McLaren F1
McLaren’s First Production Road Car

- Production from 1992 to 1998
- 106 cars were manufactured
- Price: $3,250,000
Before the Bugatti Veyron

- Despite it’s similar top speed
- No Turbocharger
- No 4WD
- No traction control
- No ABS
- No flappy-pedal electronic controlled gear box
Concepts

- Nothing was to get in the way of the driving experience
  - Driver sits in the middle
  - Completely in control

- Built without compromise

- Low weight & High Power
  - Carbon Fiber, Titanium, Gold, Magnesium, Kevlar
  - Engine type: V12
Chassis and Body

- First production road car to have a monocoque of carbon fiber reinforced plastic (CFRP)

- Attached points of suspension → Aluminum and Magnesium directly on the CFRP

- Problem → Engine produces ↑ Temperature → CFRP Mechanically stressed with high heat transference effects → Line the engine bay with gold
Engine

- BMW → V12 6.1L
  627 hp at 7400 rpm and Torque 651N.m at 5600 rpm

- Built especially for this car by BMW

- Gordon Murray insisted: Naturally aspirated

- Turbocharger ↑ power but also ↑ Complexity and ↓ reliability and drive control
Aerodynamics

- Drag Coefficient: 0.32 < 0.36 (Bulgatti Veyron)
- No wing however overall design and rear diffuser exploits ground effect → down force
- Rear electric Kevlar fans ↓ pressure and cool engine
- Top of the vehicle there is an intake → pressure air to the engine
Aerodynamics

- Ducts assisted by Kevlar electric suction to cool front breaks
- Dynamic rear spoiler
  - 40 mph (64 km/h) → brake line pressure → 0.32 to 0.39 Cd
  - Attempt to balance center of gravity
  - High pressure airflow → Cooling rear breaks
Suspension

- Comfortable yet performance oriented (road car)
  - Not as stiff and low as that of a true track machine → would increase noise and vibration

- Considered but no used computer controlled suspension
  - ↑ complexity
  - ↑ weight
  - Loss of predictability (Driving experience)
Breaks

- Unassisted, vented and cross-drilled brake discs
- Servo-assisted ABS ➔ Not used
  - ↑ complexity
  - ↑ weight
  - Reduce break feel (Driving experience)

- Ceramic carbon brakes were used later in F1 GTR
Gear Box and Power Train

- Transverse 6-speed manual
- Aluminum Housing (GTR-Magnesium)
- LSD (Limited Slip Differential) with 40% lock
Thank you