

FOREWORD

Essays of an Information Scientist is a wonderful chronicle of the contributions to science of Gene Garfield and the Institute for Scientific Information. His writings and bibliographic innovations clearly indicate that one individual can make a difference in the lives of many. The 14th volume is of interest for many reasons. It demonstrates that there is no limit to Gene's interests and that his horizons are continuously expanding. The essays cover some of his favorite topics and many new ones. Recently he has increasingly invited guest authors to provide the scientific community with diverse views on controversial matters. For example, in this volume such essays deal with the impact of citation indexing on biochemists and sociologists, inventors and inventiveness, the impact of drug bulletins, opening the doors of the Barnes museum, the science-religion connection, dependent care, tinnitus, the role of newspapers in interpreting science, the controversy regarding animals and research, meta-analysis, controversy over building the A-bomb, and delightful personal items about a number of scientists.

For the first time over 80 of his commentaries in *The Scientist* are also included. They deal with a vast array of subjects that are sometimes provocative or humorous, but always interesting. The title of this volume therefore might have been appropriately named *Essays and Commentaries of an Information Scientist*.

I thought I would deviate from the approach of previous authors of forewords to these volumes. I want to reflect on the importance of the Institute for Scientific Information (ISI) to individual scientists. I imagine that almost every scientist has at some period utilized the products of ISI, but never assessed the magnitude of the importance of these bibliographic tools on their scientific and personal lives.

I cannot speak for all scientists, but I can recount my bibliographic experiences with ISI and Eugene Garfield.

As with most scientists, I am a borderline obsessive compulsive. Even as a student, I visited the library every day in order to survey the counter containing the new publications. I remember the day in 1958 when I first saw *Current Contents* (CC).¹ I thought, how ridiculous. Who would bother to read a journal that only contained tables of contents of other journals! Within six months I had become an addict of CC. In the beginning the weekly issues were very thin, but by 1967 I was spending hours perusing the pages of CC, because of the expanding journal coverage. On the train, at concerts, PTA meetings, faculty meetings, etc., CC was always there. The time necessary to review an issue completely had become increasingly burdensome, especially since I had taken on new responsibilities at the Jefferson Medical College in 1966. Fortunately, ASCA (Automatic Subject Citation Alert) was born in 1967.² So I subscribed to the ASCATOPIC dealing with my field of research, Teratology. The results were initially disappointing so I complained to Gene. He put me in touch with the ASCA manager who taught me how to best use the system.

Over a three year period I regularly upgraded the search profile for the *Teratology ASCATOPIC*. By now it is the second most popular topic in the newly named *Research Alert* series, second only to that for AIDS. Through the effort and cooperation of many individuals at ISI we created a tool that has saved me 5,000 hours of reading over the past 25 years and has permitted our laboratory to accumulate one of the largest private collections of reprints in developmental biology and teratology.

It is of interest to me that although new bibliographic tools have been created, the originals persist and get better and better. *Current Contents* now contains, in addition to the table of contents and author's addresses, *Press Digest*, *Citation Classics*, and *Current Book Contents*. Our laboratory is a reflection of the old and the new. One of our senior scientists is still faithfully attached to *Current Contents* in print. I use *Research Alert*, and the youngest scientist in our group uses *Current Contents on Diskette*.

Sometimes scientists are requested to make presentations on short notice and it is a luxury to have an array of reprints on subjects of your interest and expertise solely due to the continued use of *CC* and *Research Alert* over the years. Without this ready source of information, I would have been reluctant to respond to NIH requests to make presentations to congressional committees on Reducing the Cost of Healthcare, When Does Human Life Begin,³ The Value of Molecular Biological Research, and the Value of Animal Research. Presentations benefit from having an impenetrable foundation in scholarship, no matter how emotional the subject. An integral part of the presentation on the importance of scientific research must include Gene's citation chain analysis of particular scientific discoveries.⁴ I frequently mentioned in my presentations that the tissue culture technique used to isolate and grow the polio virus was discovered by Harrison, an embryologist at the turn of the century. It is important to emphasize to the public and to young scientists that we are very nearsighted when it comes to predicting where the next breakthrough will occur. Gene's analysis of how discoveries are made also teaches that the older literature can be very important. Many young scientists fail to examine literature that is more than five years old, because "these papers could not be of much value." But Gene has said on numerous occasions, "Sometimes in our rush to find new solutions, we forget that we have much to learn from the past."⁵

The resources of ISI have been invaluable to me as editor of the journal *Teratology*. The *Research Alert* provides me with an estimate of the number of times each article in *Teratology* is cited. The increasing number of citations is a reflection of the longevity of a journal and its impact. In 1988, Gene wrote a *Current Comments* on the citation analysis of 48 developmental biology journals.⁴ It pleased the editors of *Teratology* to have a citation analysis of developmental biology journals and to learn the relative impact of *Teratology* in this field.

All academicians sit on various committees as part of our academic responsibility. I was appointed to a committee dealing with faculty evaluation and I suggested that a citation profile might be a useful indicator of faculty research

performance. I was surprised by the resistance of some faculty members to the use of this rather objective tool. Yet as Gene has pointed out, it has often been used and misused to settle issues of tenure and promotion in confrontations between administration and faculty or faculty and chairman.

In this volume, Dr. Garfield reviews the citation record of the Nobel laureates for 1990.⁶ He takes great pride in the accomplishments of scientists, as we all do. In the past Gene and I have differed on the importance of scientific prizes. Following one such discussion he asked me to write a commentary for *The Scientist*.⁷ The premise of my comment was that scientists were dependent on each other's work, and, therefore, prize winners should acknowledge this dependency by citing authors whose work was instrumental in fostering their own research. I was concerned that the public's image of the importance of awards distorted the true nature of scientific discovery which involves dependence on the work of others. Indeed, I suggested that many deserving scientists have not received public recognition. Gene reiterated this concept more eloquently in his recent essay:

Since the world of science has produced thousands of Nobel-class discoveries in the last 50 years, the odds of anticipating those the committees will deem most deserving are low. And it is this point I wish to stress in closing out this year's overview. We continue to identify hundreds of highly cited authors worldwide, many of Nobel class, as a reminder that the world produces an extraordinary array of original and important discoveries of benefit to mankind. Despite a proliferation of awards, local and international, an amazing number of important discoveries are not publicly recognized.

After reading his most recent essay on the Nobel prize, noting that the amount of the prize has reached \$1,000,000 and that there are numerous highly cited and qualified scientists and that there are many more scientists in 1992 than there were when the Prize was created, I would hope that one of Gene's future essays should discuss whether the number of awards in each category should be increased. What is wrong with having 10 awardees in each category? Perhaps on the 100th anniversary of these awards, the detailed provisions of Nobel's will could be modified to accommodate the exponential growth of science since he died.

Another one of Gene's essays targeted an area of great interest to me, namely, the "Teratology Literature and the Thalidomide Controversy."⁵ He pondered whether appropriate animal research would have predicted the teratogenic potential of thalidomide? He also correctly observed that the thalidomide tragedy was not the beginning of teratology as a discipline. As a footnote to this article I would have added that competent epidemiological surveillance would have recognized the thalidomide tragedy much earlier and would have prevented the malformed development of thousands of children.⁹⁻¹²

These are my scientific interactions with Gene, but there are others somewhat more personal. I was appointed to an advisory board of CC in the early 1960s and our first meeting was held at the FASEB meeting in Atlantic City (B.G., before gambling). You could stay at a motel for \$3.00 a night and bring your whole

laboratory to the meetings for a week for \$500.00. While the board meeting was not memorable, I learned something about the workings of ISI and the unbridled energy and enthusiasm that characterized Dr. Garfield. At that meeting I asked whether there could be an automatic method for printing reprint requests. Gene said the computer technology was not yet available on ISI's system. But today *CC on Diskette* provides the subscriber that option.

Over the years I would occasionally receive essays or commentaries to review, and we would occasionally see each other socially. A turning point in our relationship occurred around what I would call personal events. On July 26, 1976, Gene wrote a beautiful essay about his mother, who had recently died.¹³ It gave me a new, refreshing perspective and insight into this creative and sensitive man. One sentence in this essay revealed a whole other self of Gene. He said, "I find it sad and probably characteristic of the lack of recognition we give our women." This sentence is a reflection of his sense of fair play and his belief in providing equal opportunity for women, minorities, artists, and the handicapped. The philosophy was an integral part of his employment practices at ISI and his racial and religious blindness in his professional associations.

His sensitivity was highlighted by several other events. He was tormented by the fact that a day care center he created was going to be dismantled. This was a service for working parents and he did everything in his power to preserve the facility. When a new facility eventually opened, he arranged for the original artwork by Emeteria Rios Martinez to be installed and the puma sculpture by Eric Berg to be moved to the new site.

He was a quiet observant at an occasion at Jefferson which reviewed my own contribution to the medical school and to the literature. He was most impressed by an article that was written by my wife and myself in 1978 and wrote an essay about the article "Medicine: An Excuse from Living."^{14,15} Each of us comes to recognize how our personal lives are much more important than our professional lives. It takes some of us longer to find this out, and unfortunately a few of us go to our graves without this revelation. I do not know when Gene first learned this lesson. But I can see that revelation in his eyes when he marvels at his youngest son's accomplishments. Alexander, like his older brothers Stefan and Joshua, is one of the many lights in Gene's personal life, including especially his wife Catheryne, but also his entire extended family.

Lastly I remember the pride that the ISI staff and his family exhibited when he received an honorary degree at Jefferson. The citation read:

Within the last fifty years, advances in science and technology have changed our lives as few could have predicted. Access to the burgeoning information available in every discipline is critical for those involved in research and its applications. Doctor Eugene Garfield, a pioneer in the science of accessing information, the creator of *Current Contents*, *Science Citation Index*, *Research Alert*, and *The Scientist*, has thus been a force in all phases of modern scientific pursuit. His numerous essays which begin each issue of *Current Contents* reflect his great breadth of knowledge in medicine and science as well as his

compassion and sensitivity.

As founder of the Institute for Scientific Information, which provides information-access products and services weekly to half a million persons worldwide, Doctor Garfield's achievements have been founded on his vision of the purpose of scientific inquiry. As he has stated, 'The spread of modern methods of retrieving information...makes it possible for the scientist to become society's eyes and ears, its overt intelligence service.'

Mister President, it is my pleasure to present Eugene Garfield for the degree of Doctor of Letters in recognition for his vision, commitment, and service in developing the science of retrieving information and his role in making information more accessible to us all.

I have probably been more fortunate than most of the scientists in the world who have benefitted from the services of ISI, because I have had personal interactions with him. I think of him as the "Molecular Biologist" of bibliographic science. Maybe that is why he was named Gene. We all look forward to many more editions of *Essays*, the expansion and increasing impact of *The Scientist*, and continued innovative analysis of scientific publications.

*Robert L. Brent, M.D., Ph.D., D.Sc. (Hon.)
Distinguished Professor
Louis and Bess Stein Professor of Pediatrics
Chairman of Department of Pediatrics
Thomas Jefferson University and
Director, Developmental Biology
Alfred I. duPont Institute*

REFERENCES

1. Garfield E. *Current Contents* — ninth anniversary. *Essays of an information scientist*. Philadelphia: ISI Press, 1977. Vol. 1, p. 12-13.
2. Garfield E & Sher I H. ASCA (*Automatic Subject Citation Alert*). A new personalized current awareness service for scientists. *Am. Behav. Sci.* 10:29-32, 1967.
3. Brent R L. When does human life begin? *Teratology*. 25:127-128, 1982. [Editor's note: see Senate Bill S-158.]
4. Garfield E. Journal citation studies. 48. Developmental biology journals: citation analysis demonstrates the multidisciplinary nature of modern embryology. *Essays of an information scientist: science literacy, policy, evaluation, and other essays*. Philadelphia: ISI Press, 1990. Vol. 11, p. 75-84.
5. ———. Teratology literature and the thalidomide controversy. *Ibid.*, 1988. Vol. 9, p. 404-412.
6. ———. The 1990 Nobel Prize winners: a citationist retrospective. *Current Contents* (11):3-9, 18 March 1991.
7. Brent R L. Awards and recognition in science: a distortion of reality. *The Scientist* 6(11): 12, 3 February 1992.
8. ———. Protecting the public from teratogenic and mutagenic hazards. *J. Clin. Pharmacol.* 12:61-70, 1972.
9. Brent R L & Holmes L B. Clinical and basic science lessons from the thalidomide tragedy: what have we learned about the causes of limb defects? *Teratology* 38:241- 251, 1988.

10. Lenz W. A personal perspective on the thalidomide tragedy. *Teratology* 46(5):417, 1992.
11. Brent R L. The contributions of Widukind Lenz to teratology and science: comments on "Thalidomide retrospective: what did the clinical teratologist learn?" *Teratology* 46(5): 415, 1992.
12. Lipson A H. Thalidomide retrospective: what did the clinical teratologist learn? *Teratology* 46(5):411, 1992.
13. Garfield E. To remember my mother. *Essays of an information scientist*. Philadelphia: ISI Press, 1977. Vol. 2, p. 535-536.
14. Brent R L & Brent L H. Medicine: an excuse from living. *Resident & Staff Physician* 24:61-65, 1978.
15. Garfield E. Science and emotion are compatible: a tribute to Robert L. and Lillian H. Brent. *Essays of an information scientist: journalology, KeyWords Plus, and other essays*. Philadelphia: ISI Press, 1991. Vol. 13, p. 75-82.