

Object Worksheet: Tatra T87 four-door sedan & Ford Model Car

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The Tatra and the Ford Car model are located adjacent to each other in Gallery 379

The two objects have commonalities related to design process, scientific method, shape, line, volume, function...aerodynamics.

Personal Note: I used them on a "Design Elements—Why is the sky yellow" tour with 6th graders who attended a science fair just prior to their MIA visit. The animal metaphor to describe aerodynamic design decisions was helpful. I used these objects with 3rd grade boys—it was OK but not great. I plan to use the Tatra with a group of High School Students studying European History.

Object

Title: Tatra T87 Four door sedan 2005.138
Artist: Hans Ledwinka; Manufactured by: Righoffer-Tatra-Werke AG, Nesseldorf (now Koprivnice), Czechoslovakia, established in 1850
Date: 1948 (designed 1936)
Medium: Decorative Arts and Utilitarian Objects, Industrial Design, All-metal construction

Physical Description: silver four-door automobile; front in the style of a Volkswagen with three headlights; sloped back with back central vertical fin and back louvered window; brown leather interior; sunroof

Questions:

- How would you describe---shape, line, color (if using the Ford model car compare the surface color, texture.
- Remind you of any animals or natural forms?
- If you could touch how would it feel?
- What would it feel like to drive?

Key points:

Design and Production

- Earlier car and truck design was based on horse drawn carts, carriages, and wagons.
- The study of Aerodynamics was inspired by early airplane design.
http://www.chrysler.com/design/vehicle_design/history/eras/index4.html
- Birds, fish and the movement of air and water were studied and concepts were adopted in plane and car design. "Streamline" design elements overflowed in to decorative objects that had no functional need for aerodynamics.
- Designed by Hans Ledwinka b.1878 in Austria, lived in Czechoslovakia
http://en.wikipedia.org/wiki/Tatra_cars
- An entire range (line) of cars and trucks named after the Tatra Mountain Range which forms a natural border between Slovakia and Poland (wikipedia)
- Tatra bought license from Paul Jaray 1889-1974 Hungarian aerodynamicist
http://en.wikipedia.org/wiki/Paul_Jaray
 - "Real Streamlining" drag coefficient 0.36

- Modified by Ledwinka to improve look, grace without increasing drag. He extended the body with a short front end, long tapered rear.
- Dorsal fin increased stability in crosswind
- 1934 Autobahn opened. The 75 horse power Tatra could go 100 mph
- Fluid Think Tank members Ledwinka, Jaray, Edmund Rumpler
http://en.wikipedia.org/wiki/Edmund_Rumpler
 - Worked together to develop
- Porsche was sued for copying the design in the 1938 VW. Porsche met with Ledwinka frequently to discuss design. Porsche is quoted “Well sometimes I looked over his shoulder and sometimes he looked over mine” The suit was dropped when Czechoslovakia was invaded by Germany. The suit was finally settled in Tatra’s favor in 1961.
- Innovations:
 - Sliding sun roof
 - Side Air scoops
 - Air cooled engine
 - Rack and pinion steering
 - All wheel independent suspension
 - 4 wheel hydraulic brakes
 - Closed under carriage
 - Passenger comfort, reclining seats
 - 3 part windshield for improved visibility
 - Rear louvers
 - Cyclops fog headlight

World War II

- Production continued during WWII after the Nazi occupation of Czechoslovakia 1938
 - Hitler liked it.
 - “Many German Officers met their deaths driving heavy, rear-engined Tratas faster around corners than they could handle
 - Became known as the Czech Secret Weapon
http://en.wikipedia.org/wiki/Tatra_cars_-_War_years

Status Symbols

- The Tatra form was not popular in the US because the short hood did not convey a message of high social status. Cars such as the Chrysler Airflow (1934-37) had a long hood that in the view of the public at that time was a status symbol. Think Hollywood...

SOURCES OF INFORMATION:

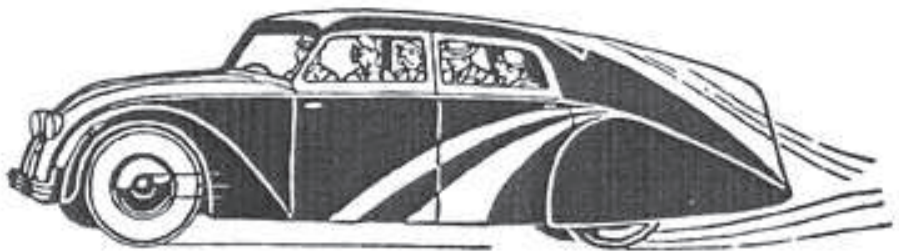
There are several detailed documents available on line, in the kiosk adjacent to the car; there is a booklet on the wall of the gallery and book in the MIA reference library.

- [Tatra : the legacy of Hans Ledwinka](#) by Ivan Margolius & John G. Henry. [TL215.T37 L42 1990](#) MIA Main Library Collection
- ArtsConnected
<http://www.artsconnected.org/resource/75116/tatra-t87-four-door-sedan>
- Teacher Resources Brochure:
<http://artsmia.org/education/teacher-resources/fivefacts.cfm?v=72>
- Videos with Curator David Ryan:

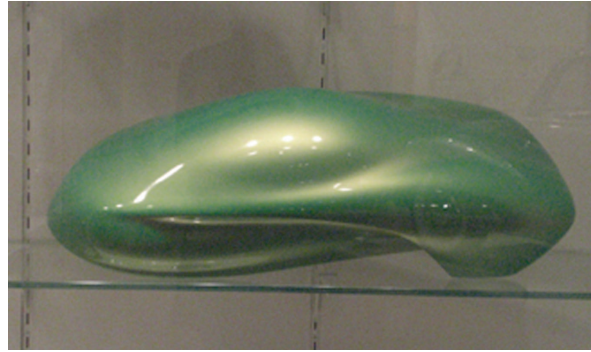
<http://www.artsconnected.org/resource/97188/tatra-t87-intelligent-design>
<http://www.artsconnected.org/resource/97189/3/tatra-t87-in-the-driver-s-seat>

Props attached in pdf format

1. Illustration from Tatra, The Legacy of Hans Ledwinka, page 97. NOTE: illustration is not an accurate portrayal of aerodynamics. ...but I think it's a fun illustration of wind / car interaction.
2. Bicycle in wind tunnel—from Google Images
3. Modern Car Aerodynamic illustration---from Google Images







Object

Title: Car model 2006.2

Artist: Ford Motor Company

Date: late 1980s-early 1990s

Medium: Decorative Arts and Utilitarian Objects, Industrial Design

bright green, highly streamlined and stylized “car”

used to test paint appearance at different angles

Gallery Label: The major automobile companies have used various means to explore their car body designs, ranging from overall aerodynamics to specific detailing and colors. Early on, they employed skillful craftsmen to create models in clay and wood and subsequently, hyper-realistic airbrush renderings. Today, most working schematics and formal presentations result from computer software. This futuristic model was made specifically to test paint development and patterns, particularly how sheen, color, and gloss would interact with a car's form when viewed from different angles.

Questions:

- How would you describe the color?
Color, Texture, Surface
How does the look change as you look at it from different angles.
Shape
How does the color and surface compare to the Tatra
- If you could touch the surface how would it feel
- What Animals does this shape remind you of

Key points:

Design Process

- Cars, planes, household objects, sculpture and countless other objects are designed using models like this. Models are used to test out aspects of the design before the actual object is produced. ...as in this case the way the paint looks and performs.
- Everything that is made by people is designed—someone makes the design decisions.
- Car companies and others sponsored design competitions. Competitors submitted models winning designs or parts of designs were sometimes used in final production designs. Google “history of car design competitions” for an amazing timeline.
- Discussion:
 - Why would you make a model? Learn what does/does not work and much less expense and on a scale that is manageable.
 - What things can you learn from a model?--- it’s a long list
 - Could include age appropriate discussion of scientific methods.

Prop

Example of current car design process. Vanity Fair Magazine April 2011

