CALIFORNIA DESIGN 1930—1965
Living in a Modern Way

AUCKLAND ART GALLERY
TOI OTĀMAKI
California Dreamin’

Inspiring Innovative Car Design and Development

Dr Tony Robotham
21st July 2013
Today, why does every major automotive manufacturer have an advanced design studio in California?
Overview

1850 – 1930

1930 – 1965

1965 – Today
1850 - 1930

A STATE IS CREATED

&

AN INDUSTRY IS FORMED
1850s

1850 US Congress makes California the 31st State of the Union

1855 300,000 Gold Rushers “49ers” had come to California

Oil collected & refined
1854 Four-stroke cycle

patented by

Felice Malteucci
Eugene Barsanti
View of San Francisco in 1850, George Henry Burgess 1878
1860s

1861-1865 American Civil War
California has only a minor role

1869 Central Pacific Railway gets to Utah &
connects to Omaha &

Chicago

Oil wells 1st dug
1860 1st Engine to run on petroleum

patented by

Etienne Lenoir
1862 1st Vehicle to be powered by an internal combustion engine

built by
Etienne Lenoir
1870s

Nicholas Otto learns how to let a fuel-air mixture burn slowly

1876 Otto builds 1st four-stroke internal combustion engine

45,000 “Otto Cycle” stationary engines sold over next 10 years
The Otto Cycle
a contemporary example
The Otto Cycle

a contemporary example

1. Induction
2. Compression
3. Combustion
4. Exhaust
1880s

Boom of the bicycle promotes a culture of personal mobility

The automobile arrives
Gentleman Cyclist & League of American Wheelmen rally in the 1880s
The bicycle …

“… directed men’s mind to the possibilities of independent, long distance travel over ordinary highways”

Hiram Maxim
1885 1st Motorcycle

built by Gottlieb Daimler
ridden by Wilhelm Maybach
1885 1st Automobile
built by Karl Benz
patented 1886
1890s

Fledgling US auto industry emerges

1893 USA’s 1st practical gasoline powered car built by Duryea Bros.
1898 LA Automobile Club formed
1882 USA’s 1st Gasoline Automobile

built by

Duryea Bros.

Duryea Runabout 1884

Charles & Frank Duryea 1st gasoline fuelled automobile built in USA 1882
Louis Perry electric automobile 1893

Henry Ford quadracycle 1896

Oldsmobile 1897

Thomas B Jeffery Rambler 1897

James W Packard 1898

Whitney steam vehicles 1898
1890s Systemé Panhard

devised by

Panhard et Levassor

- Front mounted IC engine
- Clutch
- Sliding gear transmission
- Rear wheel drive
1903  Ford Motor Co. formed
1904  USA becomes world’s largest auto maker 22,000 vehicles/year
1908  General Motors founded by merging of Buick with Oldsmobile
1909  GM acquires Cadillac & Pontiac
1900 Just 4192 cars in USA
1906 Steam Car Land Speed Record

Built by
Stanley Bros.
driven by
Fred Marriott

127.66 mph
Curved Dash Oldsmobile 1901

National Model C Touring car 1904

Ford Model-A 1903

Baker Electric 1906

Studebaker Limousine 1908

Model F Stanley steam car 1908
1908 Ford Model-T launched $950
devised by
Henry Ford

- 4-cylinder engine, separate cylinder head, integral block & crankcase, natural circulation cooling, gravity fuel feed
- 2-speed planetary gearbox with drum & band clutch
- Simple chassis with transverse springs at front and rear
1908–1927 Ford Model-T Production

devised by

Henry Ford

- High strength steels (vanadium)
- Standardised product no costly variations
- Interchangeable parts
- Specialised tooling
- Low-skilled, low-cost labour
- Moving line assembly
- 93 minutes to make
Ford Model-T Production
Earthquake & Fire ravage Dolores Street & Old City Hall, San Francisco 1906
1912  Universal Studios founded
1913  Lincoln Highway - NYC to SF
1914  Ford starts production in LA
1915  Panama Canal opens
1918  Harley Earl starts work at Earl Automotive Works
Nestor Motion Picture Co. opens first movie studio in Hollywood 1911
1910s IC engine & Systemé Panhard has triumphed

- Front mounted IC engine
- Clutch
- Sliding gear transmission
- Drive shaft to differential
- Rear Wheel Drive
- Rail Chassis
1910s IC engine & Systemé Panhard has triumphed

- Custom built Coachwork
- Optional accessories
1916 Chevrolet opens West Coast assembly plant in Oakland, Calif.
Fatty Arbuckle’s Pierce Arrow 66 – styled by Harley Earl & coachbuilt by Earl Automotive Works 1919
1920s

1920  Prohibition starts
1925  San Luis Obispo Mo-tel
1926  Route 66 commissioned
1927  “The Jazz Singer”

Douglas Aircraft, Walt Disney, MGM, Warner Bros, & Academy of Art University founded in California
1920s

1920  Walter M Murphy establishes coachbuilders in Pasadena

“superlative quality ... the finest examples of custom jobs”

1927  Chrysler Corp begins auto assembly in California

1927  Harley Earl moves to Detroit to direct GM’s Art & Color Studio
Cadillac - Harley Earl 1920
1927 Ford Model-T production ends

At its peak in 1923, 1,817,891 Model-Ts were built in one year & 50% of US cars were Model-Ts

In 1924, the price of a Model-T was merely $260

26th May 1927 the last of 15,007,033 Model-Ts was produced

Factory closed for 6-months to re-equip for new automobile

1928 Ford Model-A goes on sale
The 1930s Approach

1929 26.7m cars registered in USA
US auto production peaks 5,337,087

The “Big Three” have formed

Ford Motor Company
General Motors – Buick, Cadillac, Oldsmobile, Pontiac, Chevrolet
Chrysler – Dodge, Plymouth, DeSoto

West Coast auto assembly has begun
Harley Earl leads 1st design studio
1930 - 1965

THE STYLISTS TAKE CONTROL

&

COUNTER-CULTURES EMERGE
1930s

Economic Depression

Styling adopts Art Deco & Streamline Moderne

San Francisco builds an iconic bridge
BILLIONS LOST AS STOCKS CRASH
1930 The Great Depression sets in

- 25% of workers were unemployed
- 1 million family farms were repossessed
- Average family incomes reduced 40%
- 11,000 banks went out of business
- 9 million savings accounts lost
- 2 million people homeless
- 60% of Americans were “poor”
1930 Ford opens new assembly plant in Southern California
Ford Model-B 1932
1932 Ford V8 “flathead” arrives

Henry Ford with new “flathead” V-8 engine 1932
Dolores del Rio – Cord L-29 Town Car – Walter J Murphy Coachbuilder 1930
Dolores del Rio - Cord L-29 Town Car - Walter J Murphy Coachbuilder 1930
Duesenberg J Coupe – Walter J Murphy Coachbuilder 1931
1932 Raymond Loewy turns to autos
ART DECO
AUTOMOBILES
Chrysler Airflow - the first mass-market streamline automobile 1934
Clark Gable - Duesenberg Model JN Convertible Coupe - Christian Bonham & Maurice Schwarz Coachbuilders 1935
1938 Harley Earl’s 1st Concept Car
1938 Harley Earl’s 1\textsuperscript{st} Concept Car
1938 Studebaker commission Loewy

Raymond Loewy designed Broadway Limited Steam Engine with Studebaker President Sedan 1938 & Hearse 1939
Packard Super 8 180 Convertible Victoria - Howard "Dutch" Darrin Coachbuilder 1939
Packard Super 8 180 Convertible Victoria – Howard “Dutch” Darrin Coachbuilder 1939
Hawley Bowlus designed Airstream Clipper trailer 1935
The Wheels Fall Off

US Auto Closures

**Luxury**
- Peerless (1932)
- Marmon (1933)
- Franklin (1934)
- Duesenberg (1937)
- Pierce-Arrow (1938)
- Stutz (1938)

**Medium**
- American Austin (1935)
- Auburn (1936)
- Graham Paige (1940)
- Hupmobile (1940)
- American Bantam (1941)
The Wheels Fall Off

US Auto Survivors

General Motors

Chrysler

Ford Motors

Willys

Packard

Studebaker

Hudson

Nash

Bonham & Schwarz – Coachbuilders

Airstream – Trailers

85%
The Wheels Fall Off

Californian Auto Studios

<table>
<thead>
<tr>
<th>Standard Carriage Works</th>
<th>1890-1899</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.S. Albright Company</td>
<td>1899-1901</td>
</tr>
<tr>
<td>A. Meister &amp; Sons Co.</td>
<td>1901-1902</td>
</tr>
<tr>
<td>Earl Automobile Works</td>
<td>1902-1903</td>
</tr>
<tr>
<td>John B. Brokaw Auto &amp; Body Co.</td>
<td>1903-1904</td>
</tr>
<tr>
<td>George R. Bentel Company</td>
<td>1904-1905</td>
</tr>
<tr>
<td>Larkins &amp; Co.</td>
<td>1905-1906</td>
</tr>
<tr>
<td>Don Lee Coach &amp; Body Works</td>
<td>1906-1907</td>
</tr>
<tr>
<td>Walter M. Murphy Company</td>
<td>1907-1908</td>
</tr>
<tr>
<td>O.R. Fuller/Auburn-Fuller</td>
<td>1908-1909</td>
</tr>
<tr>
<td>Thompson Auto Body Co.</td>
<td>1909-1910</td>
</tr>
<tr>
<td>J. Gerard Kirchhoff Body Works</td>
<td>1910-1911</td>
</tr>
<tr>
<td>Bohman &amp; Schwartz</td>
<td>1911-1912</td>
</tr>
<tr>
<td>Darrin of Paris</td>
<td>1912-1913</td>
</tr>
<tr>
<td>Coachcraft Ltd.</td>
<td>1913-1914</td>
</tr>
</tbody>
</table>

data courtesy of Petersen Automotive Museum, Los Angeles, California 2013
1940s

The World at War Again

Auto production ceases

California grows by 50%
Chrysler Newport dual-cowl phaeton – Indy 500 pace car 1941
WAR! JAPS BOMB U.S. BASES
22 Feb 1942 civilian automobile production stops

75 essential products
4,131,000 engines
- 450,000 aircraft engines
27,000 aircraft
- 7,000 B24 Liberator (Ford)
2,500,000 trucks
- 600,000 Jeeps (Willys, Ford, American Bantam)

$29bn military goods
47% machine guns
450,000 aircraft engines
57% tanks
27,000 aircraft
85% army helmets
2,500,000 trucks
87% bombs
Post-War & 1950s

Prosperity returns

Space-age exuberance & flamboyancy

Custom Car Culture
My primary purpose ...

“to lengthen and lower the American automobile, at times in reality, and always at least in appearance”

Harley Earl (1954)
Delores del Rio - Cadillac Series 62 1948
Harley Earl tailfins – Cadillac Club Coupe Fastback 1954
A Californian favourite - Porsche 356 Speedster 1955
Another Californian favourite – Mercedes-Benz 300 SL Roadster 1957
Tailfins - Dodge Custom Royal & Cadillac Eldorado 1959
Tailfins - Dodge Custom Royal & Cadillac 1959
Harley Earl Legacy

Custom Cars for Hollywood Stars
1st Director of Styling
“Dynamic Obsolescence”
Clay Modelling
Concept Car
“Design Damsels”
Factory Two-Tone Paint
Tailfins
Harley Earl Legacy

Harley Earl Protégéés

Richard Teague (American Motors)
Eugene Bordinat (Lincoln-Mercury)
Frank Quick Hershey (Ford)
Elwood Engel (Chrysler)
Virgil Exner (Chrysler)
George Walker (Ford)
William Mitchell (GM)
Custom Culture
ACTION
ON THE AIRSTRIP
Flames & pinstriping by Kenneth "Von Dutch" Howard
1960s

California becomes the most populous state in USA

1950s exuberance makes way for the muscle car

Surfs Up!
413 cu in (6.8 l) V8 - Chrysler 300F GT 1960
361 cu in (5.9 l) V8 - Plymouth Fury Convertible 1960
396 cu in (6.5 l) V8 - Chevrolet Corvette C2 Stingray 1965
440 cu in (7.2 l) V8 - Dodge Charger 1967
400 cu in (6.6 l) V8 - Pontiac Firebird 1967
427 cu in (7.0 l) V8 - Chevrolet Camaro Rally SS 1968
302 cu in (4.9 l) V8 Ford Mustang Shelby GT350 1968
The Coolest Dude on the Beach ... Steve McQueen with Faye Dunaway in "The Thomas Crown Affair" driving a Bruce Meyers Manx Dune Buggy, 1968
The Coolest of Californian Toys - Harry Bentley Bradley & Ira Gifford designed Hot Wheels, 1968

4 billion cars produced.

800 models - 11,000 variations
User Car Lot, California 1960s
1965 - Today

LIFE GETS SERIOUS

&

NEW CAR MAKERS ARRIVE
Safety
1965 49,163 auto deaths

Vietnam War 47,424 combat deaths
1965 Ralph Nader publishes "Unsafe at Any Speed"

- Chevrolet Corvair
  - Spins & rollover crashes
- Second Impact
  - Deaths & injuries to passengers
- Smog
  - Tailpipe emissions & pollution
Corvair crashes and rollovers
Automakers had expended …

“millions for glitter and hardly one cent for defense of the health and protection of the American citizens against smog”

L.A. County Grand Jury July 1958
Comstock vs General Motors reveals...

“the utter abdication of responsibility and a deliberate withholding of lifesaving facts”

Ralph Nader 1965
California Cleans Up

1966 Exhaust emissions legislation
- CO, NOx & Pb

1975 Catalytic converters

2009 Smog & Global Warming Scores
Oil Crisis

1973 Yom Kippur War - OPEC cuts oil supplies to USA
1975 Fuel Economy targets set

1978: 18.0 mpg (7.65 km/l)
1985: 27.5 mpg (11.7 km/l)

US cars ave. 13.2 mpg, imported cars ave. 22.2 mpg

1978 “Gas Guzzler” tax

1979 Iranian revolution
Crisis – What Crisis?

1980 80% US cars powered by V8s
Crisis – What Crisis?

1978–80 US car sales drop 2.5m

1979 6.25 million US cars recalled
1979 $1bn losses for Chrysler
Japanese Automakers Arrive

1960  Japan exports just 7,000 cars

1967  Japan makes 1 million cars

1974  Japan becomes world’s largest exporter of automobiles
Japanese Automakers Arrive

1982 Honda opens 1st US auto plant
Nissan, Toyota, Subaru, Mitsubishi & Mazda soon follow

1984 GM-Toyota opens auto assembly plant in Freemont, California
GM-Toyota opens automobile manufacturing plant in Fremont, California 1984
The Honda Accord LX. Economize in luxury.

If you plan to give up your luxury car because it uses too much gasoline, you might consider replacing it with our 1980 Honda Accord LX.

Why? Because the Accord LX provides the kind of gas mileage usually associated with cars less lavishly equipped: 25 EPA estimated mpg, 35 highway mpg.

A glance at the instrument panel reveals the elegant nature of the Accord LX. Everything you see is standard, including air conditioning, tachometer, power steering, quartz digital clock, automatic maintenance reminder, electronic warning system, even a padded coin box.

Further standard features are remote control outside mirror, tonneau cover, front-wheel drive, four-wheel independent suspension, Michelin steel-belted radial tires, and velvety tricot upholstery. Optional this year on all Accords is our new fully automatic 3-speed transmission.

As you can see, fuel economy and automotive elegance are not mutually exclusive, at least not in the 1980 Honda Accord LX. That being the case, why not give up your luxury car for a luxury car?

Honda
We make it simple.
Acura NSX 1990
Toyota Prius – hybrid 2001
Auto Manufacture Leaves California

- GM - Oakland
- Chrysler - Stockton Truck
- Chrysler - San Leandro
- Ford - Richmond
- Ford - Long Beach
- Chrysler - Los Angeles
- GM - South Gate
- GM - Van Nuys
- Nash Motors - El Segundo
- Ford - San Jose
- Ford - Pico Rivera
- GM - Freemont
- Toyota & GM - Freemont
- Tesla - Freemont


Data courtesy of Petersen Automotive Museum, Los Angeles, California 2013
Auto Manufacture Leaves California

Company
- Snow All Grouped Markers
- BMW Manufacturing Co, LLC
- Chrysler Group LLC
- Ford Motor Company
- General Motors
- Honda Manufacturing
- Hyundai-Kia
- Mercedes-Benz/Daimler
- Mitsubishi Motors
- Nissan North America Inc
- Tesla
- Subaru
- Toyota
- Volkswagen Group of America

2012 Alliance of Automobile Manufacturers
INDUSTRY IMPACT

412,580 total Auto Jobs in state
5.2% of U.S. Auto Jobs
2.0% of State Job Force
$63.51 Billion in New Car Sales
10.42% of U.S. Car Sales

STATE REVENUE

Auto-related taxes and fees generated $10.90 Billion to the state of California, totaling
$2.21 Billion in new vehicle taxes
$1.38 Billion in used vehicle taxes
$585 Million in sales taxes on auto parts and services
$6.54 Billion in vehicle taxes (including gas taxes), licenses and fees
$80 Million in Auto Dealer Business Taxes and Estimated Dealer Title Fees
$103 Million in Income taxes from payments for automakers, suppliers and dealers

2012 Alliance of Automobile Manufacturers
30,958,596 REGISTERED VEHICLES

- 17,977,605 Cars (58.07%)
- 12,878,553 Trucks (41.60%)
- 102,438 Other (0.33%)

581 cars /1000 pop.

based upon 2010 Census pop. 37,253,956
Auto Design Returns to California

data courtesy of Petersen Automotive Museum, Los Angeles, California 2013
To build an American best seller...

“... it helps to know what the people in the community want.

So, for 40 years, we've employed local talent to help us discover exactly that”

Toyota Calty Design Research
The LA Design Center has ...

“the challenging and exciting responsibility of envisioning the products customers will want tomorrow - and beyond”

Honda R&D North America
Our mission ...

“to create attractive designs for the excitement of our customer's everyday life”

Nissan Design
And so ... Today
...why does every major automotive manufacturer have an advanced design studio in California?
“California is America, only more so”

Wallace Stegner (1959)
On the Pacific coast...

“... fewer shackles on tradition

... an unslackening development of new thought

.... a decided willingness to take chance on new ideas”

Henry Dreyfuss
California Dreamin'

Many Thanks to ...

AUT University
Auckland Art Gallery
Petersen Automotive Museum, California

References

100s of websites & other publications