be located also by its informative but less used document number, "NPS/NRNAU/NRTP-97/12".

Other meeting volumes are more problematical, such as *Proceedings of the Fossils of Arizona Symposium*, which not only is not periodic but its proceedings volume received very limited distribution. (Indeed, because distribution was primarily to those in attendance means that few if any such documents wind up catalogued in a library, because many libraries balk at the prospect of taking in "donations" of such documents buried in the accumulata of researchers who either are cleaning their offices or from the effects of those who have died.) Or then there is the instance of

[119] M. C. Debachere, "Problems in Obtaining Grey Literature", *IFLA Journal*, Vol. 21 (1995), no. 2, p. 94.

Colloque sur la Stratigraphie du Carbonifère held at the Université de Liège and published as volume 55 in its irregular series, "Les Congres et Colloques de l'Université de Liege". In each case, there are different key words that can be selected as the primary name for cataloguing.

The reader should try to locate in this bibliography these citations using the information given above. Imagine, then, the problems inherent in looking for these documents in a library catalogue whose cataloguing scheme, digital or not, may not well accommodate these kinds of documents. Imagine, too, finding these titles by handsearching in a library's older card file. And what of those libraries who may have these materials, cataloged or not, but which do not contribute to the globally available library catalogs online? These problems and a special example of "minimum cataloging" is outlined by Bichteler, who asks, "If the major research libraries don't contribute cataloging records for gray literature to the networks, who will?"[120] Without quick and easy access to large segments of gray literature, users are left to the traditional grunt work of handsearching[121]—I call it "browsing"—which for a long time yet may still be the most effective way. In fact, bibliographies such as the present one will compound the problem further, by providing references to gray documents, but cannot provide the means by which to let the user find them in libraries. The overall problem is not as extreme as it was even a decade ago thanks to the widespread advances of web resources, but the nuances of cataloging and retrieval remain.

In almost every case I met in this bibliography, gray literature was "non-conventional", to use one phrase of description given to this kind of literature. But it is clear, in the context of this bibliography, that there are two main categories of gray literature beyond that of purely administrative documents: geological and environmental. The part of the bibliography on Administration is also filled with gray literature, but it should not come as a surprise that there should be so much of it in this category. There is a similarly obscure subset of archaeological literature, too, which fits the criteria of grayness,[122] but much archaeological literature in turn is so-called "black literature"—classified—given its locality-sensitive content. (For discussion of the shades of informational categories, see in Stefik.[123]) Such exclusionary

[120] Julie Bichteler, "Geologists and Gray Literature: Access, Use, and Problems", *Science and Technology Libraries*, Vol. 11 (1991), no. 3, pp. 39-50.

[121] The term "handsearching" was brought to my attention in "How Can I Participate?" in the Cochrane Collaboration, http://www.compmed.ummc.ab.umd.edu/compmed/cochrane_collaboration/cmpart.htm. [Revised URL: http://www.cochrane.org/handbook/6221-handsearching (accessed 26 November 2011).]

[122] For example, some reports can be located in the Reports Module of the National Archeological Database, http://cast.uark.edu/other/nps/nadb/ wherein gray literature is defined as documents that are "unpublished, uncataloged, and have limited circulation". [URL remains valid; accessed 26 November 2011.]

[123] Mark Stefik, *Internet Dreams : Archetypes, Myths, and Metaphors* (MIT Press, Cambridge, Massachusetts,

literature cannot be cited here; it is superfluous to the research community because of restrictions on its availability.

Geological Gray Literature

GRAY LITERATURE has long been a specifically peculiar problem among geologists because they are a much more socially- and geographically-integrated group. Lest one jump on this remark as being elitist, I will simply point out that, by far more than do other scientists, geologists routinely gather not only to meet and discuss, but also to conduct field excursions to places of special interest and problems. The field trip has been *de rigueur* in geology since the birth of modern geology in the 1700s (although in earlier times, even in ancient times, the field trip was often a solo endeavor by curious academics). Field trip guidebooks abound; included in them often are road logs with which other researchers can retrace the routes on their own. The accompanying explanatory texts and conjectural discussions will not likely be found anywhere else. Separate maps are sometimes a part of these documents, which are an entirely different problem to librarians and to those who wish to obtain photocopies or electronically derived copies[124]; the problems are more magnified when these large, folded maps are printed in color, which is less an aesthetic concern than it is a very specifically important way of conveying a great deal of geological information. All of these factors contribute to field trip guidebooks being "orphans", which "may not be shelved or catalogued"[125].

Ironically, these kinds of documents are sometimes superior to those which are more traditionally published either under the imprint of a recognized journal or national or international organization. Bichteler indicated specifically that "guidebooks are the best and most recent source of information of the geology of a very specific area, thus they are in high demand."[126] But with limited distribution, such as noted above, they fail to wind up in the repositories that can best serve those who need to find them. Bichteler also quoted Rosalind Walcott who depicted these "sneaky, fly-by-

---

1996), 412 pp.

[124] Even today's mammoth and ever-growing Google Books effort, which is making available on the web millions of digitally scanned books, periodicals, and other catalogued documents, is not without its own problems of accessibility. Due to copyright concerns, some of these documents are not yet viewable online. Of those that are available, oversized pages (fold-outs and the like) are bypassed as part of the scanning process, a procedure that does not make the whole document available, forcing those who do need to see that passed-over material to find a real copy anyway.

[125] Robert G. Corbett, "Field Trip Guidebooks Need Not Be Gray Literature" [ABSTRACT], *Geological Society of America, Abstracts with Programs*, Vol. 20 (1988), no. 7, p. A242.

[126] Julie Bichteler, "Geologists and Gray Literature: Access, Use, and Problems", *Science and Technology Libraries*, Vol. 11 (1991), no. 3, p. 41.

night, changecoat publications [as] hard to identify, hard to acquire, hard to catalog and retrieve, and hard to preserve."[127] What neither of these authors noted is that, even when the contents of these kinds of publications are peer reviewed prior to publication, they also sometimes contain information which is purely conjectural, as a means of promoting discussion and as a defense of particular views of geology as researched in the field; more specifically, in the real-time environment of field trips, with the field guides serving as a syllabus. Some such articles, for example, appeared in the field trip guidebook for Colorado River trips through Grand Canyon sponsored by the 28th International Geological Congress.[128] (Incidentally, the last-mentioned publication was distributed in comb-bound volumes to members of the field trips, but was otherwise sold as perfect-bound books at the congress in Washington, D.C., and through the mail by the publisher, the American Geophysical Union. The perfect-bound version, although identical to the comb-bound one, has the outward appearance and feel of a book that is more likely to be more properly maintained—and cataloged.)

In related matter on gray literature from this same geological congress, another volume (perfect-bound), limited to 300 copies, was prepared for these field trips by Spamer.[129] It was distributed to the members of the field trip and afterwards sold by its producer, the Department of Malacology, Academy of Natural Sciences of Philadelphia, as part of its irregular "Miscellaneous Publications" series, *Tryonia*. But owing to problems of citing gray literature, it has since been variously cited as "*Tryonia*", as "Miscellaneous Publications" (of the department), and as the adjunctive, invented series title (it was an administrative justification for its production), "Contribution of the Invertebrate Paleontology Section, no. 1" (of which, incidentally, there has only been one). In cataloging this item, it would seem that the variations of typography, by which important and less-important information is displayed, is ignored in favor of "what seems to be" pertinent information based on the text displayed on the cover.

Geology does seem to stand out from other sciences in that there are more detailed discussions of work in progress, and more open sharing of information, than

---

[127] Rosalind Walcott, "Guidebook Problems From the Librarian's Point of View", *in* Mary B. Ansari, ed., *Proceedings of the Geoscience Information Society, 1989, November 6-9, St. Louis, Missouri* (Geoscience Information Society, 1990), pp. 185-192.

[128] Donald P. Elston, George H. Billingsley, and Richard A. Young (eds.), *Geology of Grand Canyon, Northern Arizona (with Colorado River Guides). 28th International Geological Congress, Field Trip Guidebook T115/315* (Donald P. Elston, coordinator) (American Geophysical Union, Washington, D.C., 1989), 239 pp.

[129] Earle E. Spamer, "The Development of Geological Studies in the Grand Canyon; Prepared for the 28th International Geological Congress Colorado River Field Trips Through the Grand Canyon, Lees Ferry to Temple Bar, Lake Mead, Arizona, June-July 1989", *Tryonia* (Academy of Natural Sciences of Philadelphia, Department of Malacology, Miscellaneous Publications), no. 17 (1989) (Contribution of the Invertebrate Paleontology Section, no. 1), 87 pp.

there are in other scientific fields. In 1964 there was a symposium in Flagstaff, Arizona, on the geological history of the Colorado River. Its proceedings volume offered brief analyses and commentaries stemming from the convocation, focusing on the history of the Colorado River in Arizona.[130] Despite its having been published as part of the Museum of Northern Arizona's *Bulletin* series, its relative scarcity made it seem in coming years as if it were part of the gray literature genre. In 2000 a second, formal symposium on the same subject was held at Grand Canyon; its proceedings volume was published by Grand Canyon Association as part of its *Monograph* series, not without its own hiccups in citation.[131] Then in 2010 an informal follow-up workshop was held in Flagstaff.[132] Its abstracts, posted to a secure website, comprise both true gray literature and a prime candidate for light gray literature.[133] The abstracts were in turn, some with revisions, produced for the Open-File series of the U.S. Geological Survey; but the document is available only on the web—again, both gray and light gray literature.[134]

The kinds of geological gray literature that show up in great numbers in THE GRAND CANON as might be expected are those from the U.S. Geological Survey; specifically, its informal series, *Open-File Reports*. (State geological surveys also produce such on-file reports.) These are precisely what the name says: they are not part of traditional publication series such as the USGS's *Bulletin* and *Professional Paper* series—or even the formally published map series, *Miscellaneous Investigations*. The *Open-File Reports* are reports of field investigations, whether texts, maps, or both, that are reproduced either in small quantities or on an as-needed basis (although today most of the *Open-File Reports* are accessible online). Such limited distribution is driven by economic concerns, and indeed, as one moves from the more financially flush period before the 1970s to the present, the number of such documents increases

[130] Edwin D. McKee, Richard F. Wilson, William J. Breed, and Carol S. Breed (eds.), "Evolution of the Colorado River in Arizona; an Hypothesis Developed at the Symposium on Cenozoic Geology of the Colorado Plateau in Arizona, August 1964", *Museum of Northern Arizona, Bulletin 44* (1967), 67 pp.

[131] Richard A. Young and Earle E. Spamer (eds.), *Colorado River: Origin and Evolution : Proceedings of a Symposium Held at Grand Canyon National Park in June, 2000* (Grand Canyon, Arizona: Grand Canyon Association, 2001), 280 pp. (Grand Canyon Association, Monograph 12.) [The volume carries the copyright date 2001, and the Library of Congress cataloging date 2003, but was not released until July 2004. It has traditionally been cited with the 2001 date, which more closely reflects the date of the 2000 symposium, even though strict bibliographical applications focus on the actual publication date.]

[132] "CR_Evolution_2: Origin and Evolution of the Colorado River System II Workshop: May 24-26, 2010, Flagstaff, Arizona."

[133] https://sites.google.com/site/crevolution2/home/abstracts (last accessed 1 January 2019).

[134] L. Sue Beard, Karl E. Karlstrom, Richard A. Young, and George H. Billingsley (eds.), "CRevolution 2—Origin and Evolution of the Colorado River System, Workshop Abstracts; May 24-26, 2010, U.S. Geological Survey, Flagstaff, Arizona", *U.S. Geological Survey, Open-File Report 2011-1210* (2011), 300 pp. Available only through the USGS Publications Warehouse website, at http://pubs.usgs.gov/of/2011/1210/of2011-1210.pdf (last accessed 1 January 2019).

tremendously. Fortunately, the USGS distribution network is easy to access now[135], and these documents are no more harder to obtain than are the principal series, the exception being that the oldest such materials are not included and must be sought out the old-fashioned way, by hunting, with help, and occasionally with luck.

Many of the USGS *Open-File Reports* cited in THE GRAND CANON are maps. Again, geology is a very geographically- and visually-oriented field of science, and the geologic map is a unique way to convey a great deal of information. With some maps, geologists can also derive a three-dimensional image of geological structure in a region. This is admittedly a means of communication specific to geologists, but one so important that it demands its own section in THE GRAND CANON. Map data are now being made available in electronic formats, with which maps can be produced by the user, if the user has the appropriate equipment.[136] There will for a long time yet still be a need for the large, paper map, and the only economic way of making it available will be to "open-file it"; and today that means in digital format. It should be noted that until the advent of digital production such maps were not usually produced in color; increasingly, only those which have been preapproved for publication in one of many formal map-publication categories are published in colors.

Environmental and Administrative Gray Literature

ENVIRONMENTAL STUDIES embrace a hugely diverse number of topics, ranging from organismal biology to physical and chemical aspects of waters and the atmosphere. So often the organismal and other studies are interrelated that I group them together in this discussion, but I segregate them in the topical parts of the bibliography in response to researchers' needs.

In the Grand Canyon region, as well as everywhere, environmental studies have shifted from individual and institutional initiatives to programs of research that are administratively managed by legislative or judicial mandate or with the official sanction of government oversight agencies (for example, the National Park Service). Comprehensive results of scientific research are being recorded and publicly distributed in

---

[135] Accessible through the USGS Publications Warehouse at http://pubs.er.usgs.gov/.

[136] George H. Billingsley and Haydee M. Hampton, "Physiographic Rim of the Grand Canyon, Arizona", *U.S. Geological Survey, Open-File Report 99-30* (1999), 1 sheet, scale 1:250,000, and digital database as ARC/INFO export files. [The URL cited in the original essay as edited in 1999 was http://wrgis.wr.usgs.gov; a paper copy of the map could be ordered from the USGS. Today the map is available only as a downloadable PDF file, http://wrgis.wr.usgs.gov/open-file/of99-30/qcrim.pdf (accessed 26 November 2011); the digital data with which it was created are still accessible, through the index page http://wrgis.wr.usgs.gov/open-file/of99-30/).] [*Note*: This map is also reproduced herein (reduced significantly to page size); see the introductory section on "Geographical Coverage".]

summary reports and environmental impact statements, while the traditional scholarly journals usually publish more focused and interpretive aspects of research.

Modern administrative directives provide for meticulously documented studies of the predicted impact that changes to the landscape or its use will have on the quality of the environment and the impacts such changes may have on human endeavors. This has created a bewildering panalopy of documents—preliminary, final, and revised—that provide administrative direction and remedial courses of action in response to a multitude of implementary scenarios. These documents also provide all kinds of environmental data that not only provide the basis for making evaluations, but also capture present conditions for many aspects of the environment.

Management documents within the gray-literature genre can range from the aesthetic qualities of "quiet" in the national park, as impacted by low aircraft overflights[137] or outboard motors on the Colorado River[138], to the impact of human visitation of historic sites on breeding populations of bats[139]. Other documents address concerns usually beyond the immediate notice of the park visitor; for example, sewage management.[140]

Present concerns in the national park relate to environmental aesthetics such as natural quiet and to such problems of visitation as overcrowding. (When this essay was first written more than a decade ago, these were current concerns; they still are.)

---

[137] For example, U.S. Federal Aviation Administration, *Written Reevaluation; Notice of Clarification; Environmental Assessment; Special Flight Rules in the Vicinity of Grand Canyon National Park* (U.S. Federal Aviation Administration [Washington, D.C.], 1997), 30 pp., appendices. (Prepared by William J. Marx, Ann M. Hooker, Ernestine Hunter, Jake A. Plante, Gregg G. Gleming, Amanda S. Rapoza, John R. D'Aprile, Paul G. Gerbi, Fred B. Bankert, William J. Willkie, Kimberly C. Hughes, Wendi L. Baldwin, and Mylinda H. Green [*cf.* pp. 27-30]. [First leaf is transmittal sheet signed by Reginald C. Matthews. Received accompanied by 34-page document headed: "4910-13 / Department of Transportation / Federal Aviation Administration / 14 CFR Parts 91, 93, 121, and 135 / [Docket No. 28537; Amendment Nos. 91-253, 93-73, 121-262, Special Flight Rules in the vicinity of Grand Canyon National Park *[square bracket not closed]* / Agency: Federal Aviation Administration (FAA), DOT / Action: Notice of clarification: request for comments. Dates: Comments must be received on or before (insert 60 days from date of publication)". Apparently a draft of item to appear in the *Federal Register*, but with signature of John S. Walker, hand-dated 27 October 1997.]

[138] U.S. National Park Service (Grand Canyon National Park), *Colorado River Management Plan; December 1979* (U.S. National Park Service, Grand Canyon National Park), separately paginated sections.

[U.S. National Park Service,] Grand Canyon National Park, Colorado River Management Plan Team, *Summary of public comment from the 1997 Colorado River Management Plan Scoping Process* (no imprint), separately paginated sections in one document.

[139] U.S. National Park Service, [Grand Canyon National Park], *Draft Environmental Assessment : Bat Cave Restoration, Grand Canyon National Park* (no imprint), 8 pp. [Author determined through other sources: Kim Crumbo.]

[140] Kennedy Engineers, *Master Sewage Study, Grand Canyon National Park, Arizona* (Kennedy Engineers, San Francisco, 1966, under contract to U.S. National Park Service), [*ca.* 40 pp.].

U.S. National Park Service [Denver Service Center], *Environmental Assessment : Phantom Ranch Sewage Treatment Facilities, Grand Canyon National Park, Arizona* (U.S. National Park Service, Denver, 1980), 22 pp.

There are a great many articles that pertain to these issues, and they increase in number; a variety of plans are in the process of implementation or under study. These include all kinds of Environmental Assessment documents, Management Plans, Findings of No Significant Impact, Records of Decision, and so forth. These documents may be released separately as a matter of public record (such as those cited above), publicly posted as a matter of legal announcements in the *Federal Register*[141], or formally published in a book that is intended to serve as research documentation of the evaluation process[142].

Interestingly, research conclusions published under a formal imprint such as the National Academy Press would otherwise be considered gray literature without the imprint. This book is perfect-bound, has the appearance of a book, and is available by purchase from the publisher. On the other hand, a similarly crafted book[143] is as well documented and produced, but it lacks an imprint and is available from the Commission (upon request without charge) or from the National Technical Information Service (with a charge). The overall purpose of each product is the same, but the cachet of a well known publisher, even if it is the publications arm of the National Academy of Sciences, seems to elevate such documents from the category of gray literature.

By and large, the majority of environmental gray literature is that of government agencies. It is therefore easy to make the assumption that most of these documents will also have peculiarly segmented citations, reflecting the arrangement of pertinent information on the cover pages of these documents, that the authorship credit may be to a confoundingly bureaucratic string of commissions and committees, and that titularly similar documents may exist.[144] (This is not always the case. One of

---

[141] For example, John L. England, "Endangered and Threatened Wildlife and Plants : Final Rule to List the Kanab Ambersnail as Endangered", *Federal Register*, Vol. 57, no. 75 (April 17, 1990), pp. 13657-13661.

[142] U.S. National Research Council (Commission on Physical Sciences, Mathematics, and Resources, Water Science and Technology Board, Committee to Review the Glen Canyon Environmental Studies), *River and Dam Management. A Review of the Bureau of Reclamation's Glen Canyon Environmental Studies* (National Academy Press, Washington, D.C., 1987), 203 pp. [*N.B.*: This book also includes a list of documents reviewed by the committee (Appendix A, pp. 127-140) which includes some miscellaneous reports of the Glen Canyon Environmental Studies.]

[143] Western Water Policy Review Advisory Commission, *Water in the West: Challenge for the Next Century : Report of the Western Water Policy Review Advisory Commission* (no imprint, 1998), separately paginated sections [418+ pp.].

[144] Compare these two documents: (1) U.S. Federal Aviation Administration, *Written Reevaluation : Notice of Clarification : Environmental Assessment : Special Flight Rules in the Vicinity of Grand Canyon National Park* (U.S. Federal Aviation Administration [Washington, D.C.], 1997), 30 pp., appendices. (Prepared by William J. Marx, Ann M. Hooker, Ernestine Hunter, Jake A. Plante, Gregg G. Gleming, Amanda S. Rapoza, John R. D'Aprile, Paul G. Gerbi, Fred B. Bankert, William J. Willkie, Kimberly C. Hughes, Wendi L. Baldwin, and Mylinda H. Green [*cf.* pp. 27-30]. [First leaf is transmittal sheet signed by Reginald C. Matthews. Received accompanied by 34-page document headed: "4910-13 / Department of Transportation / Federal Aviation Administration / 14 CFR

the most important gray literature documents of recent years for the region of interest here is the *General Management Plan and Environmental Impact Statement* for Grand Canyon National Park.) Not only is the topic of great significance to the administration of the national park and the public's use of the lands, but the documents themselves, while having concise information on their cover sheets, are samples of nearly everything that makes them difficult to catalogue and cite.

The *Draft General Management Plan and Environmental Impact Statement* (GMP–EIS)[145] was published as a wide, greatly detailed, oversized (11 × 17 inches) wire spiral-bound document (illustrated at the start of this essay). The *Final General Management Plan and Environmental Impact Statement*[146], instead of reprinting this cumbersome document as a revised and updated edition, simply listed by line number all the revisions to be applied to the Draft GMP–EIS; it is printed on conventionally sized paper (8½ × 11 inches) with card-stock covers, side-stapled with three heavy-duty staples. Libraries may store these two documents in separate places because of the differences in size and binding. An author who cites just the Final GMP–EIS does a disservice to all those who need to examine the document because the Draft GMP–EIS is (unusually) *a part* of the final documentation. The Final GMP refers specifically to the Draft GMP–EIS, and the two must be used together. This relationship may not be caught in cataloguing the Final GMP–EIS, and it is feasible, too, that the Draft GMP–EIS could be discarded by a less attentive librarian in light of there being a "final" version.

Parts 91, 93, 121, and 135 / [Docket No. 28537; Amendment Nos. 91-253, 93-73, 121-262, Special Flight Rules in the vicinity of Grand Canyon National Park *[square bracket not closed]* / Agency: Federal Aviation Administration (FAA), DOT / Action: Notice of clarification: request for comments. Dates: Comments must be received on or before (insert 60 days from date of publication)". Apparently a draft of item to appear in the *Federal Register*, but with signature of John S. Walker, hand-dated 27 October 1997.]

(2) U.S. Federal Aviation Administration, *Written Reevaluation : Environmental Assessment : Special Flight Rules in the Vicinity of Grand Canyon National Park* (U.S. Federal Aviation Administration, [Washington, D.C.], 1997), 26 pp., appendices. (Prepared by William J. Marx, Reginald C. Matthews, John M. Gulding, Ann M. Hooker, Ernestine Hunter, Jake A. Plante, Alan V. Trickey, Donna G. Warren, Gregg G. Fleming, Amanda S. Rapoza, John R. D'Aprile, Paul J. Gerbi, Fred B. Bankert, William J. Willkie, Kimberly C. Hughes, Wendi L. Baldwin, and Mylinda H. Green [*cf.* pp. 23-26].) [Cover title. Title on document cover sheet: *Reevaluation of Final Environmental Assessment : Proposed Revisions to Special Flight Rules in the Vicinity of Grand Canyon National Park.* First leaf is "Executive Correspondence" memorandum signed by Nancy B. Kalinowski: "Environmental Assessment; Finding of No Significant Impact; Reevaluation; Special Flight Rules in the vicinity of Grand Canyon National Park".]

[145] U.S. National Park Service, *Draft General Management Plan and Environmental Impact Statement, Grand Canyon National Park, Coconino and Mohave Counties, Arizona* (U.S. National Park Service, in cooperation with U.S. Forest Service, 1995), 321 pp. [Oversized document, cover illustrated at the beginning of this essay; ITEM NO. 13.1328.]

[146] U.S. National Park Service, *Final General Management Plan and Environmental Impact Statement, Grand Canyon National Park, Coconino and Mohave Counties, Arizona* (U.S. National Park Service, in cooperation with U.S. Forest Service, 1995), 179 pp. [This item refers to line changes in the Draft plan; see the oversized document cited just above.] [ITEM NO. 13.1329.]

Other gray-literature documents are workshop proceedings. These are most likely to be among the most confusing to catalogue because the cover data are not necessarily easily categorized. One example of a problematical citation from a workshop proceedings adds the peculiarity of an unconventional authorship.[147] This example fails to clearly identify the issuing agency, avoids listing authors by name but instead lists them by their titles and functions, and carries the date it was prepared as well as the date it was distributed. Some of the data are interpreted from other evidence in the volume. The user can thus see just how differently this citation can be listed in references and how many different ways there can be to catalogue it. On the other hand, some such workshop proceedings are much more clearly cited[148], thus they will be likely to be found more quickly in a catalog.

The Glen Canyon Environmental Studies, in fact, probably produced the most wide-ranging group of gray literature and conventional literature combined. It was an important research program, conducted in phases over two decades, embracing physical, biological, and environmental sciences, archaeological surveys, and issues of concern to Native Americans and recreational industries, and socio-economic studies. A first comprehensive overview was compiled by the U.S. National Research Council[149], but the studies continued for another decade to culminate in an Environmental Impact Statement for the operation of Glen Canyon Dam[150]. The amount of conventionally published research and discussion on GCES-related topics is tremendous. But so much exists just among preliminary and final reports from principal investigators, filed with GCES, that it has been worthwhile to include in THE GRAND CANON a separate part listing these documents, compiled by Richard Quartaroli who

[147] Glen Canyon Environmental Studies Senior Scientist, Glen Canyon Environmental Studies Program Manager, and a small group of scientific experts, "Interim Flows for Grand Canyon; Recommendations for Interim Operating Procedures for Glen Canyon Dam", separately paginated section in *Long-Term Monitoring Workshop for the Grand Canyon, October 5-6, Irvine, California* (National Research Council, Water Science and Technology Board, 1992), 19 pp. [Document dated 1991, prepared for U.S. Bureau of Reclamation and GCES cooperating agencies, from Center for Environmental Studies, Arizona State University.]

[148] Grand Canyon Trust, *with* U.S. Bureau of Reclamation, *The Colorado River Workshop : Issues, Ideas, and Directions : February 26-28, 1996, Phoenix, Arizona. Proceedings Report* (Grand Canyon Trust, Flagstaff, Arizona, 1996), 256 pp.

[149] U.S. National Research Council (Commission on Physical Sciences, Mathematics, and Resources, Water Science and Technology Board, Committee to Review the Glen Canyon Environmental Studies), *River and Dam Management. A Review of the Bureau of Reclamation's Glen Canyon Environmental Studies* (National Academy Press, Washington, D.C., 1987), 203 pp. [*Note*: This book also includes a list of documents reviewed by the committee (Appendix A, pp. 127-140) which includes some miscellaneous reports of the Glen Canyon Environmental Studies.]

[150] U.S. Bureau of Reclamation, *Operation of Glen Canyon Dam; Final Environmental Impact Statement. March 1995* (U.S. Bureau of Reclamation, 1995), 337 pp. + individually paginated appendices. Also accompanied by volumes, *Comments and responses*, 156 pp.; *Summary*, 73 pp.

then was the research librarian for the Glen Canyon Environmental Studies program.[151]

Conclusion

THAT THE FORMULATED citations in some parts of THE GRAND CANON are so broken up by "less tidy" citations of gray literature is testimony to the pervasive and persuasive importance of such products. One can get a feel for it just by browsing, particularly in the parts on Administration, Environment, and Geology. I hope that the very few examples in this discussion show the reader that no bibliography can adequately cover the gigantic volume of material that can be found only in the most specialized and comprehensive collections; though it may try. To try to gather it all would be a prodigious task, one calling for the extended periods of time of many capable searchers. I hope, too, that the examples that do appear throughout THE GRAND CANON bring to light the problems of something even as simple as citing gray literature, that even the most capable of bibliographers will resort to invention; the same, too, with writers when they cite these items. This is what makes bibliography both art and science—not to mention the fixation of "inspired idiots".[152]

---

[151] See Part 20 of THE GRAND CANON.

[152] See within the essay herein, "'A necessary nuissance'—The Traditional Bibliography in a Digital Age".