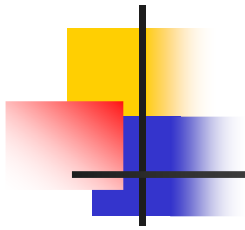




Personal Transportation in 2054

by Brad Touesnard

Faster,
more efficient,
more convenient

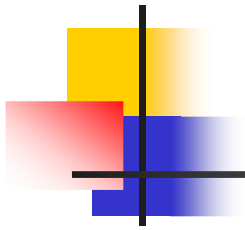


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Objective

- To demonstrate that personal transportation vehicles of 2054 will be **faster, more efficient, and more convenient** than vehicles of 2004 by examining current influencing factors and changes of personal transportation in the past.



Personal Transportation in 2054

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Outline

- Brief History
- Major Influencing Factors
 - Technology
 - Culture
 - Environment
 - Economy
- The State of Personal Transportation in 2054
 - Speed
 - Efficiency
 - Convenience
- Conclusion



Personal Transportation in 2054

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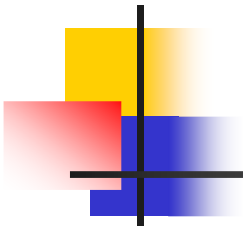
Brief History

- 3500 BC - wheels on carts
- 2000 BC - horses domesticated
- 1790 – bicycle
- 1862 – automobile
- 1867 – motorcycle
- 1908 – assembly line



The History of Transportation

http://inventors.about.com/library/inventors/bl_history_of_transportation.htm



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Major Influencing Factors

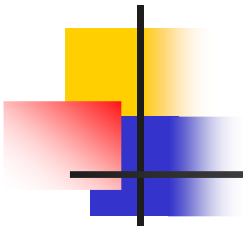
■ Technology

■ Revolutionizes

- Wheel
- Internal Combustion Engine
- What's next?

■ Enhances

- Speed – e.g. first automobile 2mph
- Efficiency – e.g. regenerative breaking
- Convenience – e.g. electric car starter



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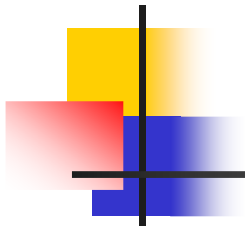
Major Influencing Factors

■ Culture

- “[By 1910] the automobile was changing American life. It had already started to change the language: 'parking', 'necking', and 'petting' had made their way into the language.” (1)
- “...the Japanese--who live in a country where things are small, especially the roads--were stunned at how large the pickups in the lot were, and how many of them they saw.” (1)

(1) Automotive History – A Chronological History (Antique Automobile Club of America)

(2) Dan Lienert (Forbes)



Personal Transportation in 2054

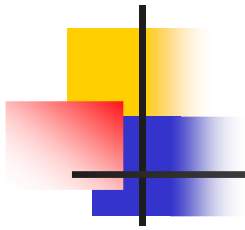
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Major Influencing Factors

■ Environment

- Public health and safety
- Environmentalist pressure
- Government regulations
 - California emission
 - Idling fines (noise and emissions)





Personal Transportation in 2054

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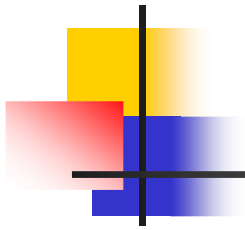
Major Influencing Factors

■ Economy

- 1929 Great Depression
 - Vehicle production decrease
- 1973 Energy Crisis
 - "American Muscle Car"
 - Japanese imports gain sales



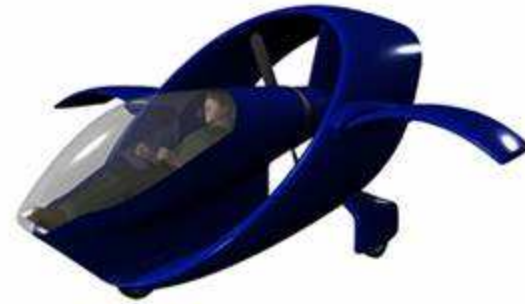
"Lexus decided to delay the release to accommodate burgeoning demand for the [hybrid] SUV...it has 9,500 confirmed orders for the RX 400h, 8,000 buyers on dealership waiting lists and about 46,000 potential purchasers...Pricing for the RX 400h hybrid has not been announced yet." – The Associated Press



Personal Transportation in 2054

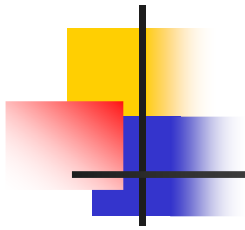
Faster, more efficient, more convenient

2054: Speed



- Satisfies cultural needs
- Limited by technology
- NASA's SATS Program ⁽¹⁾
 - Highway-In-The-Sky (HITS) with synthetic vision systems
 - Simplified software-based flight controls
 - Auto-land capability
 - Computational algorithms for automated traffic separation and collaborative sequencing
 - Airborne Internet communications
 - Comprehensive safety systems

(1) Small Aircraft Transportation System (NASA's Langley Aeronautics Research Center) – <http://sats.larc.nasa.gov>



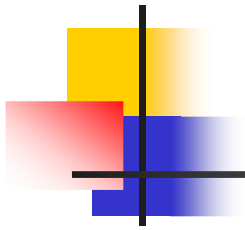
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2054: Efficiency

- Satisfies economic, environmental needs
- Limited by technology and culture
- Hydrogen Fuel Cell
 - Hydrogen production cost > delivered energy
 - Solar hydrogen
 - "...the people who develop the IP (intellectual property) that works will be the OPEC of the future." (1)
 - Infrastructure

(1) Christopher Sorrel, University of South Wales (from "Hydrogen Fuel Closer to Fruition." Wired News)

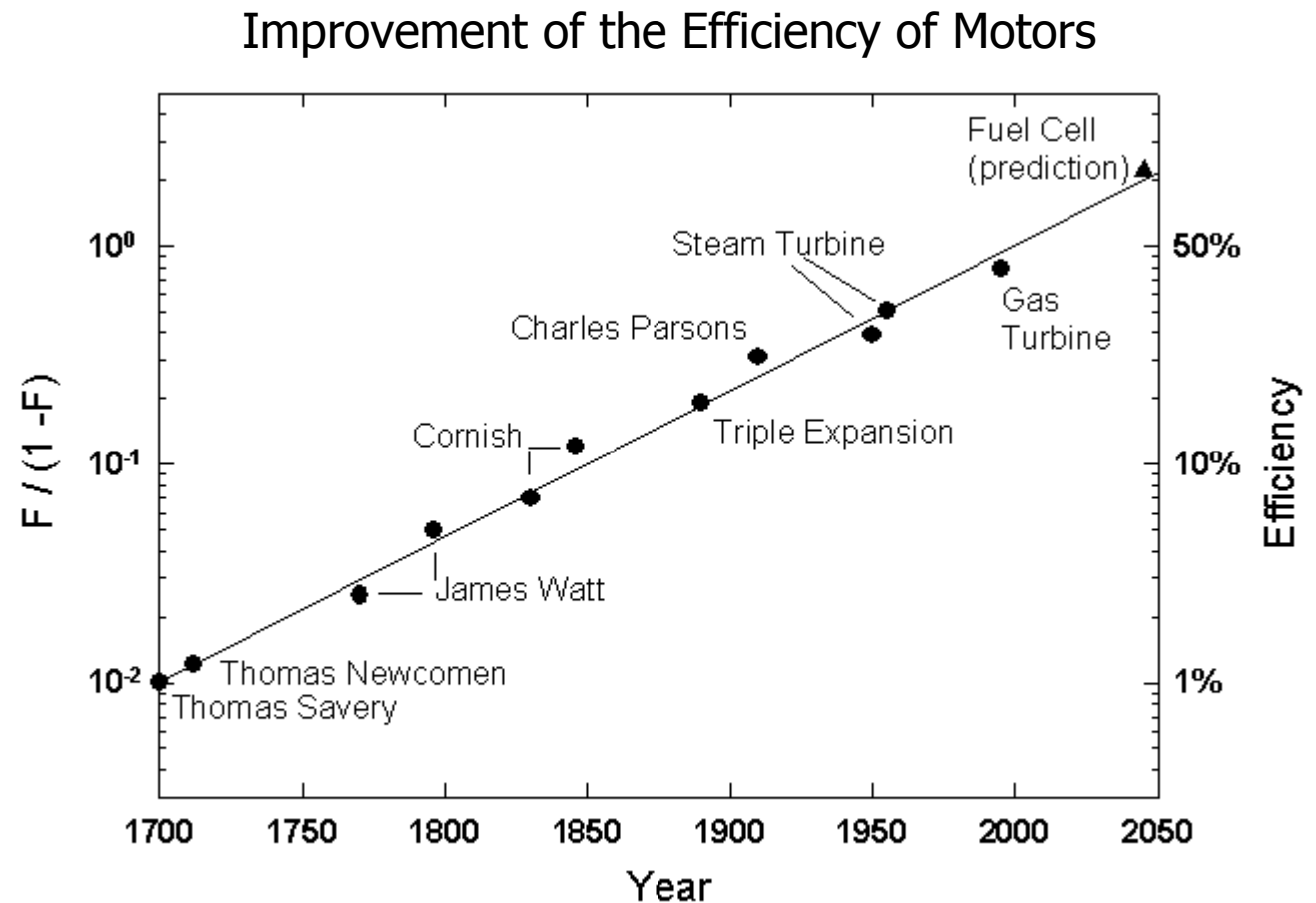


Personal Transportation in 2054

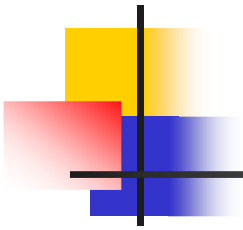
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2054: Efficiency

“Seventy percent efficient fuel cells, which are theoretically attainable, are due in 2050.” (1)



(1) Toward Green Mobility: the evolution of transport (Ausubel, Marchetti)



Personal Transportation in 2054

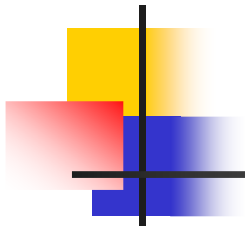
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2054: Convenience

- Satisfies cultural needs
- Limited by economy
- Segway
 - Alternative to walking or cycling
 - Used by U.S. Postal Service, Amazon.com
 - "Cities need cars like fish need bicycles."⁽¹⁾ – Dean Kamen
 - "If enough people see this machine, you won't have to convince them to architect cities around it; it'll just happen."⁽¹⁾ – Steve Jobs (co-founder of Apple Computers)



(1) Heilemann, John. "Reinventing the Wheel." Time.com. December 2001.



Personal Transportation in 2054

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Conclusion

- Bright Future
- The Efficiency of Hydrogen power
 - Eliminate air pollution and smog in cities
 - Greatly reduce dependence on fossil fuels
- The Speed of Personal Aircraft
 - Cities increase in breadth
 - Increase commuter distance
- The Segway Convenience
 - Change city culture
 - Further increase of city bustling
 - Complement public transportation

“Prediction is extremely difficult. Especially about the future.” – Niels Bohr