A Concept Diagram:

The Role of Design and Designers in Socio-Technical Transitions

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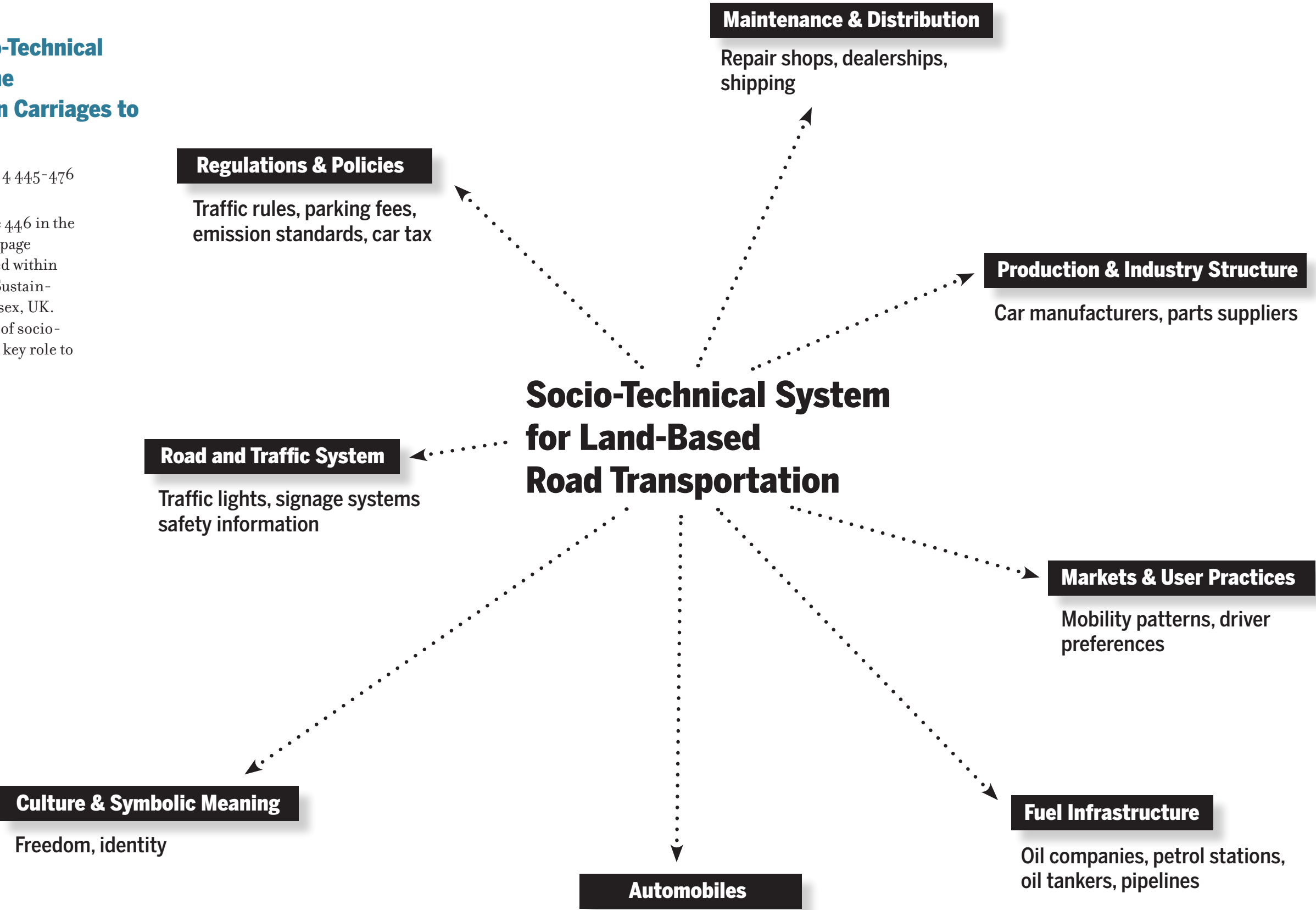
Based upon F.W. Geels, 2005:

"The Dynamics of Transitions in Socio-Technical Systems: A Multi-Level Analysis of the Transition Pathway from Horse-drawn Carriages to Automobiles (1860-1930)"

Technology Analysis & Strategic Management, Vol. 17, No. 4 445-476

The diagram at right is based upon Geels, figure 1, page 446 in the above citation. The diagram and table on the following page shows how design and its sub-disciplines are embedded within socio-technical systems. Presented at the 6th Annual Sustainability Transitions Conference (IST) August, 2015, Sussex, UK. The authors argue that design is found within all levels of socio-technical systems and that design and designers have a key role to pay in the design of sustainability transitions.

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Maintenance & Distribution
Repair shops, dealerships, shipping

Regulations & Policies
Traffic rules, parking fees, emission standards, car tax

Production & Industry Structure
Car manufacturers, parts suppliers

Socio-Technical System for Land-Based Road Transportation

Road and Traffic System
Traffic lights, signage systems safety information

Markets & User Practices
Mobility patterns, driver preferences

Culture & Symbolic Meaning
Freedom, identity

Fuel Infrastructure
Oil companies, petrol stations, oil tankers, pipelines

Automobiles

Examples of Designed Artifacts and Processes found in Socio-Technical Systems & Transitions
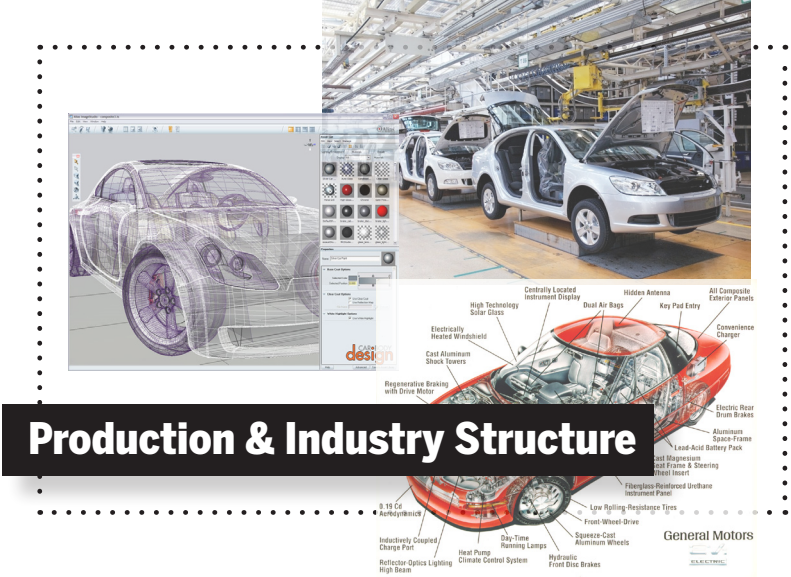
Maintenance & Distribution

Production & Industry Structure

Regulations & Policies

Socio-Technical System for Land-Based Road Transportation

Road and Traffic System

Markets & User Practices

Culture & Symbolic Meaning

Automobiles

Fuel Infrastructure

Design Within a Socio-Technical System Based upon Geels 2005; Meadows 2008

SYSTEM CATEGORIES	DESIGNED ARTIFACTS/PROCESSES EMBEDDED WITHIN THE SYSTEM	DESIGN DISCIPLINES INVOLVED	
Regulations and Policies (e.g. traffic rules, parking fees, emission standards, car tax)	Parking meters; parking ticket machines; user interfaces for ticket machines; policy for emissions; process for checking emissions; emissions testing machines; interface for testing machines; parking regulations; driving regulations; tax policy for automobiles; policy for insuring automobiles; communication materials for all of the above in print, digital and broadcast media;	• Policy design • Experience design • Interaction/interface design • Product design • Environments design	• Communication design • Information design • Service design • User research
Road & Traffic System (e.g. lights, signs etc.)	Network of motorways; guard rails; rest stops; waste containers; signage systems; signs; sign symbols; sign typography; traffic lights; traffic light interfaces and operating systems; safety lights; mobile hazard lights; safety fences & bollards; security cameras; computer interfaces for monitoring computer cameras; highway markers & symbols (crosswalks, center lines etc.); highway meridians; freeway entrance/exits/round-abouts; local, regional, national maps of highways and roads in print and digital media;	• Policy design • Urban design • Interaction/interface design • Product design • Wayfinding & signage design	• Communication design • Service design • Letterfrom design • Information design • User research
Culture & Symbolic Meaning (e.g. freedom, identity)	Brand narrative & strategy; brand identity system; advertising and marketing in print, product, digital and broadcast media; logo & symbols; branded clothing & accessories; branded events; retail and exhibition displays; brand guidelines;	• Brand strategy & identity design • Experience design • Interaction/interface design • Product design	• Communication design • Fashion design • Advertising & marketing • Exhibition design
Fuel Infrastructure (e.g. oil companies)	Petrol stations (interior/exterior); petrol pumps; user interface for fuel pumps; signage system for petrol station; brand identity for signage & products; credit card/payment system; tanker trucks; delivery system for fuel at point of sale; petrol station experience; oil tanker trucks; oil storage systems; refinery stations & equipment; oil tanker ships; oil pipe-lines; identity/advertising/marketing for oil companies in print/digital/broadcaset media;	• Environments design • Interior design • Interaction/interface design • Product design • Wayfinding & signage design	• Communication design • Service & experi-ence design • Brand design • Transport design • User research
Markets & User Practices (e.g. mobility patterns, driver preferences)	Targeted advertising and marketing in print, digital, broadcast and point of sale media; research reports and graphic representations; surveys and other methods for obtaining user data and preferences;	• User/design research • Communication design • Information design • Service design • Experience design	• Brand & retail design • Advertising & marketing
Production System & Industry Structure (e.g. car manufacturers, suppli-ers, distributors)	Automobiles; factories, assembly lines/process; materials; parts; automo-tive software for design; owners & parts manuals; software for inventory and interaction with sub-contrators/suppliers; signage & wayfinding; bill-ing systems in print/digital; employee benefits/retirement plans w/com-munications & interfaces; internal corporate strategies/communications/policies;	• Policy design • Experience design • Interaction/interface design • Product/automotive design • Environments design	• Communication design • Information design • Service design • User research • Design strategy
Maintenance & Distribution Network (e.g. repair shops, dealers)	Dealerships (exterior/interior); signage & wayfinding; brand presence in digital, print, broadcast, retail media; repair/garage exterior and interiors; automotive tools and testing devices; transport vehicles for distribution (land, air, sea); advertising/brand/marketing for dealers, automotive repair businesses and parts distributors in print/digital/broadcast and point of sale media;	• Architecture & interior design • Advertising/marketing retail design • Brand strategy & design • Transport design	• Product design • Communication design • Service design • Information design • User research