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Creating Order from Chaos: a Classificatory Approach to Retrieval in a Local History Photographic Archive

Abstract

With the advent of accessible digital technology in the 1990s, image archive collections that were once the sole preserve of the conservator or researcher with white gloves could now be made available to all. Creating digital surrogates offered promise for increasing public access, however, not without considerable challenges in the making. This article recounts and reflects upon how a local authority aimed to make, potentially, 250, 000 glass plate negatives in numerous different local history collections generally accessible by scanning and subject indexing. It considers the challenges of providing metadata that would best meet end-user needs in a touch screen public access system and how and why a hierarchical classification scheme was developed to allow productive browsing of these historic collections of everyday life. The photographic archive case study is then revisited through a twenty-first century lens, discussing latest developments and the potential of open source tools for multidimensional access.

Keywords:

classification

photographic archives

image retrieval

digitization

online interfaces

Introduction

Local history photographic archives provide a window into a world that once was, a visual record of culture, customs and collective memory. Maintaining the delicate balance between effective storage and preservation of physical collections for future generations and assuring accessibility in the present is a perennial challenge for archivists. This is particularly so when the only means of accessing photographic archives (often housed in repositories, away from public view) is by handling the actual physical artefacts, albeit in the requisite white gloves, which may seem in conflict with the desire for appropriate conservation. The 1990s heralded the beginnings of a pendulum swing towards the grail of public accessibility, however, not through the artefacts themselves but as a representation: a digital surrogate. This article documents and reflects on how a local history photographic archive was made publically accessible via first generation digital technology in the late 1990s. The primary focus pertains to how bespoke classified metadata was developed to enable end-users to search and browse the photographic collection, the challenges associated and experienced as a part of this, and how classification can be exploited as a search tool at an online image interface.

Approaching the Archive

In 1997, Kirklees Cultural Services (Kirklees being a Metropolitan Borough in the North of England, West Yorkshire) achieved Heritage Lottery Funding to help digitize its local history photographic archive, the first digital image project of its kind, and to make this accessible via touch screen terminals in the four main Kirklees libraries. To a recently qualified librarian, this innovative project appeared different, attractive and a potential challenge. Having successfully secured the post of 'Digital Image Project Officer', I encountered the archive for the first time in trepidation and the complexity of the numerous collections became quickly apparent. The archive, housed in an Aladdin's cave of a warehouse with other, often peculiar, museum pieces not currently in public view, consisted of 250,000 glass plate negatives in over twenty-five diverse collections, dating from the 1860s. Subjects ranged from scenes of the local area –

views, buildings, local customs and cultural events – to Swiss views, botany slides and even electrical experiments. These idiosyncratic named collections (in hundreds of boxes) held the provenance of the photographer or previous owner, together with the *Huddersfield Examiner* newspaper collection (dating from 1946), which would also form part of the potential digital archive. Information about the collections was limited and inconsistent; 52,643 images had been documented on the museum curators' 'MODES' system (yet the records would still require additional information for subsequent public access) whilst the remaining approximately 202,357 slides had limited information on hand-lists (sometimes with or without dates), negative sleeves or very little at all. Most significantly, to allow translation of a once hidden, curator-led, collection into a publicly searchable archive, there was no clear underlying subject retrieval in the form of a classification or subject indexing scheme.

Classification and Image Archives

Classification, in its broadest sense, is generally accepted as a process of grouping like-with-like according to a particular characteristic (Buchanan, 1979; Marcella and Newton 1994; Hunter 2000). Its use pervades our everyday lives; as young children we classify to understand the world, developing a personalized mental map, which expands and is refined as we encounter new concepts throughout life; at school we are streamed into classes of like ability; and in our adult lives, our places of work are organized into departments, which conduct similar activities. Classification is all-pervasive. However, unlike the broad groupings we see in everyday life, information items such as books and photographs may embody multiple concepts; for example, a book entitled *Scandinavia - ceramics and glass in the 20th century* or a photograph depicting this contains concepts of place ('Scandinavia'), materials ('ceramics', 'glass') and time ('20th century'), which potentially could be related to a series of other items exhibiting each, some or all of these characteristics. The challenge of organizing, retrieving and relating items which represented this multidimensional

universe of knowledge stimulated the development of highly specific bibliographic classification schemes.

Bibliographic classification provides a means for the systematic arrangement of items according to the degree of likeness by subject matter, indicating relationships and providing a 'helpful order' (Foskett 1996), without which there may be 'chaos' as Maltby envisages:

It may safely be assumed that everything in the universe is a member of some class, but on the first appearance the universe appears to be so great and complex that it is chaos – a tangle of things to which man had no clue unless he provides himself with some sort of map. This map of things is a convenient expression of a classification scheme, for we cannot reason, even in the simplest manner unless we identify and relate – that is classify – things.

(Maltby 1975:16)

Imposing such structure and organisation upon extensive and diverse collections ensures their optimum use, enabling a user to retrieve items on a specific topic more efficiently and effectively both physically and, more increasingly and of interest here, in online domains. Detailed bibliographic classification schemes, intending to represent the entire universe of knowledge in the modern sense of the word, did not emerge until the nineteenth century, when end users were, for the first time, allowed to roam freely amongst the library shelves and helpful subject arrangements were paramount. The pioneering Dewey Decimal Classification Scheme (first published in 1876), the Universal Decimal Classification Scheme and Library of Congress Classification scheme are still used today, yet are extremely detailed, rather unwieldy, hierarchical enumerations. When approaching the Kirklees Photographic Archive and drawing upon my own experience as a librarian, my natural instinct was to explore firstly such ready-made bibliographic schemes as a means of subject

access. However, I soon realized that providing metadata for images was a rather different issue.

Classifying or indexing images requires a different approach to bibliographic classification; here the metadata for books, for example, would be author, title, year of publication, place of publication, publisher and subject (discipline aspects, place and time, for example), whereas images have their own distinct qualities. Sara Shatford-Layne (1994:548) considers the intellectual activity, complexity and issues of indexing then grouping (classifying) images and suggests that this can be achieved by identifying four general image “attributes” (summarised from Shatford-Layne 1994: 584-585):

- **Biographical** (subdivided into Birth, for example the creators, time and place of creation and title).
- **Subject** (the ‘of’ and ‘about’/’Signifier’ and ‘Signified’; generic and specific identities, for example, bridges in general and Brooklyn Bridge; the subjects of the image – Time, Space, Activities, Events and Objects – animate and inanimate, and all of these five categories can be specifically ‘of’ (for example, in the case of animate objects, the name of the person would be specific), generically ‘of’ (for example, man or women) or ‘about’ (for example, the theme/meaning of image).
- **Exemplified** (the actual medium of an image).
- **Relationship** (an image may be related to another image, text or object, for example initial drawings and then the final artwork).

The above attributes illustrate the multidimensional, layered nature of images and their potential *individual* properties, which can form the basis of an indexing scheme. However, Shatford-Lane (1994:585) also asserts that to provide effective access to image collections, 'useful groupings', akin to the helpful arrangement of a library classification scheme, can also be devised from the outset, enabling a user to view and browse related images in an archive without a necessary requirement to specify search criteria.

It is well-documented in seminal information seeking process research – behavioural (Ellis 1989; Bates 1989), cognitive (Kuhlthau 1993, 1999) and situated (Hert 1997; Solomon 2003) – that users engage in multiple types of searching behaviour and the early stages, in particular, may be characterized by uncertainty and an inability to articulate the information need. Grouping and presenting related images by way of a classification scheme allows a user to explore and browse a photographic collection, providing a valuable alternative for the need to specify a known, well-formulated, keyword search, which may not be appropriate for all stages in the information seeking process, particularly when users are sourcing images and may not know exactly what they are seeking from the outset. Shatford-Layne (1994:585) endorses the value of incorporating an ability to browse collections and recommends that these 'useful groupings' benefit most users if they are 'based on the attributes of what is represented in the images rather than the images themselves.' In terms of Shatford-Layne's earlier image attributes, this would therefore mean a preference for a groupings/classification based on Subject, although she does recognise that in certain cases and for particular archives, the attributes of the actual image (namely, the above 'Biographical' and 'Exemplified' attributes) may also be just as important

as what is represented in the image, so the groupings/classification may need to incorporate both. Furthermore, although Shatford-Layne (1994:587) does acknowledge that 'different searchers will be interested in different attributes', she argues that researchers who have created such groupings for their collections have justified 'their choices...on the nature of the images being indexed and the perceived potential use of those images.' In reference to bibliographic classification theory, this would be termed 'literary warrant' (Foskett 1996: 28), whereby any groupings/classification scheme 'must be a function of the input; that is to say, our systems must take account of the relationships shown between items we are indexing.' Therefore, the actual collection, in our case an image archive, is the basis for devising any classification scheme, yet the scheme should be designed to be hospitable to new concepts, yet to be encountered, as new items/ images are incorporated into the archive.

Having encountered Shatford-Layne's enlightening discussion above and bringing this together with my own knowledge and experience of bibliographic classification, I began to examine the nature of the Kirklees Photographic Archive and quickly discounted already established arts-based classification schemes such as, for example, the Art and Iconography *Iconclass* (2012) scheme, which was felt to be far too detailed and was not representative of the literary warrant of our archive or the needs of its potential general public users. It quickly became clear that the challenge that lay ahead would be to create not appropriate.

Devising a Classification Scheme for the Archive

When examining the nature of the archive in terms of its subject attributes, available metadata, as previously mentioned, was limited to brief catalogue records for some

images, hand lists and hand-written details on glass plate negative sleeves. The company supplying the scanning equipment, software and touch screen interface, *House of Images* (2015), had already begun to subject index a small part of the collection, which they had scanned. An example of the typical subject indexing and public access touch screen interface is shown in Figure 1. There was no introductory screen to indicate the scope and coverage of the archive. The subject indexing comprised a single A-Z list of both broad (indicated by an asterisk) and specific terms, with the number of collection images representing this property against each one. A user would therefore select a letter from the touch screen keyboard and scroll through a large number of index terms, which lent itself more to a known item search rather than encouraging browsing by grouping related terms and images, inviting a user to discover. Moreover, there was little evidence of a what librarians would call a 'controlled vocabulary' of preferred indexing terms with synonyms mapping onto these, which meant images were indexed under, for example, either 'bike', 'bicycle', 'cycle' etc. and not brought together under a single preferred term. Any hierarchical structure of broad and specific terms was also disjointed due to the alphabetized display. In particular, certain index terms would have benefitted from being connected to their broader hierarchical context; for example, a question arose as to whether the term 'J Lidbetter' was a personal name, company name or name of a shop etc. Moreover, some images with specialized index terms, such as those from the textile industry, would have also benefitted from a subject context rather than being listed in isolation. Similarly, grouping place and street names/scenes under these respective headings would make these related terms more visible, rather than displaying them within an unstructured A-Z index.

Having raised the above issues, *House of Images* revised the touch screen interface to accommodate the development of a hierarchical classification scheme. The Subject Attribute was considered to be the primary access point for users in terms of this classification, although Biographical Attributes were often listed as part of the image record once retrieved (photographer, title, etc.). The devised scheme had fifteen top-level subject headings (our authority file), which represented the nature of the archive, as follows:

- Buildings, Bridges and Monuments
- Domestic Life
- Education and Health
- Emergency Services
- Entertainment and Leisure
- Events and Disasters
- Landscapes
- Organisations
- People
- Religion
- Sport
- Street Scenes
- Trade and Industry
- Transport
- War and Armed Forces

These bespoke headings were subdivided into a second and sometimes a third level. Another set of ten top level headings related to place names in Kirklees and a section for those outside Kirklees were developed, although few images were within this category. Following the addition of a welcome screen outlining the contents of the database and instructions on how to use, a user could then search by subject, place or a combined search of both. When using the scheme, and classifying the archive images for public access, we would apply the following questions as a guide, which could also determine the level of specificity (an important consideration), when indexing:

- What is the image about? What is it specifically of?
- What is its main subject? Are there any secondary subjects, e.g. a tram in the background, a particular public house – will these be sufficiently apparent to the user when viewing the image to merit indexing?
- What is happening in the picture? Is a particular event taking place?
- Are there any names of people or corporate bodies?
- What is the role of the people in the image, e.g. farmer, fireman? Are they performing a particular activity?
- Could the subject appear under more than one group heading?

It was also recognized that images could be indexed both under a subject (Sport – Football) and also the name of a person (Footballer name), and buildings could have a status of building (name) but also by their use, which could change over time.

Cross-references were added where appropriate to help the user in these more complex situations. The original touch screen terminals remained in various Kirklees libraries until 2006, when they were replaced by a website (Figure 2). Although this example search allows a user to combine two different dimensions (place and time), more intuitive system interfaces have since emerged that support more sophisticated faceted browsing.

Faceted Browsing of Image Archives

The concept of facet analysis was pioneered by the Indian mathematician and librarian, Shiyali Ramamrita Ranganathan, who identified five fundamental facets when classifying, namely his P.M.E.S.T formula (Ranganathan 1965):

- Personality (main subject/things)
- Matter (materials)
- Energy (operations, activities, actions)
- Space (place)
- Time (time period)

The onus is on the classifier to determine the components embodied by the item (in the current case, images) and then 'build', or synthesize, a representative

classification using these separate elements for the item. This was famously likened by Ranganathan to the building blocks of a Mecanno set. Thus, rather than attempting to enumerate and predetermine every possible combination of index terms, he pioneered a more flexible, multidimensional view of knowledge, predicated on reuse and arguably more hospitable to advances in knowledge. Similar to Shatford-Layne's previously discussed image 'attributes' (akin to facets), Ranganathan's concept of fundamental facets could be utilized as a basis when approaching and seeking to classify an image archive. Most notably, however, is how such faceted classification can now provide a powerful means of image retrieval when applied to an online interface. Freely available open source technology is available to achieve this. Figure 3 illustrates the Flamenco (FLexible information Access using MEtadata in Novel COmbinations) search interface (Yee et al 2003; Hearst 2004; University of California, Berkeley n.d.) and its hierarchical faceted metadata. The interface enables users to select a category within a facet and the effect can be seen across all facets in mutually constraining 'views' to broaden or narrow a search. Thus, a Boolean 'AND' search¹ is created across all facets and the categories therein. The advent of faceted navigation was also led by Pollitt (1997) and has been exploited in bibliographic library systems (Tinker et al 1999; Tinker 2005), although today the search technique is readily seen in many commercial websites and is particularly effective for large datasets. Another open source faceted navigation tool and content management system is Drupal (2014), as shown in Figure 4, which again can be freely downloaded and applied to a classified image archive. Figure 4 shows a faceted search of educational case studies by the facets of Course Level, Skills, Delivery Method and Student Task (Hill and Tinker 2011); however, a similar Drupal interface could also be created and applied to an image

archive, supported by thumbnail images of the collection. This faceted navigation with its mutually constraining views is in contrast to the 'album' and 'scrapbook' approach of popular visual social media such as Flickr (2015) and Pinterest (2015), which, although extremely visual and allowing browsing through categories, are mutually exclusive and need to be searched separately.

Technology has unsurprisingly advanced since the Kirklees website was first created in 2006. In an interview with the Senior Curator at Kirklees (G. Scanlan, personal communication, 3 December 2014), it was felt that the website interface would benefit from an update, and the potential and power of classification for online searching and browsing of virtual collections has never been more opportune. However, such digital advancement may be dependent upon the status of the corresponding physical Kirklees Photographic Archive, which has a potentially exciting yet uncertain future, as was observed when returning to the archive almost ten years later.

Revisiting the Archive

Having completed my work on the photographic archive project in May 1998, leaving behind 7000 digitized and catalogued images, the website now provides access to 61,842 images (Kirklees Metropolitan Council n.d.) and the physical archive is now split between both warehouse and museum locations. In an interview with Senior Curator, Grant Scanlan, he explained that, unfortunately, there has been no dedicated image archivist since 2012, so development of the digital archive has remained in 'in stasis' (G. Scanlan, personal communication, 3 December 2014). Despite this, the collection is well-used. Images are licensed for television and publication (with older images often requiring rescanning due to changes in

technology and the need for increased image resolution) and are frequently purchased by the general public. The archive has formed the basis of exhibitions, museum events, the creation of image portfolios for reminiscing activities with care home residents, by Local History and Civic societies and, more recently, University researchers.

The future of the photographic archive has research and teaching and learning potential, especially when simultaneously combined with the original remit of providing accessibility for a general public audience and community groups. The University of Huddersfield's recently opened Heritage Quay (2015), achieved via a £1,585,000 Heritage Lottery Fund grant to create 'a new archives centre that will be one of the most technologically advanced in the UK' (Heritage Lottery Fund 2014), may create new opportunities for the photographic archive in terms of enhanced physical and digital retrieval. Although discussions are preliminary, the University may become custodian of the more archival parts of the physical photographic collection. This would see its transference to the Heritage Quay (G. Scanlan, personal communication 3 December, 2014), with the promise of accessibility both via 'the web as well as on site' (Heritage Lottery Fund 2014), most notably by virtue of the Centre's 'Interactive Gesture Wall' (see Figure 5), together with 'mini touch-tables' (Figure 6) which allow:

A database driven 'live' link to the archives combined with powerful search functionality enables visitors to 'drill down' into the collections as far as they wish...It allows different visitors to structure a personal exploration in a manner to *[sic.]* suits them. This layered approach enables everybody to take away something, whether they have twenty seconds or twenty minutes to spare...

Wide Sky Design (2015)

This database functionality will no doubt provide powerful depth and breadth of retrieval, particularly if linked to the archive's catalogue metadata. Figure 6 demonstrates support for a mutually constraining faceted touch screen search by subject, place, people and date, having resonance with Ranganathan's aforementioned Fundamental Facets. It is fascinating to note, however, that what originally began as a Heritage Lottery Funded project in 1997 with twentieth century touch screen technology at its heart, may now move forward, courtesy of the same lottery funding and a twenty-first century reimagining of the concept of the 'touch' screen and exploratory search.

Conclusion

Digital technology has given unprecedented public access to physical photographic archives, allowing powerful searching, browsing and discovery for the end-user, and a valuable means of conservation for the curator. As a retrieval tool, classification has been central to these developments, from its early beginnings in the 1990s and, as technology has advanced, to more sophisticated multidimensional applications in the twenty-first century. These technologies offer the potential to exploit more flexible faceted schemes via open source software. Within this context, this article has charted the journey of a diverse local history photographic archive that began solely as a physical collection with limited available metadata, leading on to the complexity of developing a hierarchical classification for subject access and image retrieval in touch screen kiosks, with its more recent manifestation at a Web interface, and culminating in a potential future of archival image access by gesture and faceted 'touch tables'. Since the archive's digital inception in 1997, technological change has clearly afforded new opportunities, different platforms, interfaces and means of interaction. Classification, however, has remained the constant within this, ever

fundamental to archival organisation and retrieval in the past, present and a highly anticipated future.

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¹ Boolean searching, from Boolean logic, allows an end user to combine or exclude search terms/concepts by AND, OR, NOT, enabling broadening or narrowing of the search to retrieve greater or fewer items. A Boolean AND search will retrieve a result list where all items have (or are about) the AND-ed search terms. In a faceted classification search, facets and their multiple categories therein will be combined simultaneously, enabling a user to browse a multidimensional search space.