eLexicons – learning from relationships

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Mike Daines, the founder of the eLexicons e-learning resource for the visual arts, tells the story of its development, from the early origins as a printed visual dictionary of typography, to its current iteration as an online database, covering subjects from graphic design to fashion. The editorial challenges, as well as the technical setbacks are described, as well as the resulting opportunities for use in teaching, including new developments in visual mapping.

The eLexicons are a growing collection of online learning resources for students of the visual arts. Having started life as a printed, illustrated, dictionary of typography, they have been developed into a resource of over 2,000 biographies and 3,000 images. The online version is intended to allow the study of typography, graphic design and related subjects at undergraduate level. Context for these studies in the visual arts is provided through the relationships between entries within the subjects. The development of these 'e-lexicons' (now named commercially as eLexicons) took place during the last decade, against a background of changing technologies and teaching needs.

Early developments

The journey towards eLexicons began in 2001, when I decided to publish an illustrated dictionary of typographic terms in *Baseline* magazine. *Baseline* was created first as a 'house' magazine for the UK graphic arts company Letraset in the late 1970s. Working there as a design manager, I had designed and edited the first issue in 1979. Although intended primarily as publicity for Letraset's typeface designs, from the outset *Baseline* contained information about contemporary typography, typographic events and educational articles.

In 1993, I acquired *Baseline* from Letraset, formed a publishing company named Bradbourne Publishing with the designer, Hans Reichert, and worked to build the magazine into an internationally-distributed journal of typography. In due course, we decided to include an illustrated dictionary of typographic terms (Fig. 1).

The original intention at *Baseline* had been to provide a comprehensive reference to typographic terms, including those rapidly falling out of use, through the changes in typesetting, technology and typographic specification between the 1960s and early 2000s. Published

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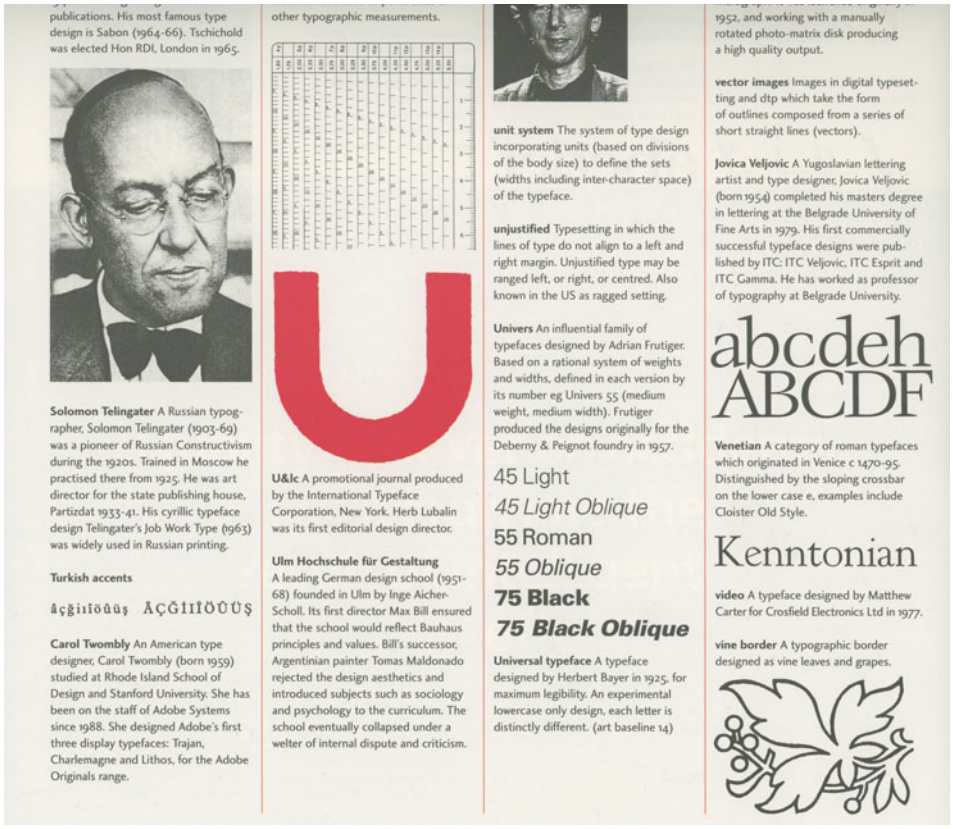


Fig. 1. The original typography 'lexicon' in Baseline magazine

with each quarterly issue, the dictionary (which we called the *Baseline lexicon*) grew to include the biographies of type designers, typographers, the histories of schools and associations, and the design and publishing details of typefaces.

Working as an external examiner or advisor at various UK universities, I was aware of significant changes within the teaching of typography. There was less room for context. Time formerly given to learning about typographic history and practice was being transferred to learning desktop design and layout software.

From contact with colleges, and through *Baseline*'s subscriptions department, I knew that the typographic lexicon in the magazine had become a useful source of reference for students. *Baseline* was a printed item, not inexpensive, and no college could provide sufficient copies for simultaneous research. And the student population studying graphic design was growing at an increasing rate.

Inevitably, the pressure grew for the *Baseline* typography lexicon to be available in a different, electronic, format. In 2003, the question was, which format?

In 2001, in *Baseline 33*, in an article entitled 'e-books: fad or phenomenon?', I had quoted author Michael Crichton: 'with e-book technologies, books can assume new roles and forms that will serve students, workers ... and many others in transforming ways.' The same article exhorted typographic designers to involve themselves in the visual formulation of the e-book.

Against that background, a simple transfer of the Baseline lexicon to CD-ROM, as PDFs for example, seemed to miss the mark.

Further, in *Baseline 40* (the issue which contained a consolidated index to the lexicon published up to that point) an article attempted to

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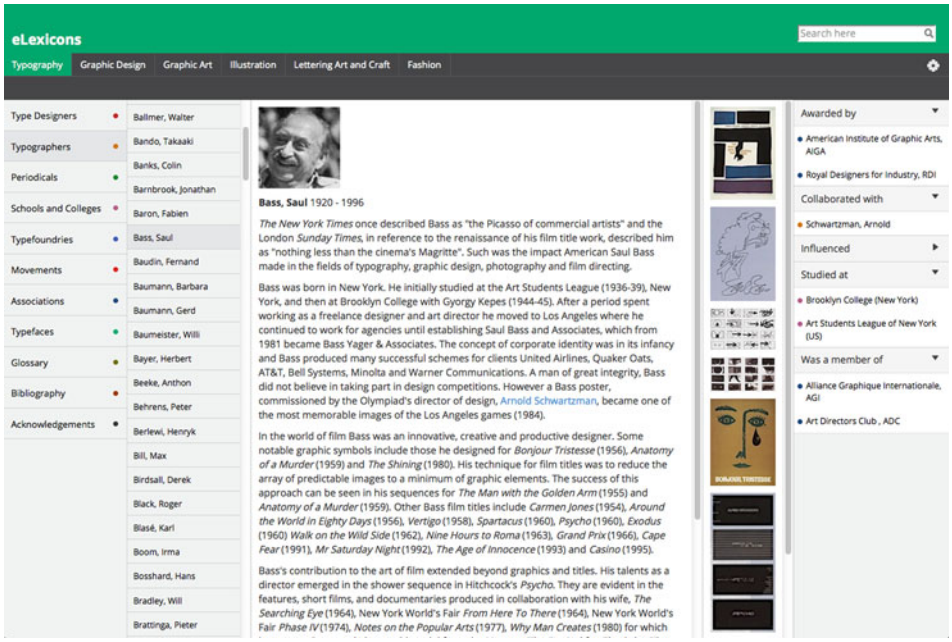


Fig. 2. The eLexicons interface

persuade designers to involve themselves more in templates, and the new e-languages used to describe and create e-documents, including XML. In the early 2000s it had become increasingly clear that XML (eXtensible Markup Language) was a significant programming development for design and for the internet. Of special relevance to a potential online lexicon was that the 'new' generation of the internet – the 'semantic web'- depended on XML.

Our initial ideas for the distribution of the typography e-lexicon were not focused on the internet. Early discussions with colleges concentrated on delivering the lexicon as a searchable database. Through these discussions, it soon became clear that there were a growing number of different approaches to the storage and retrieval of typographic (and other) images.

For example, in 2004, Professor Jay Rutherford (seconded from the Bauhaus University, Weimar) was leading a European-wide project to create a digital archive of typographic images. It was clear, though, that the growth and use of such material as e-learning resources would depend on the standardization of metadata (the additional information about the image which allows for its discovery and retrieval through a search engine).

There were other 'pockets' of historic typographic materials in various colleges and institutions around the world. For example, the collection at the Herb Lubalin Centre, the Cooper Union School in New York, and the Abram Games collection at Northampton College of Art. While early ideas for the new e-lexicon to link to such collections and to enable their wider distribution were discussed enthusiastically, the problem of metadata standardization seemed insuperable.

A growing awareness of the importance of relationships within the subject of typography led us to the right path, distribution via the internet. While thinking through the issues surrounding the e-version of the typography e-lexicon, I was reminded of a series of lectures I attended, many years ago, at the London College of Printing (now part

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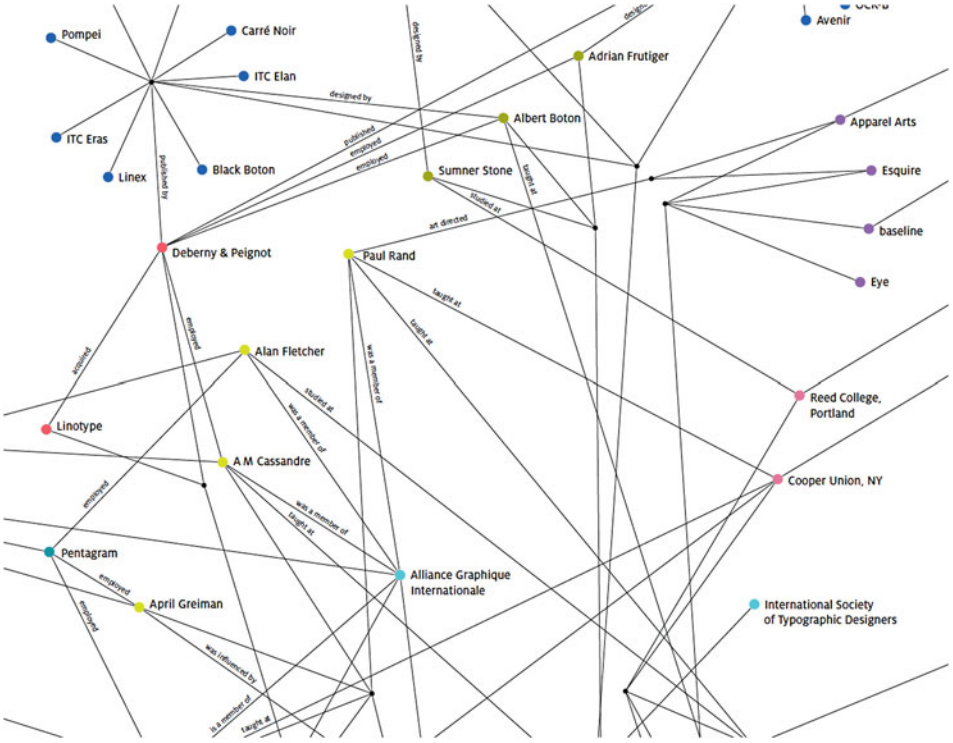


Fig. 3. An extract of a visual map generated from the Typography eLexicon

of the University of the Arts, London). On one evening, while a student on the part-time course in typography, I saw the teacher, Fred Lambert, hold up a Penguin book and ask, 'Why does this book look like this?' The obvious smart answer seemed to be: 'because it was designed by Jan Tschichold'. Or, to be more pedantic: 'because it was laid out in accordance with typographic rules, established for Penguin Books by Tschichold'. But, considering the question more deeply showed the book's appearance was the result of many relationships and influences, including those between Tschichold and his own teachers in Leipzig; with his colleagues; with the thought processes of other modernists.

Given a desire to capture these relationships, and to enable them to be searched over the internet, the way forward became clearer. Around the time of the first technical development, Tim Berners-Lee, regarded as the originator of the World Wide Web, had written about the second generation of the internet: 'The semantic web is not a separate web, but an extension of the current one, in which information is given well-defined meaning, enabling computers and people to work in cooperation.'

The essential elements for the 'semantic' web, and for intelligent search engines were XML, RDF (Research Description Framework) and the sensible organization of subject matter, into ontologies and taxonomies. A taxonomy is simply a classification, or organization, of related subjects or concepts, and we had begun the process of defining the different taxons that make up the subject of typography, by producing our printed lexicon in *Baseline*.

The partners in *Baseline* did not support wholeheartedly the plan to create an online product. There was going to be more cost, and there was a feeling that an online version might compete with the printed magazine. In the end, I sold my share of Baseline magazine to my

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partners and formed a new company to pursue the online venture. Technical developers were identified, and writers and researchers were retained.

Building the first version of the resource

Armed with a newfound technical awareness and an understanding of the structure of the subject I commissioned what was to become the first version of the e-lexicons database of typography, having agreed to place XML, as a software format, at the heart of the development.

To move the development forward we had to return to the essential subject matter. To develop a comprehensive taxonomy for typography, it was first necessary to complete the definition of the structure of the subjects.

The *Baseline* printed lexicon consisted of biographies of type designers and typographers, descriptions of typefoundries and a glossary of typographic terms. Some of the biographies included a portrait and a number of the typographic terms were illustrated. It was evident, though, that to create a comprehensive e-lexicon more taxons were needed. There was considerable initial wrestling with categorization – after all there are relatively few 'pure' type designers, but many typographers who have designed typefaces. Also, for example, when is a graphic designer also classified as a typographer?

To be properly able to map the complex relationships within the subject of typography it was necessary to research and compile information about typographic movements, schools, associations and publications. Dauntingly, it was decided to compile a complete list of related typefaces.

The 'typefoundries' taxon presented an immediate editorial challenge. It would have been significantly easier to create the lexicon in 1970, rather than in the early 2000s. Then arguments would have revolved simply around whether the newcomers to typeface manufacturing – dry transfer companies such as Letraset and MecaNorma, and photosetting font vendors such as Visual Graphics – should be classified as founders. With the advent of digitization, the Mac, and desktop font production software – the so-called 'democratization of type'– everyone could be their own founder. In *Baseline* we had created a 'digital typefoundries' category, listing companies who fitted agreed criteria: that they designed, manufactured and distributed their own fonts.

The complications and scale of the task, in creating a valid taxonomy of typography, suitable to provide at least a 'foundation' resource for students, meant that the editorial work, updating and adding subjects, took longer than expected. 'Standard' reference books about typography do not fill many bookshelves, but they still contain disparities and inconsistencies, that the e-lexicon editorial team had to resolve.

For the initial content of the e-lexicon to reach a stage suitable for publication, even with the start provided by the *Baseline lexicon* took over two years. In parallel, the development of the technical database, containing the XML data, which in turn carried the definitions of the relationships within the data, took a similar time.

The e-lexicons interface was designed to be as simple as possible and was built using Macromedia's Flash (Flash MX) software. This

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software allowed the content to be displayed interactively, with dynamic lists being created from the database, and was eminently suitable for further development to allow the display of the image library that we had started to build.

The key feature of the e-lexicon was that the user could search interactively for subject references: biographies, histories and typeface references. Most significantly, they could explore those influential and previously elusive relationships. Who worked with whom; who shared commissions from typefoundries and publishers; who taught where and who learned where. Some of these connections would prove to be blind alleys, but others would prompt students and teachers to make fascinating new connections that help to explain the history and development of typography.

Publicizing the new resource

We called the new product the Typography eLexicon (retaining the hyphen only for the company name). I presented it to the education team of the International Society of Typographic Designers in the summer of 2004, in London. It was gratifying that the educators present reacted enthusiastically to the resource and its potential. Teachers who belonged to the ISTD, and who used the Society's projects as part of their courses, seemed keen to evaluate the new eLexicon.

The timing was good, too. Colleges in the UK (and elsewhere) had begun to invest significantly in e-learning. But the initial concentration had been on VLEs (Virtual Learning Environments) – intranets and learning frameworks. It was as though the e-learning environments and communication systems almost outnumbered the e-learning subject resources. Certainly, there were few, if any, resources that capitalized on the new approaches made possible by XML and the other new technologies related to the 'semantic web'.

The London College of Communication (now part of the University of the Arts, London) and the University of the Creative Arts were 'early adopters' of the Typography eLexicon, subscribing soon after the formal launch of the resource, now a completed product, at the Design Council in London in 2006.

The original concept for the online resource was that it answered a perceived need for an e-learning reference about typography. Its editorial and technical structures had been developed as generic models. These models allowed for other subject areas within the visual arts (graphic design, fashion and photography being obvious candidates).

Creating new subjects and images

As conversations multiplied with UK universities and colleges, pressure grew to continue development in two directions. First, to extend the subjects beyond typography, particularly to graphic design, and second, to provide more visual content, especially work examples.

The e-lexicon of typography had been conceived as a 'contained' subject, meaning that the 'links' within the resource are internal, not linking to other websites or online resources. This has fundamental advantages for information quality control, but also predicates a self-contained library of images. Experience began to show that the minimum content requirement for such an e-learning resource to be

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described as 'comprehensive' (that it covers the principal exponents, movements, related schools and associations) is around 750 to 1,000 entries. The original printed lexicon contained around 200 entries.

The requests for more subjects from colleges also reflected the commercial imperative, to achieve an ongoing licence income that would support the necessary editorial and technical resources. The fact that the number of courses dedicated to typography as a separate subject had dwindled during recent years, and that it tends to sit within the remit of 'graphic design' limits the potential for subscriptions.

Working on the foundation of our initial model we began a programme of work to build an extensive image library (starting with typography) and to add new subjects. We produced new 'eLexicons' over a period of four years. The Typography eLexicon was joined by Graphic Art; Lettering, Art and Craft; Illustration and finally Graphic Design.

While I had acted as editor for the Typography eLexicon (the original Baseline Lexicon having benefited from a number of advisors) the subsequent eLexicons needed a different editorial structure. Editorial advisers were recruited, to help determine the content for each subject. For example, for the Illustration eLexicon, we worked with Martin Salisbury, the director of the MA illustration course at Anglia Ruskin University, in Cambridge, and Darryl Rees, an illustrator and the head of the Heart illustration agency in London and New York.

Appointing advisors ensured that the content of the eLexicons was guided by both academics and professional practitioners. This was done with a view to ensuring that contemporary typography, illustration and design were properly represented in the contents. The core of the writers who contributed to the texts of the eLexicons were supplemented by subject specialists, but the editorial team worked to ensure a consistent style, and level of content, for each of the subjects.

The taxons chosen for the subject of typography: exponents (type designers and typographers); companies (typefoundries); schools; movements; associations and publications served as the model for subsequent subjects. Exponents then included graphic artists, illustrators, letterers and graphic designers. 'Awards' and 'graphic novelists' were added as taxons in the Illustration eLexicon.

When developing the library of images for the eLexicons it was decided to photograph or scan original material wherever possible, and to use an experienced picture researcher to supplement original material with some images from photo libraries. Copyright ownership and credits were included in the metadata for all images, coded to be displayed with the image in the completed resource. Across the eLexicons there are in excess of 3,000 images. The determination to have a large proportion of those images directly from 'originals', led to the use of a variety of sources for the material.

During the 25 years of publication of *Baseline*, the archive of reference material had grown into a rich resource, and formed the starting point for the images in the Typography eLexicon. These were supplemented through agreement with, and access to, St Bride Printing Library in London. St Bride is the world's foremost printing, technical and graphic arts library. It has over 50,000 books and pamphlets and in excess of 10,000 type specimens from the world's typefoundries. The Frankfurt-based type company Linotype, now part of Monotype Imaging, provided most of the typeface examples for the eLexicon, including, generously, those from other typefoundries.

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Images of the typographic work of many of the exponents in the eLexicon came from these sources. Where possible, living typographers have been contacted, for examples of their work and appropriate permissions. This approach has also been followed for the graphic designers, artists, letterers and illustrators, whose biographies and work examples appear in the resource. In the subject areas of typography, lettering, graphic design and illustration particular care has been taken to include work from across the world and to span historical and contemporary examples.

An important editorial task includes the definition of the various relationships between the many taxons. This task is aided by the way in which the underlying database (and content management system) is coded. As the data is entered and compiled, relationships, sometimes surprising, emerge in the resource. This automatic process reduces significantly the workload.

The need for eLexicons version 2, a technical 're-boot'

As has been mentioned earlier, the user interface for the eLexicons was coded in the Flash application. By 2010, with the fifth eLexicon, Graphic Design, complete in its first iteration, it was time to promote the availability of the resource much more intensively; and internationally. I had visited the Cooper Union College in New York several times and was working in the city on a design consulting project. The Cooper Union, and Cara di Edwardo, head of the type and lettering department , in particular, had been instrumental in helping us to decide on the content for the Lettering eLexicon, especially its calligraphic section. While at the Cooper Union I heard of the launch by Apple, of the iPad device. Its significance in the learning environment was obvious immediately

What I failed to realize as quickly was that Apple's decision to exclude compatibility with Flash software in the operating system of the iPad effectively killed the future for Flash as an application. This had serious implications for the plans for eLexicons, built in Flash. We were facing a technical re-build, a process that took until 2014 to complete satisfactorily (Fig. 2).

Re-making eLexicons as a JavaScript application, for HTML5, offered us two opportunities, both with real significance to the way in which the resource could be used in e-learning and teaching. With the previous version, the 'search' function was working within individual eLexicons and not across them. Re-visiting the design of the database and content management system meant that searching could work across the subjects. This enabled us to begin to realize a model where the student could explore relationships across the visual arts. For example, it means that the effects of a 'universal' taxon, such as a movement, modernism, for example, can be studied across subjects such as typography and graphic design.

The second opportunity was the potential ability to structure the database, metadata and interface, to enable visualization of the relationships within the eLexicons, in the first instance as spidermaps.

Such visualizations can be very appealing, stimulating interest as well as identifying and clarifying the relationships within, and between, subjects. The editorial task is to ensure that the nature of the relationship is defined (and displayed). We have defined already the possible relationships between the various taxons. The long list

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includes: worked with; studied at; taught at; employed; published, each definition with its reciprocal description.

The eLexicons in teaching practice

The eLexicons are designed to be used as more than an illustrated dictionary for the visual arts. The key to this usefulness lies not only in the depth and quality of the information, but in its ability to provide stimulation to study the subjects in greater context.

In the teaching environment the resource is beginning to be used with a more contextual approach. The ability to set more interesting and challenging assignments is enhanced. For example, a search for facts about an individual designer can be replaced by finding out the effects of a movement on graphic design, or typography, or illustration, in a particular period. A Fashion eLexicon is in preparation, moderated by Ann Saunders, a designer and faculty member at the London School of Fashion.

The addition of subjects, and the ability to search the relationships between taxons within them, helps the teacher to explain and exemplify the inter-connected nature of the visual arts, and the importance of influences. Such a teaching approach is assisted by the provision of visual maps of these relationships (Fig. 3). The selection of data for such images poses editorial challenges, the principal one being the selection of the number of levels of connection (degrees of separation) chosen. As with a family tree, the number of results to be visualized can grow exponentially. However, the results provide visual stimulation and inspiration for students.

This teaching and e-learning process has begun, at a number of universities. For example, students in the first year of the BA course in graphic design at the London College of Communication at the University of the Arts, London, recently completed a project using visual mapping as a starting point and eLexicons as the database.

We provided the visual maps for that project and have provided others elsewhere, topics starting with the taxons ‘modernism’, ‘Bauhaus’, ‘typographic magazines’ and others, among them.

In due course, our intention is to develop the visual mapping application into one that can be used by teachers to create the visual starting point for projects, across the visual arts, utilizing the eLexicons resource. The purpose, among others, is to enable students to address and answer such questions as ‘why does this book look like this?’.

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