

# Standing the test of cybertime: Humankind through the ages has struggled to keep clear, dependable records on media ranging from papyrus to microfiche. But in the digital age of rapid technological change, vital information more than ever is subject to loss, alteration and corruption.

Michael Scott, Sun Visual Art Critic . The Vancouver Sun ; Vancouver, B.C. [Vancouver, B.C.]17 Feb 2000: A13.

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## ABSTRACT (ABSTRACT)

Just over a year into its three-year mandate, InterPARES has set some big goals for itself, in terms of meeting what [Luciana Duranti] calls "the electronic records problem." There is currently no single protocol for verifying the authenticity of electronic records, for instance. One of IntePARES's objectives is to make some suggestions. Another large area of concern is how electronic records ought best to be preserved for future generations.

Duranti and her international teams have met a mixed response to the InterPARES venture. When the project approached the pharmaceutical industry, 30 companies agreed to participate. (Pharmaceutical companies have a vested interest in the stability of electronic records, Duranti explains, because they are required by law to keep verifiably authentic records for 100 years after one of their products has stopped being sold.) But when UBC went to see Microsoft, the company was not interested in participating.

Duranti says it's too soon to say what answers InterPARES will find. She will allow, however, in a general way, that it looks as though the solution is procedural, rather than technological. There is no magic unified file format lurking around the corner -- the kind of global standard used for systems of currency or measurement that will stand for generations. But there may be ways of safeguarding electronic records that can extend their lifespans and their trustworthiness.

## FULL TEXT

In the spring of 1992 -- eons ago in cybertime -- I made a backup copy of some files on my Toshiba laptop, saving them onto a high-density floppy disk. Just in case. They were pages from a freelance design project, created with an early version of PageMaker, a desktop publishing program.

Eight years and two laptop computers later, I got a surprise when I tried to look at those old back-up files: They would not open. It seems they do not like my zippy new version of PageMaker, nor does it like them. The icons may still be winking away on my dusty backup disk, but the files themselves have become intransigent.

I could try running the prehistoric version of PageMaker that created them (if it is at all compatible with my far

advanced Macintosh operating system, that is); or maybe I could take the files to a computer consultant and have them professionally translated; or maybe another piece of desktop publishing software might retrieve at least some of the data. But anything I do is going to cost time, money, or even worse, run the risk of disturbing or otherwise damaging the data itself.

Shame on me, though, for not knowing that electronic records need to be checked (or "refreshed" as they say in the archive business) every year, and that they ought to be reformatted (or "migrated") to match new hardware every five years.

Pardon my 19th-century wrongheadedness for imagining that records would last more than a year or two without needing specialized refurbishment.

When the ancient Egyptians inscribed their pyramid texts on papyri and tucked them into the winding cloths of their mummies, they had no doubt the messages would last into eternity (or at least long enough for the 21st century to marvel at them in the British Museum). When Norman surveyors totted up the wealth of their newly conquered British dominions, they knew that the Domesday Book would outlive them by several centuries. And their Victorian successors' records of empire ... well, those documents are barely yellowed yet.

But not so with electronic records, which are losing bytes almost as soon as they are made.

Whether my PageMaker documents ever see the light of day again is more or less irrelevant. But think about other records and our vested interest as a society in preserving them: records such as institutional manifests of sites where toxic waste is stored, taxpayer rolls and other government databases, and banking and judicial records, to name a few.

Which is why Luciana Duranti and 300 like-minded archivists and researchers around the world are devoting their time to developing some global standards in the field of permanent records in electronic systems. Duranti, a professor at the University of British Columbia's school of library, archival and information studies, is the international director of an organization known as the InterPARES Project – a 15-nation initiative whose name is an acronym for International Research on Permanent Authentic Records in Electronic Systems.

Three times a year the project teams gather for an international conference lasting a week or more. The next one is taking place here, this week, culminating in a full-day public symposium on Feb. 19 at the UBC's Chan Centre.

Just over a year into its three-year mandate, InterPARES has set some big goals for itself, in terms of meeting what Duranti calls "the electronic records problem." There is currently no single protocol for verifying the authenticity of electronic records, for instance. One of InterPARES's objectives is to make some suggestions. Another large area of concern is how electronic records ought best to be preserved for future generations.

When records are being refreshed every year and migrated on to new hardware every few years, there is great temptation to cull as we go. Storage costs money, and total storage space is sometimes limited. How can we make informed decisions about which records to keep and which to purge when we have only five years' perspective, Duranti asks.

"You end up thinking about economic factors such as how much space a record takes up, or how much climate control it requires," she says, "instead of thinking about its historical significance." Duranti says that at the National Archives of Canada, more resources are now allocated each year to preserving the nation's electronic

archives than are needed to conserve its centuries-old paper archives.

One reason is that electronic records are regularly damaged by the very processes that are used to conserve them. At UBC, every time the registration database is migrated forward on to new computer machinery (which has happened three times since the university stopped using ink-on-paper registration records) some data fields are inevitably lost or corrupted.

The implications are huge, especially when the custodians of records must be concerned both with preserving information, and with ensuring its authenticity. Duranti points to the Canadian Armed Forces' records of e-mail correspondence.

Some of those records might have been crucial to the Somalia enquiry, but in the end, the enquiry's officials had to accept the fact that there was no way to prove if particular e-mail messages had been tampered with, or conversely to prove that they had not been tampered with. Similarly, the United States government has been involved in a lengthy lawsuit concerning the original electronic versions of White House e-mail. The White House long ago agreed to make paper versions available, but citizens' groups are demanding the electronic records, which also contain the so-called "meta- data" – the incontrovertible record of who read what e-mails, and when.

Each nation involved in the InterPARES Project is focusing on a particular part of the problem. The Americans are looking at patent records, for instance; the Italians are working with banking records.

The Canadian project team, led by Jesse Read, the director of UBC's school of music, is focusing on the way that musical performance – especially the performance of electronic music – is stored. Read, who is a performer and music historian, says that a lot of early electronic music is already lost or at serious risk. Wire recordings, in use before the advent of magnetic tape, are now mostly lost. And the authenticity of musical recordings, in a world of Internet piracy, is often difficult to ascertain.

"Sometimes the question is as basic as, 'What's making that sound?'" he says. When a slacker/composer is sampling other people's music off the web, altering it past recognition and then using it in his own music, how is authorship determined? When people are trolling the Internet for sound bites, oblivious to the original provenance of the things they import, how is copyright maintained?

"Authenticity has come up as an issue from the beginning of the Internet," Read explains. "Most people take a very cavalier attitude to questions of copyright, and it is often very hard to even figure out if a certain sound has been stolen from somewhere else."

But questions of attribution are not new. In the 18th century, European princes were regularly dispatching musical copyists to poach tunes from neighbouring courts. Centuries later, musicologists are left to puzzle over whether a piece of music is an original composition, or a good quality copy that may or may not be perfectly faithful to some distant (and perhaps no longer extant) original.

The discovery last year of a trove of 5,000 pieces of music in the Ukraine, including many hundreds by Carl Philipp Emanuel and other sons of Johann Sebastian Bach, raise many questions about how they came to be collected in the first place.

Read mentions, only half jokingly, that since this material is likely to be catalogued in electronic format, rather than in the photographic medium of microfiche, it is conceivable that some well-meaning archivist might decide to "tidy

things up" a bit, removing offending ink blots, say, or cleaning up smudged margins.

"You have to ask yourself in a case like this – when the original material might itself be a copy – where the authenticity of a record is," says Read.

Duranti is quick to point out that this too is no mere cyber- concern. In Imperial Rome, official dispatches were inscribed on wax tablets, and then trundled through highly secure tunnels to a central tabularium where they would be transcribed on to wood, papyrus or some other more permanent medium.

"Cicero was always complaining about the the quality of the transcriptions," Duranti explains. "It seems the archivists were always making mistakes." The Chinese took a different tack to ensuring authenticity, requiring that the original version of an imperial decree be returned, along with the response from the recipient.

Duranti and her international teams have met a mixed response to the InterPARES venture. When the project approached the pharmaceutical industry, 30 companies agreed to participate. (Pharmaceutical companies have a vested interest in the stability of electronic records, Duranti explains, because they are required by law to keep verifiably authentic records for 100 years after one of their products has stopped being sold.) But when UBC went to see Microsoft, the company was not interested in participating.

"On the contrary, Microsoft is a company that is interested in building systems that can manipulate data more easily, keep it more fluid. Bill Gates wants us to be replacing our computers every 18 months," says Duranti. "In the field of electronic records, this means chaos."

Duranti, an urbane Italian, turns serious when asked what is at stake.

"We are so very close to disaster," she says. "Every day we are losing critical information, such as where chemical waste is located. It is so worrisome that even manufacturers of computers are starting to look for ways to guarantee forward compatibility."

Read concurs: "How long are we going to be held hostage by planned obsolescence in everything," he asks. "We can stand it in a refrigerator, perhaps, or in a car. But not this – this is about our very security."

Duranti says it's too soon to say what answers InterPARES will find. She will allow, however, in a general way, that it looks as though the solution is procedural, rather than technological. There is no magic unified file format lurking around the corner – the kind of global standard used for systems of currency or measurement that will stand for generations. But there may be ways of safeguarding electronic records that can extend their lifespans and their trustworthiness.

Asked for her best advice on the subject is, Duranti smiles for a moment and then replies: "If you can avoid using computers, please do."

The InterPARES Project public symposium, titled "How Do You Know It's the Real Thing?", takes place Feb. 19 between 9 a.m. and 5 p.m. at the Chan Centre for the Performing Arts at UBC. The event features presentations by Ian Wilson, the National Archivist of Canada, Ian Macfarlane from the Public Records Office in Britain, Hans Hofman from the Dutch National archives, Paola Carucci, the national archivist of Italy and other distinguished speakers. It is free and open to the public, but advanced registration is required. Contact 688-0809 for more information.

## Illustration

Graphic Diagram: Illustration by Victor Bonderoff, Vancouver Sun / (An illustration of a computer.) ;

## DETAILS

<b>Publication title:</b>	The Vancouver Sun; Vancouver, B.C.
<b>Pages:</b>	A13
<b>Number of pages:</b>	0
<b>Publication year:</b>	2000
<b>Publication date:</b>	Feb 17, 2000
<b>Section:</b>	News
<b>Publisher:</b>	Infomart, a division of Postmedia Network Inc.
<b>Place of publication:</b>	Vancouver, B.C.
<b>Country of publication:</b>	Canada
<b>Publication subject:</b>	General Interest Periodicals--Canada
<b>ISSN:</b>	08321 299
<b>Source type:</b>	Newspapers
<b>Language of publication:</b>	English
<b>Document type:</b>	News
<b>ProQuest document ID:</b>	242728248
<b>Document URL:</b>	<a href="http://ezproxy.library.ubc.ca/login?url=https://search.proquest.com/docview/242728248?accountid=14656">http://ezproxy.library.ubc.ca/login?url=https://search.proquest.com/docview/242728248?accountid=14656</a>
<b>Copyright:</b>	(Copyright The Vancouver Sun 2000)
<b>Last updated:</b>	2017-11-01
<b>Database:</b>	Canadian Newsstream

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