

# Why Is the Engineer So Different from the Scientist?

By Eugene Garfield

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In 1963, I was recruited by Saul Gorn and Morris Rubinoff to teach a course in information retrieval at the University of Pennsylvania Moore School of Electrical Engineering. I found it useful to characterize information retrieval (IR) by a simple dichotomy: information recovery and information discovery. The inspiration for the term recovery comes from the French term *retrouver* -- to find again.

I had, at that time, already been publishing *Current Contents* for more than five years. The bulk of our readers were research scientists for whom the art of browsing is as natural as life itself. In those days, *Current Contents* was described as a "current awareness service" or "bibliographic alerting tool." Before *Current Contents* most scientists went to the library to scan the journals.

Engineers, on the other hand, were rarely seen in the library. They obtained their highly focused information by reading technical reports and recent conference literature. When I showed *Current Contents* to engineers, they would say, "That's an interesting information retrieval tool." Since by then *Current Contents* had title word and author indexes, they assumed that the typical user would use these indexes to retrieve the titles in the contents page section. In contrast, scientists would scan the entire issue from cover to cover to discover new information. They would use the indexes primarily to retrieve papers they

had already seen, or to check on the work of a particular author.

Since I was teaching graduate students the theory and practice of IR, and the role of citation indexing, I felt it important to provide the engineering library with the printed volumes of the *Science Citation Index*. The librarians were grateful to have them, but only a few engineering faculty members used them. Most were engaged in government-funded contracts, with little incentive to explore the world of the scientific and technical "literature." In contrast, most natural scientists regarded the literature as sacred.

Saul Herner and I had similar experiences with engineers in the '50s,<sup>1</sup> so I am not surprised to find that today's generation is equally uninterested in exploring the past. As another form of engineer (applied scientist), computer scientists exhibit similar behavior. To them the "literature" is rarely more than a few years old. They are constantly reinventing the past without bothering to rediscover it. And since the early days of online systems, I've increasingly heard the same complaint about the younger generation from senior scientists in all fields.

Engineers in industry, however, are prevented from being completely ignorant of the literature because large firms employ librarians and technical information specialists to help prevent costly unwitting duplication of

"inventions" reported previously in patents, journals, or even books. Since they are generally ignorant of the past literature, these new-generation engineers and computer scientists naturally rename everything they rediscover. As one who was trained in linguistics, I'm mindful that language is in a constant state of change, and synonymy develops as natural language changes. But if we are going to change the name of every phenomenon simply out of ignorance, then editors of computer journals would be well advised to require authors to trace the etymology of "new" terminology. Recently, the *Journal of the American Society for Information Science*, with which I have been associated for nearly 50 years, rediscovered the topic of "information discovery."<sup>2</sup> Similarly Communications of the ACM (CACM) rediscovered "knowledge discovery," or to be more precise, "knowledge discovery databases."<sup>3</sup> The term "information discovery" has been used since the '60s. The term "database" was used in 1962, according to the *Oxford English Dictionary* (OED).

Future "spell-checkers" (a term not yet in the OED) should automatically

display the year of the first use of any word or term that is claimed to be new. If a term such as "information discovery" is already in the spell-checker dictionary, then it is by definition not new. Hit the "etymology" button, and you should be able to display the term's provenance. If the OED, Webster's, or other dictionaries do not have it, then a quick search of the Web of Science should help identify the first time the term was used in a title or an abstract.

Back in 1958, I proposed a "Unified Index to Science"<sup>4</sup> that would encompass the total coverage of the world's leading abstracting and indexing services. We are quickly reaching its equivalent. *Dialog* and other online vendors provide a virtual unified index to science. In the near future, full-text searching of journal article databases will make the job of the etymologist easier and even more exciting. Whether this has any effect on the behavior of engineers or scientists remains to be seen.

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## References

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