Why Technical Books Cost What They Do

Costs rise. Markets decrease as specialization increases and more people use copying devices. The government competes. Sometimes the publishers feel they are caught in a supply-demand dilemma.

by Thomas J. Dembofsky

Broad, diverse and worrisome problems are affecting the economics of scientific and technical book publishing: such things as the cost of book manufacturing, effects of technical innovations such as photocopying machinery and computerized books, increased involvement of government agencies in publishing and curriculum revision, and the concept of "fair use" of copyrighted material. The publisher finds himself in a dilemma, caught between the consumer who asks why some books cost so much and a decreasing market for those same books that pushes their cost even higher. The problem is a big one in which everyone—we who are publishers and you who are readers and writers—has a stake.

Changing prices, changing costs

The prices of technical and scientific books have been increasing steadily over the years. As an example, a college physics book that is now in its seventh edition sold for $3.75 in 1932, $5 in 1948, and now sells for $9.95. Of course the purchaser is receiving a *lot more* textbook for his money now than he did in the past as a comparison of any two of the editions would show, but the student is paying more for the book.

Although the investment in books is a very small part of the total cost of an education today and is probably one of the best buys around, publishers are still confronted with the question, "Why this increase in book prices?"

A major contributor to the increase in book prices is the basic cost of manufacturing (composition, platemaking, printing, and binding). Publishers don't do their own printing; they "job" it out to printers who are specialists. Most printing shops offer a complete service; that is, starting with the edited manuscript they can set the type, photograph the art work, make the plates, and print and bind the books. Book manufacturing has been modernized and made more efficient in recent years, and, all in all, the final product we get has improved; but like everything else, the cost of manufacturing a book has gone up and gone up considerably. We estimate that the cost of making a book has risen approximately 85% between 1950 and 1966.

The history of printing has seen a continual replacement of old machinery by new, slow machinery by fast, and fast machinery by faster, but most of this innovation has taken place in the area of printing and binding of books. Unfortunately, less has been done in the crucial area of composition (typesetting), which is the most costly aspect of manufacturing. The best way to set type for scientific or technical books (books with high mathematical and symbolic content) is to have a man sit down at a monotype machine and push keys, causing individual characters to be cast to make up a line of type. Corrections and mathematical sentences are set by hand. This is the way we set books in 1930, and this is the way we set most scientific and technical books now. It is costly and time-consuming; the industrial revolution has left book composition behind.

Specialization and "twigging"

When a publisher decides to publish a particular manuscript (after carefully evaluating its merits), the first thing he asks himself is "What

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is the market for the finished product?" How much he will "invest" in the project depends a great deal on how he answers this question. Obviously, the larger the market, the greater can be his investment, so that the rising cost of manufacturing has a much larger adverse effect on the advanced, specialized books than on the wide-selling undergraduate textbooks. Most undergraduate textbooks command a large market and warrant a large investment in artwork, editing, design, use of color, etc., while with higher-level, small-market books, the publisher must be more careful with his investment and look for ways to be as economical as possible and still publish a book of which he and the author can be proud.

As interest and knowledge in science and technology continue to expand, the number of specialized texts continues to grow. This so-called "twigging phenomenon" also contributes to the rising manufacturing cost and, thus, prices of books. Each specialized text holds no larger a market now than did a similar text, say, 20 years ago, but today's specialized textbook costs much more to publish. The net effect is, of course, higher prices, and as much as we are concerned about higher prices today, we are even more concerned about the prospect of still higher prices for specialized books in the not too distant future. Solutions to the problem are not readily available.

Of course one might ask why the publisher continues to publish such "loss" or, at best, "breakeven" books when he must charge the customer so much more, when he makes so much less. Very simply, we feel that textbook publishing is more than a business and is, in fact, in the nature of a communications service. As do other corporations, a publisher tries to show a profit on each book he publishes; however, the nature of our product is such that we can and should perform a service for the educational community, the consumer who makes it possible for us to stay in business.

Why we can't print abroad

We are frequently asked why we don't go outside the country to take advantage of lower labor costs if, as we say, manufacturing costs in the United States are so high. The main reason is the so-called "manufacturing clause" in our copyright law dating back to 1891 (please note the date). This clause specifically restricts American publishers from taking *full* advantage of lower production costs in foreign countries by withholding the US copyright of any book written by an American author but manufactured outside the country. Interestingly enough, in 1961 the Register of Copyrights recommended the repeal of the "manufacturing clause"; his proposal was enthusiastically backed by authors and publishers. However, the people opposed to this recommendation, mainly leaders of the printing industry and labor unions, retaliated by demanding the explicit cancellation of a "loophole" practice under which American publishers were reducing composition costs of very complex technical matter by as much as 20–30%. Under this practice the composition (typesetting) for such books is done abroad, proofs are sent to the US, and the true manufacturing process—platemaking, printing, and binding, the most profitable operations—is completed here. If the printers and unions have their way in this matter and the loophole is plugged for good, no part of the production process can be done abroad in the future without the loss of copyright protection for American authors.

Smaller markets, higher costs

This is our dilemma: The knowledge explosion in science and technology has given us smaller markets for a larger number of high-level text and reference books rather than larger markets for a smaller number of text and reference books, thereby increasing the difficulty of servicing all areas of the market. At the same time, the book manufacturing cost structure has *not* been directed towards reduction of costly operations of book production and so has contributed to the narrowing profit margin involved in publishing high-level books for specialized markets.

Further complicating this dilemma are other problems that will eventually adversely affect the economics of book publishing: the increased use of photocopying equipment to duplicate individual pages or whole sections of books, either with or without permission, and with or without payment; the automated library system in which documents (including book pages) are recorded and displayed, when needed, by microimage or sophisticated electronic-optical devices; and the inevitability of mechanical data systems to be used for communication of technical information in the future. Clearly the text and reference book is the base upon which these systems thrive (the first two in moral violation of copyright), yet none is readily detectable by a publisher. The net effect of this is to make already thin markets even thinner. (Certainly no publisher would want to bring suit against a university for setting up a computerized callup system for information extracted from textbooks or for photocopying several pages of a high-level text for a group of students.) The result of such practices is a decrease in the market with no decrease in the cost of publishing the text for that market. The price of the text must climb even higher or, alternatively, the publisher or the author may just decide the race is not worth the candle.

There is a solution to this serious problem: a system whereby the copyright holder would be reasonably protected from infringement of copyright and unfair competition and would be paid for nonpublishing use of published material. Exactly how such a system would be set up or administrated is not yet clear, but a lot of thought is being given to the problem, especially now that hearings are underway in Washington on Congressional bills for the proposed revision of the United States copyright law—the first revision in over fifty years!

Copyright and fair use

Another alarming and recent development that could adversely affect the economics of book publishing is the attempt to extend the concept of "fair use" of copyrighted material. Let me explain: Over the years, it has generally been accepted that certain kinds of reproductions of copyrighted materials are considered "fair" and are not infringements of copyright

even without permission of, or payment to, the copyright holder. Publishers recognize this informal practice, and the exact definition of what is or is not "fair use" has been, when challenged, determined by the courts. The new copyright bill, recently submitted to Congress by the Register of Copyrights, recognizes the concept of fair use, but because of the impossibility of defining all conditions that might possibly constitute fair use, the Register has wisely not attempted to do so. There are, however, arguments for the inclusion of a clause in the new law to provide specific exemption that would permit very liberal copying —without payment—of copyrighted material for "educational" use. Such an eventuality is a real threat to publishers and authors alike, and the results are easy to foretell: The market for almost every level of text and reference book will shrink, and especially vulnerable will be those already thin markets for high-level text and reference books that already have been hurt by rising manufacturing costs. Such developments can only serve to force important books off the market.

The government competes

Now, add to these developments the increasing role of the federal government as a producer and sponsor of scientific and technical information (for instance, the $380-million budget estimate for the 1966 COSATI operation as outlined by W. T. Knox in the January issue of PHYSICS TODAY). Add also the attendant question of the copyrightability of literary works produced wholly or in part by government funds, and another serious economic problem takes shape—a problem that has long-range importance to technical publishing in general, and commercial publishers in particular, and that unfortunately adds another dimension of confusion to the economics of book publishing.

We are all familiar with and have felt the growing influence of federal participation in the total national development of science and technology, for instance in the scientific and technical curriculum reform of PSSC (Physical Science Study Committee) and other textbook-producing programs. There still exists a good deal of uncertainty about what the exact relationship should be between commercial publishers and the government-financed curriculum groups, and it may be several years before a consistent pattern develops. Especially worrisome is the whole question of copyright protection for educational material produced and published by these groups. We applaud the work being done by curriculum groups because we recognize that they have been responsible for great progress in education and that the benefits reaped from their work are many and ubiquitous. We as publishers can and want to participate in curriculum reform and to contribute our knowledge of course content, teaching methods, books production, and marketing techniques. But we believe that the material produced by curriculum groups should be published commercially and should definitely be protected by unrestricted copyright like any other book or set of books!

This position is strongly opposed by those (including some publishers) who hold that anything and everything produced in whatever form or manner at government expense should be public property. However, with no copyright protection, how many publishers would be willing to take the gamble and make the considerable investment required to produce attractively and sell aggressively books that are in the public domain? The fine work of the curriculum study groups would suffer for lack of dedicated implementation or from the high prices necessary to make the investment economically feasible. There is a lot at stake here for both the publishers and the authors who contribute their time and talent.

Everyone has a stake

So the economics of book publishing is affected in many ways by many things. In 1966 and the years ahead we will see new advances and improvements made in the manufacturing of books, but I doubt if costs will stabilize. We hope something may be done about the narrow point of view represented by the "manufacturing clause" in the copyright law, something to help publishers and authors resolve their fears concerning the continued publication of specialized books. Perhaps somehow the knowledge explosion will slow down a little and give us all a chance to catch up. I and many others would feel a lot better about the future economic health of book publishing if in 1966—"the year of the copyright revision"—all concerned would work toward a resolution of the growing photocopying and computerized-books problem and the "fair use" question and toward a better working relationship between government-sponsored curriculum groups and commercial publishers, for the overall good of education and the overall efficient and economical dissemination of scientific and technical information. All of us are collectively "a part of the main," and in a real sense, what diminishes one of us diminishes us all: Every one of us has a stake in the general welfare of the book.

Eppur si muove

SONNE STEH STILL: 400 JAHRE GALILEO GALILEI. Ernst Brüche, ed. 147 pp. Physik Verlag, Mosbach, Germany, 1964. DM 16.80.

by R. B. Lindsay

1964 marked the 400th anniversary of Galileo's birth, and there were numerous celebrations of the event throughout the world. Many written commentaries on Galileo's contributions to science have appeared in this connection. He shared the public limelight with Shakespeare, whose quadricentennial came the same year. The present volume is a collection of essays by German scientists and scholars intended not as a profound study of Galileo's scientific work but rather as an attempt to assess his overall significance for our times. The various articles contain some interesting sidelights and express some suggestive personal opinions, but on the whole they inevitably traverse ground that has already been covered thoroughly many times before by both historians of science and popular writers. In fact two of the essays merely reproduce earlier

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