



about the future of humanity and of the universe with vaulting imagination. Galaxies really are like grains of sand (to paraphrase Brian Aldiss) in Stapledon's novels. Stapledon wrote about what happens to a civilization over a billion years the way other authors write about a single character in an afternoon. L\_a\_s\_t\_a\_n\_d\_F\_i\_r\_s\_t\_M\_e\_n is his future history of mankind over the next two

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billion years. S\_t\_a\_r\_m\_a\_k\_e\_r is written on a scale that beggers even L\_a\_s\_t\_a\_n\_d\_F\_i\_r\_s\_t\_M\_e\_n. A traveler in both time and space surveys nothing less than all life in the universe over all of time. The civilizations of an entire galaxy can be reduced to a minor character. Yet Stapledon finds universal principles that apply as if he is talking about countries in Europe. S\_t\_a\_r\_m\_a\_k\_e\_r is both exhilarating and intelligent.

## 2. FUTUREWATCH:

Right here in the science fiction notice we can see in microcosm the sort of revolution that is taking hold of computing in general. We offer the MT VOID in two flavors. You can get it either on-line or you can get a paper copy. Now if the trend toward the paperless office were real, you would think people would flock to getting the on-line version, but that is really not the case. People seem to sense that the right version of the notice is on sheets of paper. And why? Because they know intuitively that the on-line version is one more step removed from what computing is r\_e\_a\_l\_l\_y all about. And what is that? I think we all know. Computing is about boxes of cards. And many leading computer scientists now say they knew it all along.

It is true that the television generation had its temporary flirtation with cathode-ray tube representations of card images. (and after all, what is a disk file but a television representation of a stack of cards?) But secretly in the back rooms of America's major universities and research companies, top computer scientists are returning to the safe, dependable, reassuring technology of punched cards and keypunches.

The keypunches of the future, of course, will not be the clunkers many of us are used to, but sleek, ecology-minded, steam-driven keypunches that do not rely on electrical power. Dr. Melodij

Ardenlesti of Bell Laboratories, Murray Hill, told our reporter that every developer at Murray Hill could be serviced by steam-driven keypunches powered by only five of the powerful new two-story boilers placed in strategic locations around the building. They can even be powered by burning printouts. The problems are not insurmountable, Ardenlesti told us. "Input media may be only the beginning. By the year 2035 entire computer centers may be running on steam power. Among the advantages, steam computing eliminates the need for expensive air conditioning. It is a well-understood technology. In the future, powering up your PC at home may be as simple as putting a tea kettle on the stove is today. But first we need to get the keypunches working." Major challenges? Most current steam keypunches cause the cards produced to "wilt" and one site reports problems with mildew.

If, indeed, there is a marriage of the new steam computing technology with a return to punched cards, there are many advantages that have been cited:

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- Card decks lead to better programming. Currently many programmers write long, inefficient programs. A major cause is that they just cannot get a very good feel for the size of their programs when they see only a small piece at a time on a CRT. Dealing with card decks helps keep a developer more "in touch" with the program. It also contributes to physical fitness.
- Card decks lend themselves very easily to multi-media applications, as notes and comments may be hand-written on computer cards.
- Card decks provide greater security and are much harder to pirate than are disk files. A piece of foreign code such as a worm or a virus is much harder to introduce since one must be physically present to stuff it in a deck. Using different colored cards, with the color of a deck chosen at random, further frustrates would-be hackers.
- The safety of CRTs has been called into question in the last few years, but card and paper technology have to date never been questioned.

But leading computer scientists, off the record, list another

virtue that is harder to quantify. There is a certain tactile pleasure in your hand a program, with its own characteristic weight and heft based on the size of the program. As one IBM computer scientist told us, "There was a need and this thing in my hand fulfills that need. It is not made up of electron positions that other equipment tells us about. It is here, self-contained in my hand. It is a sort of existential satisfaction that was present in earlier days of computing and we are looking forward to its return." Several cutting-edge technology companies are betting that feeling will become more common.

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Fear of serious injury alone cannot justify oppression of free speech and assembly. Men feared witches and burnt women. It is the function of speech to free men from the bondage of irrational fears.

-- Louis D. Brandeis

THE OXYGEN BARONS by Gregory Feeley  
Ace, 1990, ISBN 0-441-64571-2, \$3.95.  
A book review by Evelyn C. Leeper  
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If the subtitle to  T\_ h\_ e\_ S\_ e\_ c\_ r\_ e\_ t\_ A\_ s\_ c\_ e\_ n\_ s\_ i\_ o\_ n is "Philip K. Dick Is Dead,

Alas," then the subtitle to the Ace Science Fiction Specials should probably be "Terry Carr Is Dead, Alas." Under his guidance, the original series produced recognized classics too numerous to be listed here; the current series showcased such works as N\_e\_u\_r\_o\_m\_a\_n\_c\_e\_r and G\_r\_e\_e\_n

E\_y\_e\_s. In contrast, of the 1975-1976 series, which was not edited by him, the only memorable two are Lem's T\_h\_e\_I\_n\_v\_i\_n\_c\_i\_b\_l\_e and Shaw's O\_r\_b\_i\_t\_s\_v\_i\_l\_l\_e. And now that the current series has passed from his hands, the quality seems to have fallen off considerably. I have no desire to be harsh on Damon Knight, who has taken on the unenviable task of following Carr, but Knight's talents in editing seem to run to the shorter works--his "Orbit" books are excellent--rather than to the novel-length.

As you may have guessed from these prefatory comments, I did not like T\_h\_e\_O\_x\_y\_g\_e\_n\_B\_a\_r\_o\_n\_s. Perhaps more to the point in a review, I thought it needed some editing--perhaps parts were deliberately obscure, but I found myself frequently groping for something beyond the elements of Heinlein and military action novel that formed the primary layer. The basis for the plot--various groups struggling to control oxygen on the moon--is not exactly new to science fiction, though the nanotechological elements are of more recent vintage than, say, T\_h\_e\_M\_o\_o\_n I\_s\_a\_H\_a\_r\_s\_h\_M\_i\_s\_t\_r\_e\_s\_s

I can't be entirely negative on T\_h\_e\_O\_x\_y\_g\_e\_n\_B\_a\_r\_o\_n\_s. It is the sort of hard-science novel that many people seem to be crying for these days, and for that reason many people will be drawn to it. It is not b\_a\_d\_l\_y written, and Feeley shows promise. I just wish it had had the benefit of Carr's editing skills.