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Science and Authentication: Possibilities and Limitations

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Canadian Conservation Institute



- Founded in 1972
- Mission: CCI advances and promotes the conservation of Canada's heritage collections through its expertise in conservation science, treatment, and preventive conservation. CCI works with heritage institutions and professionals to ensure these heritage collections are preserved and accessible to Canadians now and in the future.
- SOA of the Department of Canadian Heritage

Analysis of museum objects' structure and materials: why?



- Analysis related to conservation treatments
- Analysis related to degradation problems
- Scientific examination of works of art or objects to answer questions related to their authenticity or origin
- Study of materials and techniques

“Non-Destructive” Methods of Examination



- Visual examination; stereomicroscopy
- Photography; photomacrography
- Fluorescence photography
- Infrared photography; infrared reflectography
- X-radiography; electron emission radiography
- Energy dispersive x-ray spectrometry

X-Ray Spectrometry

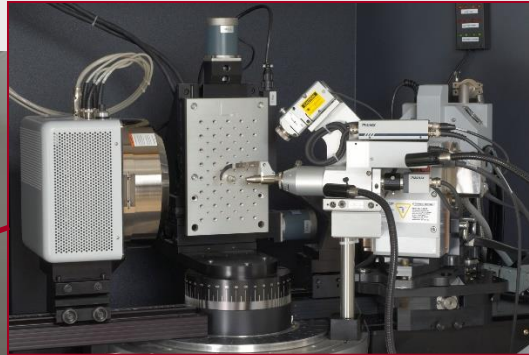


Methods of Analysis Requiring Sampling (particles, fragments, fibres)



- Microscopy (incident light; fluorescence)
- Polarized light microscopy
- Scanning electron microscopy/x-ray microanalysis
- X-ray diffraction
- Fourier transform infrared spectroscopy
- Raman spectroscopy
- High performance liquid chromatography
- Gas chromatography/mass spectrometry

Instrumentation



Dating Methods

(require sampling or modification)



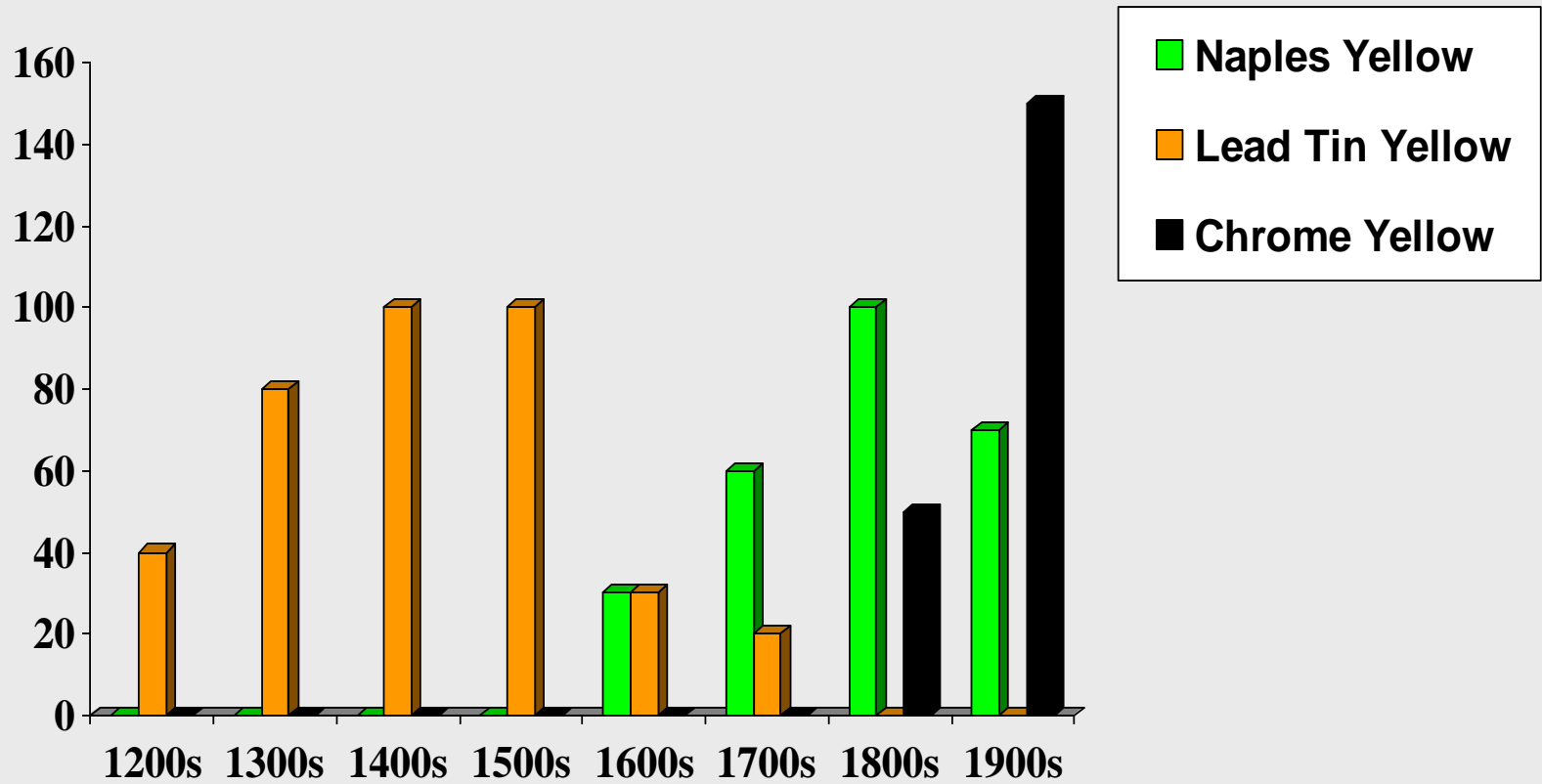
- Radiocarbon dating
- Thermoluminescence (TL)
- Dendrochronology (tree-ring dating)

Authentication: How can science help?



- Scientific examination aimed at determining if materials are consistent with attribution/period (looking for anachronisms).
- Procedures based on knowledge about materials (composition, characteristics, history of use).

Use of Some Yellow Pigments Over Time



Authentication: Limitations



- Cannot attribute a work to a given artist.
- However possible to compare materials and techniques with reference data when available.
- Reference data available mostly for pre-20th century European artists.

Canadian Artists' Materials Project



- Paul-Émile Borduas (1905- 1960)
(Parisian period)
- David Milne (1882-1953)
- Alfred Pellan (1906- 1980)
- Tom Thomson (1877-1917)
- Jean-Paul Riopelle (1923-2002)
- Marc-Aurèle Fortin (1888-1970)
- Norval Morrisseau (1936-2007)

Conclusions



- Science can help answer questions related to attribution and authenticity but:
 - It must be based on hypotheses drawn from art historical research;
 - It does not replace art historical research;
 - It relies on current knowledge on artists' materials and techniques, which may prove inexistent or incomplete.
- It is always easier to prove that a painting is a copy or a fake than to prove that a painting is original.