LEGAL RESEARCH IN A CHANGING INFORMATION ENVIRONMENT

2007 VOLUME 10 No 1

LEGAL RESEARCH IN A CHANGING INFORMATION ENVIRONMENT

T du Plessis[*]

1   Introduction

The *Constitution of the Republic of South Africa*[1] provides legal researchers with the ideal moment in South African history to, among other things, develop and enrich its common law.[2] This is demonstrated in, for example, the *Carmichele* case series[3] that provides insight into how the Constitution can modernise South African private law. Since the advent of the constitutional dispensation in South Africa, legal researchers have been presented with new opportunities for research into constitutional issues, constitutional development and the relationship between constitutional law and other fields.[4]

> This imperative is not restricted to public lawyers, but extends to all. And it is at this interface between constitutional law and other legal areas that modern researchers have the opportunity to provide South African law with another growth spurt. The beginning of the twenty-first century ought to become known as the era of our law's constitutionalisation and internationalisation.[5]

The 21st century is, analogically,[6] also known for its development in information and communication technology (ICT). In recent years legal practitioners have been introduced to a wide variety of ICTs specifically focused on the legal profession. Today, legal researchers have access to a range of primary and secondary legal research publications, being national and international

---

* Faculty of Management. University of Johannesburg.
1 *Constitution of the Republic of South Africa* 1996; hereinafter referred to as the Constitution.
2 Midgley 2004 http://www.ru.ac.za/ 20 Jul.
3 *Minister of Safety and Security v Carmichele* 2004 (3) SA 305 (SCA).
4 S 39(1) of the Constitution.
5 Midgley 2004 http://www.ru.ac.za/ 20 Jul.
6 Please also see Midgley, *ibid*, and the conclusion of this article for an expansion of the analogy.

resources that are available in print and/or digital format. Accordingly, many modern legal researchers[7] have adjusted their research methodology by also including electronic or digital legal research tools and resources. This requires skills and techniques typically associated with digital research tools and related online technologies. In general, technology has the potential advantage of saving time and conserving manpower. However, its application in legal research could pose specific challenges to researchers and could impact on crucial aspects of legal research, such as comprehensiveness. It is not suggested that legal research without consulting electronic resources is incomplete, but that the rapid progress in the ICT applications of the past few years requires the inclusion of electronic resources and tools in legal research.[8]

2   Technology and legal research

Legal research is a fundamental skill in the legal profession.[9] Although all areas of law do not require the same levels of research, competency in legal research is essential to almost any lawyer, regardless of area of law or type of practice. Legal research is generally understood as researching the law as found in the primary and secondary sources of law.[10] In the process, lawyers usually develop sophisticated skills in finding the law as well as skills to locate important facts and apply the law to the facts in appropriate ways. Nowadays, however, many sophisticated legal researchers possibly may experience skill inadequacies because they are confronted with a large variety of commercial

---

7   See amongst others Botha *et al* (eds) *Rights and democracy*; Burns and Beukes *Administrative law*; Corder and Van der Vijver (eds) *Administrative justice*; Currie and De Waal (eds) *Constitutional law*; Devenish *South African Constitution*; Devenish 2006 *JCRDL*; Dutschke 2006 *ESR Review* http://www.communitylawcentre.org.za/ 9 Aug; Gabru 2004 *PER* http://www.puk.ac.za/ 10 Feb; Hoexter *Administrative law*; Khoza 2006 *ESR Review* http://www.communitylawcentre.org.za/ 9 Aug; Pearmain 2006 *JCRDL*; Rautenbach *et al* 2003 *PER* http://www.puk.ac.za/ 10 Feb; Rautenbach and Malherbe *Constitutional law*; Van de Vijver (ed) *The judicial institution*; Van der Merwe and Du Plessis (eds) *Introduction*; Van der Walt *Constitutional property law*; and Van der Walt *Law and sacrifice.*
8   Van der Merwe *Computers* 265-269; Tjaden *Legal research*; Teshima 1997 *LA Lawyer Magazine* http://www.lacba.org/ 20 Nov.
9   Leckie *et al* 1996 *LQ* 173.
10   For a brief overview of legal research approaches and methodology, see Venter *et al Regsnavorsing*; Maisel and Greenbaum *Introduction.*

databases as well as an enormous array of Internet and other electronic information resources that are constantly expanding.[11] Furthermore, publishers of electronic information resources are frequently adding new search functionalities and other enhancing features to their online products. These features often vary from product to product, requiring researchers to apply skills suited for information retrieval in an information environment that is supported by the ever-advancing information and communication technologies.

If technology is considered to be a 'tool' and if it is used properly, then those professions that invest in new technology and in appropriate training in the use of technology will become more efficient at what they do.[12] This can be seen in lawyers' accelerated informational task performance, which includes legal research enhancement and the creation of new patterns of interaction with information. One example is how lawyers currently interact with electronic information by cutting and pasting directly from an electronic law report screen into a word-processed document, thus not using IT tools merely as information retrieval facilities, but also as tools in document production.[13] However, from the perspective of IT being a 'tool', a gradual move is implied towards using it in new and innovative ways to satisfy emerging goals, thus also requiring legal researchers to embrace new skills in reaching these goals.

2.1   A new paradigm of becoming digital

In the current paradigm lawyers as professionals are used to unpredictable situations and skilled in, *inter alia*, confronting complexity and anticipating potential problems or negatives and viewing matters from as many angles as possible in dispute resolution or in arranging agreements. They thus already have skills that are essential in a highly active and volatile information

---

11   Best 2003 http://legalresearch.org/ 24 Feb; Underwood http://www.lawlibrary.co.za 4 Mar; Feiertag *Toeganklikheid van Internetbronne*.
12   Katsh 1996 *JCMC* http://www.ascusc.org/ 22 Sep.
13   Paliwala *et al* 1997 *JILT* http://elj.warwick.ac.uk 21 Oct; Paliwala 2001 *JILT* http://elj.warwick.ac.uk 9 Sep.

environment or in what Katsh refers to as the "digital world".[14] This is a world of digital communications, transactions and transferring of electronic information, a world of digital relationships and interaction in virtual societies with virtual rules. In this type of world, it is increasingly required of lawyers partly to shift their mindset to an environment where, in general, "time is accelerated and distance is compressed",[15] where change is rapid and continuous, and relationships are quickly formed but of uncertain duration, where information verification is uncertain, and where anonymity rules and hacking prevails. It is in such a world where lawyers gradually will be expected to practise as digital lawyers, that is, professionals who effectively apply ICTs to every aspect of their practice.[16] And it is during this process of becoming digital that lawyers should increasingly equip themselves with skills appropriate to the changing information environment.

2.2   The changing legal information environment

Until recently the legal profession was a predominantly manual, paper-based legal information services industry. However, the legal information scene is in the midst of great change.[17] At present, the known and trusted publishers of printed legal information are the vendors of commercial databases who publish electronic court decisions, statutes, legal periodicals and reviews as well as various secondary resources such as encyclopaedias and textbooks. As a vehicle of distribution for their electronic products, these vendors are increasingly using the Internet and web technologies, including law firm intranets and corporate or academic portals, to provide legal researchers with ready access to a vast amount of current as well as retrospective coverage[18] of

---

14   See n 12 above.
15   Katsh *Law in a digital world* 79.
16   Granat 2001 http://www.granat.com/ 30 Oct.
17   Thomas *et al Introduction to legal skills* 9; Lynch *Accessibility and integrity of networked information collections*; Singh *et al* 2002 *JILT* http://elj.warwick.ac.uk 16 Apr; and Berring 2000 *CLR*.
18   Retrospective coverage varies from database to database, eg the *Harvard Law Review* is electronically available in full-text in LexisNexis from 1982 to current; in WestLaw from 1949 to current; and in HeinOnline for the period 1887-2002. Older resources such as the

legal information resources. Except for the commercial databases that are subscription-based, many institutional websites offer free or open access to legal and other information resources. These resources, at a minimum, supplement the established legal information providers' efforts of electronic legal information publishing.[19]

2.3   The digital information environment

Many legal researchers[20] do not ignore the change that has emerged as a result of the Internet, computerised legal databases, CD-ROMs and other electronic media channels. Rather, they emphasise that legal research encompasses using and mastering both print and electronic media. In terms of electronic resources, this implies skills and knowledge of authoritative resources that are subscription-based, such as the various products of Juta Law,[21] LexisNexis Butterworths,[22] and WestLaw[23] or resources that are freely available, for example, SAFLII,[24] Polity,[25] the Legal Resources Centre,[26] or the website of the Constitutional Court[27] for South African court decisions, legislation, bills and regulations. For international cases and legislation on the Internet legal researchers generally rely on legal information institutes such as Cornell LII,[28] AUSTLII,[29] BAILII,[30] CANLII,[31] and WORLDLII.[32] Then there also

---

translated full-text of Hugo Grotius 1625 *De Jure Belli ac Pacis* (Law of War and Peace) is available at http://www.constitution.org/gro/djbp_101.htm or the complete searchable database can be purchased at http://www.lawmart.com/pubs/grotiustoc.htm.

19   Dempsey *et al* 2000 *IPM* 254. See eg EISIL at http://www.eisil.org/ for international law resources and DOAJ at http://www.doaj.org/ljbs for law journals.

20 There exists a large number of legal research experts who share this view, including Lawson *Internet handbook for lawyers* 51; Halvorson *Law of the super searchers*; Tjaden *Legal research*; Holborn *Legal research guide* 13; Berring 2000 *CLR*; Ebbinghouse 2001 *Searcher* 12; and Katsh *Law in a digital world.*

21   Available at http://www.jutalaw.co.za/.
22   Available at http://www.lexisnexis.co.za/.
23   Available at http://web2.westlaw.com/.
24   Available at http://www.saflii.org/.
25   Available at http://www.polity.org.za/.
26   Available at http://www.lrc.co.za/Judgments/.
27   Available at http://www.constitutionalcourt.org.za/.
28   Available at http://www.law.cornell.edu/.
29   Available at http://www.austlii.edu.au/.
30   Available at http://www.bailii.org/.
31   Available at http://www.canlii.org/.

are a variety of directories and search tools such as the Hortors[33] online directory of South African legal professionals, the website of the Law Society of South Africa,[34] FindLaw[35] with access to the West Legal Directory, the SOSIG law gateway;[36] and Mbendi,[37] Google[38] or Alltheweb[39] for general information searching.[40]

The above examples are mentioned to illustrate how the current information environment is changing. And this 'change' is today acknowledged, as can be observed in the acceptance of a legal resource such as the *All South African Law Reports* series which is now not only available in print, but also widely used in electronic format.[41] Change also refers to the improved accessibility of resources that previously would not have been accessible easily, such as the electronic collections of the various Legal Information Institutes,[42] or of information that can be found in electronic format only.[43] Furthermore, change is seen in the tools that are used to find information, namely search engines that use sophisticated algorithms for advanced searching and information retrieval. Change is also recognised in the speed of information retrieval that is made possible by these tools and technologies. Change in the legal information environment thus can be seen in features such as speed and currency, interactivity, hypermedia, hyperlinking, and seamless access.

The process of electronic information searching is influenced by the features that are unique to the digital world, such as interactivity and hyperlinking. In this

---

32   Available at http://www.worldlii.org/.
33   Available at http://www.hortors.co.za/.
34   Available at http://www.lssa.org.za/.
35   Available at http://www.findlaw.com/.
36   Available at http://www.sosig.ac.uk/law/.
37   Available at http://www.mbendi.co.za/.
38   Available at http://www.google.com/.
39   Available at http://www.alltheweb.com/.
40   These are only a few examples and not a comprehensive list.
41   One of the many full-text electronic products in the LexisNexis products suite. Of interest to South African legal researchers the LexisNexis Butterworths Law Reports products suite offers, *inter alia*, the *All England Law Reports*, the *All South African Law Reports* (1828-current), the *Arbitration Awards*, *Competition Law Reports*, *Constitutional Law Reports*, *Labour Law Reports* and the *Judgments Online*, of which the latter is published electronically only.
42   See n 28-32 above.
43   E.g. Judgments Online, n 41 above.

'world' a digital legal researcher can be described as an information opportunist who appreciates words, ideas, concepts, reasons, purposes, relationships, logic, puzzles, serendipity,[44] intuition, principle and anomaly and who has endurance amidst information confusion.[45] Added to these characteristics, a digital legal researcher is one who functions effectively in an interactive information environment.

2.3.1 Interactivity

One of the unique characteristics of online searching is interactivity. It means that online searching is facilitated by a variety of ways for legal researchers to interact with both the information system and the content itself, for example, by means of navigation features; multiple manipulations of output; and iterative movement between information sources via hyperlinks.[46] Furthermore, online research is enhanced by sophisticated interactive system features for searching and manipulating information such as the facilitation of multiple interactive search strategies which include browsing, Boolean searching[47] or natural language searching, and the ranking of documents on the basis of probability of relevance to the query.

2.3.2 Hypertext and hyperlinking

Printed materials typically exist in controlled space and normally are read in a linear manner, whereas electronic content usually is made up of hypertext that is not limited by spatial constraints and allows legal researchers to search in a non-linear fashion.[48] This is because electronic content units can be linked via HTML hyperlinks[49] in a manner that enables researchers to move quickly

---

44   Referring to the process of finding something unexpected and useful while searching for something entirely else.
45   See also Halvorson *Law of the super searchers* 21; Jeffries 1999 *Law Technology Journal* http://www.law.warwick.ac.uk/ 25 Oct.
46   Arkfeld *The digital practice of law* 6-36*.*
47   Search syntax and keywords in context are discussed in section 3.1.
48   See Katsh 1994 *University of Pittsburgh LR* http://www-unix.oit.umass.edu/ 30 Oct; Pritchard http://www.prilaw.com/ 17 Sep.
49   The process where hypertext mark-up language in the form of <html tags> are used to create links between associated documents or sections of documents to enable the

between associated ideas or related units of information. In terms of legal research, a lawyer can, for example, move directly to the text of a case referred to in another case by clicking on a reference to that case. Thus, hypertext in general allows a legal researcher first to glance over legal materials and then to focus on further jurisprudential analysis.[50]

2.3.3   Hypermedia and word-image-relationships

In the print information environment, and particularly with legal materials, the strength of printing lies much more with words than with images.[51] But in the changing information environment there is a movement away from text-only sources to other types of media, known as hypermedia. Hypermedia refers to a variety of media, including text, graphics, sound, animated media, video et cetera, that are created and published via the World Wide Web.[52] In the Web environment, Graphical User Interfaces (GUI) commonly are used to improve interactivity between the searcher and the system. But legal researchers might find that, for example, the information finding tools of GUI do not place as much emphasis on text as is the case in the print information environment. Also, with hypermedia the opportunity is created to use different types of media in ways that perhaps are unfamiliar to legal researchers or that seem illogical since the word-image relationship in the field of law received less support in the medium of print. This, perhaps, may require of legal researchers to learn new skills in order to work effectively with information that is presented as hypermedia in, for example, online legal citators.[53]

---

retrieval of specific content by clicking on the text or image or other media which has a hyperlink. This is similar to cross-referencing methods in print materials. See also n 65.

50   Schweighofer 1999 *JILT* http://elj.warwick.ac.uk/ 19 Sep.

51   Katsh 1994 *University of Pittsburgh LR* http://www-unix.oit.umass.edu/ 30 Oct.

52   Hereinafter referred to as the Web.

53   Halvorson *Law of the super searchers* 11. Citation searching is an important component of legal research and involves the checking or noting-up of the continuing authority of cases or statutory reference for any following legal changes. There are a variety of electronic citators available that use hypermedia and hyperlinking to create an integrated system that gives prominent warnings if there is subsequent history that calls a case's precedential value into question. Citation searching in the digital information environment sometimes requires creative searching and the use of proper search syntax, eg searching for pieces of the citation in proximity, leaving out the abbreviation and focusing on the numbers.

2.3.4   *Information flux*

It is commonly known that the digital information environment is notoriously volatile. Much of the information that is available at any given hour could disappear or vanish, either by design, by accident, or because of a virus attack.[54] Information flux can occur because much of the information in the digital information environment is easily copied, manipulated, combined with other data, and again published electronically. The opposite is usually true of printed sources, especially from recognised publishers.[55] A legal researcher can thus be assured in the print information environment that the content of a specific page will be the same content that another person will read if it is the same page of the same publication. This, however, is not guaranteed in a digital information environment where the stability of electronic information is uncertain. Also, with electronic information resources there is no exact beginning and end of a page which, of course, causes specific problems in the legal research context. In light of such instability, researchers will require skills to determine the reliability and stability of electronic information and would have to develop methods to avoid the effects of the information flux. In addition, systems should be developed to make sure that the text one lawyer refers to is the same as that what is read by another person, for example a combined citation and paragraphing system.[56]

---

54   N 7 above mentions a random sample of legal researchers who have most likely utilised electronic legal research tools and resources in their research. Researchers who have included open web resources in their research include, but are not limited to Pearmain 2006 *JCRDL* 292, (note 15); Van der Merwe and Du Plessis (eds) *Introduction* 241 (note 15); Corder and Van der Vijver (eds) *Administrative justice* 113 (note 10). In a search for these three electronic documents referred to, two URLs retrieved the correct resources while one resulted in the following message: "Object not found! The requested URL was not found on this server. If you entered the URL manually please check your spelling and try again. If you think this is a server error, please contact the webmaster. Error 404 www.law.wits.ac.za Wed 16 Aug 2006 03:18:28 PM SAST Apache/2.0.40 (Red Hat Linux)". This error message in itself conveys the haphazardness of the Internet or open web.

55   Hanft 1999 *Legal RSQ* 78.

56   In the print information environment lawyers use standard citation formats, e.g. *X v Z* 1999 (4) SA 232, generally understood by all as: Plaintiff against Defendant, the year the case was reported, the volume within the series, the court or reporter indicator, and the page number. However, in future, these rules will need some revision in order to keep up with the changes technology has on legal research. Montgomery "Introduction" suggests the adoption of a uniform public domain citation system that will equally serve the citation requirements of the printed and digital information environments and which will take the form of a medium-neutral citation (MNC). A MNC will thus be independent of the medium

2.3.5   Seamlessness and desktop access

The last two decades have seen a tremendous acceleration in the use of desktop computers and other electronic devices in legal practice (to a lesser extent in developing countries). This gives lawyers seamless access[57] to internal and external information resources. The utilisation of these resources involves a continuing process of one computer which sends messages or requests to a local or distant other computer and then receives messages or information back without the computer user knowing of these background functions. As a result of this seamless desktop access, many lawyers have reached a level of computer literacy which enables them to make satisfactory use of the IT facilities they are provided with to enhance their daily work tasks.[58] For example, seamless access facilitates the simultaneous opening of more than one document or application. In terms of legal research, this ability adds the dimension of seamless information browsing which, in principle, replicates the way in which lawyers use legal materials. However, in practice, two uncertainties arise. Firstly, if it is either feasible or relevant to replicate lawyers' use of printed materials in the digital world. Secondly, if lawyers' computer skills are sufficiently developed towards using the full potential of seamless, desktop access.

2.3.6   Currency and speed

The processes of information acquisition, transmission and sharing have been accelerated by linking computers to a network.[59] Compared to the print information environment the most obvious difference in the digital information environment is speed of information distribution, speed of searching and of

---

in which court opinions are reported. Also in South Africa the use of MNC is introduced, as can be seen in some of the cases found in SAFLII, which cite cases as: *X v Z* [1997] ZACC 2. See, e.g., the SAFLII CC at http://www.saflii.org/za/cases/ZACC/.

57   Seamless access is normally used in a more technical sense, which goes beyond the scope of this article. It can refer to specific information architecture, operating systems and switching between different applications, etc. Here, however, it is used in a more general sense, *viz*. unburdened or facilitated activity in a digital information environment.

58   Paliwala *et al* 1997 *JILT* http://elj.warwick.ac.uk 21 Oct.

59   Katsh 1994 *University of Pittsburgh LR* http://www-unix.oit.umass.edu/ 30 Oct.

retrieval. This holds great potential for the legal information industry, which deals with new items of legal information that appear every working day, for example, the large amounts of new reported cases that need to be digested and published. Due to the speed of electronic publishing, it often is found that the information available on for example the Internet is more current than elsewhere. But, the fact that a resource is in electronic form is no particular guarantee that it is up-to-date. And because currency, that is, the inclusiveness of up-to-date authoritative legal information, is of extreme importance in legal research, it is emphasised that if electronic information is to be used for legal research purposes, then its currency should be meticulously determined.

In light of the abovementioned unique features of digital legal information, it becomes clear that legal researchers will be required to some extent to adapt to the changing information environment and to exercise control over the digital tools and resources. This involves developing efficient legal research methods suitable to a digital information environment and acquiring skills to effectively sift through the information profusion and to distil the particular information relevant to the researcher's case or matter at hand.

3   Elements and challenges typical to digital legal research

In becoming a proficient digital legal researcher, it is necessary to understand that although there is a vast array of online commercial databases, Internet databases, legal information websites, and CD-ROM products to choose from, specific practical techniques are necessary to use these perplexing sources for legal research purposes optimally. This includes, *inter alia*, knowledge of search syntax and rules and of keywords in context; distinguishing between searching and browsing; daring into creative searching; using criteria for evaluating the value of information; and understanding the elements of natural language and full-text searching to electronically augment a lawyer's legal research.

3.1   *Search syntax and keywords in context*

Successful information retrieval from computerised information systems is dependent on how clearly the 'information need' is formulated and the manner in which the 'search' is expressed. A search is expressed in 'search syntax', which is determined by the 'search rules' for individual databases. Thus, lawyers who wish to make optimal use of legal information databases must overcome a 'conceptual gap', that is, it requires some distortion of the language naturally used by lawyers.[60] This simply means a lawyer has to translate an information need into a request that is expressed according to the technical search syntax used by the database. Forming an understanding of how a database is constructed can help in understanding search syntax, for example, knowing if a database contains full-text or bibliographic data, if all uses of a word are automatically indexed and tagged according to their place in the document, if natural language searching is allowed, and if search operators are used in clarifying search ambiguity. Understanding the search syntax of any search system requires knowledge of the following elements:

- The use of Boolean logic,[61] for example, when performing a search that must *include all search terms*, the search syntax requires the operator **AND** between search terms or the plus sign (**+**) directly attached to the front of each term. A search for *any words* uses the **OR** operator or the space separator by default. To *exclude search terms* one will use the **NOT** operator or the minus sign (**–**) attached directly to the front of each word that needs to be excluded.[62]

- The use of phrase and adjacency searching, for example, to search for two or more words directly next to each other in the same word order is usually expressed by using quotation marks, "__ __ __"; or to search for

---

60   Curran and Higgins 2000 *JILT* 19 Sep.
61   This algebra, first described by and named after the mathematician George Boole, uses set theory and operators such as "AND", "OR" and "NOT". It is a logical system that forms the basis of binary computers and certain modeling operations.
62   Use the Boolean AND to find documents containing both words: stocks AND brokers. Use OR to find documents containing either word: securities OR stocks. Use NOT to find documents containing one word, but not another: stocks NOT brokers.

one word in the proximity of a number of other words, uses commands such as **NEAR**, **w(n)**, **/n** or **@n**.

- The use of truncation and wildcards, for example, by placing symbols such as <u>*</u>, **!** or **?** at the end or within a word, will retrieve plurals or variant word forms or word endings.

- The use of parentheses to create a logical search order to the search query or to group logical search units, for example, **(**sentenc<u>*</u> OR punish<u>*</u>**)** AND **(**deception OR fraud**)**.

- The use of field searching, for example, a **TITLE** or **TI** search will restrict the search to words in the title or the names of parties section of the database.

- The use of synonyms searching, for example, the use of symbols such as **$** or **%** will search for similar or related terms, taking the burden off the lawyer to include all possible terms.

It is useful to keep in mind that different search systems do not necessarily use the same operators or symbols in the search syntax and the preferred order of search commands also may vary. A single search often is not sufficient, as it may be too broad or too narrow, and some reconsideration of the formulation of the search query will be necessary. Lawyers with search syntax skills will be able to refine the accuracy and scope of a search. These skills are necessary because the natural language of lawyers permits an infinite number of ways to express one concept, but a computer is a literal instrument and will only find occurrences of specified combinations of words. Because computers cannot read between the lines, some systems employ the KWIC feature to show keywords in context. This enables a lawyer to determine the relevance of the retrieved information.

3.2   *Natural language and relevance ranking*

Natural language searching does not use complex or structured search syntax and can be helpful when the legal researcher knows relatively little about a subject at the outset. Usually the full-text of a database is searched and a

natural language query is more broadly formulated in comparison to a query that uses operators and commands. In full-text searching legal researchers must understand that a relevant document must exactly match the search query or it will not be retrieved. It is for this reason that lawyers often experience online searching as misleading and a waste of time because it produces unreliable results. Online searching is literal and works on the principle of exact matching, that is, the computer will retrieve misspelled words if the search query contains misspelled words, thus only retrieving those documents with words that exactly match the search terms specified by the lawyer. Full-text searching is challenging because the true meaning of a passage often is implicit rather than explicit. Authors or judges sometimes use metaphorical or figurative forms of speech and it is impossible for a computer to retrieve documents with implicit reference to a key legal concept, especially if the concept is abstract.[63]

Despite these challenges, some lawyers prefer natural language searching, not only because of the perceived difficulty of Boolean logic, but also because it allows for relevancy ranking. This is the search system's ability to determine the likelihood of a document's relevance by applying ranked-retrieval methods. Here, legal researchers should know that relevancy is based on statistical analysis and not all systems apply the same methods. An understanding of the assumptions on which relevancy is based, will help a researcher to structure a natural language query. One general assumption is that the more frequent a search term appears in a document, the more relevant the document is. Another assumption is that a word is a significant word if it matches a word in the search query and if it is a word that appears relatively infrequently in the database, but having the same meaning each time that it appears. Further-more, if a word appears in specific document sections, for example, the title of a document or the header of a website, and it matches a lawyer's search term, then it is considered a significant term and ranked higher in relevancy.

---

63 This is where the hidden features, e.g., KWIC and clustering and other factors such as the inclusiveness of legal taxonomies in structured search syntax searching, as opposed to natural language techniques, come into play.

However, based on assumptions such as these, natural language searching often retrieves irrelevant content.

3.3   *Searching, browsing and search building*

For some lawyers online searching sometimes results in the accumulation of unnecessary amounts of disorganised or unreliable material, and inexperienced legal researchers often become lost or sidetracked in database or web searching. Therefore, it is recommended first to determine the following: the reason for the search; the time available to perform the search; the researcher's background knowledge of the subject being researched; the resources available and the depth of research required. Depending on the situation, a legal researcher then will follow either the path of direct or targeted searching, which involves building a search by being more specific from the outset. Or he or she will perform indirect searching, known as 'browsing', which builds on the principle of commencing with a broad search and gradually working it down to a more specific search. Usually legal researchers will engage in the more direct forms of searching and if browsing is required, they typically will follow a direct approach to browsing.[64]

The success of direct searching basically relies on the extensiveness of a system's indexing processes. When engaging in direct searching, the researcher's search terms are matched against the database's index. Legal researchers thus have to know and use search terms that are included by the indexing system of the specific database, which often leads to researchers' ineffectiveness in retrieving the correct information. For this reason methods for browsing were developed with the idea to provide for multiple access points to the same unit of information and the preference to search by association. In

---

64   As opposed to a serendipitous approach, though the latter is inherent to browsing. Visual searching and the use of visual context mapping tools do exist but these tools are associated more with the creation of eg topic maps and fall beyond the reach of this discussion. However, to experience the effect of context mapping tools, inquisitive legal researchers could visit the Grokker at http://www.grokker.com and perform a visual search by activating the 'Map View' of search results.

online browsing hyperlinks are used for vertical movement within the same system and lateral movement to relevant resources located at a new destination or distant computer system.[65] Search building thus entails at the outset to think through the relevant terminology and mentally construct a hierarchy of possible terms after which the legal researcher will then decide to either search or browse. Searching is effective in finding information with a clear idea that it exists and where to look for it. Browsing is useful for finding information a researcher did not specifically know existed. Browsing often involves creative searching skills and requires bibliographic thinking.

3.4   *Creative searching and bibliographic thinking*

From the above it emerges that online legal research often entails identifying search terminology and following a direct approach to searching or browsing. Regardless of the approach, searching sometimes leads to dead ends, or in retrieving masses of irrelevant information or no information at all. This calls for the general application of lateral thinking in legal research. Lateral thinking skills lead to online search innovation, which is the ability to approach a research problem in an alternative fashion when first search attempts fail. Creative searching is typical of experienced legal researchers who apply trailing skills. In other words, it is the intuitional following of links until some information is found, although it might only be remotely relevant, but which will lead to the required information.

Creative searching furthermore involves some mechanical skills. These skills are necessary for practical reasons. A lawyer may, for example, wish to have a

---

65   Bush 1945 http://www.theatlantic.com/ 18 Sep conceived the idea of searching by association, and further developed the existing principle of multiple access points. This has lead to what is known today as hyperlinked browsing. In our time the development of mark-up languages such as XML (eXtended Mark-up Language), the growth of wiki's as online collaboration tools, and other developments such as the evolving semantic web have piloted the concept of hyperlinked browsing to intelligent linking and intelligent information retrieval. These are topics of interest to many legal researchers and call for discussion in follow-up articles within the broader theme of legal research in a digital information environment.

statute open in one window simultaneously with a court decision in a separate window without losing the statute view. The following are only a few examples of the mechanical skills and timesaving shortcuts that could enhance a lawyer's digital legal research efforts:

- To retain a current web document while opening a new web document, click on the desired hyperlink using the **right click** mouse button and choose '**open in new window**'.

- To find a word within an online document, press **Ctrl+F** and enter the word or phrase to find the first and following occurrences of the word(s) in the current document.

- To reach other levels within a website, progressively delete the URL[66] sections separated by slashes, for example, www.sa.gov/doc/**2003/**, where www.sa.gov/**doc/** will probably link to the index with access to other years as well.

- To only print specific pages from a lengthy web document, click on **Print Preview** from the File menu to discover the page numbers, and then select print and enter the page number range.

A creative searcher is also one who thinks 'bibliographical'. This is when the legal researcher asks questions such as: who is responsible for the information, or who might have an interest in it, or who would be the most reliable publishers of similar content. Thus, instead of looking directly for the required documents, the researcher looks for websites that are likely to publish reliable information on the topic and then enters deeper into the site via its information finding tools.[67] This path sometimes leads to entering the invisible web, that is, entering the databases of organisations that are, unlike open websites, not open for indexing by public web search engines.

---

66 Uniform Resource Locator also known as 'web address', e.g., http://www.anc.org.za/.
67 Depending on the situation, this is also where competitive intelligence (CI) skills are required in legal research.

3.5   *Bookmarks, alerts and track keeping*

In the print information environment lawyers often use flags, post-it notes or paper bookmarks to serve as reminders of important sections of information that are frequently used or to attract the lawyer to an interesting piece of information that should not be forgotten later on in the research process. In the web environment similar tools exist, for example, Favorites or Bookmarks, which assist the researcher to properly manage those Internet resources that need to be remembered. The challenge however, is not necessarily the creation of digital bookmarks, but rather in organising the growing collection of bookmarks. To some legal researchers bookmark management might prove to be an important skill and at present a variety of programmes are available for this purpose.[68] However, lawyers still need personal information management skills, for example storing bookmarks and web files on multiple locations such as in folders for subject matter, client matter, and topic; and applying appropriate titles to bookmarks and files for future ready reference.

On the other hand, some legal researchers might find that using bookmarks is an inefficient method for managing their Internet resources. These lawyers may, perhaps, prefer receiving, for example, a weekly email reminding them of those websites they often visit, indicating if any new information was published that could be of interest to the lawyer, and providing direct links to the full-text.[69] Furthermore, some commercial databases offer alerting features that allow the researcher to automate searches and to re-run it at periodic intervals. Alerting features work on the same principle as conventional current awareness services, where the lawyer specifies the elements in a search profile and searches are then performed on behalf of the lawyer who only receives notice per email that potentially relevant information is available, usually with a link which will take the researcher directly to the full-text resource.

---

68   E.g., Blinkpro at http://www.blinkpro.com, and the Copernic Agent product suite at http://www.copernic.com.

69   Also available is the use of RSS (Real Simple Syndication), web content aggregators and blogging, but an extensive discussion of push technologies for current awareness in legal research does not fall within the scope of this article. See also n 74.

It could happen that in the process of following links a lawyer may become so engrossed in each of a successive series of linked sites that the original site seems to be lost. To keep track of one's browsing activities, it is suggested to use the browser's History File.[70] This feature will show the researcher the titles of websites that were visited on that day or during the previous week or weeks. Often, as the result of link following, the researcher discovers and visits many websites and resources that he or she otherwise would not have been aware of. In practice, however, it seldom happens that these resources offer valid legal information and thus valuable time is wasted during browsing. Therefore, it is important for lawyers to know which sources are available and how to evaluate digital information, especially the information offered on the Internet.

3.6   Knowing and evaluating tools and sources

A part of the researcher's search strategy is the identification of suitable sources according to the type of information required or the phase of legal research the researcher is at. For example, the researcher must assimilate knowledge of the range of available sources, and be aware of where to search for statutes, case reports, treatises, encyclopaedias, journals or law reviews in the digital information environment. Furthermore, the researcher must know that, although most Internet sources offer information free of charge, there are resources that require a subscription, thus having some cost implication. When searching commercial databases, legal researchers must be aware of how they are being charged for database use, that is, time spent on-line, number of documents retrieved or printed, number of questions asked, or a flat fee for unlimited usage. Thus, to attain the maximum benefit from digital information resources it is advisable to learn to know which resources will most likely serve specific information needs and what the costs will be before venturing out into digital legal research.

---

70   An application used to view Web content and navigate through websites, e.g., MS Internet Explorer, Firefox, Modzilla, Netscape, etc.

In the digital legal research process it is most important to know which digital information resources can be relied on for its content authenticity. This does not only involve evaluating the resource content, but in the first place evaluating the provider of the Internet based legal research service, for example, whether it is a known and trusted publisher of legal information, or a court, government or academic website. Further criteria for evaluating digital information resources include the authority; credibility; accuracy and usability of the information; coverage, scope and currency of the information and the extent of retrospective coverage; active access points; transparency and objectivity; website organisation and navigation; ease of use; speed; and whether or not the resource is being maintained adequately; sophisticated searching facilities and other special or distinguishing features; search help and easy feedback; clear presentation of search results; technical considerations and compatibility; options for downloading or extracting information; and provision for physically impaired persons. It should be noted that substantial research has been done on the importance of evaluating Internet or other digital information resources.[71]

4   The process of digital legal research

Legal research is a multi-faceted activity and there are many types of legal research of which one facet is digital legal research. An example of the process of legal research could include the following in a scenario where a lawyer is presented with a legal problem in an area of the law with which the lawyer is unfamiliar:

- to commence research by consulting print sources to aid the lawyer in analysing the facts;
- to consider and evaluate what legal concepts may be relevant;

---

71   See amongst others: Holborn *Legal research guide*; Halvorson *Law of the super searchers*; Hock *The extreme searcher's guide*; Feiertag *Toeganklikheid van Internetbronne*; Adams 2002 (38) *Trial*; Hanft 1999 *Legal RSQ*; Robinson 2000 http://www.rclaw.com/ 20 Nov; Pacifici 2002 http://www.llrx.com/ 20 Apr; and Leckie *et al* 1996 *LQ* 173.

- to find concepts in secondary sources;
- to identify primary authority;
- to synthesise the principle contained in the primary sources; and
- to apply the principle to the legal research problem.

However, in the digital information environment[72] researchers follow different approaches and search for information in ad hoc, tailored ways. This could include extracting key terms while analysing the facts and using these terms as search terms in performing computerised searches to locate cases with similar facts and other applicable primary sources or to find secondary resources which will direct the researcher to primary resources.

A general observation in comparing research in the different environments is that with print sources legal researchers start quite broad and typically move from the facts of the research problem to general concepts and then to the specifics. In digital research, research usually commences with narrow or focused searching for something very particular or looking for cases that are specifically on the fact pattern, followed by reading the internal references and the noting-up of relevant cases.[73] The process of digital legal research thus differs from other research and consequently is discussed in more detail below.

4.1   Understanding the issues, sources and types of information

An effective research strategy depends largely on choosing the best starting point. Digital legal research most often begins with a research issue, which in the first place requires a thorough understanding of the main, related and margin issues, whether it is simply a topic based on a set of facts or whether

---

72   For the purpose of this discussion the reach of the digital information environment includes the electronic information searching platform provided by commercial full-text and bibliographic databases, CD-ROM products, as well as the Internet and the resources of both the open and the invisible web.

73   See Holborn *Legal research guide*; Bast and Pyle 2001 *LLJ* 297; Halvorson *Law of the super searchers* 132-144; Van de Vijver 2001 http://web.uct.ac.za/ 4 Aug; and Dow 2001 htttp://ublib.buffalo.edu/ 4 Aug.

specific information is needed. Understanding the issues will ensure that the research approach is not too narrow, though specific enough to get started in the digital information environment. Digital searching often will require some re-defining, re-thinking and re-framing of the issues, so as not to be limited by the initial characterisation of the problem. In approaching digital research the lawyer must have a fairly clear sense of the results being sought as well as an understanding of the types of information available in the digital information environment, for example: is an overview sought of literature on the topic; does the question ask for judicial opinions; or for law review articles; or business information?

At this stage, the researcher will identify words being important factual terms as well as legal concepts that will serve as search words and will list these words from the most general to the most specific. The researcher also will identify the 'places' where the answer is most likely to be found, for example, a website that offers database searching, a commercial database, a specific CD-ROM product or an organisation's or individual's blog.[74] Identifying the place to start searching, requires knowledge of the types of sources that are available and the contents of these sources. The digital information environment offers secondary sources, such as encyclopaedias and law reviews, which serve as starting points for identifying precise search terms, as well as for understanding basic legal concepts. It also offers primary sources, including statutes, administrative regulations, administrative decisions and court opinions. However, comprehending the overall web content is impossible and the difficulty arises in determining whether or not a legal research problem can be solved by using the Internet. For this reason, it is suggested that legal researchers familiarise themselves with the two basic approaches to finding

---

74 See also n 69. A web log, or blog, is a web-based publication consisting primarily of content entries in reverse chronological order and it is often used on journalism websites for breaking news, etc. This is a collaborative space – either stand alone or within a website – where visitors can post comments, link to, add to, or just read on a weekly, daily, hourly basis. Here information is instantly published and the scripting allows a person to automatically post information and additional notes and comments to a website with built-in searching and archiving features.

legal materials on the Internet, namely search engine searching and gateway or portal browsing.[75]

4.2   *Searching, browsing and search results management*

So far the researcher has identified the point of law and chosen search terms or keywords, *viz.* significant words and their broader terms, narrower terms, related terms, synonyms and antonyms, and has considered truncation. Truncation involves truncating words to obtain various word endings and words that have alternative spellings and word forms. At this stage the researcher has also chosen a starting point, which could be a reputable website or database or other finding tools, such as a blog[76] for finding information that could lead to the required information. Now the researcher will progress to retrieving information from databases or finding information by using either Internet search engines or by browsing websites linked by gateways or portals. This phase usually involves full-text database searching and the legal researcher will, if necessary, modify the search as the searching develops.

Depending on the researcher and the situation, the process may commence with searching either for primary or for secondary authority. In searching for primary sources, the researcher's first aim is to find a core of relevant cases and to expand the search from there. In searching for secondary authority, the aim is to gain familiarity with the topic and with the terminology that might be used in formulating subsequent search queries. Searching for secondary authority involves using legal periodical indexes or bibliographic databases to find references to journal articles and/or full-text databases to retrieve law review and journal articles. The researcher will not only use journal indexes, but also other secondary sources published by commercial database vendors such as encyclopaedias and textbooks.[77]

---

75   Obviously, Internet searching is not limited to these two approaches discussed here.
76   See also n 69 and 74 above.
77   Although the Internet houses secondary sources, the coverage of secondary sources in South African law in the digital information environment is currently incomplete. E.g., the

In general, legal researchers in search of legal principles rather consult printed secondary sources, but in fact-driven areas, nowadays they will conduct digital searching more readily. Once within the digital primary sources, the researcher applies proper search syntax and punctuation[78] to formulate queries and looks for matching fact patterns between the case the researcher is dealing with and the cases reported online. To be successful in full-text searching, the lawyer must be able to manipulate search syntax confidently because digital searching is literal searching, which means every letter and symbol must be correctly conveyed to the computer. If not informed by meticulous conceptual analysis, digital searching can be a misleading and dangerous method of research. Because of the challenges of full-text searching, some lawyers prefer browsing hierarchical tables of contents and digests, which use standardised language and permit the researcher to search in a manner more akin to the print information environment.

In the digital information environment there often is an integration of commentary from textbooks, legislation and case law and therefore researchers may find that browsing is more effective than searching. Typically, the researcher will use a table of contents, subject index or other listings to browse and find commentary with direct links to legislation and cases. Whether searching for primary or secondary sources, the researcher will conduct a series of searches and also will search in more than one database. This is because, although there is some duplication in commercial database's content, in legal research there always will be *more* information to be discovered.

Sabinet SA ePublications database offers access to the following resources: Acta Criminologica; Acta Juridica; African Human Rights Law Journal; African Journal on Conflict Resolution; Annual Survey of South African Law; Child Abuse Research in South Africa; Codicillus; Conflict Trends; ESR Review; Fundamina; Institute for Security Studies Papers; Journal for Juridical Science; Juta's Business Law; Obiter; Potchefstroom Electronic Law Journal; Risk Management; SA Crime Quarterly; SA Mercantile Law Journal; South African Human Rights Yearbook; South African Journal of Criminal Justice; South African Journal of Labour Relations; South African Journal on Human Rights; South African Law Journal; Stellenbosch Law Review; Transactions of the Centre for Business Law; Tydskrif vir die Suid-Afrikaanse Reg, but the Journal of Contemporary Roman-Dutch Law (*THRHR*) is currently not available in electronic format.

78   See a brief explanation of search syntax in section 3.1.

Research in a digital information environment involves finding a balance between retrieving every relevant case and precisely tuning the search to exclude all irrelevant cases.

During this stage of searching and browsing the researcher will have to plan how the results from the search should be managed. The result of searching in the digital information environment is either lists of references to documents that matched the search query, or it is the document itself, or clusters of documents created by the system. If the researcher was browsing, then the result could be all the cases linked from one case or the result could be user-selected items and document sets. Researchers often experience the need to manipulate these results, for example, to be able to search within the result set, refining and re-ordering it, or comparing it to another set. Managing results is also part of keeping record of the research done up to this point. In other words, the researcher keeps a checklist or notes of the resources consulted to make it easier to update the research at a later stage in the event of it being returned for supplementation or branching; or for reference in future projects; or to allow other researchers to assist in the research if necessary.

For expert legal researchers record keeping is part of the research strategy, as it enhances analysis and improves results. As researchers search and browse, they might copy and paste relevant information into working documents where annotations may be made and here they ask questions which influences and enhances the analysis. Thus, at this stage the researcher has prepared a broad outline of the issues, and during searching and browsing the researcher identifies sub-issues. A framework is formed, and if the researcher is truly a digital legal researcher, the process of legal writing also takes place digitally. In other words, while performing digital legal research the lawyer is simultaneously drafting an outline electronic document, which could be consolidated and expanded. Furthermore, sections of information may be inserted, moved around and deleted and if version control is required, then changes may be tracked in the electronic document while research and writing

is in progress.[79] By linking together searching, browsing, record keeping, results management and writing, the researcher moves to the next phase of digital legal research, namely working with results, of which cross-checking of content is a crucial element.

4.3   *Working with results and cross-checking document content*

During the processes of searching and browsing, many documents are returned of which not all will be relevant. At this stage the researcher will select the documents which appear to be relevant and will examine these to make an initial decision regarding their real relevance as well as evaluate and verify the authenticity and validity of the document content. The examination is enhanced by, for example, comparing individual documents and result sets. This comparison perhaps may lead to discovering relationships between topics and documents. Although the depth of examination could vary depending on factors such as the available time, the pricing structures of databases, and the domain knowledge of the researcher, the thorough legal researcher will compare search results of one search with the results of another search. This is especially done when different but closely related issues are researched and such comparison often enhances analysis.

Typically, during this stage the researcher will use electronic citator systems for determining case history and for case treatment information. With regard to other primary sources, the researcher will utilise legislative databases to determine whether there is any new material affecting them. The researcher will, for example, select the database identified for the appropriate legislative service database to see new legislation; conduct a search on the legislative service which will indicate new laws which affect the relevant statute sections; integrate the new legislation into the existing statutes; and determine the effective date of the new legislation either from the legislation itself or by

---

79   It should be noted that although the "Track Changes" function in MS Word is useful in, eg, developing successive drafts, it may leave a law firm open to a variety of risk manage-ment issues and its use should, therefore, be managed, limited or avoided accordingly.

descriptions of the database coverage. In working with secondary digital resources, the researcher will look for premium publications that provide a carefully structured, hierarchical organisation, which include detailed topical outlines that give a comprehensive overview of the subject. Furthermore, secondary sources should present concise, comprehensive, expert analysis; give extensive cross-references, indexes, and tables to provide efficient access to the material; and provide pinpointed citations to the relevant primary and secondary authorities.

In recollection of the time before computers, Komlodi and Soergel[80] compare this phase with how lawyers would try to remember previous research results and other related document sets and then lay out the items next to each other in order to point out overlaps or repeating results or actions within the research. The same processes still occur, only now it is the digital checking and showing of overlaps between result sets and setting apart of documents that have been returned before and the identification of relationships between sets that will help the researcher build a mental model of the question being researched. Naturally, working with electronic documents requires some form of saving and recording the search results in order to have all relevant information readily available.

4.4   *Saving results and building personal collections*

Saving results and other context information such as reminders, personal markings and annotations in the digital information environment is the link between finding information and using it. Except for taking notes on paper, legal researchers could capture information by typing in word processing packages, copy and paste text and URLs, make screen captures, print out screens or text selections, email documents and text, or save it to the computer's hard drive or other external storing devices. When saving search results, whether whole documents or parts of documents, it is important to

---

80   Komlodi and Soergel "Attorneys Interacting with Legal Information Systems".

preserve the URL linking to either the full document or saving the query page, thus either saving the document itself together with its digital address or saving the context of the search and the path to the source or sources. Experienced digital researchers regard this step in legal research as essential in order to continue the search or using the information at a later stage.

Saving of search results takes place throughout the search process. The action of saving is when a legal researcher takes the information found from the 'search environment', that is, the Internet or database, and moves it into the 'use environment', which could be word processed documents. After saving the information, it is ready for digital manipulation or to be printed out and manually processed in a manner preferred by the researcher. At this stage, information and knowledge management skills are crucial. For example, it is not unusual for a researcher to create personal collections of electronic documents that initially seemed useful only to be found unnecessary later on. Therefore, the experienced digital legal researcher applies information and knowledge management tools and skills to categorise and save research documents in an organised fashion and in the process builds a personal collection of electronic content which is annotated and kept up-to-date for future research and reference purposes.

4.5   Using information and integrating searching and writing

Digital legal research does not entail only searching for information, saving and annotating it and printing it out. Searching and finding information is a means to an end and must be integrated with other legal research activities, for example, problem solving, analysis and writing. At this stage legal researchers will actively use the search results. That is, the relevant information that was previously saved is now mentally processed and added to their existing knowledge to create new knowledge, and it is used to write new documents. Typically researchers will arrange documents in clusters under various topical headings, will determine whether there are gaps in the research performed thus far, and will perform additional searches if necessary. They will then interpret

their readings critically, often rephrasing them in some form. Through interpretation researchers assign meaning to what was read and link it to their current knowledge. After linkage, knowledge is applied, which entails analysis and synthesis and the conveying of the conclusions that were drawn in the integral process of legal research of which digital legal research is but one component.

Even at this stage, namely reading, using and integrating search results with other activities such as interpretation and writing, a legal researcher might find that reading leads to new or better formulated queries designed for a digital information environment. Thus, the researcher possibly may have to return to searching and browsing. Experienced legal researchers find that the process of reading while searching not only helps to learn more about the topic and to decide what the most appropriate next step will be, but it also helps with determining when it is time to stop searching.

Usually, the phase of 'final writing' most likely will entail re-drafting the writing before it will be regarded as the final writing. Also in the digital information environment, writing often starts with copying, pasting and saving quotes and other information from search results, often linked to specific legal issues, and annotating these in terms of the case or matter currently being researched. Only, in a digital information environment where it is possible to carry out searching and writing in the same environment, the process of writing is enhanced as it is drastically faster and easier to copy and paste between source and destination in comparison to how it is done in the print information environment. Furthermore, not only is it possible to collect text for insertion in the researcher's writing, also hyperlinked citations can be carried over to the document when writing. The advantage of adding or using hyperlinks, such as citations in legal writing, is the cohesion of sources referred to, as well as easy access to cited sources. Lastly, legal research in the digital information environment not only is enhanced by the possibility of keeping links between the citing document and the cited document, but it also can be helpful in future for citation checking tasks.

5   Advantages of digital legal research and electronic information

Except for the above-mentioned advantages, there are a number of additional benefits of digital legal research that sets it apart from conventional or manual legal research. This includes the enabling of sophisticated keyword searching in full-text databases; the noting up of case law directly from the original case; and 24-hour availability of information sources. But, despite the advantages over print legal resources, the use of electronic resources always should be in conjunction with research using printed legal resources, rather than as a substitute for it. Legal research thus is enhanced by combining the processes of conventional research with digital research by taking advantage of, *inter alia*, the seamless access to legal and other materials that otherwise would be difficult if not impossible to access, and the benefit of re-using digital document building blocks during research as well as in the post-research phase.

5.1   Re-use of document building blocks

Most lawyers specialise in specific areas of the law and their research becomes focused on certain topics or related to typical client matters. Lawyers often build personal collections of information sources and documents, and it is not uncommon to some areas of legal practice to re-use sections of existing documents written on the same topic. Rather, it is a natural way to speed up work to the client's benefit. In a digital information environment, legal research can benefit from systems that can examine the content of existing documents and identify similar sections in different documents, whether documents from external databases and/or the lawyer's own documents. The system and the environment thus can support the lawyer in integrating documents found during searching and documents written by the lawyer, enabling the lawyer to cut and paste between resources, using existing resources as building blocks in creating new documents.[81]

---

81   Komlodi and Soergel "Attorneys Interacting with Legal Information Systems".

5.2   *Finding hard to find or specific information*

The effect of the digital information environment and especially of the Internet is seen in the advantage of finding information that otherwise would not be available readily. Halvorson[82] is quite explicit in the opinion that it is inept of researchers not to use the Internet for legal research because some materials that are relevant or indispensable to specific research projects are available on the Internet only. In this regard, the digital information environment especially is effective for:

- finding judicial consideration of cases and case history;
- finding pending bills and recently enacted legislation;
- looking for cases dealing with an issue identified by a very particular term;
- doing searches by classification schemes or legal taxonomies;
- doing periodical searches;
- doing fact specific research;
- finding cases involving a particular expert, judge or counsel;
- restricting the search to material within a certain date range, or within a particular jurisdiction;
- finding government and government related information and forms;
- research on technology-related subjects, for example e-commerce and Internet taxation;
- finding company information and business intelligence;
- uncovering the ideas of involved parties or of the opposition expert witnesses in online discussion groups or web documents or blogs;

---

82   Halvorson *Law of the super searchers* 20. This opinion is supported by Best 2003 http://legalresearch.org/ 24 Feb in the observation that some information can only be researched with computer support, e.g., it might be materials too current to find using print sources but that have been published electronically; the material may be from another jurisdiction and not available in the lawyer's library collection; or the material may be unreported but made available electronically.

- discovering the research memoranda at the websites of opposing counsel;
- accessing the latest news, especially international news; and
- finding contact information for people.

Added benefits of doing research in the digital information environment are that researchers can form virtual communities of interest and use listservs[83] that provide invaluable collegial collaboration and information. Furthermore, while searching and moving around in the digital information environment, lawyers might learn more about legal topics compared to if they only used the available print resources.

5.3 Sophisticated searching features

Since computerised legal research was introduced in the 1970s, legal researchers gradually became accustomed to retrieving documents using technical search methods such as Boolean searching or field searching. Nowadays, they rely more readily on the searching capabilities of computers on a regular basis. Compared to the print information environment, where researchers are often dependent on someone else's indexing system, researchers can take advantage of the random access capabilities of full-text keyword searching present in the digital information environment. However, it is only by combining human input with computerised information retrieval facilities that efficient search results will be yielded. Legal researchers can benefit from sophisticated search features, which if applied correctly, assist the researcher to achieve higher precision with online resource retrieval than is possible with print-based retrieval of resources.

Examples of online search features include the use of Boolean operators that allow the combination of words and the possibility of limiting the search to

---

83 An automatic mailing list server and the application of software programmes for setting up and maintaining electronic mail discussion groups.

ignore specific terms; truncation and akin features such as wildcards and stem-searching; ranked-retrieval; conceptual searching capabilities; and searching through particular subject fields or within a particular time period.[84]

Though the searching features of web searching tools are not as sophisticated as commercial database features, they do offer targeted legal research facilities, for example, searches can be restricted by domain, jurisdiction and sometimes by document type. Typical to both subscription-based and public-based digital information systems is the utilisation of search templates that allow researchers to apply complex advanced power searching features that are unique to the digital information environment. These templates make it convenient for researchers to perform online searches by offering services that, for example, allow flexible use of terminology and easy cite checking.

5.4   *Time, speed and convenience*

Digital legal research is not restricted to physical location or to time schedules. A researcher could, for example, have access to online information, not only at the office, but also from a computer with conventional and/or Wi-Fi[85] network connection at home or while traveling or on appropriate hand-held devices. Furthermore, subject to licensing restrictions, multiple access to the same article or case is possible, thereby eliminating the frustrating problem of not being able to find the applicable print volume on the library shelf, either because it is in use, missing or mutilated. Another advantage of technology is that information can be transferred at high speed; hence digital legal research can be economical in terms of both lawyer time and effort.

Compared to, for example, the use of print indexes which usually requires careful searching through a series of annual volumes by following the entries

---

84   Some of these features were discussed in section 3.1 above and therefore are mentioned only briefly here.
85   Wi-Fi (Wireless Fidelity) is the Institute of Electrical and Electronics Engineers' wireless standard for local area networks.

indexed under the assigned subject headings, it is much faster to search bibliographic databases, which are the online versions of print indexes. These systems allow researchers to search in a matter of seconds for articles that match the keywords. The researcher then can print the result list with references to selected relevant resources, which might be available in print and/or electronic document format for further use. Other appealing features of digital legal research are the ease with which a researcher can navigate through digital information resources and move directly to a case referred to in a judgment by simply clicking a hypertext link and to link directly from the law report to a statute database.

5.4   Currency, cost and space effectiveness

The digital information environment is known more for currency of information than for making historical resources available, especially with regard to open Internet resources. Legal researchers thus can take advantage of those established digital resources that do offer reliable information that will not be published in a more timely fashion than via the Internet.[86] Digital information has the added benefit of space effectiveness, for example, many legal print materials are loose-leaf publications that must be regularly updated. Loose-leaf updating is a very labour-intensive process, and after updating is completed these books need to be shelved, which over time can become space consuming. Then there is the re-shelving of material after the updating process, which also is time consuming and labour-intensive. These kinds of problems could be substantially reduced or minimised in a digital information environment where electronic materials require little or no space compared to print sources.

---

86   Halvorson *Law of the super searchers* 5 has found that the cost of research is an interplay between the cost of resources used and the cost of the researcher's time. While the cost of retrieving a print source may be less, the saving is often consumed by the cost of the researcher's time to retrieve that information and often the total cost would be less if the information were retrieved electronically. It could be argued that research costs usually may be passed on to the client, but most lawyers abide by ethical obligations of providing competent, cost effective service to their clients. See also Ambrogi 2001 *NJ Law Journal* 34.

If used discriminately, digital research tools can be cost effective means for swiftly finding accurate, current, reliable and comprehensive information. The effectiveness of these tools, however, greatly relies on the researcher's knowledge of the unique characteristics, aspects and the prerequisite skills of digital legal research such as search syntax skills together with a thorough understanding of the limitations of these tools.

6   Limitations of electronic information and digital legal research

Although most information on the Internet is free, using the online services of commercial database vendors is often excessively expensive, which makes it generally inaccessible to smaller law firms and sole practitioners. Furthermore, most online resources do not equal the historical coverage of print legal materials and the question also could be raised as to the quality of digital legal information resources.

6.1   Quality and lack of coverage

The greatest obstacle to using digital legal information for research purposes is the determination of the quality of the information. The question of quality is directed especially at free Internet resources that lack quality control and requires independent authentication and citation verification. Also, many of these resources do not keep historical, archival or older information in their databases, which makes web-based research more suited to research covering recent years only. Therefore, it is advisable not to discard the importance of conventional legal research tools and sources that cover, for example, the hundreds of years of cases contained in law library collections.

6.2   *Digital volatility versus the integrity of the published page*

Digital information is generally more disorganised and less reliable than legal researchers are accustomed to.[87] Compared to print resources, electronic resources are not always published by reputable authors, and the same degree of involvement from trusted legal publishers does not exist with Internet resources compared to print resources. In general, legal researchers are fairly uncomfortable with citing open web resources such as webpages, because of the volatility of webpage content. Digital information is less durable and has less permanence and, therefore, more 'luck' or 'chance' is involved in finding the same information at a given URL. For these reasons legal researchers are confronted with the question of how to maintain 'permanence' in the digital information environment. Most legal researchers depend on a relatively small range of websites maintained by reliable sources such as selected academic websites and government websites. But even within these sites it may happen that legal researchers follow links that either once existed, but subsequently have moved or vanished, or links that only lead the researcher in circles without finding anything of substance.

6.3   *Technical issues, file formats and document presentations*

Legal research in a digital information environment calls for appropriate hardware and software to provide access to content. Although this perhaps does not seem to be a problem in all countries and law firms, there is a disadvantage to moving towards a digital *only* information environment. As Tjaden[88] explains, the commercial online databases are password protected and only selected people are covered by the license agreements. This leaves many others without access to legal information which previously would not have been the case if the information was made available in print in a law

---

87   Especially on the Internet where a more rapid appearance of information or disinformation is facilitated. Legal researchers therefore need to acquire knowledge, skills and/or tools to verify if data has been altered or corrupted.

88   Tjaden 1999 *LawLink* http://www.law-lib.utoronto.ca/ 28 Aug.

library. Other technical issues include the need for a robust network; the increased need for technical support and training as well as the disparity of file formats. This disparity refers to the different formats of, for example, digital court opinions: some are in HTML while others are in ASCII, some are WordPerfect documents, others RTF or PDF et cetera. Many legal researchers find that reformatting these documents before further use not only is crucial, but also extremely time-consuming.

6.4   Digital screen reading and loss of peripheral vision

It is observed generally that most people prefer to read from hard copy documents and rather would print out the text that they have scanned on-screen than to try to read from the screen comprehensively. Legal researchers especially find it inconvenient to browse statutes online and sometimes find it unfeasible to have many windows open while trying to research all relevant provisions. Furthermore, with case law research, legal researchers are challenged by the loss of peripheral vision.[89] That is, compared to the print information environment, case law research in the digital information environment may have a very narrow or factual focus. With print materials, researchers are able to have many law reports open on the relevant pages and with the help of digests and noter-ups be able to see, consider and analyse the context of each case and consider the importance of the context of the facts. This type of research in the digital information environment could intensify the researcher's tendency to remain at a factual-level analysis of retrieved cases due to the limitations of screen space and reading.[90]

---

89   See in this regard Bast and Pyle 2001 *LLJ* 297. Furthermore, difficulty with screen reading results in increased printing, thus burdening the lawyer or law firm with the administration of printing and printing facilities and carrying additional printing costs.

90   The limitation of screen space can be avoided by connecting multiple screens to a personal computer or laptop/notebook, on which, in turn, multiple windows could be opened simultaneously. These multiple screens could then be cross-searched, sometimes rendering it more potent than manual searching.

6.5   *Difficulty of digital searching and output overload*

Although powerful, search features are one of the greatest advantages of digital legal research tools, some lawyers perceive searching as either too complicated or as 'easy'.[91] As regards the latter, legal researchers lacking digital legal research experience may think perhaps that they are retrieving the relevant documents from a database. However, if the actual recall of their search should be measured, the true performance of their searching often will show low recall as well as lack of search precision. Searching the Internet is not simple and knowledge of its search deficiencies[92] should guide the legal researcher in the selective use of the Internet as a research tool. The use of Internet search engines for legal information searching especially requires experience, as these facilities are not geared to satisfying the sophisticated information needs of lawyers. In addition, the combination of natural language full-text searching with Boolean searching often means that although relevant documents are retrieved, they are subsumed totally in the overabundance of irrelevant materials. Legal researchers are thus challenged by output overload, that is, countless relevant and irrelevant documents are retrieved and it becomes impractical for the researcher to study all search results to determine those that truly are relevant.

Though the foregoing discussion highlights some of the existing limitations with regard to digital legal research and electronic information resources, the discussion is not aimed at undermining the usefulness of digital legal research. Rather, the objective is to form an appreciation of the digital information environment by also taking its limitations into account. By doing this, legal researchers increasingly will find the digital information environment a useful environment that offers tools which will augment other research tools rather than replace them.[93]

---

91   Rather read: 'deceptively easy'.
92   These include the lack of cross-file searching; deficient or inconsistent website search facilities; often documents cannot be searched by document type; and generic search tools perform poorly at retrieving legal information, to name but a few deficiencies. See also Halvorson *Law of the super searchers* 15 ff.
93   See also Thomas *et al Introduction to legal skills.*

7   The future of legal research

The future of legal research is not a move away from the traditional methods of finding and using information. Rather, it is an evolving process that keeps pace with the effect technology has on the legal information environment as well as on the law as a profession.[94] In future, there will be a continuous growth in electronically available primary and secondary legal resources. Some of these resources will be in the public domain; others will remain copyrighted information with subscribed electronic access. Books will not become obsolete, but there will be an increasing fusion of physical and electronic materials that make up the legal researcher's toolset. Today this fusion already occurs, but it will become common practice in future.

In the near future, having digital legal research skills will differentiate a mediocre legal researcher and a highly effective researcher. Skills for networked information discovery will become essential and in future lawyers increasingly will demand direct access to current legal information on the Web as well as tools for the easy re-retrieval of research materials and the ability to suspend and resume interrupted work that involves many documents. In the not too distant future, MacLachlan[95] foresees a time when the legal profession will have to appraise critically what is considered as 'reasonable research' in the light of new technologies and the availability of new research tools. Furthermore, the standard of professional competency with its current threshold for what is accepted as 'adequate research' will require some revision in response to the increasing level of sophistication of research tools and the methods of accessing these tools.

---

94   Susskind *The future of law* 46.
95   MacLachlan 2000 *Geo J of Legal Ethics* 607-649. Also in future, with the introduction of digital legal research in law offices as well as in the world at large, there will be an increase in awareness of and access to legal information. This could have a commensurable effect on the public's expectations of lawyers' abilities to find and use legal materials to perform research at levels assumed of professional service providers.

8   Conclusion

In Midgley's concluding remarks, he suggests three ways of shifting the boundaries of knowledge when undertaking legal research. The first is to allow also for other approaches than traditional research approaches or "to adopt a different research paradigm".[96] Secondly, to become more collaborative in the research approach. Thirdly, "to make full use of the moment that our Constitution presents us [with]". Midgley suggests that what would be required is –

> …not only a change of mindset insofar as the nature of legal research (law in context), but also a change of methodology, from individualistic to collaborative, and in many instances, from desk-top to empirical research.[97]

It is agreed with Midgley that "if we are to invigorate research in law, some of us should no longer do business as usual".[98] Without misconstruing Midgley's original thoughts on invigorating research in law, it is concluded analogically that legal researchers today have the benefit of access to a wide range of additional tools and resources to invigorate the legal research process. These digital tools and resources have considerable advantages and are likely to become invaluable to legal researchers in future.

An effective digital legal researcher is the lawyer who, among other things:[99]

- skilfully formulates search queries according to the different search syntax requirements of a variety of commercial databases as well as other electronic information systems;
- critically evaluates and identifies those websites of the open Internet as well as the invisible web that are most pertinent to his or her relevant practice and research area(s);

---

96   Midgley 2004 http://www.ru.ac.za/ 20 Jul.
97   *Ibid.*
98   *Ibid.*
99   Without a doubt, legal research involves many other activities. These examples only indicate a few activities of legal researchers in the digital information environment.

- regularly and skilfully uses general and law specific search engines for discovering new content of relevance;

- appositely takes advantage of registering database queries by setting up search profiles and automatically running specific queries on a regular basis;

- regularly receives filtered email alerts when new or changed resources are published; and

- cleverly uses blogs, web content aggregators and listservs for attaining insight into the thoughts and communication of peers on a specific topic or practice area(s).

Bibliography

Adams 2002 (38)*Trial*

Adams KL "Online research strategies for the bookish lawyer: lawyers with more legal than technical know-how can still use the many computer tools available to enhance their research and make their arguments more persuasive" 2002 (38)*Trial* 58-62

Ambrogi 2001 *NJ Law Journal*

Ambrogi RJ "Do your research on the Internet: legal research web sites" 2001 (165) *New Jersey Law Journal* 34

Arkfeld *The digital practice of law*

Arkfeld MR *The digital practice of law: the practical reference for applying technology concepts to the practice of law* 5th ed (Law Partner Publishers Phoenix 2001)

Bast and Pyle 2001 *LLJ*

Bast CM and Pyle RC "Legal research in the computer age: a paradigm shift?" 2001 (93) *Law Library Journal* 285-302

Berring 2000 *CLR*

Berring RC "Legal information and the search for cognitive authority" 2000 (88) *California Law Review* 1675-1708

Botha *et al* (eds) *Rights and democracy*

Botha H, Van der Walt AJ and Van der Walt J (eds) *Rights and democracy in a transformative constitution* (SUN Press Stellenbosch 2003)

Burns and Beukes *Administrative law*

Burns Y and Beukes M *Administrative law under the 1996 Constitution* (LexisNexis Butterworths Durban 2006)

Corder and Van der Vijver (eds) *Administrative justice*

Corder H and Van der Vijver L (eds) *Realising administrative justice* (Siber Ink Cape Town 2002)

Currie and De Waal (eds) *Constitutional law*

Currie I and De Waal J (eds) *The new constitutional and administrative law Volume I: Constitutional law* (Juta Lansdowne 2002)

Dempsey *et al* 2000 *IPM*

Dempsey BJ *et al* "Design and empirical evaluation of search software for legal professionals on the WWW" 2000 (36) *Information Processing and Management* 253-273

Devenish 2006 *JCRDL*

Devenish GE "The theory and methodology for constitutional interpretation in South Africa" 2006 *Journal of Contemporary Roman-Dutch Law* 238-258

Devenish *South African Constitution*

Devenish GE *The South African Constitution* (LexisNexis Butterworths Durban 2005)

Ebbinghouse 2001 *Searcher*

Ebbinghouse C "Portals to the future of legal information" 2001 (9) *Searcher* 10-16

Feiertag *Toeganklikheid van Internetbronne*

Feiertag T *Die toeganklikheid van Internetbronne in inligtingverskaffing aan regsgeleerdes* (M Bibl dissertation PU for CHE 2000)

Halvorson *Law of the super searchers*

Halvorson TR *Law of the super searchers: the online secrets of top legal researchers* (CyberAge Medford 2000)

Hanft 1999 *Legal RSQ*

> Hanft JK "A model for legal research in the electronic age" 1999 (17) *Legal Reference Services Quarterly* 77-83

Hock *The extreme searcher's guide*

> Hock R *The extreme searcher's guide to Web search engines: a handbook for the serious searche*r 2nd ed (CyberAge Books Medford NJ 2001)

Hoexter Administrative law

> Hoexter C "The new constitutional and administrative law Volume II: Administrative law" in Currie I (ed) *The new constitutional and administrative law* (Juta Lansdowne 2002)

Holborn *Legal research guide*

> Holborn G *Butterworths legal research guide* 2nd ed (2001 Butterworths London)

Katsh *Law in a digital world*

> Katsh E *Law in a digital world* (Oxford University Press London 1995)

Komlodi and Soergel "Attorneys Interacting with Legal Information Systems"

> Komlodi A and Soergel D "Attorneys Interacting with Legal Information Systems: Tools for Mental Model Building and Task Integration" Papers delivered at the American Society for Information Science and Technology Annual Meeting 2002 Philadelphia, PA

Lawson *Internet handbook for lawyers*

> Lawson J *The complete Internet handbook for lawyers* (American Bar Association Chicago 1999)

Leckie *et al* 1996 *LQ* 161-193

> Leckie GJ, Pettigrew KE and Sylvain C "Modeling the information seeking of professionals: a general model derived from research on engineers, health care professionals and lawyers" 1996 (66) *Library Quarterly* 161-193

Lynch *Accessibility and integrity of networked information collections*

    Lynch C *Accessibility and integrity of networked information collections*

    OTA-BP-TCT-109 NTIS (Congress of the United States 1993)

MacLachlan 2000 *Geo J of Legal Ethics*

    MacLachlan LD "Gandy dancers on the Web: how the Internet has raised

    the bar on lawyers' professional responsibility to research and know the

    law" 2000 (13) *Georgetown Journal of Legal Ethics* 607-649

Maisel and Greenbaum *Introduction*

    Maisel P and Greenbaum L *Introduction to law and legal skills*

    (Butterworths Durban 2001)

Montgomery "Introduction"

    Montgomery J "Introduction to the newly launched SAFLII" Discussion with

    the Director: Legal Information Services (University of the Witwatersrand

    Law School 2004)

Pearmain 2006 *JCRDL*

    Pearmain DL "Contracting for socio-economic rights: a contradiction in

    terms (1)" 2006 *Journal of Contemporary Roman-Dutch Law* 287-301

Rautenbach and Malherbe *Constitutional law*

    Rautenbach IM and Malherbe EFJ *Constitutional law* (LexisNexis

    Butterworths Durban 2004)

Susskind *The future of law*

    Susskind RE *The future of law: facing the challenges of information

    technology* (Clarendon Press Oxford 1996)

Thomas *et al Introduction to legal skills*

    Thomas PA *et al Dane and Thomas: how to use a law library: an

    introduction to legal skills* 4th ed (Sweet and Maxwell London 2001)

Tjaden *Legal research*

Tjaden T *Legal research and writing: Law in a nutshell* (Irwin Law Toronto 2001)

Van de Vijver (ed) *The judicial institution*

Van de Vijver L (ed) *The judicial institution in Southern Africa: a comparative study of common law jurisdictions* (Siber Ink Cape Town 2006)

Van der Merwe *Computers*

Van der Merwe D *Computers and the law* 2nd ed (Juta Kenwyn 2000)

Van der Merwe and Du Plessis (eds) *Introduction*

Van der Merwe CG and Du Plessis JE (eds) *Introduction to the law of South Africa* (Kluwer Law The Hague 2004)

Van der Walt *Constitutional property law*

Van der Walt AJ *Constitutional property law* (Juta Cape Town 2005)

Van der Walt *Law and sacrifice*

Van der Walt JWC *Law and sacrifice: towards a post-apartheid theory of law* (Birbeck Law Press London 2005)

Venter *et al Regsnavorsing*

Venter F *et al Regsnavorsing: Metode en Publikasie* (Juta Kaapstad 1990)

Register of legislation

Constitution of the Republic of South Africa 1996

Register of court cases

Minister of Safety and Security and Another v Carmichele 2004 (3) SA 305 (SCA)

Register of Internet resources

Best 2003 http://legalresearch.org/ 24 Feb

Best CP 2003 *Legal research is an essential lawyering skill* [Found on internet] http://legalresearch.org/docs/process1.html [Date of use 24 Feb 2004]

Bush 1945 http://www.theatlantic.com/ 18 Sep

Bush V 1945 As we may think [Found on internet] http://www.theatlantic.com/unbound/flashbks/computer/bushf.htm [Date of use 18 Sep 2002]

Curran and Higgins 2000 *JILT* 19 Sep

Curran K and Higgins L "A legal retrieval information system" 2000 *Journal of Information, Law and Technology* [Found on internet] http://elj.warwick.ac.uk/jilt/00-3/curran.html [Date of use 19 Sep 2002]

Dow 2001 htttp://ublib.buffalo.edu/ 4 Aug

Dow S 2001 *Using the Internet for legal research* [Found on internet] htttp://ublib.buffalo.edu/libraries/units/law/eresources/interhistory.html [Date of use 4 Aug 2006]

Dutschke 2006 *ESR Review* http://www.communitylawcentre.org.za/ 9 Aug

Dutschke M "Children's right to social services in South Africa" 2006 (7) *ESR Review* [Found on internet] http://www.communitylawcentre.org.za/ser/esr2006/2006apr_right.php [Date of use 9 Aug 2006]

Gabru 2004 *PER* http://www.puk.ac.za/ 10 Feb

Gabru N "Dilemma of Muslim women regarding divorce in South Africa" 2004 (2) *Potchefstroom Electronic Law Journal* [Found on internet]

http://www.puk.ac.za/fakulteite/regte/per/issue04v2.html [Date of use 10 Feb 2005]

Granat 2001 http://www.granat.com/ 30 Oct

Granat RS 2001 *What is a digital lawyer?* [Found on internet] http://www.granat.com/digi1.html [Date of use 30 Oct 2002]

Jeffries 1999 *Law Technology Journal* http://www.law.warwick.ac.uk/ 25 Oct

Jeffries J "Developments in legal databases: a law firm user's perspective" 1999 (1) *The Law Technology Journal* [Found on internet] http://www.law.warwick.ac.uk/ltj/1-2f.html [Date of use 25 Oct 2001]

Katsh 1996 *JCMC* http://www.ascusc.org/ 22 Sep

Katsh ME "Lawyers in the networld" 1996 (2) *Journal of Computer-Mediated Communication* [Found on internet] http://www.ascusc.org/jcmc/vol2/issue2/katsh.html [Date of use 22 Sep 2002]

Katsh 1994 *University of Pittsburgh LR* http://www-unix.oit.umass.edu/ 30 Oct

Katsh E "Digital lawyers: orienting the legal profession to cyberspace" 1994 (55) *University of Pittsburgh Law Review* 1141-1175 [Found on internet] http://www-unix.oit.umass.edu/~eleclaw/lawyer.html [Date of use 30 Oct 2002]

Khoza 2006 *ESR Review* http://www.communitylawcentre.org.za/ 9 Aug

Khoza S "The importance of a dialogue on strategies to promote socio-economic rights in South Africa" 2006 (7) *ESR Review* [Found on internet] http://www.communitylawcentre.org.za/ser/esr2006/2006july_dialogue.php [Date of use 9 Aug 2006]

Midgley 2004 http://www.ru.ac.za/ 20 Jul

Midgley JR 2004 *Shifting the boundaries of knowledge: some thoughts on Societal challenges for law researchers in the Eastern Cape Province* [Found on internet]

http://www.ru.ac.za/research/pdfs/midgely_thought_paper.pdf [Date of use
20 Jul 2005]

Rautenbach *et al* 2003 *PER* http://www.puk.ac.za/ 10 Feb
Rautenbach C, Jansen van Rensburg F and Pienaar GJ "Culture (and
religion) in constitutional adjudication" 2003 (1) *Potchefstroom Electronic
Law Journal* [Found on internet]
http://www.puk.ac.za/fakulteite/regte/per/issue03v1.html [Date of use 10
Feb 2005]

Singh *et al* 2002 *JILT* http://elj.warwick.ac.uk 16 Apr
Singh G, O'Donoghue J and Broome K "An empirical study in the use of IT
by small and large legal firms in the UK" 2002 (1) *Journal of Information,
Law and Technology* [Found on internet] http://elj.warwick.ac.uk/jilt/02-
1/singh.html [Date of use 16 Apr 2002]

Teshima 1997 *LA Lawyer Magazine* http://www.lacba.org/ 20 Nov
Teshima D "Keeping current in electronic legal research methods:
computerized research keeps advancing and changing with each year"
1997 *LA Lawyer Magazine* [Found on internet]
http://www.lacba.org/lalawyer/tech/legalresearch.html [Date of use 20 Nov
2001]

Tjaden 1999 *LawLink* http://www.law-lib.utoronto.ca/ 28 Aug
Tjaden T "The digital law library: is it time to byte?" 1999 (4) *LawLink*
[Found on internet] http://www.law-lib.utoronto.ca/lawlink/v4n7.htm [Date of
use 28 Aug 2002]

Underwood http://www.lawlibrary.co.za 4 Mar
Underwood PG "Avoiding the breakers: making the best use of the Web to
ensure you have easy access to legal material" in Papers of the
International Institute for Research Law Librarian Conference 20-21
November 2001 Johannesburg) [Found on internet]

http://www.lawlibrary.co.za/notice/conferences/iir_2001/iir_conf_2001_11_underwood.htm [Date of use 4 Mar 2002]

Paliwala 2001 *JILT* http://elj.warwick.ac.uk 9 Sep

Paliwala A "Learning in cyberspace" 2001 (3) *Journal of Information, Law and Technology* [Found on internet] http://elj.warwick.ac.uk/jilt/99-3/paliwala.html [Date of use 9 Sep 2002]

Paliwala *et al* 1997 *JILT* http://elj.warwick.ac.uk 21 Oct

Paliwala A, Cartwright A and Terrett A "User needs in electronic law reporting: a research study of the law reports" 1997 (2) *Journal of Information, Law and Technology* [Found on internet] http://elj.warwick.ac.uk/jilt/leginfo/97_2pal/ [Date of use 21 Oct 2001]

Pacifici 2002 http://www.llrx.com/ 20 Apr

Pacifici S 2002 *Getting it right: verifying sources on the net* [Found on internet] http://www.llrx.com/features/verifying.htm [Date of use 20 Apr 2002]

Pritchard 1998 http://www.prilaw.com/ 17 Sep

Pritchard LA 1998 *Intranet-powered law practice: what it will mean for lawyers and clients* [Found on internet] http://www.prilaw.com/intranet_powered_law_practice.htm [Date of use 17 Sep 2002]

Robinson 2000 http://www.rclaw.com/ 20 Nov

Robinson CF 2000 *The 21st Century law practice* [Found on internet] http://www.rclaw.com/finding.html [Date of use 20 Nov 2001]

Schweighofer 1999 *JILT* http://elj.warwick.ac.uk/ 19 Sep

Schweighofer E "The revolution in legal information retrieval or: the empire strikes back" 1999 (1) *Journal of Information, Law and Technology* [Found on internet] http://elj.warwick.ac.uk/jilt/99-1/schweigh.html [Date of use 19 Sep 2002]

Van de Vijver 2001 http://web.uct.ac.za/ 4 Aug

> Van de Vijver L 2001 *A guide to research and writing skills* [Found on internet] http://web.uct.ac.za/depts/pbl/imel/writingskills.doc [Date of use 4 Aug 2006]

Abbreviations and URLs

Alltheweb	http://www.alltheweb.com
AUSTLII	Australasian Legal Information Institute
	http://www.austlii.edu.au/
BAILII	British and Irish Legal Information Institute
	http://www.bailii.org/
Blinkpro	http://www.blinkpro.com
CanLII	Canadian Legal Information Institute
	http://www.canlii.org/
CC	Constitutional Court
	http://www.constitutionalcourt.org.za/
Copernic	http://www.copernic.com
Cornell LII	Cornell Legal Information Institute
	http://www.law.cornell.edu/
DOAJ	Directory of Open Access Journals
	http://www.doaj.org/ljbs
EISIL	Electronic Information System for International Law
	http://www.eisil.org/
Findlaw	http://www.findlaw.com/
Google	http://www.google.com/ or http://www.google.co.za
Grokker	http://www.grokker.com
Hortors	http://www.hortors.co.za/
Juta Law	http://www.jutalaw.co.za/
LRC	Legal Resources Centre
	http://www.lrc.co.za/Judgments/
LexisNexis Butterworths	http://www.lexisnexis.co.za/

MBendi   MBendi Information Services

                          http://www.mbendi.co.za/

Polity   http://www.polity.org.za/

SAFLII   Southern African Legal Information Institute

                          http://www.saflii.org/

SAFLII CC   Constitutional Court of South Africa Decisions

                          http://www.saflii.org/za/cases/ZACC/

SOSIG   Social Science Information Gateway – Law

                          http://www.sosig.ac.uk/law

WestLaw   http://web2.westlaw.com/

WorldLII   World Legal Information Institute

                          http://www.worldlii.org/