Back Talk-Chains of Complexity

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Interesting survey over ACQNET and has done lots of other research on allocation formulas in libraries.

Be sure and look for the brochure and registration information for the 1999 Charlestown Conference which was mailed to you with this issue of ATG!

Correction

Ooops! Matt Nauman (Blackwell's) noticed that on page 10 in Rumors (April), we have a note about the Collection Manager launch in Australia. Unfortunately, the URL www.blackwells.com/cm/ is incorrect and just gets a "Not Found." Like I said, oops! Sorry! The correct URL is: http://cm.blackwell.com

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years or so. Moving from browsable to remote collections minimizes the serendipitous discoveries that result from looking at books to the right and left of the one you knew about. Changing from list price to national consortial price seems a bit like going full circle back to list price again. Consortial work saves money but it takes away from other things like talking more with our user communities.

Dorner's message for us is fairly simple: Nothing is as simple as it seems and it pays to look at the big picture as well as the one that is in your face at any given moment.
Why Things Go Wrong and What We Can do To Make Them Right (1989) tells an interesting story about what happens when experts fail to comprehend the complexity of a situation, when they look for non-existent simple relationships of cause and effect and ignore "chains of complexity," when they fail to "see that a process that develops exponentially will, once it has begun, race to its conclusion with incredible speed" (p. 33). The Chernobyl reactor, located in the Ukraine, was one of the most advanced in the former Soviet Union. It was designed to produce steam to generate electricity. A reactor is basically a huge core of graphite, in this case, four million pounds of graphite, with 1,600 channels or tubes cut through it. Into the tubes nuclear fuel rods can be inserted to generate heat. 211 control rods can be inserted to reduce the level of reactivity and to reduce the heat, and water can be pumped through the tubes or channels to both cool the graphite core and to be heated to produce the steam needed to generate the electricity. As long as these three variables—fuel rods, control rods, and water—are managed correctly, the level of heat in the reactor is kept within a range of safety. If they are not managed correctly, instead of a reactor to produce steam, you have a nuclear explosion that generates so much heat that it melts everything and that is what happened on April 26, 1986: The Chernobyl disaster.

On that day the experts operating the reactor needed to run some experiments to improve the reactor's safety system. To run the experiment they needed to bring the reactor down to 25% of its normal level of heat. At such a level, the reactor could not generate sufficient steam to generate electricity. To insure that during the experiments the automatic safety system would not kick in, it was turned off. In the midst of the safety system experiment, however, a request was made to continue generating electricity to meet an unexpected demand for power. The experiment was therefore delayed for many hours. Once they could resume the experiment, the experts manually manipulated the controls to bring the system down to the target of 25%. Instead, however, they overshoot the target and brought the reactor's heat level down to 1%. Like your car engine that is operating too slow, the reactor began to operate in an erratic or chugging manner. The experts knew that operating the reactor below 20% of capacity was extremely dangerous so they removed a huge number of control rods to bring the core up to a 25 percent heat level. Once they did this, a cascade of things took place that they could not control. The experts faced with much heat oversteered and made things even worse. Eventually the channels or tubes through which the water to cool could be pumped, and into which the control rods could be inserted, buckled under the pressure: No control rods could be inserted, the water could not be circulated, and the reactor was like a runaway truck going down a steep hill without brakes. The results were inevitable and tragic.

Now what does this story have to do with librarianship? I find that much of what is written about what we should do about how to handle many of the problems facing collection developers fails to appreciate the level of complexity that exists in our world of information. We are like the Chernobyl experts. We knew what to do with the information world when it was acting normal but it hasn't been normal for at least 15 years and we are playing with a variety of inputs which produce a cascade of time-delayed outcomes which play on each other. Our information machine, some days it seems like the reactor, or the runaway truck—bound for a disaster.

Let me review a few examples. By citing them I AM NOT inferring that these are the wrong things to do, just to illustrate the complexity of the information system in which we labor:

- We are dissatisfied with the pricing practices of commercial publishers, so we manipulate the inputs by encouraging authors to withhold copyright, we organize consortia to force the publishers to reduce their prices, and we jump from print to digital because the Web is "free."
- We are dissatisfied with spending so much in anticipation of use so we manipulate the inputs by substituting unmediated interlibrary borrowing and commercial document delivery for browseable collections.
- We are dissatisfied with being victims of electronic pricing schemes so we manipulate the inputs by creating local, state, regional, national and now international consortia and push publishers into coming up with ever larger aggregated pricing schemes.
- Some of our provosts and presidents are frustrated with the possibility eternal library addition programs manipulate the inputs by funding storage facilities and digitizing programs to avoid cement and brick solutions.

Each of these actions has their own set of consequences or problems that must be resolved. Getting authors to withhold copyright in order to free themselves and us from the control of predatory publishers will turn reserve libraries and distance education programs which "just want permission to make 25 copies or allow 25 simultaneous readers" into an Orwellian nightmare. Switching from low tech print to high tech digital includes a whole trail of very expensive details including hardware, software, and content migrations every five