Transportation Design Education
A New Direction

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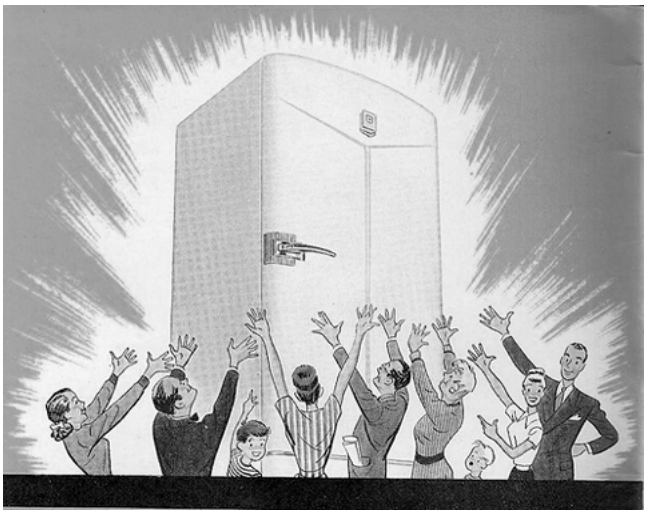
"Owners of refrigerators don't spend the weekend waxing and polishing them".

So said Ron Hill, my former colleague at the Art Center College of Design, then Chair of the Transportation Design Department. We had been discussing America's love affair with automobiles and he was trying to shed some light on this unique cultural obsession. As a product designer (today's shorthand for Industrial Designer), I was initially puzzled by his claim that cars were more important to people then any other objects. As if product design was any less than car design! I couldn't accept that. But I began to realize that there was some validity in what he was saying.



What other products engender and nurture this somewhat obsessive behavior? Apple products perhaps? We, as a society, don't seem to have the same fascination for products as we do for automobiles. The distinction to be made is that customers are apparently drawn to the forms of the cars in ways that just don't happen with products. We want our products to function well first, to do for us what is advertised, and to make our lives easier. Products, in of themselves, evoke an intellectual response. But the automobile? The shapes, the flowing lines, the looks seems to resonate with the customer on an emotional level. With a car we can strive to define who we are, we can be lifted up by the driving experience and we can embrace the freedom and flexibility that comes from owning a car. Sadly, the refrigerator does none of these things. During my 25 years as Chair of the Product Design at Art Center and with the opportunity to observe the Transportation Design Department on a regular basis, I came to appreciate the predominate role of form giving in the car design process but at the same time I was able to see the shortcomings of the traditional approach to transportation design education.

Since the 1950's transportation design education has been almost exclusively about automobiles. Motorcycles, trains, taxis, planes, etc. have been an elective opportunity but largely a footnote in student portfolios- with projects primarily focused on getting employment with the car companies. The students attracted to these programs are typically automotive enthusiasts enamored with the appearance and styling of cars. Teachers are almost exclusively former car designers and major funding from the car companies in the form of sponsored projects and gifts perpetuate the status quo. I believe that the private design schools' dependence on the corporations has led to a stasis- and limits the opportunity for diversion into studying other forms of transportation, because no one wants to jeopardize the largess of their

principle benefactors. The schools bristle at being labeled trade schools but in fact that's what they appear to be- training grounds for the car companies.

Much like the future for their student's imagined designs, the programs of these schools are in a design gridlock that is out of touch with the realities of today and more importantly- tomorrow.

Transportation Design Education must change. It needs less of a focus on automobile styling and a broader understanding of all forms of transportation. It must also take an objective approach that is responsive to today's society, that values car ownership less ands seeks responsible mobility solutions that are less damaging to the planet.

A Brief History of Transportation Design and Design Education

General Motor's legendary Vice president of Design, Harley Earl, is credited with the creation of Transportation Design as we know it today. As a former coachbuilder in Hollywood in the early 1920's his company received chassis from the manufacturer's, which he then designed and fitted on the bodies - a common practice for manufacturers at the time. Earl's customers were often the rich, the famous and the flamboyant. During this time he developed design techniques such the sketching and clay modeling, techniques still in use today.
He was recruited by General Motors to bring his processes and experience to Detroit.

At the time selling automobiles was very competitive and the then current practice of engineers designing bodies for cost and functionality was not compelling enough to reach new customers.[i] In 1927 Earl established GM's Art and Color Section to showcase his concepts and ideas for car bodies designed for mass production. In 1937 the section was renamed "Styling". As well as the aforementioned design techniques Earl is credited with conceiving the concept car as way of testing public reaction to new designs, using two tone paint schemes, the wraparound windshield and the "tailfin".[ii] General Motors rapidly gained market share as a result of Earl's contributions, enabling it to become the largest corporation in the world for many decades. The other manufacturers noted design's contribution to the success of GM cars and today there is not a single automaker worldwide without a central automotive design department.

After World War II automotive design departments were established worldwide. And thus the need for car designers who were schooled in car design techniques became necessary. One of the first schools to respond to fulfilling the growing demand for car designers was a private art and design school in Pasadena, California, named the Art Center College of Design. Art Center established the first Transportation Design Department in 1950. Although Art Center had an Industrial Design Department since the 1930's, the growing demand for specialized car designers and the urging of companies like GM, compelled the school to respond with a distinct and separate educational stream from Industrial Design. Since the 50's, designers from Art Center have contributed many notable designs to almost all of the well known global automobile brands and the graduates are or have been the heads of design for all the major automotive design studios. Other schools noted the success of those early Art Center graduates and have since implemented their own Transportation Design Departments. The Center for Creative Studies, The Royal College of Art, Hochschule Pforzheim, and The Umea Institute are

considered at the forefront of car design schools today and they also happen to benefit from financial support by the major car companies.

The Role of Styling

What the aforementioned schools have in common is a focus on form giving, (or styling as it is commonly referred to as) and a fundamental lack of attention to manufacturing and functionality. In a quest to design the perfect lines or a flowing form, practical considerations such as headroom for the rear seat passenger are frequently sacrificed. It is a widely held belief in the car industry that styling sells cars and therefore students faithfully perpetuate the "emotion in motion" appeal. It is this inherent emotional element that is a necessary component of a successful car design process. Styling, when used as brand building, can also be strategic and business focused. But what the current process lacks is a balance of the practical and emotional, with critical regard for the impact that a vehicle will have once it begins it's journey down the assembly line and then out to the customer.

Is it Car Design or Transportation Design?

The design schools almost all designate their programs as Transportation Design. But they are almost exclusively about the automobile. Some educational institutions (i.e.: Art Center with their Mobility program) have begun modest initiatives to address movement of people and goods irrespective of the means, with elective classes studying boats, motorcycles and trucks. However, in today's context, to be a successful car designer one must love the appearance and styling of cars. The student's dream project is a low and sleek sports car- a configuration that lends itself to what I refer to as the "heels and wheels "ingredient. Inspiration in the classroom is drawn from the images of scantily clad young women pinned to the walls. Sexy sells cars and it seems to motivate young car designers as well. Student portfolios focus on getting a job with the car companies so naturally they focus on cars. The recruiters from the car companies are all the while seeking new employees that will design their future automobiles. And at this juncture, the future is looking like more of the same- sedans, SUV's, and sports cars. Bringing the schools to a point where they will change their programs to be more diverse will be challenging. The history of the schools, the desires of the students to pay for their expensive educations by securing immediate employment and the influence of the car companies pose serious barriers to meaningful change.

The Big Picture

Because of recent economic events "business as usual" in the transportation industry has been profoundly transformed. The bankruptcies, closings, mergers and sell off of established brands has created paradigm shifts, not only in energy technology, distribution channels and manufacturing processes but also in the design and engineering of vehicles. Government and consumer mandates for higher average fuel economy, consumer demand for "responsible, green" products and the shift of market and volume from West to East are evidence that the automotive industry is beginning to change. It therefore stands to reason that the opportunities and role of the automotive designer will change as well, requiring a well-rounded designer who is able to do more than just styling and successfully work in a broader range of employment situations.

The nature of cities is changing as well. Today over 50% of the world's population reside in what is considered the urban environment.[iii] A 1 or 2-hour commute from affordable housing in the suburbs to a job in the city is becoming untenable. It is increasingly evident that cities are challenging the notion that driving a car wherever and whenever is no longer a right, let alone a pleasure. Europe is leading the way with the restriction of vehicles in the urban core- with street

closures and special taxes to discourage car usage and car ownership in these zones. These and other methods are sure to be implemented by cities that are confronted with the same issues of gridlock, lack of parking and increasing levels of pollution.

According to Neville Mars, a Beijing urbanist, the whole mass of Europe is being built in China in the span of 20 years with most of the attention focusing on building new cities and highways to link them. Unfortunately, Chinese city planning seems to be emulating and replicating the western ideal- with vast freeway systems, which as we have learned, will provide a mobility solution that hastens urban sprawl and encourages individual car ownership. Within this decade Shanghai's population has grown by 15% and the land it occupies has increased by 45%.[iv] Freeways, bridges and streets are being built in vast building projects at a terrific pace as China mobilizes to becoming the worlds largest market for cars, surpassing the US this year. The Chinese bicycle, an iconic symbol of the Cultural Revolution, has disappeared from the streets and the manufacturing of motorcycles is now discouraged- except when destined for export! What does bode well for the planning of the transportation infrastructure in China, is the rapid construction of multiple transportation solutions- subways, buses, and high speed trains to link cities. It is encouraging that they are considering this more balanced approach to meeting transportation needs.

In the United States, it is interesting to note that California declared a moratorium on building additional freeways, after discovering that within 6 months of opening those new roads, traffic was just as gridlocked as before.[v] Instead, the transit authorities are now building a light rail/subway system to replace the one that was recklessly dismantled in the 50's by a consortium of bus manufacturers and tire companies that were intent on selling more GM buses and Goodyear tires.

On the other side of the world, cities like Hong Kong have created efficient and comprehensive transportation systems that are a model for the world. Offering a new twist in export schemes, the Hong Kong's transit authority, MTR, has been contracted to use their very successful management techniques and methods to operate 2 significant urban transit systems in Europe.
Hong Kong has a highly developed and sophisticated transport network, encompassing both public and private transport. Over 90% of the daily journeys are on public transport, making it the highest rate in the world.[vi] As of 2009 the Census and Statistics Department of Hong Kong reports that there are 584,000 licensed vehicles in Hong Kong- 8.5 persons per vehicle.[vi] Compare that with car ownership in Los Angeles- 1.84 persons per vehicle.[vii] Almost 5 times more cars!

In 2001, China announced its intention to build 400 new cities of 1 million inhabitants each by 2020 at a pace of 20 new cities a year for 20 years.[viii] It is a staggering goal that only China, with its centralized system of government, with political leaders primarily drawn from the ranks of engineering and a goal of lifting it's many citizens out of poverty, could accomplish. For one of the few times in the history of human settlements, cities will be located where they need to be as opposed to the historical reasons of proximity to harbors, rivers or favorable topography. New developments in Hong Kong and China are also in the process of being planned as closed communities that will limit or even eliminate access by private automobiles with transportation

needs being met by light rail and other shared transportation solutions such bicycles and light trucks.

To date modern Industrial Design practices have played a minor role in the planning process of most urban development. Proven innovation processes, such as design thinking, problem solving; prototyping, etc. would lead to more innovative and creative solutions- allowing the designer to make a meaningful contribution to the planning and creation of cities.

Introducing Transportation Systems Design Education

I am proposing that a new approach to educating Transportation Design students be embraced and undertaken. It must, along with other educational goals consider the larger context of transportation and focus on the complex system of mobility solutions for moving people and goods.

In support of this proposal and beginning in the fall of 2011, the School of Design at the Hong Kong Polytechnic University will begin offering a Masters of Design degree within the MDes Design Practices scheme, that will focus on transportation design issues in China and other rapidly developing Asian countries. As a government funded university the Hong Kong Polytechnic does not have the same funding imperatives that confronts the private institutions making the Polytechnic the ideal place to launch this new approach.

The aim of this 10 month program is to familiarize students with the emerging trends and issues that are having an impact on the design and planning of transportation in the urban, suburban and rural environments in the most rapidly growing regions in the world. They will be tasked to respond to the implications of these trends and issues with regard to the practice of transportation design and planning in the future. They will be encouraged to understand how they, as designers, can contribute to the design of mobility solutions as members of cross disciplinary teams.

Students will use a variety of research methods for gathering design centric data, which is relevant to transportation planning and recent societal developments in Asia. Regional case studies from around the world will be used as effective tools in learning and teaching for this subject. Major issues; like government policies, economic, cultural, behavioral, social and managerial systems will be explored for their significance in affecting transportation planning strategies and outcomes. As members of teams they will analyze and summarize their research discoveries in tandem with lectures and presentations about transportation systems- their history, evolution, technology and future scenarios.

The program will begin with a series of workshops taught by experienced designers, architects, urban planners and educators; featuring lectures and presentations about transportation issues- the history, evolution, technology and future scenarios of mobility. The program will conclude with a Capstone project- a semester long, self- generated project that is China centric and relevant to any one of the emerging transportation markets there.

This program is designed to appeal to applicants seeking non-traditional transportation related employment opportunities, recent graduates of Transportation Design Programs, designers seeking a new career direction, automotive engineers, employees of companies with a presence in China, or those seeking knowledge about the state of transportation design in the most dynamic economy in the world.

Learning Outcomes

- To develop knowledge of research methods and resources related to mobility trends and changes, including both quantitative and qualitative materials.
- To develop practical experience in the analysis and application of research findings.
- To strengthen the understanding and value of user centered research, design processes and methods.
- To embody problem solving techniques as a fundamental aspect of the design process.
- To reinforce innovative and teamwork approaches to problem solving.
- To instill an appreciation for the value of cross- disciplinary viewpoints and teams.
- To develop a greater understanding of design opportunities within the urban context.
- Examine the history of post industrial revolution cities and the events, technologies and topography that have shaped them and their transportation systems.
- Identify evolving technologies and societal trends that will affect transportation planning for the future.
- Understand how the built environment (urban, suburban, and inter-urban) is defined by current stakeholders, market forces and private investment and then shaped by municipal regulation.

The Promise of the Future

I'm not implying that Transportation Design education is inherently bad or has failed us completely but it's clear to me that we are overdue for the paradigm shift that fundamentally addresses the pressing needs of today and provides a better vision for the future of transportation. Granted the car companies are trying to do what they need to do and that is to sell cars, but the singular focus on the personal automobile is no longer the answer for the world we live in. To be sure, private vehicles will continue to have a place in the future but they should be only one of many viable options for moving people and goods.

As a young design student I was inspired by Syd Mead, the noted "visual futurist" and concept artist who is best known for his designs for science-fiction films such as *Blade Runner*, *Aliens*, and *Tron*. Primarily a vehicle designer Syd's illustrations usually placed the vehicle in a setting, typically a future city with elevated roadways, fantastic flying machines and vast skylines. It was this picture of the future that captivated my imagination- a designed future that was clean, uncrowded and full of promise. I now realize that perhaps Syd Mead is the ideal symbol of what I envision as this new designer- the transportation systems designer.

With this vision in mind, designers graduating from these new programs in Transportation Design will have a broader understanding of global transportation needs. Graduates will still be able to go on to work for car companies but with a new awareness of the greater context for what they are designing, which will undoubtedly result in better cars and contribute to an enriched quality of life for us and generations to come.

Imagine designers that bring to the design of our cities the kind of emotional inspiration that they currently bring to car design. Will the residents of these future cities feel as strongly about their cities as we do about our cars today? Will they spend their weekends enjoying their environment as much as people enjoy their cars today? I sincerely hope so.

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[i] Sloan, Alfred P. (1964), McDonald, John, ed., *My Years with General Motors*, Doubleday

[ii] Earl, Harley, http://en.wikipedia.org/wiki/harley_earl

[iii] Freidman, John, (2005) *Chinas Urban Transition*, University of Minnesota

[iv] Mars, Neville; Brody, Adrian (2008) *The Chinese Dream- A Society under Construction*, 010 Publishers

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[vii] *"Density, Car Ownership, and What It Means for the Future of Los Angeles* http://la.streetsblog.org/2010/12/13/density-car-ownership-and-what-it-means-for-the-future-of-los-angeles/ Retrieved 12 July 2011

[viii] Mark Hansen and Yuanlin Huang, *"Road Supply and Traffic in Californian Urban Areas."*

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