

## Timothy Vitale

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Over 35 years of treatment, imaging, consulting, science, training and project development experience. Graduated in first class of the Winterthur Museum Conservation Training Program, with an MS in Conservation of Art; undergraduate degree in Art History and Chemistry.

Comprehensive experience treating hundreds works of art on paper, photographs and electronic art and media. Conservation Science research at the Smithsonian Institution using tools and technology from a variety of industry, government and university sources. Responsible for groundbreaking research in Paper, Photography and Electronic Media Conservation. Collaborate with conservators, curators, scientists, engineers, architects, art historians and building managers. Surveyed numerous national collections, with thousands of B&W and color images and motion picture film; made recommendations for cold storage and electronic media migration. Comprehensive understanding of all conservation specialties, including extensive interactions with painting's conservators on structure and varnish issues. Developed several pieces of unique conservation equipment. Developed websites on Albumen Prints, Ohio Industrial Heritage and Video Preservation. Over 40 years of photographic imaging and lighting experience, from film to digital technology.

### EXPERIENCE

#### **CONSERVATION TREATMENT, IMAGING AND CONSULTING, Emeryville, CA 1993-Present**

Work with a wide range of institutions and collectors both in the US and abroad. Treat documents, significant art works on paper, oriental screens and scrolls, photographs and Installation Art. Create digital facsimiles, migrate film to digital masters, negative and positive color and B&W. Design storage and exhibition spaces. Consult on video, paper, parchment, photography and painting conservation problems with professionals and collectors.

- Digitally captured and restored historic wallpaper, producing 350 ft<sup>2</sup> facsimile wallpaper with waterproof inks; created 40 digital facsimiles of prints, oriental scrolls and books for the Peabody Essex Museum
- Provided treatment of 25 Mackintosh (Glasgow) drawings and watercolors for the 1996-98 Charles Rennie Mackintosh Exhibition. Designed and installed radio telemetry light, temperature and humidity monitoring system in the historic 1897/1909 Glasgow School of Art. Designed Storage and Conservation Labs.
- Researched and developed the first continuous, wall moisture monitor for use in both stone and wood substrates using digital radio telemetry environmental monitoring tools.
- Treated original California State Constitution and create digital/lithograph parchment facsimile.
- Worked with Intermuseum Conservation Association (1998-00) as Special Projects Conservator on digital image and analog photograph preservation, with website development for education/exhibition in a Northern Ohio community <<http://www.loraincityhistory.org>>. Surveyed Midwest institutions and private collections producing comprehensive statistical analysis and reports.
- Created (2001) Albumen photography <http://albumen.stanford.edu>: gallery, literature, technology and forum.
- Created (9/07) website on video preservation <<http://videopreservation.stanford.edu/>> for in-house use by institutional preservation departments.

#### **SMITHSONIAN INSTITUTION, Conservation Analytical Lab (CAL), Wash., DC 1983-1993**

##### **Head of Paper Conservation: Senior Paper Conservator**

Managed budget, physical-plant and personnel. Developed and implemented Conservation Science research and CAL Seminar programs. Treated institutional art works including prints, drawings, watercolors, documents, maps, collages, oriental works, photographs and composite works. Institution-wide consultant on preservation and conservation technology.

- Surveyed, analyzed and produced survey and reports on institutional collections and exhibition materials.
- Developed, produced and marketed 12 professional seminars and meetings to 1500+ professionals.
- Created and marketed major research projects: 20 publications, 30 lectures and 8 seminars.
- Created, marketed and edited first body-of-knowledge manual for profession--Paper Conservation Catalog.
- Actively trained numerous interns and postgraduate fellows.
- Designed, equipped and ran the completely equipped Photography Studio and Imaging Laboratory
- Received institutional award for design of treatment laboratories and photography suite.

#### **NATIONAL ARCHIVES, NARS, Washington, D.C. 1982-1983**

##### **Chief of Preservation Branch**

Managed Branch budget, physical-plant and staff of 15. Provided consultation services to professional and technical staff. Major contributor to institutional preservation program (of the era).

- Marketed services to client Branches and Presidential Libraries.
- Renovation of the 10,000 ft<sup>2</sup> laboratory and expansion of professional staff.

#### **INTERMUSEUM CONSERVATION ASSOCIATION, ICA, Oberlin, OH 1978-1982**

##### **Head of Paper Conservation**

Managed staff and interns. Treated hundreds of prints, drawings, collages and paintings on paper. Created and presented seminars for museum professionals and collectors on Paper and Photography Conservation. Produced collections' surveys with thorough reports and recommendations. Provided consultation services to clients and public. Produced extensive technical reports and professional publications.

## EDUCATION

**Postgraduate: Roy Perkinson: Museum of Fine Arts (MFA), Boston, MA** 1977-1978  
Funded by NEA Master/Apprentice Grant

**Internships: (1) Alexander Vow, Pierpont Morgan Library, New York City** 1976-1977  
**(2) Mary Todd Glaser, private practice, Englewood, NJ.**

**Master of Science in Art Conservation, University of Delaware, Newark, DE** 1974-1977  
**Winterthur Museum, Winterthur, DE** 1974-1976  
**Majors: Paper**, Anne Clapp and Konstanza Bachmann  
**Photography**, Jose Orraca (2 Semesters)  
**Minors: Paintings**, Paul Schwartzbaum  
**Furniture**, Mervin Martin

**Bachelor of Art: Major in Art History, Calif. Sate University at Jose State [San Jose State]** 1970-1974  
Minor in Chemistry

**Preparator, Stanford Museum, Stanford University, Stanford, CA** 1969-1973

**Conservation Frammer, Los Gatos and San Jose, CA** 1965-1970

## PROFESSIONAL GROUP PARTICIPATION

American institute for Conservation (AIC); Professional Associate (PA) 1974-Pres

### Specialty Groups

1997-2007 Founding officer, Electronic Media Group (EMG); newest AIC Specialty

1999-2000 Program Chair

2000-2002 Chair

2004 Chair, Digital Documentation Committee

2007 Digital Task Force (digital imaging recommendations)

1981-1985, Founding officer, Book and Paper Group (BPG); first AIC Specialty Group

1981-1983 BPG Program Chair

1983-1985 BPG President/Chair

1984-1988 Paper Conservation Catalog

1984, Organization and implementation of Paper Conservation Catalog

1984 -1986, Editor

1986 -1988, Editorial Committee

### Professional Committees

2007 - Pr EMG Digital Task Force

2004 - 2006, EMG Digital Documentation Committee

2001 - 2002, AIC Website Development Committee

1999 - 2000, Member AIC-2000 Program Committee

1981 - 1986, Member, AIC Certification and Accreditation Committee

1981 - 1982, Chairperson, AIC Handicapped Access Review Committee

## GRANTS REVIEW

Institute for Museum Services: Professional Services and Development Program

National Science Foundation

National Endowment for the Arts

National Center for Preservation Technology and Training

## INVENTIONS

Small-Area Fritted Glass Bead Suction Disk (basic invention of technology) 1977

Multiple Mode large area suction table (improved existing large-area device) 1982

Stainless Steel Tray -- Large Area Suction Table (inexpensive version) 1989

Heated Air, Filter Device for the Suction Table (improved system efficiency) 1991

Suction Table Monitoring System (computer-based: vacuum, flow and evaporation rate) 1992

Radio telemetry in-wall wood and stone moisture monitor 1996

(Co-developed with Martin Hancock, Hanwell Instruments, Exeter, Devon, UK)

Millisecond-recording, computerized, integrating light meter 1996

(Extech B401 020, PicoLog ADC and PC laptop)

## SKILLS

Technical: Thorough computer literacy (PC & Mac: networking, motherboard, I/O boards, add-on boards, CD-ROM, -R/RW drives, interrupts, ports, installation and configuration); PC & Mac integration of scanners, digital cameras, digital scanning backs and color management; color theory; Art technology of many types; photography (site, studio photography and photo-studio manager); architectural design, drafting & CAD; audio and video recording; writing and directing in-house and web video.

Software: Mac OS, Windows OS, Word, Excel, Access, Macromedia Dreamweaver, CorelDRAW, Photoshop, Illustrator, InDesign, FileMaker Pro, Final Cut Pro, Mathcad, Labtech Notebook, PicoLog, CAD and numerous systems management applications.

Technological and scientific knowledge — Traditional Media: plastics, paint & varnish, organic solvents, water (ultra pure deionized & distilled), inorganic chemicals, organic chemicals, natural glues & gums, synthetic adhesives, paper (cellulose chemistry and biogenesis), paper structure (texture and physics), natural fiber identification structure and physics, synthetic fibers identification, glass, ceramics and plaster, wood, textiles, metals and metal corrosion.

Electronic Media: Video skills include scripts, camera, sound and non-linear editing, with preservation equipment recommendations. Audio preservation skills include digitization, analog modification (equalization, compression and expansion) and re-mastering, with preservation equipment recommendations. Digital imaging skills include facsimile production (California State Constitution facsimile on parchment displayed In the Golden State Museum), digital file separation and manipulation, CMYK printing, digital to offset lithography, scanner operation, digital cameras, digital scanning backs, RGB inkjet and pigment-in-resin printers, printer and monitor profiling and color management. Migration of B&W and color still film to 16-bit digital master files, including pixel-level restoration.

Scientific equipment operation and abilities: x-radiography (paper and paintings), x-ray fluorescence spectroscopy (XRF), energy dispersive electron spectroscopy (EDAX), wavelength dispersive electron spectroscopy (WDS), slit & Fourier-transform infrared spectrophotometer (FTIR), diamond-cell FTIR, microscope FTIR, colorimetry (research grade and several portable instruments), densitometry, UV-VIS spectrophotometer (scanning and single wavelength instruments), powder & camera x-ray diffraction (XRDWAXS), small angle x-ray spectroscopy (SAXS), scanning electron microscope (SEM), environmental scanning electron microscope (ESEM), emission spectroscopy, stereo microscopy, polarizing & component measuring microscopy, fiber identification (natural, synthetic, wood and paper), pigment and small particle identification, differential thermal analysis (DTA), differential thermal mechanical analyzer (DMTA), pyrolysis & gas chromatography (GC), ultrasonic impedimetry, Instron strength tester, equilibrium tensile strength tester, liquid viscometry, wet chemistry, inorganic & organic spot tests, small volume humidity & temperature controlled chamber for dimensional & weight measurement, temperature, humidity and air flow measurement technologies, array of paper testers (fold, tear, burst, sizing, etc.), design, building and testing of unique paper evaluation equipment, A-D computer-based data gathering, signal conditioning, data reduction and systems design.

Familiarity with scientific instruments (used in research projects): Microprobe, electron spectroscopy for chemical analysis (ESCA), ellipsometry, atomic absorption spectroscopy (AA), gas chromatography mass spectrometry (GCMS), differential scanning calorimetry (DSC), laser light scattering for structural analysis (LLS), thin-layer chromatography (TLC), differential thermal dielectric analysis (DTDA) and proton induced x-ray spectroscopy (PIXE)

## PUBLICATIONS

Frey, F., Heller, D., Kushel, D., Vitale, T., Warda, J. & Weaver, G. (alphabetical). 2008. ***The AIC Guide to Digital Photography and Conservation Documentation***. Washington, DC: American Institute for Conservation of Historic and Artistic Works; ed. Jeffery Warda; 42 ill., 111 pp. [Online updates available via AIC purchase code.]

Vitale, T.J. & Messier, P.A. ***Video Preservation Website*** <<http://videopreservation.stanford.edu>>, 2007.

Vitale, T.J. ***Brief History of Imaging Technology [3000 BC to Present]***. May 2008 v9, EMG Library <[http://aic.stanford.edu/sg/emg/library/pdf/vitale/2007-07-vitale-history\\_imaging\\_techchnology.pdf](http://aic.stanford.edu/sg/emg/library/pdf/vitale/2007-07-vitale-history_imaging_techchnology.pdf)>

Vitale, T.J. ***Digital Image File Formats: TIFF, JPEG, JPEG2000, RAW and DNG***. July 2007 v20, EMG Library <[http://aic.stanford.edu/sg/emg/library/pdf/vitale/2007-07-vitale-digital\\_image\\_file\\_formats.pdf](http://aic.stanford.edu/sg/emg/library/pdf/vitale/2007-07-vitale-digital_image_file_formats.pdf)>

Vitale, T.J. ***Storage of Image Files***, 2006 v26 (long), EMG Library <[http://aic.stanford.edu/sg/emg/library/pdf/vitale/2005-11-vitale-storage\\_image\\_files\\_long.pdf](http://aic.stanford.edu/sg/emg/library/pdf/vitale/2005-11-vitale-storage_image_files_long.pdf)> and AICNews Vol. 31, No. 1, Jan 2006.

Vitale, T.J. **Digital Imaging in Conservation: Cameras**. AICNews, Vol.30 No.3, July 2005 and EMG Library. <<http://aic.stanford.edu/sg/emg/library/pdf/vitale/2005-07-vitale-digital-imaging.pdf>> 2005.

Vitale, T.J. **Film Grain, Resolution and Fundamental [Photographic] Particle Size**, April 2007v20, EMG Library <[http://aic.stanford.edu/sg/emg/library/2005-06-vitale-documentation-tiff-image/2005-06-vitale-documentation-tiff\\_files/frame.htm](http://aic.stanford.edu/sg/emg/library/2005-06-vitale-documentation-tiff-image/2005-06-vitale-documentation-tiff_files/frame.htm)>

Vitale, T.J. **Digital Imaging in Conservation: Cameras**. EMG Library. October 2005. <<http://aic.stanford.edu/sg/emg/library/pdf/vitale/2005-07-vitale-digital-imaging.pdf>> and AICNews, Vol.30 No.3, July 2005.

Vitale, T.J. **Digital Documentation: Getting the Most from a TIFF Image**, EMG Library. 2005. <[http://aic.stanford.edu/sg/emg/library/2005-06-vitale-documentation-tiff-image/2005-06-vitale-documentation-tiff\\_files/frame.htm](http://aic.stanford.edu/sg/emg/library/2005-06-vitale-documentation-tiff-image/2005-06-vitale-documentation-tiff_files/frame.htm)>

Vitale, T.J. **Color Targets for Digital Imaging**. CoOL, Conservation Online. October 2003. <<http://palimpsest.stanford.edu/byauth/vitale/color-targets/>>

Vitale, T.J. **Projecting Digital "Slide" Images**, CoOL, Conservation Online. October 2003. <<http://palimpsest.stanford.edu/byauth/vitale/digital-projection/>>

Vitale, T.J. **TechArcheology: Works by James Coleman and Vito Acconci**. JAIC, Journal of the American Institute for Conservation Fall/Winter. 2001, Vol 40, No 3. pp 233-258.

Vitale, T.J. **Website History and Preservation**. on EMG Website at <[http://aic.stanford.edu/conspec/emg/emg\\_website\\_preservation.html](http://aic.stanford.edu/conspec/emg/emg_website_preservation.html)> Jan. 2001.

Vitale, T.J. **Digital Documentation** on EMG Website at <[http://aic.stanford.edu/conspec/emg/emg\\_website\\_preservation.html](http://aic.stanford.edu/conspec/emg/emg_website_preservation.html)> Sept. 2001.

Vitale, T.J. **Website: Lorain City History**, for the Black River Historical Society, Lorain, Ohio <<http://www.loraincityhistory.org>>. [The site was changed from as designed 2/02, most parts are still working.]

Vitale T.J. & Messier, P.A. **Albumen Website: The Science, Technology and Treatment of Albumen Photographs; A Comprehensive Resource on the World Wide Web**. <<http://albumen.stanford.edu>>

Vitale, T.J. **Light Levels Used in Modern Flatbed Scanners** <<http://www.rlg.org/preserv/diginews/diginews2-5.html#techni>> [RLG is no longer online; avail from author.] Vol. 2, No 5, October 15, 1998.

Vitale, T.J. and Messier P.A. **Physical and Mechanical Properties of Albumen Photographs**, JAIC. 33 (3): 279-299 (1994).

Messier P.M. and Vitale, T.J. **Effects of Aqueous Treatment on Albumen Photographs**, JAIC. 33 (3): 257-278 (1994).

Vitale, T.J. and Erhardt W.D. **Changes in Paper Color Due to Artificial Aging, and the Effects of Washing on Color Removal**. ICOM Committee for Conservation, 10th Triennial Meeting Washington, DC, August 22-27, 1993. Preprints, Volume II, edited by J. Bridgeland (ICOM Committee for Conservation, Paris). 507-515.

Messier, P.A. and Vitale, T.J. **Cracking in Albumen Photographs: An ESEM Investigation**. Microscopy Research and Techniques. 25(5 & 6): 374-383 (1993).

Messier, P.M. and Vitale, T.J., **Albumen Photograph: Effects of Aqueous Treatment and Fundamental Properties**. In Proceeding of the Center for Photographic Conservation\*s Conference, 1992: eds. I. Moore & A. Moore. 1993.

Sugarman, J. & Vitale, T.J. **Observations on the Drying of Paper: Examination and Application of Drying Methodologies to Treatment**. JAIC. 31(2): 175-197 (1992).

Vitale, T.J. **Effects of Water on the Mechanical Properties of Paper and Their Relationship to the Treatment of Paper**. In Materials issues in Art & Archaeology III, Symposium Proceedings. eds. P.B. Vandiver, J. Druzak, G.S. Wheeler & I.C. Freestone. Pittsburgh: Materials Research Society. 1992. 397-427.

Vitale, T.J. **Effects of Drying on the Mechanical Properties of Paper and Their Relationship to the Treatment of Paper**. In Materials issues in Art & Archaeology III, Symposium Proceedings. eds. P.B. Vandiver, J. Druzak, G.S. Wheeler & I.c. Freestone. Pittsburgh: Materials Research Society. 1992. 429-445.

Vitale, T.J. **Observations on Theory, Use and Fabrication of the Fritted Glass Bead Suction Disk Device**, The Paper Conservator, The Institute of Paper Conservation, London, England. 12: 47-67 (1988).

Vitale, et al. **Washing**, In Paper Conservation Catalog, 7th Edition, contributor, Outline 16, 49pp, Book and Paper Group of the American Institute for the Conservation of Historic and Artistic Artifacts (BPG/AIC), November 1990.

**Paper Conservation Catalog**, 5th Edition, Editorial Committee, BPG/AIC, June 1988.  
Consolidation/Fixing/Facing, In Paper Conservation Catalog, Contributor, Outline 23, 20pp, 5th Edition, BPG/AIC, June 1988.

Vitale, et al. **Sizing/Resizing**, In Paper Conservation Catalog, Contributor, Outline 17, 33pp, 5th Edition, BPG/AIC, June 1988.

**Paper Conservation Catalog**, 4th Edition, Editorial Committee, BPG/AIC, May 1987.

Vitale, et al. **Filing and Compensation**, In Paper Conservation Catalog, Outline 26, 25pp, 4th ed., BPG/AIC, May

**Paper Conservation Catalog**, 3rd Edition, Editorial Committee, BPG/AIC, May 1986 Visual Examination, In Paper Conservation Catalog, Contributor, Outline 6, 38pp, 3rd ed., BPG/AIC, May 1986.

Vitale, T.J. **A Book and Paper Group Panel Discussion on Ethics**, Co-author, Book and Paper Group Annual BPG/AIC, Vol. 4, pp.116-117, 1985.

**Paper Conservation Catalog**, 2nd Edition, Editor, BPG/AIC, May 1985.  
Media Problems, In Paper Conservation Catalog, Contributor, Outline 3, 34pp, 2nd ed., BPG/AIC, May

**Paper Conservation Catalog**, 1st Edition, Editor, BPG/AIC, May 1984.

Vitale, et al. **Drying and Flattening**, In Paper Conservation Catalog, Co-compiler, Outline 28, 9pp, 1st ed., BPG/AIC, May 1984.

Vitale, et al. **Humidification**, In Paper Conservation Catalog, Co-compiler, Outline 22, 7pp, 1st ed., BPG/AIC, May 1984.

Vitale, T.J. **Review of the Effects of Light on Paper and Design Media**, In ICA Newsletter, Intermuseum Conservation Association (ICA), Oberlin, OH, January 1981.

Haner, P., Rankin, R.Q. & Vitale, T.J. **Painting on Paper: A Dialogue in Five Case Histories**. AIC Meeting Preprints, May 1980. pp 26-38.

Loew-Craft, M. and Vitale, T.J. **Economical Textile Storage: Part I**. In *Museum News*, Nov/Dec. 1979; now an AAM Reprint.

Loew-Craft, M. and Vitale, T.J. **Economical Textile Storage: Part II**. In *Museum News*, Jan/Feb., 1980; now an AAM Reprint.

## **PROGRAMS AND SEMINARS ORGANIZED**

**Education Needs for Professionals in Electronic Media Preservation**, Discussion, Funded by Kress Foundation and Stanford Libraries, EMG Session June 10 2002, AIC Annual Meeting, Miami FL, June 2002.

**File Format Migration Discussion in the EMG Digital Discussion Group**, EMG Session, June 3 2001, AIC Annual Meeting, Dallas TX, June 2001.

**Digital Imaging in Conservation**. Conservation Training Program Lecturer, Winterthur Museum and the University of Delaware, March 2001.

**Discussion Group: Discussion: Digital Conservation Documentation**, AIC Annual Meeting, Philadelphia, PA, June 2000.

**Electronic Media Group Program for AIC 2000**, Program Chair, AIC Annual Meeting, Philadelphia, PA, June 2000.

**Digital Discussion Group: Digital Image Manipulation and Color Management**. EMG Sessions, AIC Annual Meeting, Philadelphia, PA, June 2000.

**Digital Discussion Group: Digital Camera, Printing and Color Management**, AIC Annual Meeting, 1999 St Louis, MO, June 1999.

**Digital Discussion Group: Digital Scanning and Printing**, AIC Annual Meeting 1998 Alexandria VA, June 1998.

**Use of Subjective Evaluation Tools in Paper Conservation**, Graduate Conservation Training Program at State University College at Buffalo, Buffalo, NY, October 1993.

**The Suction Table for Textile and Paintings Conservators: Treatments, Fabrication and Theory**, Organize, directed with multiple presentations, CAL Advanced Training Seminars, Conservation Analytical Laboratory, Smithsonian Institution, Washington, DC, October 14-18, 1991.

**The Paper Suction Table: Treatments, Techniques, Fabrication and Theory**, Organized, directed with multiple presentations, CAL Advanced Training Seminars, Conservation Analytical Laboratory, Smithsonian Institution, Washington, DC, March 19-23, 1990.

**Drying and Flattening Paper: Science Techniques and New Directions**, Organized, directed with multiple presentations, CAL Advanced Training Seminars, Conservation Analytical Laboratory, Smithsonian Institution, Washington, DC, Nov. 28-30, 1990.

**Paper Suction Table: Treatments, Techniques, Fabrication and Theory**, Organized, directed with multiple presentations, CAL Advanced Training Seminars, Conservation Analytical Laboratory, Smithsonian Institution, Washington, DC, April 1989.

**Techniques, Uses, Differences and Operating Parameters of Current Paper Suction Tables**, Organized, directed with multiple presentations, CAL Advanced Training Seminars, Conservation Analytical Laboratory, Smithsonian Institution, Washington, DC, May 1985

**A Book and Paper Group Panel Discussion on Ethics**, Symposium organized and moderated, AIC Meeting, Washington, DC, May 1985.

**Traditional Japanese Mounters Techniques for Western Paper Conservators**, (1984 CAL Masuda Course) Seminar organized and directed, CAL Training Seminars, Conservation Analytical Laboratory, Smithsonian Institution, Washington, DC, July 1984.

**Discussion of the Ethics of Photographic Materials Treatment by Paper Conservators**, Symposium organized and moderated, AIC Meeting, Los Angeles, CA, May 1984.

**Cellulose Science Seminar**, Symposium organized, moderated and directed, BPG/AIC Seminar, AIC Meeting, Baltimore, MD, May 1983.

**BPG Meeting Program**, Meeting organized and directed, AIC Meeting, Baltimore, MD, May 1983.

**BPG Meeting Program**, Meeting organized and directed, AIC Meeting, Milwaukee, WI, May 1982.

**Discussion on Water Quality in Paper Conservation**, Discussion organized with presentation, AIC Meeting, San Francisco, CA, May 1980.

## **LECTURES (Significant Only)**

**Digital Documentation: Getting the Most from a TIFF Image**, June 10, General Session On Documentation Dilemma: Managing Conservation Data in the 21st Century, AIC Annual Meeting, Minneapolis, June 2005.

**Preservation of Video in the Conservation Laboratory: 10-bit, 0-108.4 IRE, full-scale; at 4:4:4 TUV or RGB** June 12, EMG Session, AIC Annual Meeting, Minneapolis, June 2005.

**Electronic Media Preservation**, JFK University, Preventive Conservation in the Master of Arts in Museum Studies Program May 2002.

**Imaging for Survey Reports in Best Practices for General Conservation Assessments Symposium**, June 6, AIC Annual Meeting, Miami, June 2002.

**Electronic Media Preservation**, JFK University, Preventive Conservation in the Master of Arts in Museum Studies Program May 2001.

**High Resolution Digital Photography**. Winterthur Museum, Winterthur, DE, March 2001

**Digital Imaging.** Winterthur Museum, Winterthur, DE, March 2001

**Using Adobe Photoshop in Conservation.** University of Delaware, Newark DE, March 2001

**Examining Light Levels Used In Modern Flatbed Scanners,** EMG session in AIC Annual Meeting, St Louis, June 1999.

**Issues in Digital Imaging and File Migration,** EMG at AIC Meeting Alexandria, VA, June 1988.

**Digital Tools for Monitoring of Temperature, Humidity and Moisture Content.** Invited Lecturer, Glasgow Architectural Association, Glasgow, Scotland, August 1996,

**Treatment of The Glasgow School of Art 's Charles Rennie Mackintosh Drawings,** Society of Archivist Meeting, Edinburgh, Scotland, July 1996.

**Operation of Large and Small Area Suction Tables: Hands-on Use of the Suction Table,** half-day session at the Society of Archivist Meeting, Edinburgh, Scotland, July 1996.

**Comparison of Paintings Conservation Techniques Used with Suction Tables,** Gerry Hedley Memorial Seminar: Mechanical Behavior of Paintings: Experience and Theory, Ottawa, Canada, October 1993.

**Paper and Photographic Conservation Research,** 2-day seminar, Graduate Conservation Training Program, State University College at Buffalo, Buffalo, NY, October 1993.

**Effects of Water on the Mechanical Properties of Paper and Their Relationship to the Treatment of Paper,** Materials Research Society meeting, San Francisco, CA, April 1992.

**Effects of Drying on the Mechanical Properties of Paper and Their Relationship to the Treatment of Paper,** Materials Research Society meeting, San Francisco, CA, April 1992.

**Comparison Between Practitioner-Observed and Measured Changes in Mechanical and Physical Properties of Before and After Washing,** BPG Session: AIC Meeting, Buffalo, NY, June 1992.

**Albumen Photographs: Effects of Aqueous Treatment and Fundamental Properties,** co-authored with, and presented by Messier, PMG at AIC in Buffalo, NY, June 1992.

**Aqueous Treatment of Albumen Prints,** Photographic Conservation Conference '92, co-authored with, and presented by Paul Messier, Windermere, England, April 1992.

**Theory of Operation of the Suction Table:** (1) Pump Flow and Vacuum, (2) Lateral Flow or Downward Flow, (3) Capillary Action Holding Liquid in Pores, (4) Liquid\*s Surface Tension And Contact Angle, (5) Pore size distribution in Textiles, Paintings and Paper, (6) Relative Effective Permeability and (7) Drying on the Suction Table, CAL Advanced Training Seminar: The Suction Table for Textile and Paintings Conservation, October 1991.

**Monitored drying on the Suction Table** CAL Advanced Training Seminar: The Suction Table for Textile and Paintings Conservation, October 1991.

**Review of Science for the Drying and Flattening of Paper,** CAL Advanced Training Seminar: Drying and Flattening Paper: Science, Techniques and New Directions, CAL, Smithsonian Institution, November 1990.

**Attempts to Recreate Original Paper Surface Textures Using Pressure Drying,** CAL Advanced Training Seminar: Drying and Flattening Paper: Science, Techniques and New Directions, CAL, Smithsonian Institution, November 1990.

**Observations on the Mechanical Properties of Paper,** CAL Advanced Training Seminar: Drying and Flattening Paper: Science, Techniques and New Directions, CAL, Smithsonian Institution, November 1990.

**Mechanical Properties of Paper,** CAL Advanced Training Seminar: Mechanics of Materials and Structure of Cultural Property, CAL, Smithsonian Institution, April 1990.

**The Paper Suction Table**, CAL Advanced Training Seminar: The Paper Suction Table: Treatments Techniques, Fabrication and Theory, Conservation Analytical Laboratory, Smithsonian institution, March 1990.

**Stain Removal and Other Uses of the Small Area Fritted Disk Suction Table**, CAL Advanced Training Seminar: The Paper Suction Table: Treatments, Techniques, Fabrication and Theory, CAL, Smithsonian institution, March 1990.

**Flattening of an e.e. Cummings, SOUND No.2, Oil Painting on Paper Using Traditional Moisture and Felts: Could Radiant Heat and Humidity on the Suction able Have improved the Treatment**, CAL Advanced Training Seminar: The Paper Suction Table: Treatments. Techniques, Fabrication and Theory, CAL, Smithsonian Institution, March 1990.

**Physical Phenomena Affecting the Drying Rate During Suction Treatments**, CAL Advanced Training Seminar: The Paper Suction Table: Treatments. Techniques. Fabrication and Theory, CAL, Smithsonian institution, March 1990.

**Fabrication of the Small Area Fritted Glass Bead Suction Table and a Simple Large Area Suction Table the Stainless Steel Tray Table**, CAL Advanced Training Seminar: The Paper Suction Table: Treatments, Techniques, Fabrication and Theory, CAL, Smithsonian institution, March 1990.

**Observations on the Drying of Paper and Its Application to Treatment**, General session: AIC Meeting, Cincinnati, OH, June 1989.

**The Effects of Solvents on Paper**, General Session: AIC Meeting, Cincinnati, OH, June 1989, co-written with Lynn Brostoff, presented by Lynn Brostoff.

**Definition of The Suction Table, Large Area vs Small Area**, Vacuum Pump Types Treatment Classifications and introduction to Porosity the Drying Process, CAL Advanced Training Seminar: The Paper Suction Table: Treatments, Techniques, Fabrication and Theory, CAL, Smithsonian Institution, April 1989.

**Stain Removal and Other Uses of the Small Area Fritted Disk Suction Table**, CAL Advanced Training Seminar: The Paper Suction Table: Treatments, Techniques, Fabrication and Theory, CAL, Smithsonian Institution, April 1989.

**Flattening of an e.e. cummings Oil Painting on Paper Using Moisture and Felts: Could Heat and Suction Have improved the Moisture and Flattening Treatment**, CAL Advanced Training Seminar: The Paper Suction Table: Treatments, Techniques, Fabrication and Theory, CAL, Smithsonian institution, April 1989.

**Paper Pore Size Distribution and Relative Effective Porosity and Liquid Surface Tension: Their Effects on Drying Process and Rate**, CAL Advanced Training Seminar: The Paper Suction Table: Treatments, Techniques, Fabrication and Theory, CAL, Smithsonian institution, April 1989.

**Fabrication of the Fritted Glass Bead Small Area Suction Table and of a Stainless-Steel-Tray Large Area Suction Table**, CAL Advanced Training Seminar: The Paper Suction Table: Treatments. Techniques, Fabrication and Theory, CAL, Smithsonian institution, April 1989.

**Examination of Possible Altered White Highlights on Selected Frederic Church Drawings**, BPG Session: AIC Meeting, New Orleans, LA, June 1988.

**Observations on the Theory, Use and Fabrication of the Fritted Glass Bead, Small Suction Disk Device**, At Institute for Paper Conservation 10th Anniversary Meeting, Oxford, England, April 1986.

**Techniques, Uses, Differences and Operating Parameters of Current Paper Suction Tables**, CAL Advanced Training Seminar: Techniques, Uses. Differences and Operating Parameters of Current Paper Suction tables, CAL, Smithsonian Institution, May 1985.

**Treatment of Works of Art on Paper Using Both large and Small Paper Suction Tables**, CAL Advanced Training Seminar: Techniques; Uses, Differences and Operating Parameters of Current Paper

Suction tables, CAL, Smithsonian Institution, May 1985.

**Book and Paper Group Panel Discussion On Ethics**, BPG Ethics Symposium: AIC Meeting, Washington, D.C., May 1985.

**Paper Conservation Education**. National Air and Space Museum, Smithsonian Institution, Washington, DC, April 1984.

**Conservation Administration and Surveying at the National Archives**, Columbia University Library Conservation Training Program, NYC, December 1982.

**Preservation of 20th Century Records**, Middle Atlantic Records Administration Committee Meeting, Philadelphia, October 1982.

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## GENERAL REFERENCES

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