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Affordable Textbooks Campaign

Can Online Texts Help?

Bernard Russo

High textbook prices have led many to wonder if there are alternatives. Indeed there are, in the form of online textbooks and in the form of a grassroots effort to reduce the price of textbooks. This article looks at one online math textbook that is now available and describes the campaign.

A First Course in Linear Algebra, by Robert Beezer

This is a free online book (<http://linear.ups.edu>) designed for a rigorous introductory course in linear algebra at the sophomore or junior level. The author goes beyond the usual government copyright by licensing the book to anyone under the terms of the GNU Free Documentation License (details of which are in an appendix). Most of the information given in the first part of this article was obtained from the above URL, the author's website, and the preface to the book.

According to the author, the book is not only free, it has **freedom**, that is, "it will never go 'out of print' nor will there ever be trivial updates designed only to frustrate the used book market." Implicit in the licensing agreement is the hope that users will contribute back any modifications they make for incorporation into the book. Suggestions for how to do this are given at the end of the preface.

The book came into being as a result of the author's frustration with new editions of textbooks coming out with little or no substantial content changes and with textbooks going out of print. Central to the notes on which the book is based was a collection of stock examples that would be used repeatedly to illustrate new concepts. These examples are called Archetypes and are included in an appendix to the book. This book is an

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attempt to carry over the model of creative endeavor implied by the open-source software movement to textbook publishing.

A novelty of this book is that Chapters, Theorems, etc. are not numbered but instead referenced by acronyms. This means that as revisions are made (the current online version is the 29th in two and a half years), Theorem XYZ will always be Theorem XYZ, for example. This may seem confusing at first but is compensated for by other features, such as lists of theorems, examples, definitions, and notation in the front of the book, and a very extensive index. In the electronic version, all of the cross-references are hyperlinks, allowing you to click to a definition or example, and then use the back button to return. Depending on which browser you are using, you will need to download fonts or plugins, which however are free. This is explained at the URL noted above. For copies of the book that you have downloaded free and printed, you must rely on page numbers, which will change, depending on the version, margins, size of paper, etc. But you don't have to download it; physical copies of the book are available at <http://LuLu.com>, a print-on-demand service. A paperback copy (684 pages) costs US\$24.50. There is also a two-volume set with coil bindings, which should be easier for students to work from, for just a few dollars more.

The book is globally divided into three parts: **Core, Topics, Applications**. The **Core** contains the basic ideas of a first exposure to linear algebra, with chapter titles of SLE (Systems of Linear Equations), V (Vectors), M (Matrices), VS (Vector Spaces), D (Determinants), E (Eigenvalues), LT (Linear Transformations), R (Representations). **Topics** is meant to contain those subjects that are important in linear algebra and that would make profitable detours from the Core for those interested in pursuing them. **Applications** should illustrate the power

and widespread applicability of linear algebra to as many fields as possible. (As of the writing of this article, with the exception of three sections in the Topics part, the latter two parts have not yet been written.) The Archetypes (mentioned above) cover many of the computational aspects of systems of linear equations, matrices, and linear transformations. Each section ends with some exercises (288 total), including detailed solutions to two thirds of them.

The author (as well as his university) is to be commended for devoting the time and energy to creating this book and more importantly of unselfishly making it freely available to the mathematical community. This gesture represents a significant step in the campaign currently under way to alleviate the problem of the runaway cost of textbooks. This campaign is described in the rest of this article.

The Affordable Textbooks Campaign

Some of the issues raised by the author and mentioned above are key elements of an organized campaign started by students, faculty, and public interest research groups in the fall of 2003 to stem the tide of the rising cost of textbooks. An excellent summary of that effort up to the middle of 2006 is Allyn Jackson's article in the August 2006 *Notices*. In it she summarizes reports by the California Public Interest Research Group (CALPIRG) in 2004 (updated in 2005) and by the federal Government Accountability Office (GAO) in 2005, and describes the efforts by certain mathematics departments to alleviate the situation.

The CALPIRG report asserted that the average expense for University of California students for textbooks (and supplies) was in the neighborhood of US\$900 per year, up about 40% since 1996, compared to a rise of 17% for the Consumer Price Index in that period. The GAO report, as well as two other reports, substantiated this number in other states. On the other hand, an estimate by the Association of American Publishers (AAP), puts the figure at \$576, thus putting the two groups most closely involved with textbooks at loggerheads in the debate.

The primary points of contention in this debate concern (1) whether ancillary materials which came bundled with textbooks are really necessary, (2) why the same book can sell for less in some foreign markets, (3) the short revision cycle, and (4) full disclosure by publishers.

Although this sometimes heated debate cooled off a bit in the first half of 2006, it picked up some momentum in the rest of that year. More than a dozen state PIRGs together put out two reports: *Textbooks for the 21st Century—A Guide to Free and Low Cost Textbooks* (August) and *Required Reading—A Look at the Worst Publishing Tactics at Work* (October). A third report was released in Feb-

ruary 2007: *Exposing the Textbook Industry—How Publishers' Pricing Tactics Drive Up the Cost of College Textbooks*.

The first report found that major publishers are failing to offer viable low-cost alternatives to expensive college textbooks and, as a result, other free and low-cost options are slowly emerging in the market. The report features some examples of free and very low-cost textbooks (including the one described here) and offers an overview of what's been happening recently to lower textbook costs. The second report presents new case studies of how the college textbook publishing industry deliberately undermines the used book market and inflates prices. The latest report, based on a survey of 287 professors from a variety of disciplines at Massachusetts colleges, addressed points (1), (3), and (4) above.

The full text of each of these reports, as well as links to newspaper articles and other related documents can be found at <http://www.maketextbooksaffordable.com>. As was the case with the earlier PIRG reports, the AAP responded in kind and the debate is ongoing (see <http://www.textbookfacts.org>). An interested party that is following the issue is the National Association of College Stores (NACS), which put out a white paper in 2006 called "The Great Textbook Debate" (<http://www.nacs.org/whitepaper>).

In addition, 2006 saw a lot of textbook-related legislation and university policy. In June Connecticut passed a bill requiring publishers to disclose to professors what textbooks will cost so that professors can use price as one criterion in deciding whether to adopt the textbook for use. Several other states have passed or are considering bills that promote lower textbook costs by setting purchasing recommendations and addressing bundled books. Similarly, the Academic Senate of California State University recently passed a resolution advising faculty on how to lower textbook costs for their students. The Congressional Advisory Committee on Student Financial Assistance recently launched a one-year investigation on the rising costs of textbooks. It will make its recommendations on how to make textbooks more affordable during the summer of 2007. Also at the federal level, Senators Norm Coleman (R-MN) and Richard Durbin (D-IL), in March 2007, introduced the College Textbook Affordability Act of 2007, which was referred to the Committee on Health, Education, Labor, and Pensions.

With textbooks and price disclosure drawing so many decision-makers' attention, and with so many new alternatives to traditional publishing beginning to emerge, this is a busy time for anyone interested in this issue. Indeed, a Google search for "cost of textbooks" leads one to numerous other reports and media articles. Among them, I

single out the following as particularly interesting or provocative.

- “Why Are Textbooks So Expensive?” (Henry L. Roediger III, Washington University, St. Louis, Association for Psychological Science *Observer*, January 2005).

A well argued defense of the thesis: The high price of textbooks is the direct result of the used book market.

- “The High Cost of Textbooks: A Convergence of Academic Libraries, Campus Bookstores, Publishers?” (John H. Pollitz and Anne Christie, Oregon State University, *Electronic Journal of Academic and Special Librarianship*, Summer 2006).

The university library can be part of the solution.

- “dotReader to Slash Cost of College Textbooks” (Press Release, May 30, 2006). (See also “Online college texts are free, but not free from ads”, *Christian Science Monitor*, October 12, 2006.)

The article discusses embedding of ads inside textbooks via dotReader, thereby reducing the cost by 60%.

- “High Cost of Textbooks Sparks Interest in Digital Alternatives” (Dan Gordon, Teaching Learning & Technology Center, University of California, 2005).

Is the traditional college textbook on its way to becoming obsolete?

- “Viewpoint: The Economic Case for Creative Commons Textbooks” (Fred M. Beshears, UC Berkeley, October 2005)

Inspired by MIT’s OpenCourseWare, Rice University’s Connexions, and the British Open University, an approach called OpenTextbook, still in the exploratory phase, is envisioned as a consortium of universities that would acquire and distribute high-quality Creative Commons content for use either as online courses, electronic textbooks, or customized printed textbooks.

Numbers at Work
A Cultural Perspective

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