

# Conservation of Digital Media

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# How will you preserve your family history records?

- A major concern for all family historians must be what is to become of all their painstaking research currently maintained in electronic data bases. One answer: write and publish the family history in book form, as widely distributed as possible. But what is to become of the electronic data-bases such as TMG, PAF, FTM, etc. not to mention all the digital photos, of people or of documents and other records found in the course of that genealogical and family research?

# How long will your CDs & DVDs last?

- At a recent conference on the conservation of digital media I acquired some very useful documentation on digital preservation from Mr. Joe Iraci, Senior Conservation Scientist at the Canadian Conservation Institute.
- Some of his points most relevant to us were on the longevity of CDs and DVDs used for media storage; this presentation is based largely on his presentation and on the Manual he has written for the CCI entitled “Modern Information Carriers”.

# Longevity of Digital Media

<b>Media Type</b>	<b>Predicted Longevity</b>
<b>Magnetic Disks - Hard Disks</b>	<b>2 to 5 years</b>
<b>Magnetic Disks - Floppy Diskettes</b>	<b>5 to 15 years</b>
<b>Magnetic Tapes - Digital</b>	<b>5 to 10 years</b>
<b>Magnetic Tapes - Analog</b>	<b>10 to 30 years</b>
<b>Optical Discs - CD-RW, DVD-RW</b>	<b>5 to 10 years</b>
<b>Optical Discs - CD-R (cyanine and azo dyes)</b>	<b>5 to 10 years</b>
<b>Optical Discs - audio CD, DVD movie</b>	<b>10 to 50 years</b>
<b>Optical Discs - CD-R (phthalocyanine dye, silver metal layer)</b>	<b>10 to 50 years</b>
<b>Optical Discs - DVD-R</b>	<b>10 to 50 years</b>
<b>Optical Discs - CD-R (phthalocyanine dye, gold metal layer)</b>	<b>&gt;100 years</b>
<b>Other Optical Discs – MO, WORM, etc.</b>	<b>10 to 25 years?</b>
<b>Flash Media</b>	<b>?</b>

# Archival Gold

- The good news is that there are CDs & DVDs now available that are of archival quality. These have a 24 carat gold layer and the claim is that they will have a shelf life of up to 300 years, which should suffice for most people...
- One of the main suppliers is a Colorado company, MAM-A <http://www.mam-a.com/>  
Their spokesperson Laura Swenson was extremely helpful and gave me much useful information on their technology. However they do not ship to Canada and one must order through a Canadian distributor.

Some archival discs have no logo.



others have a printed logo



# Canadian Distributors

- MAMA-A has 1 in Montreal and 2 in Toronto, but the Montreal firm appears to be only wholesale, and I could get no response from one of the Toronto firms. However the other, **Precision Sound** was very helpful. The contact person there being Joan of Customer Service at **1-866-492-1889**

[toronto@precisionsound.com](mailto:toronto@precisionsound.com)



# Some of the MAM-A products available through Precision Sound

- Gold Archive CD-R (no logo) In jewel case 24 pack 74 minutes #40110: \$1.82 each plus 21cents tax. These would take about a week to get in.
- MAM-A Gold Archive CD-R (no logo) in bulk 100, 74 Min. #40113: \$1.42 plus 21cents tax each. Stock in Toronto.
- MAM-A DVD 8X 4.7 GB (no logo) Gold Archive. BULK #83437 (50 per spindle): \$2.30 each DVD plus 27 cents for the jewel case.
- MAM-A 4.7 8x Gold Archive DVD=R #83440: \$2.85 per disc, minimum order of 200 discs.
- Shipping Approximately \$20.00
- Orders placed with MAM-A about every 2/ 2 ½ mths.

# Other U.S. suppliers of archival discs

- John Taylor recommends B&H of New York: [www.bhphotovideo.com](http://www.bhphotovideo.com)
- *“Their catalogue (in the Media section) offers a range of gold CDs and DVDs under the efilm name by Delkin Devices with a “tested storage life” of 100 years and possibly up to 300. In my catalogue, they can be bought in 10, 16, 25 or 100 disc amounts. In U.S. \$, CD-Rs run from \$108.95 per 100-pack on spindle to 139.95 per 100 for scratchless; and DVD-Rs from \$214.95 per hundred to 244.95 for scratchless. You can also buy them ink-jet printable.*
- *The photo list-servs rate B&H as the most reliable mail-order supplier in the USA, and it is easy to set up an account with them and use your plastic if you are so inclined.*
- *The only problem with ordering from the USA is that despite NAFTA, orders are sometimes dinged with customs duties (and automatically with gst and pst), and sometimes only with gst and pst, and sometimes with nothing. The Canada Post delivery people say there seems to be little rhyme or reason to the practices.”*

**I have looked at the B & H offerings on their web-site, and though it is possible to buy discs in smaller quantities, the discs themselves do not appear to be of as high a quality as those from MAM-A, but may be perfectly acceptable for those only wanting a few discs. Please do your own comparison shopping!**

# Other considerations: new and future technologies and media

- *“ ...some photographer friends point out that in five or 10 years we will have to retain heritage hardware and software to even read cds and dvds. Already Blu Ray has begun supplanting CDs and DVDs, and their standard discs are advertised as having "archival reliability".*

John Taylor

- According to Mr. Iraci, the CD & DVD technology is so widespread that in the foreseeable future there is little risk of our CDs and DVDs becoming unreadable. Even the new Blu-Ray technology does read all the earlier formats. The more immediate concern is with the durability of the media themselves, and the archival quality gold CDs and now DVDs seem to provide an acceptable solution.

# Labels

## ■ Labelling

“Many optical discs are labelled by the disc manufacturer using a silk-screening technique (e.g. audio CDs or CD-ROMs that are manufactured in bulk with the same label printed on each disc). When it is necessary to label discs uniquely (e.g. for CDs / DVDs that are recorded in-house), several different labelling options are available.

### **Writing on the disc with a permanent-ink felt-tip marker**

“This is the least expensive method. It can be used only on discs with a special writable surface, and requires a water-based permanent-ink pen (solvent-based permanent markers may permeate the disc surfaces and damage layers, and ball-point pens, pencils, or other sharp objects require so much pressure to write that they will damage the pit areas and lead to readability errors). For maximum safety, it is best to write only on the hub area of the disc...”

Quotes from CCI Manual by Joe Iraci

**He does not recommend the ink-jet printable discs as it is not yet known what the long-term effects of the inks might be. The best solution seems to be no label at all on the disc, but only on the container, with that being kept to a minimum and “non-acid, non-debris and non-oxidant producing”.**

# Long term storage

- **Light**
- Always avoid direct sunlight, and store discs out of light when not in use
  
- **Storage containers**
- Storage containers should protect discs. They must be impact resistant, prevent moisture or dust from entering the container, and not deform readily
- They should also allow storage such that the surfaces of the disc are not in contact with the container (this will prevent scratching), and should have a locking mechanism to prevent accidental opening of the case.
  
- **Recommended** For safe storage in containers:
- • choose containers made of plastics such as polystyrene, polypropylene, or polycarbonate
- • use regular-sized polystyrene jewel cases with a holding tray
- • for discs handled often, use less brittle polypropylene cases
- • for added protection from light and variations in environmental storage conditions, store cases **vertically (no leaning)** in a suitable cabinet

# Storage Containers

## Not recommended

“The following will compromise safety, and are not recommended:

- containers made of paper or cardboard, foam rubber, and plastics such as cellulose, polyvinyl chloride (PVC), and any other highly plasticized materials
- plastic or paper sleeves (Plastic sleeves may adhere to disc surfaces and paper sleeves may deposit debris on the discs. Also, sleeves provide a lack of physical protection for the discs and may lead to scratching and fingerprint contamination when discs are inserted into or removed from them.)
- liner notes (glossy printed booklets) stored with the discs
- thin jewel cases (the disc surfaces are very close to the jewel case in a thin case and this may lead to damage)”

# Standards for long term storage of digital media

- **Standards for Environmental and Other Storage Conditions**

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION. *ISO 18925:2002. Imaging Materials - Optical disc media - Storage practices.* Geneva, Switzerland: International Organization for Standardization.

- **Standards for Proper Handling Procedures**

- INTERNATIONAL ORGANIZATION FOR STANDARDIZATION.

- Under development. *ISO 18938. Imaging Materials - Optical discs – Care and handling practices for extended usage.*

- Under development. *ISO 18943. Imaging Materials - Magnetic hard drives used for image storage – Care and handling.*

- <http://www.iso.org/iso/en/ISOOnline.frontpage>

- **Disaster Preparedness and Recovery**

- *Disaster Recovery of Modern Information Carriers: Compact Discs, Magnetic Tapes, and Magnetic Disks.* CCI Technical Bulletin No. 25.

- [http://www.cci-icc.gc.ca/publications/tb/index\\_e.aspx](http://www.cci-icc.gc.ca/publications/tb/index_e.aspx)

- <http://palimpsest.stanford.edu/bytopic/disasters/>

- [http://www.specsbros.com/h\\_flood.htm](http://www.specsbros.com/h_flood.htm)

# Conclusions

- Write and publish that family history the old fashioned way, on high quality paper stock! Remember the 7<sup>th</sup> century Book of Kells is still perfectly readable, no machinery required. (If you've never seen it, it's worth the trip to Dublin!)
- Save your data bases & digital photo albums on archival quality discs, in multiple copies.
- Deposit two or three copies (print and or discs) with your Genealogical Association library or your town archives or even the National Archives if they will accept them.
- Keep an emergency copy in your safety deposit box!
- Give a copy to each of your relatives – ask your wealthy relations to contribute to the cost: they may be more appreciative then of all your hard work!
- Good luck to you all! EW