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Getting the Picture: An Exploratory Study of Current Indexing Practices in Providing Subject Access to Historic Photographs

Se faire une image : une exploration des pratiques d'indexa- tion courantes dans la fourniture de l'accès par thème à des photographies historiques

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Résumé : Cette étude explore les pratiques courantes d'indexation du contenu thématique d'images historiques. Elle examine la façon dont la tradition positiviste en bibliothéconomie et sciences de l'information exerce une influence sur les indexeurs au moment où ils déterminent les thèmes devant être indexés. Les termes utilisés par les indexeurs comme thèmes sont analysés par niveau de facette de sujet afin de déterminer l'étendue de contenu thématique indexé aux fins de repérage d'information.

Mots-clés : indexation par thèmes, images, catégories, indexation, photographies

Abstract: This exploratory study investigates current practice in indexing the subject content of historic photographs. It examines how the positivist tradition of library and information science influences indexers' determination of subjects for indexing. Indexers' subject terms are analyzed by subject level facet to determine the range of subject content being indexed for information retrieval.

Keywords: subject indexing, images, categories, indexing, photographs

Introduction

Understanding image indexing is fundamental to creating access to the subject content of historic photographs that meets users' information retrieval needs. The growing availability of images on the Internet has increased the need for practical solutions to subject access (for a recent overview, see Enser 2008). Libraries have met the challenge of information retrieval from the multitude of sources on the Internet by

developing a variety of metadata standards, but “an exchange standard can do nothing to improve the quality of the catalogues themselves and the need for careful, systematic description remains as great as ever” (Lusenet and Klijn 2004, 26). Metadata cannot provide access to the levels of meaning that users require if these are not currently indexed in the catalogues.

Despite its importance, the process involved in subject indexing is little understood and there is a surprising lack of research to evaluate how it should be done (Mai 2005). The challenge is trying to analyse and express the content of an image—an issue that has been very widely discussed over the last 20 years (summarized in Enser 2008). How to categorize images in a useful way (Rorissa and Iyer 2008) and the range and type of image attributes to be indexed is still a matter of discussion (Laine-Hernandez and Westman 2006; Ménard 2007). The need for effective indexing methods is critical because substantial resources are spent on cataloguing (Calhoun 2006), and institutions providing collections of digitized images need to find the most effective and economical means to provide access to images.

The study reported here is part of a broader investigation exploring two major themes, the first of which is the sources and nature of cognitive dissonance between professional indexers and users of historic photographs. The second is the nature of social tagging of historic photographs and how it might be used to improve subject description and information retrieval. This preliminary study addresses the question of how well current indexing practice represents the levels of subject content found in historic photographs for the purpose of information retrieval. Subsequent studies will explore how the representation of the subject content of historic photographs can be enhanced by tagging in order to improve information retrieval.

A review of the literature

Positivism has been the dominant paradigm of library and information science (LIS) (Budd 1995). The positivist viewpoint is based on the empiricist view of the nature of science. From its foundations in the nineteenth century LIS has focused on techniques, standards, and rules for the organization and representation of documents in an information system (Miksa 1983). Indexers are cautioned against interpretation and

directed to index objectively. This prevalent paradigm effectively limits indexers' conceptualization of the subject and the image content they index to objective subjects. Equally, within the tradition of librarianship, there is a clear tendency to specificity and avoidance of ambiguity (Svenonius 2000, 76, 108, 187–8), which is still reflected in modern indexing texts (Lancaster 2003, 35).

Yet, crucially, an issue such as the concept of the subject has produced several competing viewpoints without yielding a clear understanding of what a subject is (Andersen 2004). One response to the difficulties of what constitutes a subject is the concept of “aboutness” developed by Robert Fairthorne. He suggested two types of aboutness: the content of the component parts or what is intrinsic to the item; and the reason or purpose for which the item has been acquired by a library or requested by a user (Fairthorne 1969). The first concept of aboutness is document-centred and the second requirement- or user-centred.

The concept of aboutness has strongly influenced subsequent literature in which subject and aboutness are treated as synonymous (Hjorland 2001, 774). A standard handbook on information retrieval suggests the indexer decides on the “aboutness” of an item as the first step in indexing (Chowdhury 2004, 74). User-centred aboutness has been extended with a domain-centred approach, which attempts to understand the domain and users and the indexer's role in analysis so “that the indexing is consistent with the users' use of the information” (Mai 2004, 5).

Traditional LIS would argue that it incorporates the domain perspective through the concept of warrant, first coined by Hulme in 1911 (Svenonius 2000, 135). Literary warrant is the “topics around which literature has become established” (Beghtol 1995) and the basis of modern systems such as the Library of Congress subject headings (Olson 2002, 143).

The positivist viewpoint of standard LIS indexing according to rules and guidelines has been carried over to standards for cataloguing images (Betz 1997; State Library of New South Wales 2000). The “Thesaurus for Graphic Materials I: Subject Terms (TGM I)” (Library of Congress, Prints and Photographs Division 1995), a widely used tool for cataloguers of visual materials, provides a brief discussion of how to index images. The authors recommend “indexers should examine images, their captions, and accompanying documentation carefully to determine both

the most salient concrete aspects (what the picture is ‘of’) and any apparent themes or authorial intents (what the picture is ‘about’), taking care not to read into the images any subjective aspects which are open to interpretation by the viewer.” The positivist approach has resulted in a narrow notion of the subject and largely limits indexing of the subject content of an image to objective subject matter—actual objects and events. While objective subject indexing meets some user needs, user needs for interpretive subject matter are not met.

The essentially rules-based approach has not provided either a clear understanding or a theory for image subject content. A number of researchers have looked to cognitive studies, in particular studies of categorization, to address this theoretical gap (Greisdorf and O’Connor 2002; Jorgensen 1995; 2007; Rorissa and Iyer 2008). Basic level theory provides both a basis for understanding human categorization and a theoretical foundation for concept-based image indexing (Rorissa 2007; Rorissa and Iyer 2008). Basic level theory proposes a three-level hierarchical categorization of objects that moves from the general to the specific and distinct. These levels are the superordinate (e.g., furniture), the basic (e.g., chair) and the subordinate (e.g., desk chair) (Rosch et al. 1976). Evidence suggests that categorization is influenced by whatever classification scheme is used (Tversky 1977, 344), which has important implications for how library language structures might affect indexing.

The usefulness of basic level theory in explaining how humans perceive the objective subject content of images has been demonstrated in recent experiments (Rorissa 2007; Rorissa and Iyer 2008). Basic level theory, while indicating that objective indexing is likely to match user perceptions of objective subjects, does not explain why certain objects may be picked out by viewers or explain the higher level interpretations of images. Furthermore, this essentially positivist approach has effectively been reductionist with its emphasis on perception of image elements rather than a holistic understanding of image meaning.

A second approach to the theory of the subject content of images has come from art historian Erwin Panofsky’s formal analysis of Renaissance art works (Panofsky 1955). Panofsky proposed the distinction of three levels of subject matter or meaning: pre-iconographical description, iconographical analysis, and iconological interpretation. Pre-iconographical description relates to everyday objects and events that require no specialist knowledge to interpret. Iconographical analysis deals with images,

stories, and allegories for which knowledge of specific themes or concepts is necessary. Iconological interpretation deals with the “intrinsic meaning or content” and requires an insight into symbolical values and their varying use over time.

Panofsky’s approach was modified to provide a theoretical basis in LIS for describing any image and its subject matter (Layne 1994; Shatford 1984; 1986). Shatford’s four subject facets of “who,” “what,” “where,” and “when” each have three aspects: the “specific of,” the “generic of,” and the “about.” Shatford’s faceted classification provides a structure for systematically identifying possible subjects. As a minimum, Shatford proposes indexing images with both generic and specific “of” subjects (e.g., bridge; Brooklyn Bridge). She notes thresholds at which indexing should cease: the threshold of detail beyond which no element should be named, which is an integral part of the whole; and the threshold of pertinence where only objects that are meaningful and identifiable in the image should be named. The Shatford/Panofsky model has been used as an analytic tool in several studies, most notably in user research by Armitage and Enser (1997).

The need to consider a broader range of attributes led Jorgensen (1995) to conduct exploratory research into the image attributes typically described by individuals. She identified 12 classes and 47 image attributes, which she grouped into three levels: perceptual, interpretive, and reactive. This research demonstrated that abstract and affective attributes are typically

Table 1. Shatford/Panofsky subject level classification

Facets	Iconography / Specific of	Pre-Iconography / Generic of	Iconology / About
Who?	Individually named person, group, thing	Kind of person or thing	Mythical or fictitious being
What?	Individually named event, action	Kind of event, action, condition	Emotion or abstraction
Where?	Individually named geographical location	Kind of place: geographical, architectural	Place symbolized
When?	Linear time: date or period	Cyclical time: season, time of day	Emotion, abstraction symbolized by time

described, and suggested that image indexing would benefit from more subjective interpretations than have traditionally been carried out.

More recent work has brought together perceptual or visual features and subject levels into one model (Jaimes and Chang 2000). Jaimes and Chang's indexing structure is useful for showing that the syntactic (i.e., related to perception) and semantic (i.e., meaning) elements and the classes can be seen as a sequential extraction of meaning at increasingly higher conceptual levels.

Subject levels in all the models discussed display an orientation to the document or image, and no account is taken of different domain knowledge. There is an implicit assumption that knowledge and expertise increase with each step upwards through the subject hierarchy. However, as in textual theory, the image models do not clarify how definitions of higher level subjects are derived.

The lack of a concept of image warrant is an important gap (Svenonius 2000, 138), which highlights how narrowly image indexing has been constructed on traditional text cataloguing. Image warrant can draw from different sources including users (Rafferty and Hilderley 2007, 406) or visual literacy and learning to "read" images (Burke 2001; Lesy 2007; Ritzenthaler and Vogt-O'Connor 2006; Rose 2007; Schwartz 1995).

An overview of the state of intellectual access to visual materials 10 years ago concluded that there was no general agreement on what image attributes should be indexed (Chen and Rasmussen 1999). A recent overview (Enser 2008) points to a continuing variety of approaches and lack of consensus.

The traditional LIS viewpoint is a significant hurdle for indexing to overcome if it is to meet users' needs for more than just an objective level of indexing. The challenge is to develop a practicable interpretive indexing that encompasses the levels of meaning in an image and reflects "the concepts which would be regarded as most appropriate by a given community of users" (International Organization for Standardization 1985). Photographs, unlike textual documents, usually lack text that guides interpretation and access to domain concepts. While indexers are instructed to take into account "authorial intents" (Library of Congress, Prints and Photographs Division 1995), this instruction raises the issue of inten-

tional fallacy, familiar from literary studies, and the corresponding criticism that authorial intent is not necessarily the key to interpreting an image and may not even be recoverable (Sandweiss 2007, 2).

Developing and limiting the possible meanings of images—"polymorphously perverse entities" (Lesy 2007)—has been seen as particularly difficult. The challenge may be overstated due to a lack of visual literacy. Images have multiple, but not unlimited, meanings and the viewer is informed by context, including visual sequences or an entire corpus of work, which helps constrain potential meanings (Natanson 2007; Warner 2007). Readings can be a "preferred reading" where the document is accepted as is, a "negotiated reading" where only part is accepted, or "alternative" or "oppositional readings" where the reading is completely contrary to that intended (O'Shaughnessy 1999, 52ff.). The readings depend on the critical approach, the audience's knowledge, and the context. The literature on indexing images does not discuss how these different approaches or how changing "preferred readings" over time should be addressed. As well, libraries, while trying to capture the meaning of photographs, contribute to how the meaning of a photograph is shaped (Schwartz 2004, 121).

Methods

The research discussed here comprises an exploratory investigation into indexers' understanding and indexing of the subject content of historic photographs. The study contributes to a larger investigation into subject access to historic photographs.

This research uses a qualitative methodology to explore the particular phenomenon of indexing as a human activity system situated in the social environment of organizations. Given the nature of the research focus and the specific research question, a qualitative methodology was considered the best primary approach. Previous research has called for contextual studies and for a shift from scientific to qualitative methods to get a better understanding of indexing (Mai 2000, 296). A key aim of the overall research project is to provide better understanding for practitioners and techniques that they can employ in their institutions to improve access to their collections. Findings based in real-world contexts are essential if they are to have resonance and validity for practitioners.

An important aspect of this study was the selection of participants who are indexing historic photographs in real-life situations. The use of purposive sampling has been shown to be an effective technique for gathering rich description and accurate and reliable information (Johnson 1990, 27ff). Face-to-face interviews and think-aloud protocols were conducted by the researcher with a sample of 11 participants indexing historic photographs in publicly available national to small local studies collections in Australia (7), New Zealand (2), and North America (2). (Resources limited the geographic range of the in-person interviews.) The sample size was small and there is evidence that interviews with a small sample can provide rich information (see, for example, Barry 1994; Schamber 2000; Weller and Romney 1988, 69ff.) and the “validity and meaningfulness” of qualitative research depends not on sample size but on the “information-richness” of the selection (Patton 1990, 185). The aim of the sampling was to provide a broad range of indexers working in a variety of institutions, and the indexer demographics were deliberately diverse to explore whether individual, professional, or institutional differences might affect variations in indexing. The advantage of this wide variation sampling is that common patterns “are of particular interest and value in capturing the core experiences and central, shared aspects” (Patton 1990, 172). In this study the sampling provided a diverse range of indexers representing different professional levels, ranging from a library officer to a director of a digital libraries program. The indexers, nine females and two males, ranged in age from their twenties to sixties and their indexing experience varied from 2 years to more than 30. However, their experience was largely in traditional cataloguing, no indexer had more than about 10 years working with images, and the average was close to 5 years.

The semi-structured interviews aimed to gather participants’ knowledge and understanding of theory and their perceptions of specific subject levels when indexing for the retrieval of historic photographs (see appendix interview questionnaire). The describing or photo analysis tasks following the interviews were designed to complement and amplify the information gathered during the interviews. Participants were asked to describe two or three historic photographs from the their own collections and provide the terms they would use in indexing these items. Participants were then questioned to elicit further subject responses and to describe what they found easy or difficult (see appendix photo analysis questions). The photo analyses allowed comparison between indexers’ responses to interview questions and what they did in practice. The

photo analyses provided data revealing what attributes are typically perceived and how they are classified.

The interviews and photo analyses were held in interviewees' workplaces. The aim was to ensure that the surroundings were as conducive as possible to the interviewee feeling comfortable and talkative while providing a suitable environment for interviewing. Nevertheless, participants often presented information in a confused or disjointed manner. This may have been caused by a variety of factors, including the challenge of trying to articulate responses on issues that they may not previously have considered. The more experienced indexers tended to be more articulate informants. Sessions typically took about 90 minutes. All sessions were recorded and transcribed, except one photo analysis session when the recording equipment failed. The transcriptions were then subjected to content analysis using the software program QSR N6. Units of analysis were in "chunks" varying in size from words, phrases, and sentences to whole paragraphs.

This exploratory study investigates indexers' attitudes and approaches to indexing, but the sampling approach limits what it can reveal about the extent to which these may be affected or shaped by different work contexts. As a result of the nature of the methodology, other effects on indexing—such as working within the parameters of the participants' local library systems, including local thesauri or subject headings, and normal work constraints, such as the limited time available to index each work—were not captured.

Preliminary research findings

Note: Research participants are identified by individual letters and quoted extracts by the paragraph number in the transcripts.

Theoretical understanding

Overall, participants demonstrated little theoretical thinking about what constitutes a subject, and most responded that the question was "difficult." No indexer referred to the extensive literature or even compared the subject cataloguing of books to that of photographs, despite many participants' having backgrounds in book cataloguing.

A “subject” seemed to be whatever an indexer perceived when looking at an image. The focus was on specifics, and one indexer at least recognized that this approach resulted from traditional library practice.

I think it’s just conditioning, really. Because we’re so focused on other things, like what somebody’s wearing or what their name is. (I, 50)

While indexers might not show any theoretical understanding, they made clear that their indexing practice was based on several fundamental principles: what they perceived clients would ask for, the institutional mission, and a requirement for indexing to be “neutral” and “objective.” All indexers took a user-centred approach to their indexing, which was based on how they perceived their institutional mission and clientele.

Indexers working in local studies or specialized collections seemed to have particularly narrow, self-imposed limitations or boundaries around what constituted a “subject” because of how they perceived their institutions’ missions and clientele, even though they recognized potentially broader uses.

You’ve just got to keep the mission of your collection in mind when you apply subject terms. So, at the [state library] the terms that they would apply would be quite different to what I would apply, and even though I know we have got some of the same photographs. (E, 75)

As a result, while their collections were generally small, their indexing for each photograph was less comprehensive than that of indexers working in larger collections. Indexers working in institutions serving a wide variety of clients found subject indexing more challenging because they were aware that searchers may be approaching the same images from diverse viewpoints.

The need for neutrality constrained readings that were seen as overly interpretive. One indexer expressed concisely the standard viewpoint:

But part of the point of indexing it is to rein in that subjectivity and provide as much access as you can without going overboard, which is . . . which is an objective exercise. (E, 82)

Only one participant, directing the digital program of an academic library, recognized that indexing could readily shade into what he saw as interpretation.

The challenge is determining what level of treatment and looking at the benefits for the end user ultimately in terms of a detailed analysis of the content . . . where does the role of the professional indexer or librar[ian] . . . cataloguer end and the investment of the researcher in terms of their own skill sets to interpret . . . ? So when do we cease being documenters and when are we interpreters? To me that's the interesting challenge. (L, 72)

There was no expressed or implied recognition that indexing or identifying subjects in historic photographs might require specific visual skills or training.

Determining what to index

Indexers determined which subjects to index with relative ease, despite the lack of theory and the subjectivity involved in choosing what to index. They considered the "subject," such as objects, people, and many activities, self-evident.

What's easy are the things that obviously are large and stand out that you're familiar with and if a photograph is simple and only has two or three things in it. Well then obviously that's quite simple and straightforward. (H, 78)

Indexers, when considering photographs that they judged to be more complex, typically indicated they considered what the photographer's intent might have been, or what they saw as its "focal point" (B, 20).

The notion that subject content can be determined on the basis of authorial intent is problematic. However, it is clear that what indexers described as intent equates to what they consider the photograph is "of."

Usually I look at the whole or what the photographer meant to take the photo of, so if it's a street, he's looking down the street and he meant that photo to be of the street. (A, 12)

At times, even with reasonable grounds for supposing a photographer's intent, indexers might leave this up to the user's interpretation.

Like we've got cases of photographing early Maori where I think the photographer was doing it with a bit of tongue-in-cheek and set up to possibly maybe ridicule . . . I don't think that you would say anything about that in the indexing because it is what it is. You let the person looking at it then [decide]. (H, 56)

A common theme was that historic photographs are “documentary” and therefore the photographer’s intention was not a significant factor. It was sufficient to index the ostensible subject content.

So, our expectation is the photographer is documenting what they see, and that is more objective than, say, a photographer who is pursuing an artistic theme. (N, 70)

The apparent “main focus” of a photograph operated effectively in directing attention to certain elements and enabled indexers to both develop and limit the range of possible readings of the photographs and quickly identify subject concepts.

I’d look at it first and work out what the main focus of the photograph is. But you also have to look at the photograph overall as well and try to work out what different aspects of the photo different people will want to know about. (B, 10)

The focal subject might be determined from the accompanying documentation or collection context, the straightforwardness of the image, or the collecting aims of the institution.

The photo analyses made it clear that recognizable scenes or activities were important determinants in identifying focal subjects and what subsequently would be considered appropriate to index. In nearly all cases the first “subject” concept identified in the photo analyses matched the first subject heading indexers chose.

Despite frequent comments about the documentary and often straightforward nature of many historic photographs, indexers acknowledged that their responses were subjective.

So two people looking at the same photograph may . . . would probably see different things unless it was very obvious what the overriding theme was. But with all types of indexing, whether it’s photographs or text, I think it is very subjective. (B, 40)

Inconsistencies in indexing between indexers were explained by factors including differences in attention, biases, or differing levels of knowledge and experience (O, 62). However, the general feeling was that indexers’ shared perceptual responses to an image would result in broadly comparable subject indexing and that the concrete or specific subjects indexed would be equally evident to users.

The subjectivity in how different viewers read photographs was ascribed to different “frames of reference.” The framing directs the focus of attention and determines the relative importance of subjects in an image. The indexer frames historic photographs as documentary materials whose subjects are considered straightforward (N), and this constrains indexing to objective elements.

For indexers the most important consideration in choosing what to index was what they saw as their clients’ needs—an issue often inextricably linked with how they perceived their institutional mission. The emphasis on perceived client needs as a guiding factor in indexing was especially pronounced in specialized or local studies collections. In contrast, local indexing policies did not appear to be either well developed or well known to indexers. Several indexers were unaware of any institutional policies, and some appeared to equate institutionally endorsed subject heading lists, such as *Library of Congress Subject Headings*, with policies.

All indexers indicated that they considered what subjects they thought clients would ask for when indexing. Implicit in their approach to indexing was the belief that what they regarded as valid subjects and the relative importance of different subjects would be shared by users. This viewpoint, which assumes a cultural or majority consensus, was overwhelmingly cited by indexers as a key factor guiding their indexing. They did not refer to any systematic or organized approaches to gathering information about what subjects users might be interested in or to any institutional guidelines or studies to guide their decisions. The evidence was anecdotal; usually experience working on reference desks was cited.

From my point of view, the work on the enquiry desk when you get people coming in, from the questions that they ask, after awhile when you’ve been indexing you know the sorts of things that people ask for and it’s all very helpful. (A, 57)

The indexers were aware they might have to consider users’ differing levels of knowledge and what these implied for indexing.

So it may be somebody who knows a lot about photographs in the area or it may often be somebody who knows nothing about it, so I have to tend to that somehow. (H, 12)

Indexers, despite their expressed user focus, directly referred to potential client needs only in slightly more than one-third of the photo analysis

sessions (10 of 28). Each time it was in relation to indexing concrete objects. The reference most often was negative, such as “not clear enough to be of interest to anybody” (A, 95) or too mundane to be interesting, such as “no one is going to ask me about the roses” (E, 124). Overall, little explanation was given about why items selected for indexing were considered to be potentially useful. None of the comments suggested any guidelines or formal methods for determining potentially useful subjects were guiding decisions.

Ultimately, indexers recognized that some users might require more help than their indexing could provide. This pragmatic viewpoint helped indexers accept limits to how much they indexed.

And I actually think that you can't index the reference librarian out of the process . . . for patrons who are a bit more unsure the reference librarian has to be there. (E, 49)

Indexers were preoccupied with other indexing thresholds. They were concerned about how information retrieval might be affected if many photographs were indexed with the same term. As a result, indexers made judgements about which photographs of an object would be indexed with the appropriate subject term. A factor in deciding which were indexed was the quality of the subject as an exemplar of the type or the technical quality of the photograph.

I've found that sometimes there would be something in an image when I think someone might be interested in that, but I've seen three or four better examples and indexed it and so I won't bother with this one. In the beginning I indexed absolutely everything exhaustively and as I've gone on, and I've seen better examples . . . much better detail. Sometimes it's to do with the quality of the photo. (A, 21)

All indexers consciously selected the best examples or “exemplars” for indexing, although less-experienced indexers tended to index in greater detail and with less discrimination. In more than one-third (11 of 28) of photo analyses indexers commented about the quality of objects when considering whether to index them. The visual or technical quality was critical in choosing what to index, but in practice this might not be a hard-and-fast rule. One indexer indicated in interview that even a building shot on an angle that would be difficult to recognize might be indexed “if we didn't have anything else” (N, 74). In fact, in the photo analyses indexers tended to take a more inclusive, enumerative approach

to listing subject matter rather than make a more limited qualitative selection of subjects as they suggested they would do in their interview responses.

Quality was often judged in relation to other photographs in a collection: "There are much better photos showing much better detail" (A, 94), or, "It's no good indexing if it's just the side of a building or something . . . because I've got much better photographs" (G, 132). Like specific object subjects, generic terms were more likely to be used on photographs of better quality: "[I would] use the generic one of 'roads and streets,' because it is such a good shot" (N, 142). However, a generic term might be used when the indexer decided specific items did not justify indexing.

There's another generic heading for "buildings" as well. So I might have to put that because I don't know what any of these are. They're not clear enough to identify singly. (N, 142)

Related to the quality of the image was its uniqueness. It was clear that an atypical, unique, or special item might be indexed, even if the quality was not high.

The depth of indexing was an important concern for indexers. All participants considered that indexing all subjects in a photograph, in particular every object, was impossible because of the resources this would require and that it was undesirable because it would be unhelpful to users.

At what point do we say that this is complete? And I think that's the issue. And I think it's also the question of when does it stop being meaningful? (L, 72)

Warrant

Indexers did not directly refer to the concept of warrant. However, comments about their use of textual information suggest literary warrant is an important factor in deciding on subjects. All indexers commented on the importance of documentation, including collection information, in understanding a photograph. For many indexers, checking this information was cited as the first critical step in the indexing process. Indexers also cited research and comparison with other photographs in the collection.

Internal evidence, such as information on signs captured in the photograph, provided another source of warrant for identifying subject matter.

The collection context also framed how a photograph would be viewed and understood. Only a few indexers articulated how this framing influences their reading of its subject matter.

You try to establish how does this single image fit into the collection. And you'd be trying to . . . you'd be assuming there's a consistency and you'd be looking for it, I guess. So you'd have that in mind. (N, 50)

In the absence of documentation, internal evidence, or collection context, indexers might struggle to identify subjects.

Indexers clearly found warrant in the library thesaurus and, in one case, consciously considered the practice and vocabulary of other established domains.

In other words, we feel it's important. We draw on the appropriate vocabularies and the sources and we have demonstrated or evidenced from our users that subject access is important. And that's drawn from the professional community largely, not from the layperson but rather from the professional users. (L, 42)

There was no evidence of a developed "visual warrant" equivalent to literary warrant. This gap may be a problem when trying to decide on appropriate subjects.

Despite the recognized importance of these contextual factors, indexers frequently commented that in indexing they would look at each photograph first and foremost on its own merits. The item-by-item approach is clearly shaped by LIS tradition and cataloguing practice.

Subject levels

The range of subject levels used in indexing historic photographs is critical in providing full access to their subject content. The Shatford/Panofsky model provides an effective analytic tool in data analysis to assess how indexers approached levels—the specifics, generics, or abstracts—and then the facets—the who, what, where, and when.

There was no evidence during the interviews or photo analyses that participants have clearly formulated concepts of subject levels. In fact,

some did not clearly distinguish between levels and sometimes appeared to lack a clear understanding of what was encompassed in a specific subject level. However, an analysis of subject terms used in the photo analyses shows distinct patterns in the distribution of subjects.

Specifics

Participants considered the specific physical objects, people, places, or activities represented in photographs obvious or straightforward to identify. There was, in contrast to other subject levels, an assumption that specific objects do not require “interpretation.”

Indexers seemed most comfortable indexing subjects at the level of the specific object and regarded this level as critically important for user access:

We attempt to be as complete as possible in providing access to those objects, and that’s our ultimate goal. (L, 24)

Some indexers appeared relatively indiscriminating and indicated they would index a wide variety of items—“I’d try to cover as much as I could” (F, 22). During photo analyses, indexers tended to enumerate objects, often in detail, such as articles worn by sitters in portraits. That this reflected actual practice was shown in one interview response describing the indexing of a collection of portrait photographs (H, 18).

However, even at this basic level, considerable judgement was used in choosing what to index. Given the practical difficulties of comprehensively indexing all objects in an image and how useful this would be for users, indexers discussed deciding what to index on the basis of such factors as what users might request or the historic significance or technical quality of the photograph.

For example, there might be a street scene that had got good examples of old . . . old types of street lighting or gas lamps or something like that. And I think if it’s a good representation of something like that, then I think it’s certainly worth making a point and giving a subject heading . . . It is fairly subjective, but I think you have to try to think in historical terms what might be of interest to people doing historical research. (B, 22)

The decision about what to index might be difficult, and a less experienced indexer might be less selective.

In relation to photographs, sometimes you can have so many things happening in a photo that you want to sort of make sure you encompass everything. (F, 24)

Even experienced indexers found indexing “busier” images challenging, and ultimately what the indexer chose to index rested on a subjective decision.

Maybe you’re going to weigh up how many different objects are there, are they worthy of their own subject heading in the context of the whole image ... Like, it’s subjective what you decide. (N, 20)

Another librarian reiterated the need for limits and emphasized that the decision about what to index will return to a consideration of the type of library and an understanding of the library’s clientele.

You have to draw the line somewhere. You couldn’t look at a photo and, say if it was the interior of a room, you couldn’t index or give a subject heading to every single object. But I think if it’s major ... major objects like furniture or if it’s outside, like the example of the street lighting or something like that, I think ... It really depends on the type of clientele, the type of library that you’re in as to how much attention to detail that you would give to those sorts of things. (B, 24)

Indexers were interested in objects specifically because they help to date or otherwise identify an image. The object, unless of historic importance or of particular quality, might not be indexed but it would establish a timeframe for the objects that were indexed.

Probably the only thing I do with cars is the fact it helps sometimes with the time frame. (G, 25)

Cataloguing theory and texts recommend indexers use the most specific terms when indexing and not include the broader terms. While indexers did not specifically cite these recommendations, their experience and practice provided support for using more specific terms.

I tend to be as specific as possible because I have found that people do tend to ask for specifics. They will ask for petrol pumps rather than petrol stations or stations—don’t they? (A, 58)

Generics

Many of the participants showed confusion and misunderstanding about what constitutes a generic subject. Half needed to be prompted with

examples of generic headings. Most of the others requested clarification, often asking, “Do you mean . . . ?” then giving an example of a type of generic heading. Examples of generic subjects that were offered tended to be the most commonly used, such as “portraits” or “streetscapes,” and represented concrete terms and factual descriptions.

Generic headings formed the basis of some of the local organization or classification systems. In these cases indexers took generics as a given, because the photographs were filed by the generic subject and focused on specific subject terms when indexing an image.

Furthermore, it appears that indexers are influenced to a certain extent by the cataloguing maxim to be as specific as possible in assigning subjects.

I don’t think you should use generic headings for every record. If you can find more specific terms that describe what’s in the image then I probably wouldn’t use them. (N, 38)

While most often a generic heading was considered from the viewpoint of whether specifically identified concepts should have an additional broader subject heading term, in some cases it was clear that an indexer may have recourse to generic headings because the specifics cannot be identified.

Because you do end up with photographs you have no idea of what they’re actually of . . . they’re the ones you actually put the broader subject headings on. (E, 51)

Two main themes about generic subject headings usage emerged. The first, and most frequently mentioned, was a concern about the usefulness of indexing many photographs with the same generic subject term.

But there’s always the danger that you’d end up with 2 million records with the same heading on it, so I think you do have to be a bit careful and use on the photo . . . think about who’s going to use it, so for instance if somebody is doing hotels in general, if you’ve good photos of hotels and you know the name of the hotels, the second subject heading is hotels, whatever, and banks. (A, 29)

There was no consensus about when the usefulness of generic headings became a problem when searching a collection.

I think certain categories like portraits. I think some people do want to come in and they want to look at that type of photograph so I think it's probably important, but I think . . . I don't think you want too many of them; it can generalize the collection. (B, 30)

The second concern with generic headings involved when it was appropriate to use them. This resulted in a tendency to use them only to a limited extent.

Every time you've got a picture of a house, should we put a subject heading "Houses" or "Dwellings," and I have tended to. If there just happens to be a house in the photo, I have not done it. If it's been a photo of a house and I've given it a subject heading of the address (hopefully I'm right), sometimes the name of the house if you know it and then a general subject, subjects heading, "Houses—Western Australia—wherever it is." Also occasionally if I've known it, the architectural style. (A, 30)

For some indexers, it appears adding a generic subject to provide a broader context was an automatic procedure.

So in terms of procedures: you choose a general subject heading or indexing term that fits the photograph, so "Streetscape" or "Portrait," whatever . . . to give it that broader context. Yeah, and if it's a photograph of a street I'm very conscious of putting the street name in as well. (E, 84)

Photographs in special format, such as postcards, were routinely mentioned by indexers because "the form of the photo, like postcard is important" (A, 25) for some users.

Some indexers might choose to put a generic heading or description as a note—"I tend to put that in a notes or summary field where it said 'family portrait' or whatever" (F, 32)—rather than as a subject. Whether this reflected uncertainty about the proper use of generic terms or an idiosyncratic usage is not clear.

Abstracts

Indexers expressed great reluctance to use abstract subject headings. There appeared to be a general doubt about how useful these are.

I don't know if anyone, if they did a keyword search, whether they would look under "Happy" and "Peace." I mean . . . I'm very unsure about that. (F, 38)

There was a consensus that abstract headings are too difficult to get agreement on and involved too much interpretation by the indexer. A number of indexers suggested that abstract headings were more affected by personal biases than specific or generic headings. Indexers considered interpretation inappropriate and best left to the user.

Interestingly, many of the indexers consider that the documentary photographs collected by their institutions do not contain abstract subjects (“our pictures on the whole aren’t that sort” [J, 47]) or that these subjects are unimportant to their meaning. The view that documentary photographs represent essentially straightforward and factual subjects was frequently stated, even when the indexer might appear to have some doubts.

Documentary photographs—they don’t really have abstract concepts in them, but of course we know that’s not really true. (N, 58)

While indexers emphasized the importance of indexing to meet the needs of their audiences, the aversion to abstract indexing means they will not index abstract concepts, even when they know their users may want to use them for information retrieval. Typically, participants mentioned advertising agencies in regard to an interest in abstract subjects.

That [abstract indexing] is quite important. It is actually something that I don’t think we do when I seriously think about it. I can see why it should be done though . . . Because it’s . . . that is exactly what people could quite possibly ask for. Particularly we get lots of advertising agencies and they are looking for our photographs and that is the sort of question they would ask. (I, 46)

Indexers were ambivalent about catering to the needs of users seeking abstract terms. There was a sense that their institutions had in mind users who did not search for images in this way.

I wouldn’t use them, not in the photographic indexing collection [collection indexing]. I think they’re not particularly useful . . . If people are going to use that search term . . . I don’t think they’ll find what they are looking for. It’s very hard to know if you put, if you use the search term “Peace” what they are actually after. (E, 43)

The issue of abstract indexing suggests that indexers are making judgments about what indexing is appropriate on the basis of their perception of who their institutional users are or even perhaps who they should be. The result is that consciously or unconsciously they discriminate between

what subjects are “valid” or not when indexing. One indexer explained that the justification for this mindset is established library practice.

The APT [*Australian Pictorial Thesaurus*] has abstract subject headings that, like there’s six branches of the hierarchy and one of them is “Ideas and Concepts” but we’re not supposed to go beyond a certain point in Dewey, because it’s based on that idea that photographs don’t convey abstract ideas. (N, 40)

The exception to this normal practice occurred in institutions where staff are creating online “exhibitions,” which usually involves placing items in their context and considering their relationships to other materials. On these websites interpretation has a key role in creating richer access to the material than is normally provided in the online library catalogue.

What we’re really concerned with is drawing out for the users and, as a consequence of that we would feel indexing this information, drawing out from the prints not only the historical information, but also the iconographical information so we have a symbolic layering that we’re pulling out of there. (L, 44)

Distribution of subject level terms

The terms used by participants during the photo analyses were analysed using the Shatford/Panofsky matrix shown below. The subject terms were classified by level—the specifics, generics, or abstracts—and then by facet—who, what, where, and when. While the analyses show participant terms can be clearly categorized by subject level facets, it should be noted that these facet distinctions were not highlighted by participants. No participant mentioned using subject levels as an indexing tool in the photo analyses. None of the analyses showed evidence that any participant thought of the subjects in terms of levels or facets.

The number of subject terms identified by indexers during the photo analyses totalled 222. Half of the terms related to specifics and 46% to generics, most of these belonging the kind of person or thing facet (G1). The G1 facet had the largest number of terms, followed by the specifics facets of where (S3) and who (S1). The distribution clearly reflected the subject-level emphases that emerged in the indexer interviews. The low level of terms relating to the specific what (S2) was predictable, given the lack of documentation available to participants; normally participants would have been able to identify these specifics using available documentation or through research.

Table 2. Subject level classification matrix

	Specifics	Generics	Abstracts
Who?	S1 (individually named person, group, thing)	G1 (kind of person or thing)	A1 (mythical or fictitious being)
What?	S2 (individually named event, action)	G2 (kind of event, action, condition)	A2 (emotion or abstraction)
Where?	S3 (individually named geographical location)	G3 (kind of place: geographical, architectural)	A3 (place symbolized)
When?	S4 (linear time: date or period)	G4 (cyclical time: season, time of day)	A4 (emotion, abstraction symbolized by time)

Figure 1: Indexer terms by level and facet

Indexers overwhelmingly used specific or generic terms relating to the kind of person or thing (G1) rather than other generic or abstract facets. Subject terms categorized by the abstract facet relating to what (A2) were ones the indexers mentioned in the analyses but indicated they would not use when assigning the final subject headings.

The subject distributions demonstrate indexers’ fundamental bias towards objective indexing. Some generics are poorly represented, and abstracts are virtually non-existent.

Table 3. Indexer terms by category

	S1 Who	S2 What	S3 Where	S4 When	G1 Who	G2 What	G3 Where	G4 When	A1 Who	A2 What	A3 Where	A4 When	Total
Total	40	4	43	29	82	10	11	0	0	4	0	0	222
%	18	2	19	13	37	5	5	0	0	2	0	0	100%

Figure 2: Indexer terms by category

Table 4. Easy and difficult subjects

	S1 Who	S2 What	S3 Where	S4 When	G1 Who	G2 What	G3 Where	G4 When	A1 Who	A2 What	A3 Where	A4 When
Easy	15	1	11	3	10	3	1	0	0	0	0	0
Difficult	11	7	7	12	3	0	4	0	0	6	0	0

During the photo analyses participants were questioned about what subject aspects had been easy or difficult to identify. Not surprisingly, given the distribution of level terms, mostly specifics or generic terms relating kind of person or thing (G1) were mentioned as being easy to identify. The difficulties encountered by participants usually related to confirming the specific subject identities, a task normally made easy in a work situation where accompanying documentation might be available or further research can be done. Indexers highlighted proportionally more difficulties with generics and abstracts.

Conclusions and recommendations

The findings clearly demonstrated that current indexing is conditioned by the positivist tradition of LIS. The overwhelming use of subject head-

ings related to specifics or generic things and an almost complete absence of abstract or interpretive subjects suggest that there is a fundamental gap in the access being provided to the subject content of historic photographs.

An improved understanding of the objective basis of current library indexing, its strengths and its limitations, can help institutions holding historic photograph collections evaluate how well this type of indexing meets the needs of their user groups. It is hoped that a better understanding of contemporary practice will lead institutions to incorporate more interpretive indexing to supply access to the different levels of meaning contained in images. The research findings relating to organizational influences on indexing should act as a catalyst for institutions to clarify institutional goals and intentions for indexing and to develop improved policy, procedures, and strategies in this area to assist indexers who are working largely from assumptions and their own experience. Institutions also should inform users about their indexing practices so they have a better understanding of how local indexing might affect their information retrieval.

A better understanding of indexing has implications for indexers' individual practice. A greater awareness of the indexing process will help indexers identify the organizational and personal factors that affect how and what they index. This awareness will help sensitize them to the biases in their own indexing, increase recognition of the need to develop their knowledge and skills, and acquire a better understanding of different domain knowledge perspectives to improve their indexing. Recognition of the importance of alternative points of view and domain knowledge may encourage the employment of other discipline specialists as indexers.

The findings can benefit users by providing direction for better indexing practices at both the institutional and individual indexer level to meet their needs for more interpretive subject access. The need for indexing to bring in the perspectives of other disciplines, and of the users themselves, will offer users opportunities to contribute directly to indexing for the benefit of other users.

Other sources of information, and phenomena such as social tagging, offer alternatives to institutionally mediated access and a shift in the locus of control that highlights the different or competing interpretations of image content that are available. The second phase of this research will explore online tagging and potential new roles for indexers working collaboratively with taggers to meet these challenges.

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Appendix

Interview Questionnaire

These are indicative questions only. The direction the interview takes and the responses of the interviewee will determine the exact wording of these and the intervening and supplementary questions asked during the interviews.

Interview reference number, date, and time

Demographic questions

The first questions are demographic.

- What is your position?
- And your age (you can give the decade range)?
- And your years of experience in indexing?

What to index (process and principles) questions

The next group of questions deal with what to index, the processes and principles

- What are the steps you go through in looking at a photograph and deciding on its subjects?
- Do you have a special procedure for how you examine or visually scan a photograph when you are deciding on its subjects? If yes, please describe.
- How do you determine what constitutes a “subject”?
- How do you approach indexing objects in a photograph?
- How exhaustively should objects be indexed? What parts of things should be indexed?
- How important is it to index objects? Why?
- What generic headings should be used in indexing a photograph?
- How important is it to index generically? Why?
- What abstract concepts should be indexed? If any, how should these be determined?

- How important is it to describe an overall subject or theme for a photograph? What factors would you take into account in determining what this is?
- What other sources of information do you use in indexing a photograph? How do you use these?

Collection context / relationship factors questions

The next group of questions deal with the collection context, where a photograph is part of a specific collection.

- What is the effect on indexing if photographs are part of a specific collection?
- What is the effect on indexing if there are obvious groupings of photographs in a specific collection or the collection as a whole? How do you determine a “grouping”?
- What effect do the differences between photographs in a collection have in determining the subject(s)?
- What other factors effect indexing?
- How does having or not having a digitized photograph available for the client to browse affect your approach to indexing?

Indexing orientation questions

The next group of questions deal with “indexing orientation.”

- What role does the photographer’s intention or purpose in taking the photograph have in your determining its subject?
- What effect does a consideration of how the user may be interested in the photograph have on indexing? How do you determine the subjects a user may be interested in?
- Do you think that indexing photographs is an objective or subjective process? Explain your viewpoint.

Library systems questions

The next questions deal with library systems.

- What policy does your organization have about subject indexing? How does the organizational policy affect your indexing?
- What classification or subject heading systems does your organization use? How do these systems affect your indexing?

Wrap up question

What do you find easy or difficult about analysing subjects in photographs?

Photograph analysis questionnaire

These are indicative questions only. The direction the analysis takes and the responses of the subject will determine the exact wording of these and the intervening and supplementary questions asked during the analysis.

- Please describe the photograph in your own words as clearly and completely as possible.
- What subject headings would you use to describe its subject or subjects?
- What other index keywords or phrases would you consider appropriate or necessary for indexing this photograph?
- How would you describe the setting or place of the photograph?
- How would you describe its time period?
- How would you describe the emotional or abstract qualities of the photograph?
- What do you find easy about describing this photograph?
- What do you find difficult?