June 2002

Back Talk -- Memory Lane: It's Budget Time!

Anthony (Tony) W. Ferguson

University of Hong Kong, ferguson@hkucc.hku.hk

Follow this and additional works at: <https://docs.lib.purdue.edu/atg>

Part of the [Library and Information Science Commons](#)

Recommended Citation

Ferguson, Anthony (Tony) W. (2002) "Back Talk -- Memory Lane: It's Budget Time!," *Against the Grain*: Vol. 14: Iss. 3, Article 11.
DOI: <https://doi.org/10.7771/2380-176X.3984>

This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries. Please contact epubs@purdue.edu for additional information.

The fluorescent dye allows the laser beam to travel deeper into the medium with less noise (stray light) and interference in the return signal because when the focused laser strikes a pit on one of the information layers, the fluorescent light that's reflected has a higher wavelength than the laser. In other optical media, more layers produce more stray light, making it difficult to distinguish the signal from the noise, particularly if the noise is the same wavelength as the signal. With fluorescent multilayer discs, the fluorescent light carries the information; and the read device filters out the stray light and only reads the signal. This configuration permits the use of more information layers because it's better able to distinguish the signal from the noise.

While the cost of a single FMD will probably be higher than that of other storage media, the cost per gigabyte should be considerably lower if the FMDs now in development can hold the projected 140GB of data. In contrast, the next-generation of DVDs are expected to contain 20GB.

InPhase has a prototype hologram disc the size of a CD that can hold up to 400GB of data and retrieve it at the rate of about 30MB per second. That's roughly equivalent to downloading a DVD movie in about thirty seconds. **IBM** is developing a system that stores 250GB in a hologram no larger than a square inch. Another approach proposes to use a photosensitive crystal the size and shape of a sugar cube to store 1 terabyte of data.

The **Photorefractive Information Storage Materials** consortium (**PRISM**) and the **Holographic Data Storage System** consortium (**HDSS**), under the aegis of the **Defense Advanced Research Projects Agency (DARPA)** have been experimenting with the development of new and improved holo-

graphic media, spatial light modulators, and detector arrays, as well as the opto-mechanical components needed for high performance system implementations.

Blue Light Specials

All of the technologies discussed so far use red lasers. Scientists have also been working to develop devices that use blue lasers that have shorter wavelengths and, consequently, greater storage capabilities. The blue lasers would burn smaller pits to cram more data onto the storage medium. That would be comparable to shrinking car sizes and parking them closer together to increase the capacity of a parking lot. However, blue-laser devices haven't made it out of the laboratory because they remain too unwieldy for commercial applications. The main problem is that the heat they generate makes blue lasers very difficult to function reliably at room temperature; but **Jan Oosterveld**, a member of **Philips Electronics NV's** group management committee says: "We are not so far away from producing blue-laser DVDs in mass quantities."

Sony, Matsushita Electric Industrial, Hitachi, Pioneer, Sharp, Samsung Electronics, LG Electronics, and Thomson Multimedia have recently agreed on uniform standards for next-generation blue-laser DVDs which may appear as early as next year. These new discs promise capacities of up to 27GB on one side of a single 12cm disc — enough to store more than two hours of digital high-definition motion video. That's nearly six times the 4.7GB capacity of current DVDs.

The key factors that will determine the success of a holographic data storage system are: useful capacity, transfer rate, and access time. A holographic data storage system also has to be cost-competitive at the same time it delivers improved performance over other conventional optical and magnetic drives.

Crystal Ball

Holographic data storage has a bright fu-

ture as smaller and more powerful lasers get developed. It can expect competition from other optical storage technologies, particularly DVD, which may employ some kind of volumetric storage scheme. This could entail the use of multilayer discs or even a holographic approach to increase data-storage capacity. Data transfer rates of multilayer technologies are much lower than those of holographic systems; so DVD may rely on blue-laser technology, holography, or a combination of both.

Holographic data storage will require a new and costly manufacturing infrastructure to meet market demands for competitively priced products in sufficient quantity and quality. Polymer-based systems may be the first on the market because they leverage the existing manufacturing infrastructure better than the crystal-based, all-solid-state devices. They also allow write speeds 100 to 1,000 times faster than those using crystals.

Holographic devices may eventually appear in all kinds of small portable appliances and electronic devices, such as mobile phones, handheld computers, video recorders, PCs, digital cameras, and high-definition TVs. They also offer great portability as they permit storing gigabytes of data on a disc the size and shape of a credit card.

References

- Buderi, Robert. Data holograms. *Upside*. 11:6 Jun 1999 p.146.
High density, high performance optical data storage via volume holography: viability at last? Wilson, W. L.; Curtis, K.; Harris, A., et al. *Optical and Quantum Electronics*. 32: 3, 2000 pp. 393-404.
Matlis, Jan. Fluorescent multilayer discs promise to provide 1406B of storage in the space of a CD. *Computerworld*. 35:15 pp. 56 ss.
Orlov, Sergei S. Volume holographic data storage. Association for Computing Machinery. *Communications of the ACM*. 43:11 (Nov, 2000), pp. 47-54.

Back Talk from page 86

was available, e.g., titles like *Science Direct*. We then put into place a fund increase control plan that restricted the overall increases allowed for books and serials in order to guarantee 15 to 20 percent increases for the divisional electronic pots annually. Our goal, fairly modest compared to what is happening now, was to nearly triple our electronic expenditures to a lofty eleven percent of all funds within five years. We fairly quickly achieved that goal and were closing on fifteen percent when I left **Columbia**. Because **Columbia's** budget is large, fifteen percent represented a significant pile of money.

So, here I am in Hong Kong. Still dealing with the exact same issues. But thankfully I am not the one doing the spreadsheets. Happy budgeting to you all!

ADVERTISERS' INDEX

49	ABC CLIO	83	THE CHARLESTON ADVISOR	87	KLUWER ACADEMIC
27	ACADEMIC PRESS	10	THE CHARLESTON REPORT	71	MAJORS
44, 45	ACS	55	CSA	41	McFARLAND
2	ALFRED JAEGER	13	DIVINE/FAXON	88	MIDWEST LIBRARY SERVICE
37	AM. INSTITUTE OF PHYSICS	31	EASTERN BOOK COMPANY	17	PROQUEST
21	AM. SOCIETY OF CIVIL ENGINEERS	29	EBSCO INFORMATION SERV.	53	RITTENHOUSE
69	ANNUAL REVIEWS	25	ELSEVIER SCIENCE	33	SERIAL SOLUTIONS
73	ASME INTERNATIONAL	39	ELSEVIER SCIENCE	51	M. E. SHARPE
5	ATG	47	EMERY PRATT	61	SIAM
18	AUX AMATEURS DE LIVRES	77	ERASMUS	9	SPRINGER-VERLAG
14	BASCH SUBSCRIPTIONS, INC.	19	IEEE	23	SWETS BLACKWELL
3	BLACKWELL'S BOOK SERVICES	67	IESNA	57	WILEY
7	BOOK HOUSE	15	INGENTA	35	YBP
79	BROCKHAUS/GERMAN BOOKS	11	INSTITUTE OF PHYSICS		

Ad Manager: Edna Laughrey Internet: elaughrey@aol.com
phone: 734-429-1029; fax: 734-429-1711

Back Talk — Memory Lane: It's Budget Time!

Column Editor: **Anthony (Tony) W. Ferguson** (Library Director, University of Hong Kong) <ferguson@hkucc.hku.hk>

This year, as I sat down to work with my new collection development, acquisitions, and serials librarians to talk about the book budget, I nostalgically thought back at the 15 years at **Columbia** when I would sit for hours at my computer working on spreadsheets (and not always backing them up on the computer and losing data at least once a year).

I had been involved in budgeting at **BYU** and **Texas A&M**, but my arrival at **Columbia** also coincided with (at least in my case) the personalization of the PC by doing **Excel** spreadsheets on my own. Earlier, budgets were the product of a secretary or other assistant who was good at the adding machine. He/she would run tape after tape (remember the paper tapes that came out of adding machines) each time something new was tried to spread too little money over too many needs. Since academic libraries can have hundreds of budgets, this is no mean task.

1986 was also firmly in the new age of participative management so while the making of spreadsheets might have been a solitary activity, getting selectors and departmental managers to buy into their outcomes was a group activity. **Columbia** was a paradise for those who like data on how much money is spent on what. For almost all departmental funds, we had separate serial, continuation, monograph, replacement, reserves, and librarian-assisted electronic searching funds. It was also a nightmare figuring out how much each fund should be increased or decreased.

These were great years at **Columbia**. In general, it was as if someone had decided in **Columbia's Garden of Eden** that library materials funds should be increased by 8 percent annually. Once this commandment was in place, it wasn't questioned. In the 15 years I was there, I had a couple of years above that percent, and a couple below it. When we went below, **Elaine Sloan**, the University Librarian squeezed the rest of the budget to soften the blow and to demonstrate to the faculty/administration that we believed in content.

During the process of dividing up the money we developed a few informal principles and practices that I think still have value:

1 We didn't use formulas. We had a taskforce that met for many months and came to the conclusion that even though formulas provided you with your own set of smoke and mirrors to disguise what you wanted to do, they were inflexible and to be avoided.

2 We allocated on the basis of need. A subcommittee of selectors would meet to review possible allocations based only upon price change data. Their recommendations were then sent to all the selectors who

had to recommend what they thought was appropriate from their front line viewpoint. Initially we used zero based budgeting but that took too much time. After that, we annually allowed selectors to ask for more money, less money or to move money from one of their funds to another. If they wanted to do one of these three actions they had to justify in writing their actions on the basis of changes in the universe of publication, or changes in the nature of their user community. Then the subcommittee would meet to review their requests. They were a tough group who were usually more hard-hearted than I. However, I found this system built trust. Even if a selector didn't get what they wanted, they felt that the system was about as fair as was humanly possible.

3 We made changes in serials funds on the basis of actual expenditures — not on the basis of what their budget was like the previous year. We would look at the three previous years spending history to detect if there were irregularities in the data, but if a fund was not spent, it would be reduced to fit the projected need. To prevent reckless spending we followed the next rule.

4 New serials equal to 3-5 percent of an allocation could be placed if the fund had not been overspent the previous year. This simple rule of thumb is from **Dean Larsen** at **BYU**, one of the great collection developers of all time.

5 In the mid 90's, in order to prevent serials creep, we instituted the rule that only a set percent of the total budget could be spent on serials. Since the budget was growing, and by then the dollar was stable, it worked great. Had the increases disappeared or a failing dollar reappeared, serials funds would have been in trouble and cuts would have followed. But in general, setting a percent of the total budget (not individual departmental budgets) helped us end the cyclical buy and cut syndrome.

6 We used the ARL charts that showed skyward serials inflation and downward monograph purchases to defend our budgets, but we recognized that there are many local issues that tend to place our own experience in between these two extremes. Like in the story of **Chicken Little**, the sky might be falling but nothing is as bad as the rhetoric. Your might use worst-case figures when applying for funds, but never when actually allocating them.

7 We tried to buy consortially at all times but we went with the best consortium. This meant that we were not always seen as loyal members of a group, but it also insured that we did not spend more than was necessary.

8 We always set aside flexibility money to meet unforeseen needs. Flexibility money could not, however, be used to pay for serials purchases whether digital or print.

During the 1990's the issue of how to fund the purchase of electronic forms of information emerged. Our policies evolved over time. Initially, we said that if it was a CD-ROM and was a one-time purchase, monograph funds should be used. If it involved a subscription, serials funds should be used. This was easy to say, but few new electronic titles were purchased. First of all, selectors already hard pressed to buy everything they felt was needed, wanted new money to buy these new forms of information. Second, many of the new titles, especially the expensive ones, were cross-disciplinary. To purchase these titles, coalitions of selectors had to develop. These coalitions were not emerging because selectors didn't feel they had the authority to add their faculty's money to pots they did not control. We were at a bit of a standstill. We knew that there were lots of new titles to be purchased, but we were not able to buy them. We had plenty of money but it wasn't in the right places.

At this point my public service and technical services colleagues (I won't mention their names intentionally) and I decided that we would have to artificially create some new money by scraping a few hundred thousand off the top of the new year's allocation. The selectors were not happy to have been robbed, but they were happy to see new money to buy new electronic forms of information. I also had to promise not to do it again.

We then went through a few years of what I call the "my money" versus "other people's money" syndrome. Selectors were happy to spend other people's money on multi-disciplinary titles or packages, but they were loathe to spend their own money. When the buying power of the scraped funds dwindled, what we needed was more money to be moved from their funds to the central electronic budget. But this was just like the old problem of moving money to pots that the donor/selectors did not control. At this point we divided up the central pot into a group of divisional pots and turned the control of these funds over to the selectors. With this power, some of these groups began to move former print money to their digital pots.

Even this, however, didn't enable us to move sufficient funds to digital uses fast enough to keep up with the increases in what

continued on page 85