Chapter IV

The Use of Query Operators and Their Effect on the Results from Web Search Engines

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Abstract

Advice to improve searching performance typically includes recommendations to utilize query operators, such as Boolean or phrase searching. Many professionals assume that the use of these query operators techniques would improve the quality of results. In this chapter, we review the existing literature on this topic, and we test this assumption by examining the effects of query structure on the documents retrieved by Web search services. The results obtained using the queries with search operators from each search engine were compared to the results obtained by the original 100 queries with no operators from that search engine. Overall, increasing the complexity of the queries had only moderate effect
on the results, with an average 66% similarity between results from the simple and complex queries. Implications on the effectiveness of current searching techniques for future search engine design and for future research are discussed.

**Introduction**

Searchers rarely use advanced techniques, such as Boolean operators or phrase searching, (Borgman, 1996) when using information retrieval (IR) systems. This characteristic has been especially true for Web searchers, with the vast majority of Web and Internet queries containing no advanced searching operators. Several Web studies have noted this near absence of complex query operators (e.g., AND, OR, NOT, must appear operators, paraphrases, etc.) in Web queries (Hoelscher, 1998; Jansen, Spink & Saracevic, 2000; Spink, Jansen, Wolfram & Saracevic, 2002). The use of Boolean operators, typically about 8%, in these Web searching studies is lower than the rates reported in studies of searchers using traditional IR systems such as DIALOG or LEXIS/NEXIS, sometimes substantially. For example, research on the DIALOG system has reported Boolean usage of over 36%, which the researchers considered a low rate of usage (Siegfried, Bates & Wilde, 1993). These low rates of query operators usage occur even on academic Web sites, where one would assume their usage would be higher (Wang, Berry & Yang, 2003).

It has been assumed that correct use of advanced searching operators would increase the effectiveness of Web searches. These advanced searching techniques are well known, and one can find numerous articles and books on advanced searching strategies (Korfhage, 1997), tutorials on searching training (Sullivan, 2000a), and numerous educational courses on searching strategies. Based on the Web searching studies, it appears that the majority of Web searchers continue to use very simple queries, with little to no use of advanced searching operators. These searchers seem to be employing an ineffective and inefficient strategy for finding information.

Why are Web searchers not using more advanced queries? Some researchers have stated that Web searchers are just lazy (Zapur & Zhang, 2000) or that there is a design flaw with Web search engines (Clark, 2001). Neither of these assertions seems likely. Studies and data suggest that Web users may be finding the information they want using these simple queries. A survey of users on a
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