

KEYWORD SEARCHING FOR VISUAL INSPIRATION? MEETING THE IMAGE SEARCH NEEDS OF ARCHITECTURE STUDENTS

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Abstract

Architecture is an inter-disciplinary field, with an emphasis on creative design skills. Students' questions at the library's reference desk relating to their studio design work can be classified into seven categories: architectural history, building types, materials and technologies, construction details, design manuals, precedents and case studies, and visual inspiration. Whereas the first six are similar to those encountered in other disciplines, and can be fulfilled in a straightforward manner using standard library search and discovery tools, visual inspiration poses a challenge to students and librarians.

Where does this challenge originate? For over a century the tools and methods used by libraries for subject access, have been developed for predominantly textual materials. A key assumption underlying classification and indexing is that a document is about something, and that this something can be expressed in words. But how can this notion of aboutness be extended to a medium using nonverbal symbolism? This implies that the library's search and discovery tools and the accepted models for information seeking behavior are not well suited for visual searching.

Recent studies in human cognition have shown that the brain is capable of rapid image processing, requiring just a few tens of milliseconds to recognize an image that meets a predefined criteria presented among other images. Therefore browsing images appearing in search results is more efficient than browsing text. This can be implemented by extracting images from documents in databases and library collections, and displaying them as thumbnails in previews of documents that appear in search results.

Introduction

Architecture is an inter-disciplinary field drawing on several disciplines: art and architectural history, engineering and the social sciences, while being at the same time an applied art, with a strong emphasis on creative design skills.

The issues raised in this paper were stimulated by the author's experiences during the last 5 years as a reference, collection development and faculty liaison librarian at Tel-Aviv University's D. Azrieli School of Architecture. During this time it was observed that students' everyday questions at the reference desk relating to their studio design work could be broadly classified into seven categories: architectural history, building types, materials and technologies, construction details, design manuals, precedents and case studies, and *visual inspiration*. Whereas the first six are similar to those encountered in other academic disciplines, and could be fulfilled in a straightforward manner using standard library search and discovery tools and subject databases, it was the seventh category *visual inspiration* that usually posed the greatest challenge to the students as well as to the librarians.

Previous Studies

The information seeking behavior of architecture students, studio art and design students, including new practitioners in these field has been under-researched in comparison to other academic disciplines (Bennett, 2006; Cowan, 2004; Hemming, 2009; Lo & Chu, 2014; Mason & Robinson, 2011; Makri & Warwick, 2010). Some of these studies are outdated being more than ten years old, pertaining predominantly to printed materials (Beaudoin & Brady, 2011; Makri & Warwick, 2010), and to users that are quite different in their information behaviors from the Millennials that comprise most of today's students or new practitioners.

Visual information and textual information are equally critical in the collections of art, architecture and design libraries, as users require a wide selection of visual materials to document, compare and inspire (Craig, 2003). However, only a handful of studies specifically addressed the use of images by these user groups (Beaudoin & Brady, 2011). Greer (2015) emphasized the importance of information seeking by student studio artists for "forging connections with larger concepts and cultural references", and as part of the inspiration seeking inherent to an artist's formation.

Inspiration

Unlike other academic disciplines, visual inspiration plays a central role in the study and practice of architecture (Beaudoin, 2014; Beaudoin & Brady, 2011; Makri & Warwick, 2010), as well as in other fields of studio arts and design (Gregory, 2007; Hemming, 2009; Littrell,

2001; Lo & Chu, 2015; Mason & Robinson, 2011).

In a study of graduate students in architecture Makri and Warwick (2010) reported: "A key overarching theme was that inspiration was found to be both an important driver for and potential outcome of information work in the architecture domain, suggesting the need to design electronic information tools for architects that encourage and foster creativity".

Gregory (2007) found that the main reason for browsing library collections by studio art faculty was to seek inspiration. Beaudoin (2014) noted that images were most often used by architects and artists for stimulating inspiration in the beginning stages of the creative process.

Information Encountering

Erdelez (1999) defined information encountering as: "a memorable experience of an unexpected discovery of useful or interesting information. Information encountering occurs when one is looking for information relating to one topic and finds information relating to another one. However, it also occurs upon bumping into information while carrying on a routine activity".

There is evidence that information encountering plays a role in the information behaviors of architects and studio artists. Mason and Robinson (2011) noticed that emerging artists were "not actively searching for inspiration in the world around them but being inspired all the same by odd occurrences, daily life or things they find lying around". Makri and Warwick (2010) found that information encountering was important to the architecture graduate students in their study, as it gave them "a feeling of inspiration because much of the encountered information provided ideas for their current design project or for future projects." Similarly, Beaudoin and Brady (2011) reported that for architects and artists "it is likely that direct personal engagement with visual stimulus in their daily lives plays an important role in what each of these two groups perceive as image seeking".

Image Searching

For more than a century the tools and methods used by libraries for subject access, most notably classification and indexing, have been developed for subject access to predominantly textual materials, as used for most academic disciplines. A key assumption underlying classification and indexing is that a document is about something, and that this something can be expressed in words. But how can this notion of aboutness be extended to a medium using nonverbal symbolism? An image document that is wordless may defy subject indexing and classification (Svenonius, 1994). Thus, the standard search and discovery tools as well as the accepted models for information seeking behavior are not well suited to the task image searching.

Additional complexity arises “because some classes of image[s], especially in architecture, engineering or medicine tend to occur as adjuncts to parent records, and it is these parent records which are usually the object of retrieval, rather than the images themselves” (Enser, 2008). Thus, important images, e.g. plans, maps, drawings, etc. which comprise part of a parent record are rarely indexed explicitly, while the parent record may receive only a vague mention concerning the existence of visual material. Similarly, Gregory (2007) noted that most online library catalogs do not index book illustrations.

Browsing Images vs. Browsing Text

Recent studies in human cognition have shown that the brain is capable of extremely fast image processing, requiring just a few tens of milliseconds to recognize an image that meets a predefined criteria presented among other images (Potter, Wyble, Haggmann, & McCourt, 2014). So while browsing long lists of search results represented as text is tedious and inefficient, which is the reason for the traditional librarian emphasis on achieving high precision in online searches; for images it may actually prove more fruitful to allow rapid browsing of a large number of search results presented as thumbnails without attempting to increase precision at the inevitable expense of decreasing recall.

A common thread in the information seeking studies of architecture students and studio artists is their preference for browsing (Gregory, 2007; Hemming, 2009). An important advantage of browsing is that relevant images could be identified or recognized almost instantaneously by users (Albertson, 2015). And being able to browse thumbnails of images in search results is important because it saves users’ time (Makri and Warwick 2010).

Some studies reported that browsing promoted inspiration, and was therefore considered by users as a worthwhile activity. Not being as narrowly focused as searching it supported accidental discovery (Gregory, 2007; Littrell, 2001), and often took place as a preliminary activity before becoming more specific when looking for inspiration (Mason & Robinson, 2011).

Assessment of Current Search Tools

Google Images

Beaudoin and Brady (2011) as well as Marki and Warwick (2010) reported that Google Images was the main source used by architects and architecture students for searching images.

Although it contains many millions of images, and is a very powerful and useful tool for many user groups. However, its weakness as an image search tool for architecture students lies in not being able to limit search re-

sults to images within scholarly publications or to images in books, i.e. those images that are parts of documents indexed by Google Scholar or Google Books respectively.

Library OPACs or Search and Discovery Tools

Library automation system vendors have made great progress in improving the graphical user interfaces, for example by allowing searchers to limit results by facets. Catalogers have added additional content, such as tables of contents for publications. Nevertheless, not much has been done to provide subject access to images within publications, as it would require enormous effort. However, the author of this paper believes that providing thumbnails of the images contained in publications, that would be integrated in the display of search results, or could be browsed along with the bibliographic descriptions of items, would prove a desired and useful aid. This is in accordance with the general preference for browsing among this user group. For electronic publications this could be automated by using commonly available software for extracting images from the files of the retrieved items, which are in standard electronic publishing formats.

The Disciplinary Bibliographic Databases: The RIBA’s API, and The Avery Index

Both the Royal Institute of British Architects (RIBA) Architectural Periodicals Index (API) (Kamen, 1983) and Columbia University’s Avery Index to Architectural Periodicals (Fabian, 2011) should be commended for the high quality of indexing at the documents level and breadth of coverage of the literature of architecture. However, neither one has changed significantly with regards to what is included in the indexed record in the last twenty years, since the author of this paper has used them for the first time. It is unfortunate that they have not been the subject of recent user studies. It would be fruitful to add indexing for images that are part of parent documents, i.e. architectural publications, as well as adding modern day database search features: full-text document search, previews of images and search results, and links to cited and citing documents, bringing them up to the highest standards of present bibliographic databases in other disciplines.

Conclusions

The Need for Seamless Integration of Resources in the Hybrid Library

The main paradigm for libraries of the last twenty years has been of the hybrid library, a “hybrid environment where electronic and paper-based sources are used alongside each other” (Oppenheim & Smithson, 1999); recognizing the diversity of materials in the library but striving to unify their search and discovery by pursuing seamless integration of resources. An overarching theme of this study is the need to close the gap in the tightness

of the integration of the search tools with their objects, the resources used by the users.

Develop Library Tools and Services to Meet the Demands of Today's and Tomorrow's Students and Professionals

Most of today's students were born after 1993 and are Millennials or members of the Google Generation. Rowlands et al. (2008) described them as "diverse information seekers", exhibiting "a strong preference for expressing themselves in natural language rather than analysing which key words might be more effective", with a preference for visual information over text, demanding library "services that are integrated and consistent with their wider internet experience", and having a low tolerance for barriers to access such as additional log-ins or print formats.

Enable and Promote User Generated Tagging

"The phenomenon of social tagging has brought a new dimension to the representation of the semantic content of visual materials... the ability to contribute personal tags to image and video metadata challenges the supremacy of professionally sourced, authoritative subject representation, whilst introducing opportunities for beneficial enhancement of both exhaustivity and specificity in subject indexing" (Enser, 2008).

Enabling and encouraging the use of user generated tagging in the context of library search and discovery tools could alleviate some the vocabulary problems caused by the difference in terminology used by librarians and scholars vs. practicing architects or students (Woll, 2005), as well as allowing useful notes concerning some aspects of documents, that in the view of a professional indexer do not merit specific mention within the context of their parent record.

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