

PREFACE

This volume, containing the 51 "Current Comments" columns published last year in *Current Contents*[®], approximates my professional diary for the year 1986. I am tempted to supplement this by describing other, more personal, aspects of my life as an information scientist, communicator, and publisher, especially since the people who acquire one of these volumes are typically part of my "extended family." However, as ISI and Eugene Garfield are so inextricably bound up with one another, perhaps it is, after all, unnecessary. I'll simply let these essays serve as my professional and personal annual report.

CC columns cover those subjects, problems, and ideas that captured my intellectual interests. I aimed in most for an objective summary of what turned up in the course of satisfying my curiosity. (On matters of strong conviction, however, I notice that I was not shy about expressing an opinion.) Perhaps something of the sense of discovery I experienced in writing these pieces will be felt by the reader; that is my hope. Some of the essays also mirror, although not in strict chronological order, the activities of ISI, such as our launching of *THE SCIENTIST* last October. I had for many years dreamed of publishing a newspaper for science professionals. And now, for over nine months, we have been supplying scientists and science policymakers with a colorful fortnightly newspaper covering news, opinion, and features. In two essays in this volume I discuss the *THE SCIENTIST* and its genesis.

I took a "vacation" for a few weeks last year by reprinting a few articles of mine that had been published elsewhere. One of these I cowrote with Henry Small, ISI's director of research, on mapping the academic literature of the sciences and social sciences, an exercise that has come to be known as scientography. Since so many of my essays rely on citation data and the light those data shed on particular topics, and since multidimensional-scaling maps of specialty areas are a frequent feature of the columns, the theme of scientography seemed to tie together the essays in this volume.

Scientography is the cutting edge of citation analysis at ISI. It is remarkable to me how this latest development is linked to my earliest work in information science; then, as now, I attempted to use automatic systems of classification in place of *a priori* subject-heading categories or other more or less subjective, non-algorithmic schemes. But the maps are distinct from past work in offering a visual dimension to our data. Drawings, charts, graphs, and maps appear prominently in the scientific literature because they do what words or numbers fail to do (or do more concisely and clearly what words and numbers do). They give concrete proportion to ideas otherwise expressed verbally or numerically.

The article on mapping is the most up-to-date summary of our scientographic technique, developed mainly by Henry Small and his research group at ISI. However, this essay does not answer two questions that I am frequently asked: "Where is the axis of the map" and "What does it mean when map circles overlap?" Indeed, it's true

that most maps have an axis or orientation, but our maps merely show relative degrees of similarity or proximity. The closer two research fronts appear together, the closer they share subject matter and literature; usually, those closest to the center are the most highly co-cited, but sometimes more than one clump of fronts appear on a map and there are multiple “centers.” Fronts on the periphery are just that: weakly linked to the overall research front in relative terms.

The second question arises from the overlapping of circles representing research fronts. People ask: “Do the overlapping circles attempt to show—like Venn diagrams—the proportion of the literature that fronts share in common, or, if not that, is such overlapping a distortion arising from what is three-dimensional being shown in two dimensions, (wherein it is imagined that the research front is a sphere or planet that floats behind another)?” First, the maps are not an attempt to represent three-dimensions. Neither do overlapping fronts signify a proportional sharing of the literature. Overlapping is an artifact of our attempt to provide a second piece of information besides that on degrees of subject proximity—the size of the circle surrounding a research front is proportional to the size of the literature in the front. That two or more fronts lie close enough to one another and have in them literatures large enough so that their sizing circles overlap is merely accidental. It is only the distance between the points in the center of each front that denote the relatedness of one field to another.

No doubt we will be refining multidimensional-scaling maps. Perhaps, even, we will move into creating three-dimensional contour maps of the scientific terrain or chronologically sequential maps of year-by-year progress in science as seen on the level of research fronts. Advances in computer graphics make this prospect more likely all the time. In fact, a visitor to ISI can observe a dazzling display of color research fronts, from lowest or most specialized to the highest or most aggregated levels. But, of course, mapping the literature of science is still in its infancy and should be considered but the first steps *Towards Scientography*.