

## HISTORIC VEHICLES PRESERVATION: A DIAGNOSTIC APPROACH

\* Mario laureati (a). Graziella Roselli (b). Marco Minicucci (b).

Giuseppe Di Girolami (c). Paolo Cinaglia (c). Simone Campanelli (a)


\* Presenting author

(a) Tecnologie e Diagnostica per la Conservazione e il Restauro – Università di Camerino, Via E. P. Mazzoni 2 - 63100 Ascoli Piceno


(b) Laboratorio di Tecnologie e Diagnostica per la Conservazione e il Restauro – Università di Camerino, Via E. P. Mazzoni 2 - 63100 Ascoli Piceno - c) A. R. T.&CO. Srl - Spin-Off Università di Camerino, Via E. P. Mazzoni 2 - 63100 Ascoli Piceno

The historic vehicle as a cultural asset between design and work of art.

### A BRIEF HISTORY




**Cugnot steam wagon (military engineer French):**  
-1769: First failed experiment  
-1771: works- speed. 4 km/h




**Steam carriage Virginio Bordino (Sardinian army officer):**  
- First half of 1800- speed 6/8 km/h

### A BRIEF HISTORY



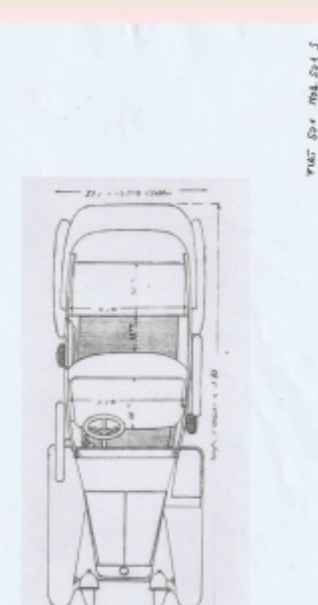
February 18, 1926: in a letter sent to Senator Giovanni Agnelli, Gabriele D'Annunzio establishes that "The car is feminine"

**FIAT 508 "Baillia" of 1935:** speed 80 Km/h - the only point in common with the "carriage" remains the upper closure of the roof, with structure in wooden strips and waterproofing layer



Lancia lambda-1924- torpedo body with supporting structure, that is, forming a single whole, rigid and light, between chassis and body.



### THE CAR AS A CULTURAL ASSET BETWEEN A DESIGN OBJECT AND A WORK OF ART



- The culture of art and the culture of the automobile have actually never met until today.
- Art and architecture critics have a cult of attribution and personality; car manufacturers have, by written contract, the opposite.
- The point of connection, between industrial culture and official culture, will find definition starting from the first post-war period in the definition and procedures of design.
- The modern definition of "cultural heritage" includes the goods having reference [...] to the applied arts [...] and to the history of science and technology" establishing a new conception of cultural heritage.

**The historic vehicle therefore as a cultural asset, a design product, a work of art in some particular creations.**

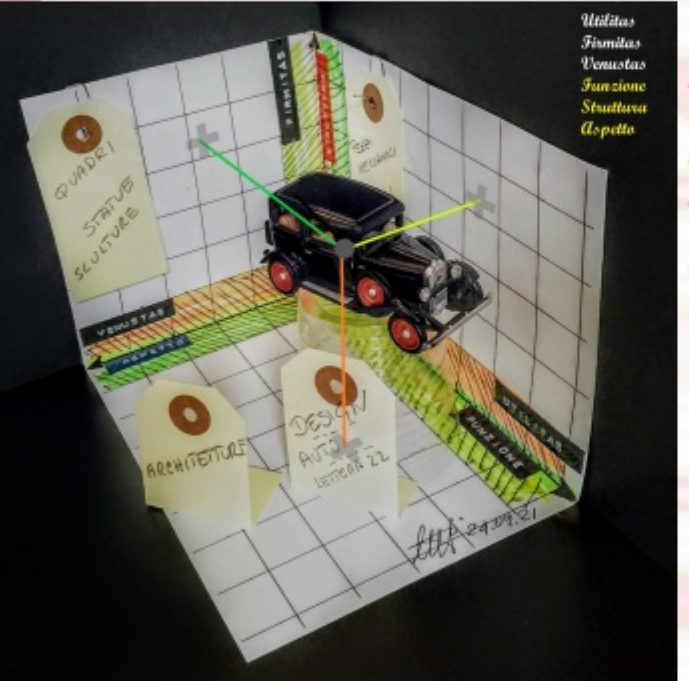
### THE CAR AS AN ADVERTISING OBJECT: THE BEGINNINGS

- The culture of the automobile, linked to advertising, established that the object was not "attributable" in the sense of art history.

The advertisements (these are attributable n.d.a.), which were distributed throughout the country, obviously confirm the predominance of the corporate brand over the attribution and at the same time testify to the intertwining of customs and artistic and design trends with the object "car".

### For a synthetic representation of an object (cultural asset)

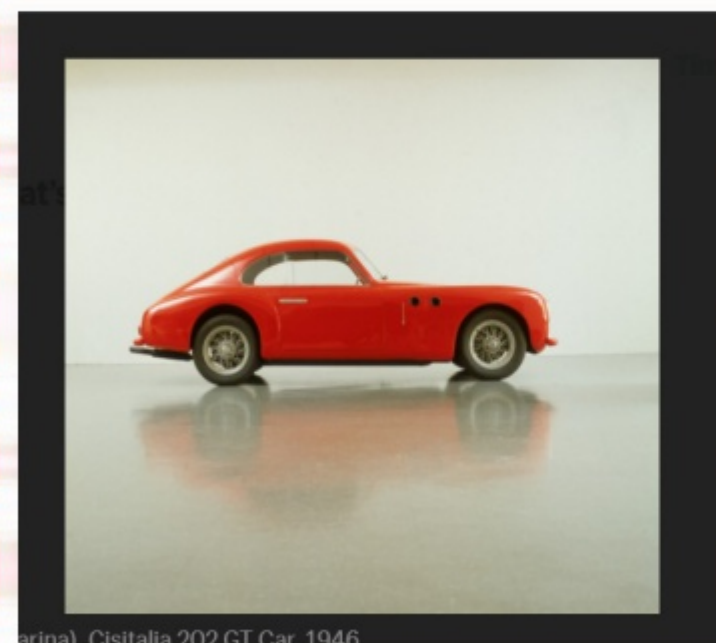


An attempt has been made to put together a series of information on a simple triad of Cartesian axes to graphically display the point at which to place an object (design, architecture, work of art, common object).

Were used the definitions of Brandt (Theory of restoration) relating to a work of art, which are:

- FUNCTIONALITY**
- STRUCTURE**
- APPEARANCE**

### For a synthetic representation of an object (cultural asset)



If we consider **STRUCTURE** and **APPEARANCE** for paintings, when the object possesses all three characteristics (**STRUCTURE, APPEARANCE, FUNCTIONALITY**) here we enter the world of **ARCHITECTURE** as well as **DESIGN** objects.

Since 1972, the Cistalia 202 Gt from 1946 has been on permanent display in the collection of the MOMA in New York to attest to the **AUTOMOBILE** as a symbol of **DESIGN**.

### Protection and conservation of historic vehicles: the Turin Charter.



On 27 October 2012, for historic vehicles, the "Turin charter" was ratified in Monaco by the FIVA General Assembly (Fédération Internationale des Véhicules Anciens).

The "Charter" specifies that "historic vehicles are significant as means of transport, as witnesses of their historical origins, of the technical state of the art of their period and, last but not least, for their impact on society".

It is significant that the protection also extends to "buildings and artifacts related to historic vehicles and their period of use, such as factories, refueling stations, roads or speed tracks".

**FIAT Lingotto factory Renzo Piano - 1985- Reuse project**

### DEFINITION OF A DIAGNOSTIC APPROACH.

In the field of classical art we have a sequence of layers which varies according to the support (canvas or panel) and which is in any case characterized by:

- preparation
- priming
- pictorial film
- final protective varnish

The aesthetic and expressive function of these layers is performed by the pictorial film: what the painter wants to represent through overlaps and shades of color.

In the automotive field, speaking of the metal support (most of the cases for vintage cars), we have:

- grouting
- application of primer and filler
- application of the paint product in several coats with polishing
- application of any protective wax product

In the industrial and automotive fields in particular, we therefore no longer speak of a pictorial film but of a "paint product".

### XRF ANALYSIS AND THE ROLE OF LEAD IN THE CHOICE OF DATING CRITERIA

- The spectroscopic investigation with the X-ray fluorescence technique (XRF) allows to analyze the components of a material or its properties.
- Analyzing all the samples taken, the presence was highlighted, mainly of:

CALCIUM (Ca), TITANIUM (Ti), IRON (Fe), NICKEL (Ni), COPPER (Cu), ZINC (Zn), BARIUM (Ba), MERCURY (Hg), LEAD (Pb).

- With reference to **LEAD**, grouping the results by year, it was noted that the % detected varied on average in a decreasing manner according to the period (higher in the oldest cars, until zeroing in for current cars).

### XRF analysis and the role of lead in the choice of dating criteria

- It was therefore decided to investigate the correlation between production period and % lead content.
- Lead was used because it accelerates the drying of the oil binder
- The League of Nations (now the UN) initiated efforts to ban lead paint in 1921.
- The use of lead paint has been banned in the European Union since 2003
- France had passed a law in 1909 banning the use of paint containing lead for the interior and exterior painting of all buildings.
- In Italy, with the Law of 19 July 1961 n. 706, the use of white lead in painting is regulated
- The use of lead is now banned in many countries due to its toxicity. Its accumulation in the body causes lead poisoning. Lead paint is not banned in India and other countries.

### CASE STUDIES FOR THE DIAGNOSTIC APPROACH.

in total, n. 21 historic vehicles from various eras, with the withdrawal of n. 57 samples

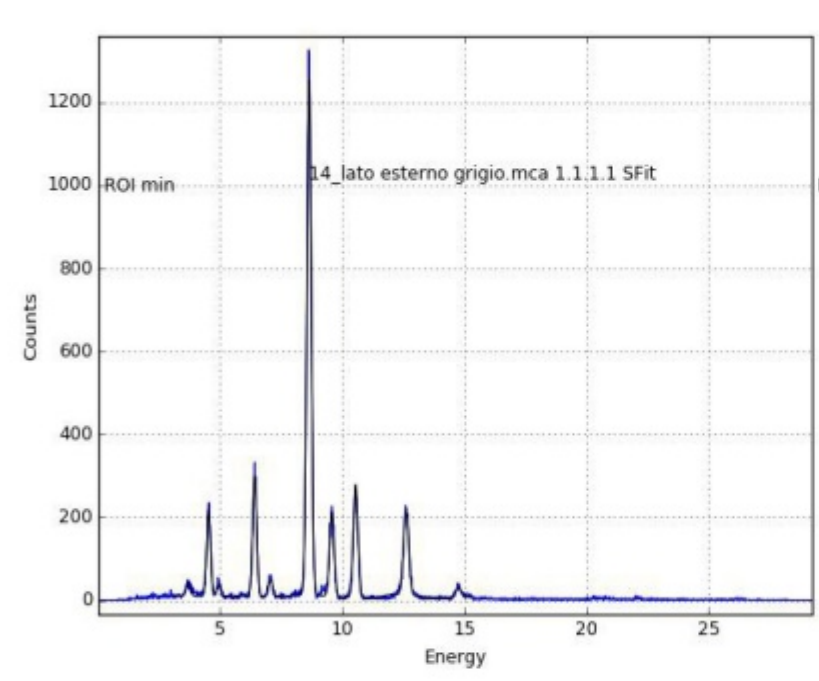
#### HISTORICAL VEHICLES AT COMPANIES AND INDIVIDUALS

FIAT 501 Sedan from 1925/ FIAT 508 B "Baillia" 4-speed from 1935 (restored)/FIAT 508 B "Baillia" 4-speed from 1936 (original) /FIAT 1100 - VAN - YEAR 1949 /Alfa Romeo GT 1750 from 1969.

#### HISTORICAL VEHICLES AT THE NATIONAL AUTOMOBILE MUSEUM OF TURIN "AVV. GIOVANNI AGNELLI"

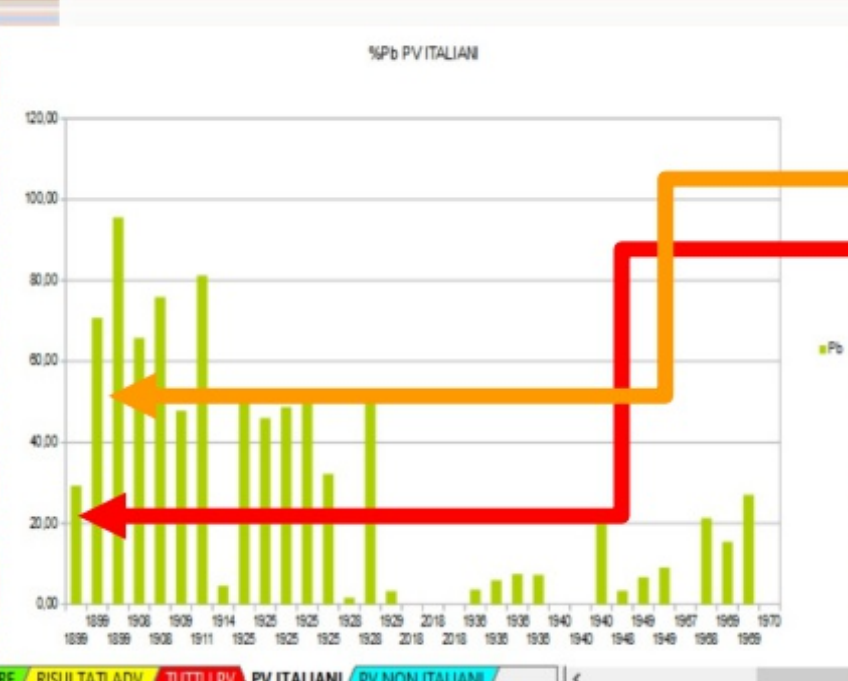
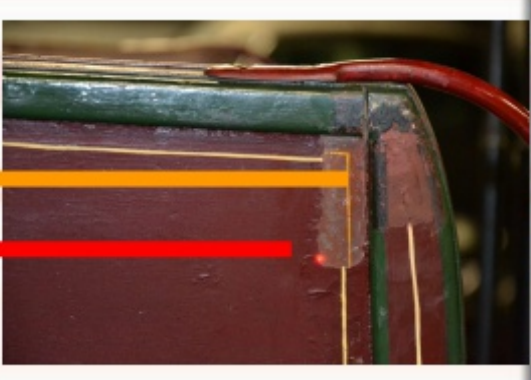
Italia, 35/45 HP (Palombella), 1909; Fiat, 4, 1911; Rolls Royce, 40/50 HP Silver Ghost, 1914; Citroën, 11 A, 1934; Maserati, Mexico, 1968; Lancia, Aprilia, 1948; Automobili Giuseppe Ricordi, 8 HP Break, 1899; Legnano, A 6/8 HP, 1908; Adler, K 7/15 HP, 1912; Lancia, Theta, 1914; Italia, 61, 1928; Ford, A, 1929; Alfa Romeo, 6C 1750 Turismo, 1929; Daf, 44, 1965; Autobianchi, Primula, 1967; Lancia, Flaminia, 1970/545 HP (Palombella), 1909; Fiat, 4, 1911; Rolls Royce, 40/50 HP Silver Ghost, 1914; Citroën, 11 A, 1934; Maserati, Mexico, 1968; Lancia, Aprilia, 1948; Automobili Giuseppe Ricordi, 8 HP Break, 1899; Legnano, A 6/8 HP, 1908; Adler, K 7/15 HP, 1912; Lancia, Theta, 1914; Italia, 61, 1928; Ford, A, 1929; Alfa Romeo, 6C 1750 Turismo, 1929; Daf, 44, 1965; Autobianchi, Primula, 1967; Lancia, Flaminia, 1970

### DIAGNOSTIC ANALYSIS -XRF ANALYSIS



- The analyzes were carried out in the laboratory at the headquarters of the A.R.T. & Co. Spin-off company of the University of Camerino.
- With the X-ray fluorescence (XRF) technique, for each sample, the data of the emission characteristics of the spectrum were acquired and the information relating to the chemical elements present was obtained, using the "PyMca Application" Version 5.1 software. 3.

### DIAGNOSTIC ANALYSIS - DATA ANALYSIS

Vehicle Giuseppe Ricordi 8HP- BREAK- anno 1899

### CONSIDERATIONS AND CONCLUSIONS

- It can be concluded that, having reference values regarding the presence of Pb, it is possible to hypothesize a date of the application of PV on the vehicle and therefore of the vehicle itself in the case of original paint.
- In any case, the diagnostic data must always be associated with information taken from the observation of the vehicle and the sampling points as well as the available documentation.
- The sample obtained and analyzed is still very limited and for the moment makes the creation of reference values of Pb referred to the painting time STATISTICALLY unreliable.
- A subsequent working hypothesis will be to have a significant number of vehicles to better cover the time periods, from the beginning to the whole of 1900.
- Ultimately, in the future, it will be possible to build a reference database for historic vehicles, both to date the painting / repainting operations carried out and to establish their originality.

### SPECIAL THANKS

A.R.T. & Co. - spin-off of the University of Camerino - for the welcome and collaboration of Giuseppe Di Girolami, Paolo Cinaglia, Antonella Potenza throughout the internship.

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CARROZZERIA HAPPY CAR of Spoleto (PG) with the owner Mario Cozzari who has made available his 1936 Baillia and other cars

Finally, a special thanks to the rapporteurs PROF. GRAZIELLA ROSELLI and PROF. MARCO MINICUCCI for the support provided to me during this process of "discovery" of a particular cultural asset not normally considered in a diagnostic course for restoration.