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Preserving our history for future

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THE Rosetta Disk is three inches in diameter and made of pure nickel. It's designed to last 10,000 years and to preserve a piece of humanity.

On it, micro-etched to a fineness that requires a microscope to read, are the first three chapters of the biblical book of Genesis -- in 1,000 languages -- plus other material that might be of use to scholars thousands of years hence. The disk, a prototype of which is being unveiled this weekend, is part of a project taking a long-range view of the world.

The Rosetta Disk's public unveiling is part of the "10,000-year Library" symposium at Stanford University. This small but significant gathering of leading thinkers has been pulled together to ask some essential questions about the preservation of our knowledge and cultures.

These questions matter because we are doing a terrible job of it today -- and from all signs, the situation is getting worse, not better, in the digital age.

That may seem counter-intuitive, given the growing scope of the Web and digital media, and the ease of copying and storing information. Actually, says Michael Keller, "the likelihood is that even more will be lost now than in the past."

Keller, university librarian and director of Academic Information Resources at Stanford University's Green Library, is co-organizer of the weekend meeting. He's been working for years on this growing predicament.

Anyone who has made the transitions from early personal computers, with their 5 1/4-inch floppy disks and data created with now-abandoned programs, knows about the problem. Some of the information I created and stored back in the 1980s would be difficult, if not impossible, to retrieve at this point.

My old digital junk isn't important. Consider the loss, however, of some of NASA's earliest pictures of Earth -- no longer viewable, Keller says, because we've lost the operating system and documentation of the data formats.

Or ponder the dilemma facing the people who are in charge of the world's nuclear waste, generated by weapons, medical

gear and power plants. Some of the waste will be dangerous long, long into the future. One of the people scheduled to participate in the Stanford conference heads the "Office of Long-Term Stewardship" at the U.S. Department of Energy. How will we alert the people in the distant future not to dig in certain places?

Experts are working on a variety of ways to preserve such information in ways that are useful to our distant descendants. As digital media become ubiquitous, this is getting much harder, given how quickly generations of digital media pop up and go away every few years. Figuring this out means rethinking the very nature of archives, of libraries, with a view toward the extremely long term, at least in the human context.

Enter the Rosetta Disk, a project under the auspices of the San Francisco-based Long Now Foundation (www.longnow.org). Jim Mason, trained as an anthropologist, is heading the project.

"We're attempting to create a modern Rosetta Stone," he says, referring to the multi-lingual slab that was the key to deciphering Egyptian hieroglyphics. When complete, the disk will be "a long-term linguistic archive that's a meaningful survey of 1,000 world languages as well as a functional translation engine that gives the tools to decipher potentially dead languages in the deep future."

Besides the Genesis chapters, the prototype disk being unveiled this weekend includes descriptions of all 1,000 languages, such as where they originated and how they relate to other languages. When the disk is finished, it will also contain other information, including charts, linguistic family trees and other data that should be valuable to future scholars.

The most important aspect of the disk is the way the data is being stored. It's analog, not digital -- ultimately, some 27,000 finely etched pages of recognizable text and diagrams. Why? So you don't have to depend on digital system upgrades and transitions down the road.

It's simple enough to put the information into digital form, if you have the right kind of microscope, scanning technology and optical character recognition software. Just read the data and redigitize it, says Mason, who hopes to put hundreds of thousands of these disks into all sorts of hands in coming years.

Pure nickel, from which the disk is made, oxidizes slowly, giving it a 2,000- to 10,000- year "life expectancy" even in a setting that's exposed to air, pollution and variable heat and humidity. For further protection, the disk will be enclosed in a special kind of stainless steel. With enough of these around, some are bound to survive longer, Mason expects.

The Rosetta Disk isn't the only method under consideration to keep the people of the future informed. The Web and database technologies offer some possibilities -- systems that automatically replicate and update themselves as new kinds of storage and data structures are put in place. Break a link in the chain, though, and we've lost the information.

Another possible approach is called emulation. Basically, this is software running on modern computers that literally re-creates the older machines, operating systems and programs, allowing old data to be understood and updated.

The nuclear waste warnings of the future raise an additional problem, notes Stewart Brand, president of the Long Now Foundation and co-organizer of the weekend conference. Not only must the data be preserved, but we'll probably need a "separate alerting device that wakes up from time to time and reminds people that, oh, by the way, there's (toxic) waste in that salt cavern."

This is important work. Unfortunately, it's barely a blip on the radar for a group of people who should be paying closer attention -- the technologists creating these new kinds of digital tools and toys with such speed and style. But the tech elite has, for the most part, ignored the question of digital preservation.

"Silicon Valley hasn't stepped up to this," says Brand, an author who founded the Whole Earth Catalog, among his many other pursuits. "Because, as they say, there is no business case for archives."

Dan Gillmor's column appears each Sunday, Tuesday and Friday. Visit Dan's online column, eJournal (weblog.mercurycenter.com/ejournal). E-mail: dgillmor@simercury.com; phone (408) 920-5016; fax (408) 920-5917. PGP fingerprint: FE68 46C9 80C9 BC6E 3DD0 BE57 AD49 1487 CEDC 5C14.

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