User Requirements and Relational Modelling for a Non-Theatrical Cinema and Video-Art Cataloguing System

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Aim:

- To design and implement a computerized cataloguing system for a laboratory dedicated to the **restoration** and **archiving** of **non-theatrical cinema** and **video art**

Taking into account three different aspects:

- (i) national and international standards and workflows concerning preservation, cataloguing and archiving of film and contemporary art (OAC; FIAF; DCA; GAMA)
- (ii) specific needs emerging by daily experimentation in film and video restoration practice; (Laboratory)
- (iii) the interoperability with national and international film archives and contemporary art museums/Aggregators (Europeana)

Non-Theatrical Cinema and Video-Art

VIDEO
VS FILM

**FILM: HUMAN
READABLE
VIDEO: NON
HUMAN READABLE**

**PROGRAMMED
OBSOLESCENCE**

+

sound

La Camera Ottica Lab. (Gorizia)
# Univesity of Udine

Starts from basic principles of:
- Cinema restoration and preservation history and theory
- Art restoration and preservation history and theory

Looks at:
- International and experimental projects
  - www.incca.org
  - www.fiafnet.org
  - www.dca-project.eu
  - www.getty.edu
  - www.labs.europeana.eu
  - www.docam.ca
  - www.variablemedia.net
  - www.medienkunstnetz.de
- Italian ministerial regulation
  - Normativa OAC (Opere d'Arte Contemporanea)
  - Standard for the creation and managing of multimedia files
  - www.iccd.beniculturali.it

Proceed through:
- Theoretical and Practical experimentation on archives and case studies
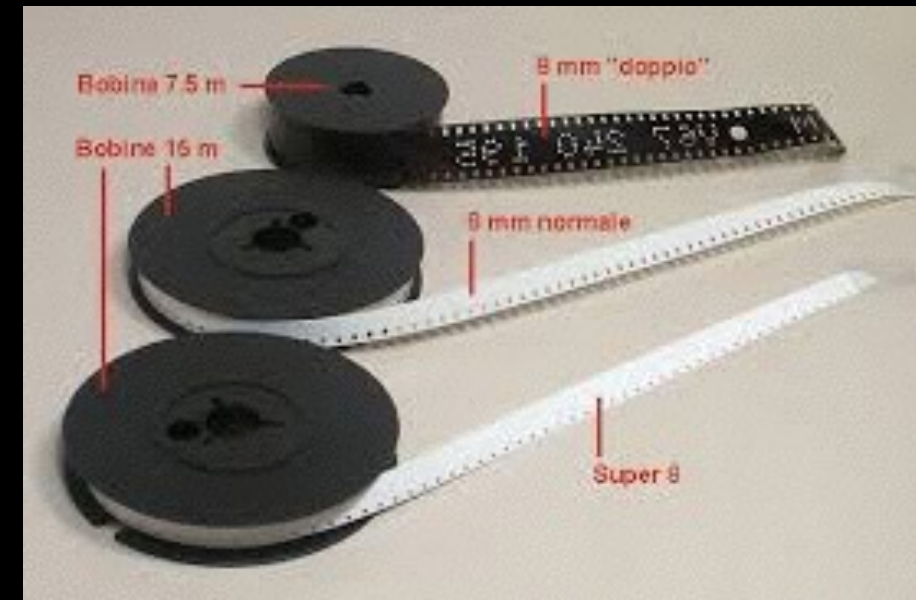
Plan and Purpose of the intervention

- Technical factors
- what is the physical carrier, what is the physical format?
- what is the age of the work and/or carrier?
- what is the physical condition of the carrier?
- what is the storage history of the work and/or carrier? According to which specifications were the works-to-be-digitised stored?
- does all the content run in one direction on the tape or film?

Active preservation:
1° Phase

- Historical factors
- has the content been sliced together and what is the condition of the splice points?
- what is the content on the carrier? What is the genre of content on the carrier? What is the status of the work and/or carrier?
- how many works are there within the object (a videotape might contain multiple works should it be considered to be one or several works)?
- do other (better) copies of this work exist?

Active preservation:
2° Phase

1 - Inventariazione e documentazione fotografica

0042-IO-0001 → Nome fondo – Formato Tipologia – ID Oggetto
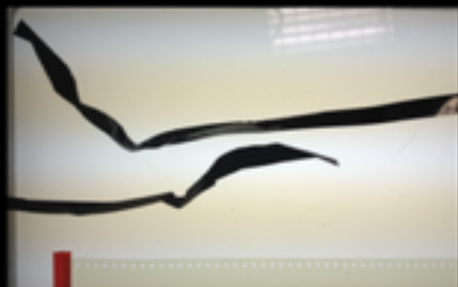
2 - Diagnostica dei nastri

Presenza di tagli e/o graffi sul nastro. In questo caso la rottura del nastro può compromettere il tracking o la lettura dell'audio

Nastro VCR gravemente affetto da *Sticky Shed Syndrome*

Nastro ¾" sul quale si constata la presenza di macchie dovute probabilmente al contatto con un liquido.
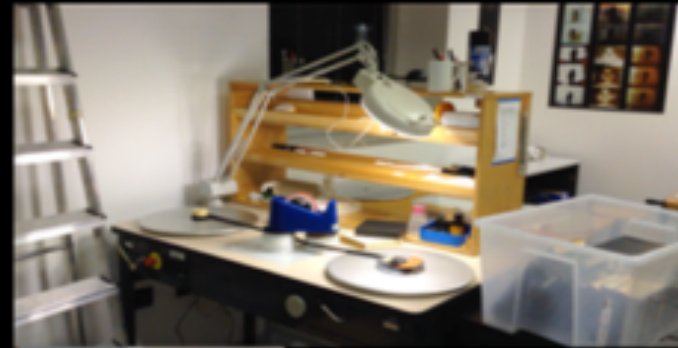
Evidenza di giunte su nastro ¾"; le pieghe sono dovute allo scorretto reinserimento del nastro

Ossidazione della parte metallica del carter VCR. Necessità di un intervento di pulizia

Trattamento di Baking 1/2"

Problematicità 1/2"

Problematicità VCR

3 - Trattamento dei nastri

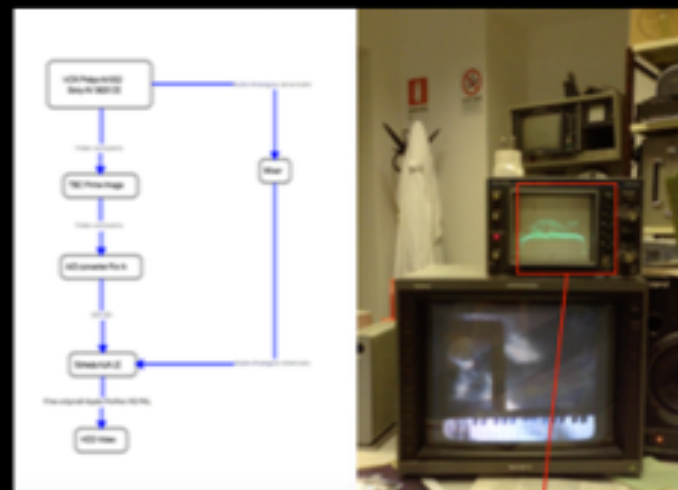Pulizia e preparazione per il *baking* dei nastri

In alto: riparazione delle giunte e stiratura del nastro
A destra: pulizia del carter

4 - Migrazione del contenuto dei nastri

Il segnale dei nastri viene acquisito attraverso l'apposito *work-flow* (in basso)

Strumento di analisi del segnale

Work-flow of the Lab. La Camera Ottica/video
Active preservation:
1° Phase

Archival Master file, Production Master file e *Derivative file*

Archival Master file
Migration or *upgrade of the video content*. Uncompressed format

Production Master file
Segmentation, *crop*, digital restoration, Uncompressed format

Derivative file
Compressed copies for exhibition and web access.

Active preservation:
1° Phase

Active preservation:
1° and 2° Phase

Protocol of the Lab. La Camera Ottica/video
Active preservation:
2° Phase

The completion of the non-theatrical cinema or video preservation and digitization is not the end of the cataloguing process.
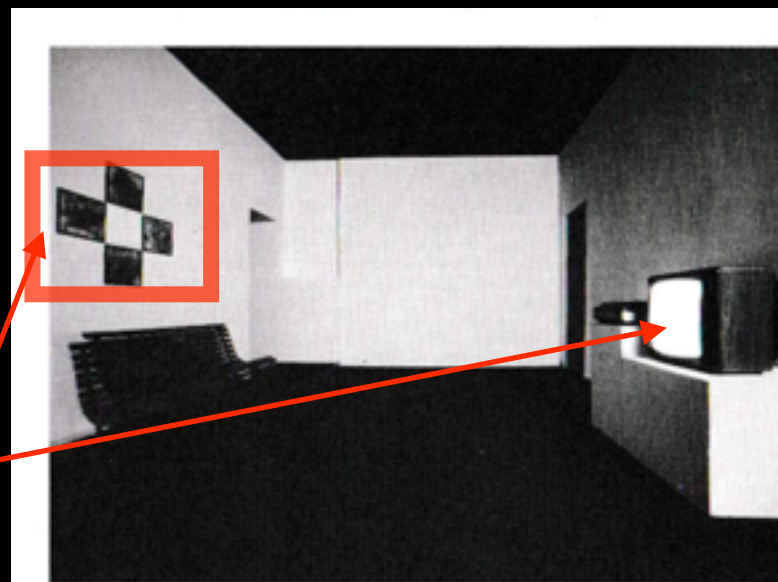
The ultimate digital object to be catalogued will be composed of four fundamental parts:

- the work of art (abstract)
- its digital and analogue manifestations,
- Variants/Expressions
- documentation (layout plants, certificates and contracts)
- contextual information (actors, locations, event, dates, etc...)

Luigi Viola
Feltre 1949, vive a Venezia

I looked for... (da Alice 1977)
1977

installazione:
4 fotografie cm. 30 x 40
una panca viola su cui è fissata una targa con la scritta « I looked for soap-bubbles, I looked for butterflies... that summer evening long ago a-sitting on a gate » (Ho cercato bolle di sapone, ho cercato farfalle... quella sera d'estate molto tempo fa seduto su un cancello)
video, colore, sonoro
durata 4'

L'installazione offre un'immagine del mio lavoro tra il 1977 e il 1978. È l'espressione di una sensibilità tesa a rivalutare ciò che appartiene alla realtà soggettiva, interiore, attraverso il recupero dei valori lirico-evocativi dell'immagine, i quali scaturiscono da un atteggiamento (molto contemplativo) di « osservazione trasognata ». Anche la memoria agisce sull'immagine come un ulteriore filtro, in grado di esaltarne la forza evocativa ed allusiva nella rappresentazione di cose e fatti quotidiani, frammenti lirici di una realtà di cui si coglie il fluire fenomenico e spontaneo, ricercando dentro di sé, nello spazio dell'immaginazione, nelle pulsioni soggettive, uno strumento privilegiato di avvicinamento ad essa.

L.V.

Video as no video
1978
video b/n e colore, sonoro

Urlo
1979
video b/n, sonoro

125

Film and video can perhaps be archived in their material form, but the installation of which video or film is a constitutive element can only be documented. Documentation (possibly organized and digitized) is the only way to preserve/archive the performativity and ephemerality.

DCA (Internationally used cat. Regulation)	FIAF (Internationally used cat. Regulation)	OAC (National cataloguing regulation)	LAB. La Camera Ottica, Gorizia
Work (Abstract)	Work (Abstract)	Main records (Scheda madre)	Work (Abstract)
Expression (Abstract)	Variant (Abstract)	Secondary records, level 1 (scheda figlia)	Expression (Abstract)
Manifestation (Physical)	Manifestation (Physical)	Secondary records, level 2 (scheda figlia)	Manifestation (Physical)
Item (Physical)	Item (Physical)	Secondary records, level 3 (scheda figlia)	Item (Physical)
-	-	-	Batch
-	-	-	Collection
-	-	-	Project

Work: an entity comprising the intellectual or artistic content and the process of its realization.

Expression/Variant: an entity that may be used to indicate any change to content-related characteristics that do not significantly change the overall content of a Work as a whole.

Manifestation: a physical embodiment of a moving image Work/Variant. Manifestations include all analogue, digital and online media.

Item: a single physical copy of a Manifestation of a Work or Variant.

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Goal

«Long-term potential of organising knowledge by expressing semantic relationships among myriads of predicates"»

(Paraphrased from `filmstandards.org`)

- Linkding

- Integration

- Interoperability

RM/T (Codd, 1979)

- Conceptual model

- Extension of the Relational Model

- (Some) semantic aspects encoded explicitly (**catalog**)

- Identification based on **surrogates** (Hall et al., 1976)

«Two surrogates are equal in the db iff they denote the same real-world entity»

- Extended relational algebra

  ▸ Graph operators
  ▸ Schemas ⟷ instances
  ▸ Etc…

A (Contrived) Example

I Vitelloni ("The Layabouts") is a 1953 movie starring Alberto Sordi (as Alberto), who was awarded the Nastro d'Argento (silver ribbon) as "best actor" for his performance in the movie

Movie

entity_id
m_1

CATR

relname	reltype
Movie	E-relation, inner kernel
Year	Property relation

Year

entity_id	year
m_1	1953

PG

sub	sup
Year	Movie

An Example (cont.)

Title

entity_id
t_1

CATR

relname	reltype
Movie	E-relation, inner kernel
Year	Property relation
Title	E-relation, characteristic

TitleMovie

entity_id	movie_id
t_1	m_1
t_2	m_1

PG

sub	sup
Year	Movie
TitleName	Title
TitleLang	Title

TitleName

title_id	title
t_1	I Vitelloni
t_2	The Layabouts

TitleLang

title_id	language
t_1	italian
t_2	english

CG

sub	sup
Title	Movie

Example (cont.)

Actor	Award	IsAwarded
entity_id	*entity_id*	*entity_id*
a_1	w_1	i_1

CATR

relname	reltype
Movie	E-relation, inner kernel
Year	Property relation
Title	E-relation, characteristic
Actor	E-relation, kernel
Award	E-relation, inner kernel
IsAwarded	E-relation, associative

AwardActorMovie

eid	award_id	actor_id	movie_id
i_1	w_1	a_1	m_1

AG

sub	sup	att
Award	**AwardActorMovie**	*award_id*
Actor	**AwardActorMovie**	*actor_id*
Movie	**AwardActorMovie**	*movie_id*

Extended Algebra

Title

entity_id
t_1

TitleName

title_id	title
t_1	I Vitelloni
t_2	The Layabouts

TitleLang

title_id	language
t_1	italian
t_2	english

PROPERTY(**Title**)

title_id	title	language
t_1	I Vitelloni	italian
t_2	The Layabouts	english

Extended Algebra

AwardActorMovie			
eid	award_id	actor_id	movie_id
i_1	w_1	a_1	m_1

LGRAPH(**AwardActorMovie**)		
s	t	rel
w_1	a_1	**AwardActorMovie**
a_1	w_1	**AwardActorMovie**
w_1	m_1	**AwardActorMovie**
m_1	w_1	**AwardActorMovie**
a_1	m_1	**AwardActorMovie**
m_1	a_1	**AwardActorMovie**

Extended Algebra

- COMPRESS $(\cdot, \mathscr{R})$ is the relation obtained by repeated pairwise application of associative and commutative operator $\cdot$ to the relations in the set $\mathscr{R}$;

- APPLY$(f, \mathscr{R}) \doteq \{f(r) \mid r \in \mathscr{R}\}$, where f maps relations into relations;

Extended Algebra

*«Find the movies related **in any way** to Alberto Sordi»*

$$A \leftarrow \pi_{\mathsf{sup}}(\mathbf{AG} \bowtie_{\mathsf{sup}=\mathsf{sup'} \wedge \mathsf{sub}=\mathbf{Movie} \wedge \mathsf{sub'}=\mathbf{Actor}} \mathbf{AG'})$$

$$B \leftarrow \pi_{\mathit{entity\_id}}(\sigma_{\mathit{name}=\mathsf{Alberto\ Sordi}}(\mathsf{PROPERTY}(\mathbf{Actor})))$$

$$\mathit{Answer} \leftarrow \delta_{\mathit{entity\_id} \rightarrow s}(B) \bowtie \mathsf{COMPRESS}\,(\cup, \mathsf{APPLY}(\mathsf{LGRAPH}(), A))$$
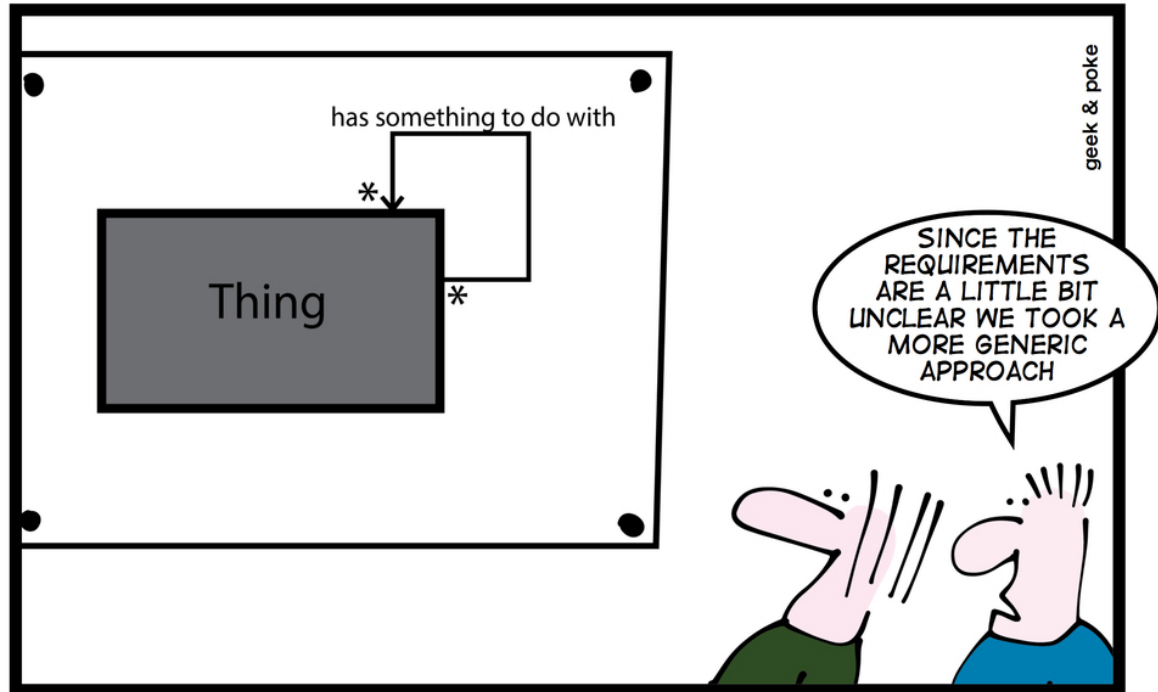
- Returns tuples of the form (a_1, R, m_k), where m_k is the surrogate of a movie related to Sordi via relation R

- E.g., $(a_1, \mathbf{IsAwarded}, m_1)$

Conclusions and Future Work

- The extended algebra has not been studied extensively

  ▸ cf. Data Science applications

- Interoperability

  ▸ Relational databases as an exchange data format
  ▸ Distributed databases

- Support for RM/T in existing DBMSs