

THOUGHT & ACTION in Planning

AUP
249

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Course Summary

“Thought and Action” is an appropriate course for all those interested in being better planners; it is not just for transportation specialists. It aims to provide a behind-the-scenes tour of the minds of professional planners and elected officials, while at the same time providing a way to learn to unearth your own assumptions about planning and help you become a more insightful, reflective and effective planner.

The course examines the nature of complexity and how the mind tacitly copes with it by simplifying phenomena in ways which can be highly misleading. In unraveling processes of perception, concept representation and understanding we will study the role of imagery, symbolism, metonymy, metaphor and myth. Freudian theories will be considered too. We'll look at these concepts in action in the minds of planners, using the case study of transportation planning in

Los Angeles, but ranging beyond transportation issues to examine topics such as social justice in the inner city. A framework will also be provided for reviewing the ethical framework of assumptions. A case-study of the tacit assumptions of quantitative techniques will be included.

It is assumptions which will above all command our attention, and on a number of levels. We will see that much of planning takes place through filters of assumptions which lead to bad decisions. Such decisions are often said to be “political” in nature. But suppose they are related to faulty thinking? If that is the case then we have a chance to do better through education. We can educate ourselves to reveal and criticize the assumptions which — untested and unknown to us — can lead us astray. And having done so, we can try to educate other practitioners in planning, in an effort to achieve a more reflective planning system, one which produces better results for the people it is created to serve.

Prerequisites

There are no prerequisites for this course, which is open to all UCLA graduate students (and possibly to undergraduates with permission).

Course Assignments and Evaluation

The first set of written assignments will ask students to critically analyze a series of issues in three discursive essays. The emphasis will be more on learning to critically analyze material than on assembling a large number of references or facts.

The aim should be to produce something which is tightly organized, yet flowing, a "thought piece" which requires less time in the library than a "paper" but which does require you to have thoroughly understood what you have read and to provide a thread of logic to keep the reader on track from beginning to end. While the formal referencing systems of "papers" are not required, you must attribute any idea which is not your own. You may discuss what you are writing about with other members of the class provided you write the essay by yourself and attribute any material someone else has provided.

Perhaps the most important thing to bear in mind is that there is generally no "right or wrong" answer. You can generally be most successful by considering views you find hard to accept along with those which seem to make more sense, and by questioning the assumptions of both. By exposing assumptions, you might change your mind. While I will try to

represent both sides of arguments in class, I will not try to disguise my own views. You should not feel obliged to agree with me, and I will in fact particularly appreciate well-presented dissenting views from which I can learn.

During the first part of term, students will divide into groups to prepare research proposals for a term project designed to reveal the assumptions of planners and decision-makers. For this project, which will emphasize cooperation and not competition, student groups will conduct interviews of planning professionals and politicians to test hypotheses on how underlying patterns of thought lead to understandings and actions. The proposals will detail the objectives of the study; a proposed research methodology for the conduct and interpretation of interviews; a list of potential candidates for the interviews; and a timetable for the completion of work.

The results will be presented in class as well as in written form. While it is recommended that all groups focus on transportation, since that is where most support can be provided, proposals to examine similar phenomena in other areas of planning will also be considered. The course grade will depend on performance in the essays and term project, and will be adjusted for participation in class.

Readings

To promote a lively environment in class, students will be expected to have read and be prepared to critically discuss readings in class.

We will be using many sources, and a reader will be

made available based on the material referenced below. Arrangements will also be made to duplicate my dissertation, *Transport of Delight — The Mythical Conception of Rail Transit in Los Angeles*.

Several books have been ordered for this course, to provide a choice and not out of absolute necessity. Feel free to browse through them in the bookstore, and purchase items which seem to be of particular interest.

Plan of Course

Please note that while the following provides a guide to the order in which topics will be covered, some items may be brought forward into classes also dealing with other topics in order to provide timely preparation for the field work element of the course. Recommended readings will be announced for subsequent sessions in each class.

1. Introduction

In his new book, *Uncommon Sense*, Alan Cromer disagrees with the commonly-held view that science “is a natural part of human development... Scientific thinking, which is analytic and objective, goes against the grain of traditional human thinking, which is associative and subjective... All nonscientific systems of thought accept intuition, or personal insight, as a valid source of ultimate knowledge.” We will return to study this claim in greater depth, but for now we will conduct a few experiments in class to demonstrate this concept. In the process, we will realize that our patterns of logic are often defective, and that the only way to remedy this problem is to

make ourselves aware of our generally-unquestioned patterns of thinking; seek out their assumptions; critically analyze them; and ask ourselves if we might be able to find some better ones to substitute in their place.

A basic function of the mind is to simplify. As Ackoff says, “We usually try to reduce complex situations to what appear to be one or more simple solvable problems. This is sometimes referred to as ‘cutting the problem down to size,’ In so doing we often reduce our chances of finding a creative solution to the original problem.” Much of the problem is not simply that we cut problems down to size, however, but that we are unaware we are doing so. We simplify and work with a limited set of ideas. It is as if we lived in bubbles. The bubble provides a womb-like sense of comfort and security, an uncertainty-controlled environment in which we can work, using the repertory of procedures — mediated by the universe of understandings — on the list of problems contained within the bubble’s walls. We may peer out to glance at the outside world; it is seen, however, only from the perspective of our particular bubble. Because the bubble has invisible walls, we are not even aware of being in a bubble.

The bubble enables us to tacitly live by a set of assumptions, rather than invite us to critically appraise them. Those assumptions lead us to ask certain questions, and not to ask others, but we rarely question how come we arrive at a particular set of questions. As Don Schön put it: “Underlying every public debate and every formal conflict over policy, there is a barely visible process through which issues come to awareness and ideas about them become powerful. The

hidden process by which ideas come into good currency gives us the illusory sense of knowing what we must worry about and do.”

This hidden process can be dangerous, for it can lead us to adopt assumptions of which we are unaware, and which we would choose not to adopt were we to know about them. Our task is going to be to reveal the “hidden process” to not only help understand why others make defective decisions but to enable ourselves through greater self-awareness to be better planners ourselves.

The “Hidden Process” in Transportation Planning

As Alan Altshuler, writing on *The Urban Transportation System*, remarks:

Analytic activities have tended overwhelmingly to focus on the appraisal, advocacy, and/or incremental adaptation of . . . technologies and services — which we term *preselected solutions* — rather than on laying bare the character of the problems generating demands for public action or searching with a fresh eye for effective remedial strategies.

Paramount among the preselected solutions have been highway and transit improvements, and policy discussion has typically proceeded as if these were the only options available for addressing sources of dissatisfaction with the urban transportation system.

We tend to be obsessed with technologies, and begin with an answer rather than a question. We say “what can we

do with this technology?” rather than “what is the best way to attack this problem?” or “is this in fact the problem we should be attacking in the first place?”

What people see is important. In the 1950s they saw congestion, and the response in the United States was to build highway systems. Few questions were asked. There was general support. The attitude to transit at the time was still that it should cover its costs. A decline in transit quietly went ahead largely unquestioned.

A similar attitude to road building prevailed in Britain: in 1946 the Ministry of War Transport declared that the task was to gauge demand and then provide for it, unaware of Mel Webber’s restatement of Parkinson’s Law that “traffic expands to fill the space available.” Even in 1963 the brief of the Buchanan team which produced *Traffic in Towns* was “to study the long-term development of roads and traffic in urban areas and their influence on the urban environment.” The brief framed the problem entirely in terms of roads, rather than asking if it might be desirable to find means for people to travel by other ways instead.

In the 1960s, however, there was a growing realization that congestion was not going to be cured by building roads, and a simultaneous shift (which Alan Altshuler effectively describes) to issues of race, poverty, urban violence, the economies of cities and the environment. The Urban Mass Transportation Act of 1964 led to the creation of the largest discretionary grant program in the United States. Now the “hidden process” produced transit as the response to urban problems, with new rail programs in the forefront of public

spending. Expensive systems such as BART in the San Francisco Bay Area were supposed to cover all expenses from fares, but capital grants were followed by massive subsidy programs to cover the mounting gaps between revenues and costs. For system after system, costs proved to be greater than expected, and riders less than expected.

An important attribute of transit programs is that they have tended to avoid harming interests, which Altshuler says is a key to American policy formation. But in the process, these programs may have resulted in the expenditure of large amounts of money with little resultant gain. We need to probe deeper into why this might have happened, and that is the task ahead.

We will be looking in especial detail at rail programs in Los Angeles, and in particular at the curious case of the downtown Los Angeles – Long Beach Blue Line. In 1980 Proposition A was approved by Los Angeles County voters. It provided for three years of bus fare reductions, and then the construction of a countywide set of rail rapid transit lines. The Long Beach line — the last of the “Red Car” interurban rail services to pass out of existence — was the first to be chosen for implementation.

Critics — particularly in the academic community — find rail transportation to be inappropriate for Los Angeles and other dispersed western cities. In fact, the degree of consensus reached among economists and planners who are opposed to rail in cities such as Los Angeles is remarkable. They believe that more can be gained from improvements to the existing bus system — which can provide direct service

between a larger number of origins and destinations than can rail — and from better management of existing roads. In this light, support for rail seems puzzling, and there *has* been much support and little dissent. Over the next weeks, we will try to find out why.

READINGS

- ACKOFF, RUSSELL L. (1960), *The Art of Problem Solving*; New York: Wiley; 3-49;
- ALTSHULER, ALAN A. (1979), *The Urban Transportation System; Politics and Policy Innovation*; Cambridge, MA: MIT Press; 1-99;
- HALL, PETER, “Transport — Maker and Breaker of Cities,” (Paper printed from diskette of manuscript; reference unknown);
- JONES, DAVID W. (1985), *Urban Transit Policy; An Economic and Political History*; Englewood Cliffs, NJ: Prentice-Hall; 132-156;
- RICHMOND, JONATHAN E. D. (1991), “Epilogue;” *Transport of Delight: The Mythical Conception of Rail Transit in Los Angeles*; MIT, Ph.D. dissertation; 313-321;
- TAEBEL, DELBERT A. and CORNEHLS, JAMES V. (1977), *The Political Economy of Urban Transportation*; 3-15; 28-57;
- WASON, P. C. (1960), “On the Failure to Eliminate Hypotheses in a Conceptual Task;” *Quarterly Journal of Experimental Psychology*, 12; 129-140;
- WEINER, EDWARD (1992), “History of Urban Transportation Planning;” Ed. Gray, George E. and Hoel, Lester A., *Public Transportation*; Englewood Cliffs, NJ: Prentice-Hall; 46-76;

2. The Lessons of History — Did GM Kill The Red Cars?

To understand the patterns of today, we need to study the history of the past. Many of today's assumptions are rooted in practices of the distant past. It is helpful in understanding the validity of today's actions to ask how the context of the present compares to that in which they originally arose. We will take a brief historical survey of urban transportation, and take a particular look at allegations that General Motors was responsible for killing Los Angeles' "Red Car" system. Appreciating the thinking which leads to such beliefs helps us understand the thinking behind promotion of rail transit in LA today.

In Southern California, Henry Huntington built the largest interurban rail network in the world. Unlike most electric railroad builders, he was well capitalized. His first line — which was also to be the last one to close and the first one to be reborn — connected downtown Los Angeles and Long Beach, starting in July, 1902. Long Beach's population climbed from 2,200 to 18,000 in less than a decade, while Watts was transformed "into what was perhaps the first fully-fledged bedroom community in the city" (Brodsly).

Huntington was a real estate developer; his system was built to open up tracts of land for development and profit. The Los Angeles metropolitan area population grew from 180,920 to 507,300 residents during the first decade of the twentieth century at a time when "the electric trolley had a virtual monopoly of interurban transport." The trolleys traveled long distances, stimulating communities to sprout far

away from the core, and setting the pattern for LA's dispersed urban form.

The "conspiracy theory" of Bradford Snell merits particular examination, because it is so widely believed. Snell maintained that the trolley systems of Los Angeles and other cities were eliminated through a conspiracy of "rubber interests," to replace them first with buses and ultimately with automobiles. Such claims imply that the loss of rail lines was a function of monopolistic rather than "natural" free-market economic forces. This conclusion leads to the belief that under "natural" conditions the rail lines would have continued in use, and lends support to those who would resurrect the system today.

The alternative view is that the demise of the trolley was a function of the decline in the financial feasibility of operations, accelerated as automobile ownership grew and as rail services became decreasingly suited to meeting the population's transportation needs. This hypothesis suggests that Huntington's "Red Cars" became naturally extinct as they were displaced by automotive technologies which both caused changes in urban form and provided services better suited to serving that new form's needs.

As Snell put it:

In the 1930s General Motors and allied highway interests acquired the local transit companies, scrapped their pollution-free electric trains, tore down their power transmission lines, ripped up their tracks, and placed GM buses on already congested Los Angeles streets. The noisy, foul-

smelling buses turned earlier patrons of the high-speed rail system away from public transport and, in effect, sold millions of private automobiles.

George Hilton sees things rather differently:

Rail passenger transportation was so inflexible that it could provide little but the trip to and from the central business district... The introduction of rubber-tired transport initiated both the decline of rail passenger transport and major revision of the urban pattern. The automobile gave Americans a lateral mobility, and an opportunity for point-to-point travel which the electric railway had denied them.

We will look at how Los Angeles became an automobile city; at how the private vehicle provided access to new areas not accessible by rail and promoted infilling; at how the automobile provided new opportunities and competed with the Red Cars. It is interesting to note the role of the bus in this. It can be argued that buses made for a financially far healthier form of investment. It can also be argued that the inauguration of “de luxe” bus lines took commuters away from the rails by providing a higher level of service.

We will also see how the Los Angeles freeways system got underway in *A Major Street Plan for Los Angeles*, published in 1924. In this plan, congestion was seen as a function of “unscientific” street width and design, and “improper” use of existing street spaces. The plan sought to produce a “balanced scheme for handling a tremendous traffic flow” by establishing different classes of roadways for different traffic

needs as a way of avoiding the “promiscuous mixture of different types of traffic,” which the authors said caused congestion. Of particular note, the plan called for roads both focusing on the central business district, and roads which linked other places, steering clear of the CBD itself. The concentration of activities was seen by the authors as a stimulus to road congestion, and limits on building heights were called for to mitigate its effects. “Extended-through highways, inter-district bypasses, boulevards and parkways all were proposed to provide programmatic support for a dispersed and multicentered urban form” (Brodsly). This form it can be argued became a matter of choice for Los Angeles residents, and this form was more related to the service characteristics of the highway, than that of the Red Car.

Although we will be returning to the study of metaphor in more depth later on, we will end this section by studying the “Addiction Metaphor,” which will help us understand how beliefs about the past shape conceptions of problems today. In transcripts from a TV news story, there is talk of being “hooked” on gas, and of “withdrawal symptoms” when gas is hard to get. A psychiatrist is even brought on to say: “What will happen when it’s taken away? It’ll be a shaker-upper. They will be in a sort of transportation shock.” The reporter confirms that “In Southern California our dependence is staggering.”

Now, what is the point of this? If we see something as an addiction it means it’s intrinsically bad. It’s a habit we’ve acquired that we’d rather do without, and what we really need is an “antidote.” Under the influence of this metaphor, rail

seems to provide an appropriate antidote. As one county supervisor said of Long Beach light rail: "We should set this project as the number one priority so we can begin to reduce our dependence on the freeways and smog-producing automobiles."

How did we become addicts? We lost the Pacific Electric and — the rail system gone — we became hooked on gas. The TV reporter says as much. GM killed the Red Cars, leaving only the Long Beach line, which "died" in 1961. "And so the seeds of our addiction to the automobile were born." Implication: bring back the rail system, and we'll be cured of our addiction.

The metaphor is misleading because the automotive life is for most people the way of choice, not of desperate compulsion. By making it seem like an addiction, the metaphor can not only cast the car and the highway as a demon drug, but also suggest that there is a simple "antidote," when no such easy answers really exist. Thus is the power of metaphor to persuade and lead astray.

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- BRODSLY, DAVID (1981), *LA Freeway*; Berkeley: University of California Press; 61-137; 151-160;
- FOSTER, MARK (1979), "City Planners and Urban Transportation: The American Response, 1900-1940;" *Journal of Urban History*, Vol. 5, No. 3, May; 396-465;
- GENERAL MOTORS (1974), "The Truth About 'American Ground Transport' — A Reply by General Motors;" Part 4A, Appendix to Part 4, *Hearings* before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, United States Senate; A-107 – A-127;
- HAMER, ANDREW M. (1976), "Transportation and Urban Location Behavior in Perspective;" *The Selling of Rail Rapid Transit*; Lexington MA: Lexington Books; 1-18;
- HOLT, GLEN E. (1972), "The Changing Perception of Urban Pathology: An Essay on the Development of Mass Transit in the United States;" Ed. Jackson, Kenneth T. and Schultz, Stanley K., *Cities in American History*; New York: Knopf; 324-343;
- JONES, DAVID W. (1985), *Urban Transit Policy; An Economic and Political History*; Englewood Cliffs, NJ: Prentice-Hall; 28-95;
- RICHMOND, JONATHAN E. D. (1991), "The Rise and Fall of the Pacific Electric: A Case-Study in Technological Evolution and Displacement;" "The Addiction Metaphor: Trains as Antidote to Gas Addiction;" *Transport of Delight: The Mythical Conception of Rail Transit in Los Angeles*; MIT, Ph.D. dissertation; 23-40; 224-226;
- SNELL, BRADFORD C. (1974), "American Ground Transport, A Proposal for Restructuring the Automobile, Truck, Bus, and Rail Industries;" Part 4A, Appendix to Part 4, *Hearings* before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, United States Senate; A-1 – A-103;
- WACHS, MARTIN (1984), "Autos, Transit and the Sprawl of Los Angeles: The 1920s;" *Journal of the American Planning Association*, Vol. 50, No. 4, Summer; 297-310;

3. The Rail Versus Road Debate

To evaluate the views of transportation decision makers and planners we need to understand the nature of the debate between rail and road forms of transportation. A large selection of readings is included below as a reference source.

Guidance will be given to steer you towards those you might find of particular interest. Alan Altshuler's book (unfortunately out-of-print but available on reserve) contains a good introduction to many of the topics. Note in particular chapters on "Recent System and Policy Evolution;" "Politics and Innovation;" "Congestion;" "Urban Land Use and Development;" and "The Options." My chapter 3 in *Transport of Delight* also covers much of the ground we will be discussing.

Issues we will examine will include the following:

Service characteristics. We will look at the different service characteristics of road and rail transportation facilities, and how they meet the needs of alternative patterns of transportation demands. Rail services may be faster, but they tend to be organized in radial forms, and their limited ability to reach into any but the highest density residential districts requires travelers in cities such as Los Angeles to transfer vehicles more, lessening the attractiveness of the service. Buses come in smaller units and can be operated more frequently and to more destinations by a larger choice of routes. The automobile permits direct access between a myriad dispersed destinations. Should we design transportation to mimic this desirable characteristic in a dispersed environment? Or should we change the form of the city to conform with transportation technologies?

Rail is said to be more comfortable than the bus, but there is little evidence that this influences how people travel. It is also said that trains are easier and more convenient to use than trains. But is this so and need it be so?

Cost factors. Rail service is said to cost less to provide than bus service, partly because one driver can haul so many more passengers than a bus driver can. We will see, however, that the evidence suggests otherwise. Facilities and maintenance costs are generally substantial for rail, while staffing levels involve far more than a matter of drivers. There is also the cost of new bus services to feed rail stations to be taken into account. On certain systems, such as in San Diego, management has claimed lower operating costs for rail than for bus, but has met with disagreement from critics. The critics have contended, furthermore, that when capital costs are taken into account as well, rail is a clearly more expensive option than bus.

Environmental issues. Rail systems are often claimed to have the potential to alleviate congestion, but rarely have the level of service needed to make a noticeable dent. Congestion is also a more complex matter than simply allocating vehicles from one system to another. If some vehicles are attracted from highways to rail facilities and road speeds become temporarily faster, this will attract more road vehicles, increasing congestion again.

Questions of energy use and pollution characteristics are also far from simple to assess. If people need to get access to rail stations by automobile or bus, for example, the energy and pollutant effects of that transportation must also be

taken into account. Very little analysis has been of sufficient sophistication to reflect factors such as these, and part of our task will be to ask how we can encourage the conduct of better analysis in the future.

Land use. Rail is often said to foster desirable development patterns, but while advocates frequently cite the example of Toronto to demonstrate rail's successful influence, others would disagree. "Many policymakers have been misled by this widely-publicized overstatement" say Knight and Trygg. And, while Bob Cervero has been substantially more optimistic about the development potential of light rail than most, he stresses the need for additional actions to promote such development and adds that "the current auto-highway system seems so firmly rooted that any major structural changes in urban form seem unlikely."

We should also study what Alan Altshuler has to say on the matter: "As density increases within any area, the transit share tends also to increase, but so does the absolute level of highway traffic demand per unit of road capacity." If new developments are induced, a certain proportion of trips will be served by the new transit system, but there will also be new trips generated by people who choose to gain access to the development *by automobile*, resulting in a *worsening of highway congestion*. "By comparison, land use dispersal has the opposite effects; transit shares decline, but so does the absolute level of highway traffic demand per unit of road capacity."

Once again simple statements can be misleading. Even if rail does induce development, is that the sort of develop-

ment we want for our city and what feedback effects will there be on the transportation system as a whole? The unfortunate reality is that most participants in debates over the virtues of one technology versus another stick to the simplest claims of what a technology can or cannot do. Our task will be to ask how to deepen inquiry to look at the systems questions so frequently ignored and to see that to ask what kind of transportation we want we have to ask what kind of a city we want to live in.

READINGS

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4. Utilitarianism, Technique, and Forecasting in Planning

We focus in this session on critically analyzing the assumptions of technical work — it is important to probe the often invisible assumptions underlying techniques, assumptions of which we are too often unaware. Some of you may also wish to interview planning professionals to see how they understand the tools of their trade, as part of the term project assignment.

Before we look at techniques themselves, we need to step back and realize that virtually all techniques presuppose a utilitarian system of ethics. Utilitarianism essentially says that we should do that which provides the greatest good for the greatest many. It is ideally suited for expression in quantitative form because it assumes that we can identify good and bad things; assign values; and then calculate the best possible outcome. One of its most glaring problems is that it neglects the *distribution* of good and bad things. So, when

applied in cost-benefit analysis, it is possible to recommend clearing out a lot of low-income housing to build a highway, simply because that housing has a low economic value.

Many utilitarians do claim that they can be more sophisticated than this, but this is still within a calculative framework: greater weightings can be given to the housing of the poor, for example. When that happens, however, the result may simply be to determine that greater compensation must be paid to the poor for displacing them, disregarding the question of whether they in fact *want* to be displaced. This is not a framework which permits the making of absolute moral judgments. Utilitarianism cannot produce a statement that “the poor have rights and it is wrong to destroy their homes against their wishes.” Kelman and MacIntyre have both written good critiques of utilitarianism, while West Churchman discusses issues of “Willingness to Pay and Morality” — questioning the utilitarian assumption that it is ok to do something bad as long as we pay for it. He offers an alternative approach — being guided by Kant’s moral law “that we make our own policy choices on the basis that the principle underlying the policy can be made a universal law, applicable to all under all circumstances. His moral principle is the concept of moral fairness extended to its ultimate.” Under Kant’s law, if something is bad we are *not* to do it, even if we are willing to pay for it.

Stokey and Zeckhauser’s classic text — used in many Public Policy programs — demonstrates utilitarian assumptions in use, and we will ask if these are the assumptions we want to guide our planning decisions. Such material will also

be helpful in providing a framework for probing the assumptions of those who use the technical apparatus we will be putting under review.

The Wachs article is excellent for probing the assumptions of forecasting.

Transportation Planning as a Technical Exercise

Many texts, including the Hanson and the classic by Stopher and Meyburg talk of the urban transportation planning process as if it essentially a technical exercise. We need to look at what this technical conception means, critically analyze it, and ask if there are other better approaches we could try.

Stopher and Meyburg describe the “Transportation-planning process” as a series of seven technical steps, at the core of which are a series of forecasts to estimate the future demand for transportation and determine how attractive to travelers alternative means of travel will be in providing for it.

The first step is to take an inventory of the situation prior to planning. This includes information on current transport facilities and usage and demographic data. We start off with a problem because the information being used to feed the model represents a current picture which may be undesirable for the future. Today is projected to tomorrow, even if the tomorrow we might desire is structured quite differently.

Land-use forecasts are done next. These forecasts are done separately from the transportation forecasts which are to follow. They are often politically shaped and based on

assumptions which may not prove to be reliable.

“Trip generation” and “trip distribution” involve building a picture of the *total* transportation market by all modes of travel. Total travel is then divided among competing transportation modes in a “modal split” model. This process is analogous to purchasing and serving cake. When buying, one has to decide what size of cake to get. Later, a decision has to be made on how to divide the cake. A quarter of a big cake will be more than a quarter of a small cake. So, the bigger the cake out of which a potential new mode of transportation gets a proportionate slice, the more its predicted ridership will be.

We will identify a number of problems with these procedures in general and as implemented in Los Angeles in particular. One example of dangerous assumptions lies in the use of a gravity model from Newtonian Physics in “trip distribution,” despite the lack of evidence that people in towns — and especially in the non-traditional Los Angeles — behave like particles in space.

To give another example, a key problem with the method of “trip generation” used in Los Angeles is that trip volumes being generated for a study of the potential of a new transit system are said to be a function of private vehicle ownership alone. Areas with many cars are said to produce more trips — including potential transit trips — than those with less automobiles.

Yet, first of all, we would expect areas with lower car ownership to have a proportionately higher demand for transit, all other things being equal, because of the lack of alter-

natives. One would, in fact, expect a negative income effect: the demand for transit would be expected to decrease, relatively, as increasing income provides increasing opportunities to travel by car.

Secondly, we might *want* to supply areas with low car ownership with a relatively higher level of transit service, simply in order to increase transportation opportunities to those for whom they are currently denied. The formulation used, however, implicitly makes a normative statement favoring those areas which already have a high degree of transportation opportunity by showing that transit will have a higher relative demand in those better-off areas than in parts of town which are, in fact, more heavily “transit dependent.” Here we see one of the principal pitfalls of calculative approaches such as these: the model does carry a bias, but the moral issues become invisible, the major effort being the execution of supposedly bias-free calculations. A pause for reflection shows us that this calculation of the “greatest good” discriminates against the poor because they have so little to begin with, and surely calls us to find a way to replace the rule of such techniques and implicitly utilitarian frameworks with direct methods of moral inquiry.

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5. Barriers of Complexity

We will look in this session at a number of articles on how the mind makes the complex seem simple, and of the pitfalls which result. We'll end by examining a number of examples from transportation in Los Angeles.

In his extraordinary article on "A City is Not a Tree," Christopher Alexander says that "The mind's first function is to reduce the ambiguity and overlap in a confusing situation... It is endowed with a basic intolerance for ambiguity... Complexity defeats us unless we find a simpler way of writing it down." Designers, he says, rarely confess their inability to solve the complex problems which confront them daily. "Instead, when a designer does not understand a problem closely enough to find the order it really calls for, he falls back on some arbitrarily chosen formal order. The problem, because of its complexity, remains unsolved."

Rittel & Webber write in their famous article on

“Dilemmas in a General Theory of Planning” that professionals are failing. The professional’s job is seen as solving “solvable” problems, but such easy problem formulations do not get at the heart of the real problems we face, which the authors call “wicked problems.” Wicked problems have no definitive formulation: indeed, how you determine the problem determines the proposed solution you are likely to obtain. So, picking an easily “solvable” problem to solve doesn’t make the real problem go away — yet doing so provides an easy escape from complexity.

Harold Laski lingers on similar issues, saying that Bentham and Jefferson “did not see that merely to formulate rightly the nature of a social problem is far more difficult than to formulate a problem in physics and chemistry.” Specialists frame problems according to their specialized knowledge, but “the technical expert, by reason of his immersion in a routine, tends to lack flexibility of mind once he approaches the margins of his special theme.”

This is shown to be troublesome in Langdon Winner’s article, since to know means “to know a small part well.” Knowledge he says is gained at the cost of understanding. In specialization, certain variables are selected as relevant, while others are shut off. “Specialization triumphs over complexity by reducing its scope.”

Wachs and Schofer take these ideas into the realm of transportation in their “Abstract Values and Concrete Highways.” In it, they establish a “value hierarchy” going from “Values” at the top to “standards” such as a cost-benefit ratio at the bottom.

Evaluation in transportation is seldom if ever based on a rational inquiry into appropriate goals, meaningful objectives, and logical criteria which result from the chain of dependence relating them to the societal values... it is undoubtedly simpler to deal solely with concepts for which there are physical referents than to try to relate abstract concepts such as security or belonging to the design of the system.

The consequence of this is that planning produces outcomes which might not fit with the goals and values we might choose to adopt were we to actively engage them.

The complexity of the hierarchy and the fact that the planner is often unaware of its structure and the interdependence of the criteria, result in implied weights for the goals and values. As a result, the implied weights cannot be computed, nor is it possible to know whether or not these weights are consistent with weights which would be assigned if the goals or values were considered directly...

Many current planning efforts have not established comprehensive and specific objectives and, consequently, plan design has become the process of merely extending and expanding existing physical facilities.

We can see this happening in the history of transport planning in Los Angeles, where particular technologies have been adopted and expanded, while there has been an

absence of questioning of what sort of city we would like to have and the absence of *design* of technological choices based on that discussion.

If the above articles help inform us why planning has failed, it is Philip Morrison — writing on problems of teaching physics — who brings home the general perils of the escape from complexity, and the problems this means for everyone involved: we will see that his theory applies to politicians and planners alike. We depend on “common sense” on an everyday basis, he says. Common sense, derived from experience tells us which actions are most likely to succeed, and most of the time it serves us well. Such common sense tells us that the “air is invisible but always ambient; when one needs it freshened, the window is opened. Yet a glass ready on the shelf is, and always was, regarded as a matter of course to be empty, never filled with air.”

Common sense actions:

seldom need explicit calculation, nor is there any desire to pose sharp logical tests of the comfortable and usually adequate presuppositions for action... What is involved are rough conclusions about a wealth of distinct details, rarely step-by-step paths to long-pursued ends... Neither generalization nor objectivity nor precision are very important to the common-sense frame of mind... The light is almost always there in the room without delay once we snap the switch or kindle the candle. Whence and how light moves is not even asked and

would indeed be hard to answer through our commonsense perceptions.

While common sense interpretations and prescription-sallow us to escape from complexity, while guiding us well for much of the time, we can be deluded when extrapolating them to new domains, particularly when applying them to problems whose structure we have not probed, and which we do not understand except in terms of raw observation and “common-sense” deduction.

The principles elucidated in these articles will be central to the theories of symbolic forms we will be exploring during the next classes, for symbolism and the creation of myth is fundamentally about creating something simple in which to believe, in the process preventing complexity from confounding us. While planners may simplify by depending on bounded models, a solution is generally in the planner’s mind before such models are even applied. Solutions also come to political decision-makers, who generally have little or no technical training and draw on common-sense. As former Mayor of Santa Monica and Los Angeles County Transportation Commission member Christine Reed said: “All I have to go on is my gut-level ordinary you know citizen, policy-maker housewife reaction,” referring to an idea by Southern California Association of Governments Executive Director Mark Pisano to electrify and automate freeways. “It is too Star Ways,” she said.

Let us look at some other examples of common-sense perceptions in transportation, especially those used to justify rail over bus transportation. Firstly, it’s common sense that

trains are preferable to buses because they can travel faster. It's common sense — and observed from daily experience — that the freeways are jammed up and that some alternative is needed. While buses must use roads, trains have their own right-of-way and they don't get caught in traffic.

Los Angeles is seen as lagging behind the rest of the world. All successful cities have rail transit. It's common sense that bringing rail to Los Angeles will make Los Angeles successful too. The monorail at Disneyland unfailingly works well and it's lots of fun. One of those would be great for solving LA's traffic problems.

It's common knowledge that buses are dirty, smelly and slow and attract crime — they therefore must be bad, common sense says.

Trains have only one driver to haul up to 400 people. Obviously trains are a cheaper operation than buses, common sense says, since ten times as many bus drivers are needed to move the same number of people.

All such observations come from daily life, and they seem to make a lot of sense. A particular technology — the train — gets put in the limelight by such observations, and the narrow investigations of planners — escaping complexity along with the politicians — ends up promoting the technology without ever questioning whether it is the right choice for the Los Angeles of tomorrow.

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6. A Theory of Myth — Symbols, Images, and Metonymy

We will see that myth serves as a mechanism for the need to escape complexity we have observed above. We will study how imagery, symbolism and metaphorical conceptions shape understandings, and create myths of simplicity, power and appeal — however absurd they may seem to the outsider looking in.

Here are some examples of the material we will be studying.

Metonymy. Metonymy is a **symbolic** function which happens when one thing is allowed to stand for another. The relationships are rooted in cultural understandings. We generally identify a person by their face. So, if we are shown a photo of someone's face, we are likely to say "that's so-and-so." The face stands for the person.

The most common form of metonymy is where a part stands for a whole. As Lakoff and Johnson show: "There are many parts that can stand for the whole. Which part we pick out determines which aspect of the whole we are focusing on." There are intriguing examples of where metonymic understandings appear to influence our conceptions of physical space and transportation across it. It is common to represent a total trip by the time spent on just the main vehicle, for example. "People, say out in Thousand Oaks or Agoura or Westlake Village could get into downtown Los Angeles in 15 minutes on a very high-speed train," one person told me. But what about the time getting to and from stations? Because

the train trip is taken to represent the *total* trip, this access and egress time tends to get ignored in imagining the ideal system. When the system turns up, however, people are made to realize that the journey involves more than just the time on the train, and that influences whether they decide to use the new service. This is a disturbing dissonance — which will be illustrated in class — and we should ask what we can do about it.

Imagery renders complexity in black-and-white. According to Susanne Langer, images are "our readiest instruments for abstracting concepts from the tumbling stream of actual impressions. They make our primary abstractions for us, they are our spontaneous embodiments of general ideas."

The image is effective largely because those under its influence are unaware that it is an illusion: the image is taken for the real thing. "An image is only an aspect of the actual thing it represents," writes Langer. "It may be not even a completely or carefully abstracted object. Its importance lies in the fact that it symbolizes the whole — the thing, person, occasion, or what-not from which it is an abstract." What imagery does, in essence, is to anchor what Steinbruner calls "inferential logic." Langer points out that while patterns of interpretation engendered by imagery might not follow "logic" as we traditionally understand the concept, the imaginative mode of ideation as she calls it "has a logic of its own, a definite pattern of identifications and concentrations which bring a very deluge of ideas, all charged with intense and often widely diverse feelings together in one symbol."

The apparent logical nature of inferences from imagery lends images power to persuade. We will be looking for patterns of logic in the quotations we will be studying — and which will be collected in term projects — to help us establish if imagery is providing a basis for interpretation.

There is much imagery associated with alternative transportation systems, and such simplifications color our views. Trains are seen to be fast, buses slow; trains appear to be clean, and buses dirty (but do they have to be?). Freeways, once carrying images of *freedom* now draw up images of nightmare congestion and despair.

Trains are seen to be more efficient because there is only one driver up front. As a *Los Angeles Times* article reported “One of the arguments made most often for the rail line is that it will be cheaper to operate because a single driver on a train can carry up to five times as many passengers as a bus.” We saw earlier that this was a popular “common sense” belief. We see now that it is a powerful belief because it is conveyed by a simple image of virtuosity, which is easy to understand and attractive. It is more available to the average decision maker than the convoluted financial analyses which might paint a more accurate picture.

The train can be seen to be more than symbolic of good transportation. Arnold Pacey writes about the “virtuosity values” of technology, the enjoyment of “having mechanical power under one’s control, and of being master of an elemental force.” Thus trains are seen as “powerful,” “advanced,” and “modern.” As one member of Congress put it: “There’s something modern, exciting about a red trolley moving along

at a nice clip, a little more of the space age.”

There’s a romantic and sexual element to technology too. “I’m sorry you never saw them. They were stunning. I’ve got pictures of them. They were knock-outs.” The imagery may be of bronzing bodies on the beach, but the subject is rail cars. And, was it accidental that the Los Angeles County Transportation Commission opened the Blue Line tunnel into downtown Los Angeles on Valentine’s Day, advertising it with a picture of the tunnel contained in a heart-shaped cut-out and with the headline “A Tunnel Just Waiting for a Train?”

The great danger, of course, is that the “thrill” or “romance” associated with particular technologies can undermine the task of making appropriate decisions. There are many examples we will study of the train as “Transport of Delight.” One of the most interesting is the proposal former county supervisor Baxter Ward developed for a luxurious “Sunset Coast Line,” complete with dome cars, and “swivel rocker seats” on certain services. “Because *the heart still returns to the rails*,” the report says:

people still talk about the Big Red Cars, and ask these sensible questions...

The Sunset Coast Line, this proposal, brings all that talk and *nostalgia and hope* together — into an 85 mile an hour Main Line that is guaranteed to break up any *love affair* — it’ll pry us right out of our autos and take us where we want to go, in style, in comfort, and faster than any law-abiding car.

It’ll be a *whole new romance* for commuters, and they’ll like themselves in the morning, and in the evening as well [my emphasis].

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7. Theory of Myth — Metaphor

Metaphor is an instrument of understanding, specifically as Lakoff and Johnson define it, "understanding one kind of thing in terms of another." Donald Schön characterizes the functioning of metaphor as follows. The meaning of a concept employed as a metaphor, A, is taken as a program for the exploration of its subject, B. In doing this, "expectations from A are transposed to B as projective models." A thereby pulls the strings of B, "fixing and controlling" the way in which B is understood.

The "programming" concept is a necessary condition for a symbol to also be a metaphor. Many potent symbols are not metaphors because the conceptions they evoke are not programmed by the meaning of the symbol itself. A flag, for example, can be a powerful symbol of national identity, but it does not act as a program and cannot do so, for the flag qua piece of cloth has no meaning of its own with which to do the programming.

Metaphor acts like DNA in that it transports and implants as a code for the development of concept B a set of characteristics which are A-like; the conception of B then develops in the manner of A. Information conforming to A-like characteristics is used in programming the concept. The metaphor hooks onto and transports to B admissible A-like phenomena, and leaves other information behind.

In doing its work metaphor clarifies. As Schön says, it names, fixes, and structures "what might otherwise be vaguely troubling situations." It makes it possible to understand

abstract things in tangible ways. We say someone has a “hot” temper, for example. A “temper” is a complex concept to understand. But heat is something we have all experienced, and provides a compelling descriptive device for presenting the temper.

In using the concrete to pin down the abstract, metaphor creates what Ricoeur calls a “heuristic fiction.” The power of the metaphor to present fiction as reality lies in its transparency: we are put under the metaphor’s spell without even knowing that it has invaded our thinking. Freud maintained that when thought and wishes become unconscious, they gain greater intensity and generality. In a similar way, says Schön, “certain metaphors of our culture, as they go underground, intensify and become more generalized.”

Schön develops the concept of “generative metaphor” to account for the framing of social policy. Problem settings, he says, are mediated by the “stories” people tell about troublesome situations — stories in which they describe what is wrong and what needs fixing. When these problem-setting stories are analyzed, it becomes apparent that the framing of problems often depends upon metaphors underlying the stories. Each story “constructs its view of social reality through a complimentary process of *naming and framing*. Things are selected for attention and named in such a way as to fit the frame constructed for the situation.” In this way, a few salient features and relations are selected “from what would otherwise be an overwhelmingly complex reality. They give these elements a coherent organization, and they describe what is wrong with the present situation in such a way as to set the

direction for its future transformation.”

We will look in class at the complex and intriguing “balance” metaphor to try to understand what people mean when they call for “balanced transportation.” We will look at the road system as a blood “circulation” system, and at “Escape Valve” and “Evolution” metaphors.

As we will see, the system of images, symbols and metaphors comes together in the form of **myth**. The myth represents a complex of perceptions and stories about the world and has all the power of religious belief: it is not something to question. More devastating: we are not even aware when we are under the power of myth. We will investigate the myth that rail transit can alleviate the transportation problems of Los Angeles, and ask whether there is evidence that it has influenced decision making in the Southland.

We will also develop research frameworks for interpreting metaphors and other symbolic concepts, to be used in term projects. As has been demonstrated above, metaphors have a clear programming function, while all symbolic forms have representational aspects which can be described and then tested for in the interview transcripts to be interpreted. Most helpful are the forms of coherence and “logic” established — not necessarily “rational logic” — but a logic that conforms to the terms of the symbolic concept under investigation.

When testing for the presence of a metaphor we should ask how is B A-like, where B is the concept we suspect is programmed by the metaphor, and A is the metaphor. What is the “heuristic fiction” which is wedding B to A? How is it per-

forming a clarifying function? Are abstract ideas being conceived in concrete terms, and are those terms generated by A?

To test this, it is necessary to chart out the assumptions and expectations of A and see if they are being mapped uncritically onto B. The presence or absence of a coherent pattern in this mapping function should then be established. When flames flare they can go out of control, become dangerous, and burn things in their path. Are these expectations all coherently mapped to a king's flaring temper?

We will show that rigorous tests can be developed to help us in interpretation and if — in the final analysis — our conclusions are reached after a legalistic type of weighing of evidence, we can at least reach our conclusions "beyond a reasonable doubt."

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8. Poverty and Transportation

For our final topic before concluding the theory of myth, we'll look at the disturbing question of what transportation means for people of low income and low opportunities, and how changes in transportation systems can affect them.

The Long Beach light rail line is seen as a way to provide benefits to the low income communities of Watts and Compton. Claims are made that these will reach beyond the mere provision of transportation. In particular, rail is said to be capable of providing links to employment opportunities as well as to places. A 1971 study by Caltrans, however, found that in practice such links were weak. "If jobs are not available for whatever reason, no amount of transport will create them."

There are questions, furthermore, whether the orientation of the rail service is most appropriate for the community's needs. Census data prepared for the *Los Angeles Times* showed that less than 10% of mid-corridor residents worked in downtown Los Angeles. "By far, most residents of the corridor either work within the area or travel to widely dispersed locations such as the Westside, South Bay and San Gabriel Valley." Most public transport uses are of a local nature, for which buses can provide a higher level and greater variety of

service. The degree of transferring needed when using rail services make them inappropriate for most short trips.

There are other equity issues, too, which receive less attention than the promotion of rail. The fares policy has consistently favored long-distance commuters, relative to those taking shorter inner urban trips, and could be an important target for adjustment to bring about greater fairness.

Perhaps most noteworthy, however, is that while transportation was an area the McCone Commission identified for improvement in its report on the Watts riots, a follow-up study a decade later found that transportation was the only area where there had been substantial improvement. We need to study the symbolic appeal of light rail to see why it is so unusually important in this context. While the more complex social problems of poverty are intangible and hard to deal with directly, light rail offers a solid symbol of progress. It receives strong support within the community. The then Mayor of Compton, Walter Tucker, went to college by Red Car: "If I hadn't had the Red Car — I don't know what — I probably wouldn't have been able to get in and out... This is one of the reasons why they had the Watts riots; it's because they didn't have transportation in and out to Watts to the hospitals and a lot of things... It[light rail] would definitely serve a purpose."

But perhaps we should look to one of the few detractors, a previous Compton councilman, Maxcy Filer, who said that if he had the money being spent on light rail "he could build a plant where there are jobs in the community, then the people... wouldn't have to travel so far.... Now, if you're going to

help the unemployment rate, I'll put them on the bus now... You find the jobs and I'll find the transportation."

We need to ask to what extent transportation is symbolically related to other problems, and what chance we have of addressing those major problems when transportation is cast as such a ready panacea.

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9. Theory of Myth — Synthesis & Reflection on Alternative Ways of Thinking

In this section, we will reach conclusions from the theory of myth, and ask how we might think in different ways in attempts to avoid the perils placed by the tacit assumptions of myth and technique.

Due to time constraints in the course, we have not had time for a traditional analysis of the politics of technological choice, although the symbolic processes we have studied are themselves powerfully political in their ability to shape decision-makers thoughts and actions. We will see here how the pushing and shoving of the traditionally-viewed political process is mediated by symbolic forms. We can see that a window of political opportunity — to put forward Proposition A of 1980 — was coincident with the emergence of an available mythology associated with rail, which displaced the old mythology of the virtuous freeway. The train: concrete, sexy — transport of infinite memories and powerful ideas — provided a firm basis for consensus, something denied to more complex, abstract ideas, whatever their merit, or to technologies with negative symbolic connotations. Rail had an almost universal symbolic appeal, just as the highways did in the 1950s. And, just as the highways were built on the dream of a better way, so the railway also came to bear us on a fantasy of a renewed life built on our experience of life in the past and our imagination of how it might be better in the future. We will trace the specific events in the interaction of myth and policymaking in class.

Churchman tells us that the most important question to

ask is whether a particular question should be asked at all. In his essay “On Connectedness” he complains that planners want to “formulate the problem first,” rather than inquire into whether they are studying the right problem because “such a step provides feasible boundaries to the ethical issues, which need no further defense.” To study the ethical issues, we need to transcend the boundaries of our initial inquiry to find out if we are asking the right questions.

Churchman moves to Kant who says “That all knowledge begins with experience, there can be no doubt.” Kant, however “immediately goes on to tell us that knowledge must contain more than experience, eg. nonexperiential universals.” It is these universals — in essence our system of morality — which can help take us beyond the constraints imposed by the mythology formed of experience, even if the very task of digging ourselves out of mythological ruts is hindered by the invisibility of the myths which guide our daily lives. Hyman gives an example of how this might be done in his illuminating “Constructive Uses of Contradictory Thinking in Transportation.” Through use of dialectic, for example, we can try to argue the opposite of our deepest beliefs and in this way dig out our assumptions and put them to the test.

Churchman’s “systems approach” demands the ever-broadening of inquiry to move beyond the superficial and into the profound, to identify and tackle the roots of universal problems, rather than merely masking their symptoms. We see that a question of transportation must be about far more than mere technological choice — it must broaden into questions of urban form, employment, education, equity,

poverty and race. As it does so, it becomes increasingly complex. Yet, we find complexity unnatural. We yearn for simplicity. And in pursuing simplicity we leave the core problems untouched.

By making ourselves aware of our weakness, we can at least try to do better. If we cannot expand our inquiries as broadly as Churchman would want, at least we have the power through reflective modes of thinking to uncover our more immediate assumptions, and through that knowledge to transcend them. If we can just begin to appreciate that we are ensnared by a myth, we have a way to try to move beyond it.

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CHURCHMAN, C. WEST (1979), "Ethics of the Systems Approach;" *The Systems Approach and Its Enemies*; New York: Basic Books; 117-144;

GAKENHEIMER, RALPH (1985), "An Addendum to 'Planning, Organizations and Decision-Making: A Research Agenda';" *Transportation Research - A*, Vol. 19A, No. 5/6; 535-538;

HYMAN, WILLIAM A. (1983), "Constructive Uses of Contradictory Thinking in Transportation;" paper at

Transportation Research Forum, 24th Annual Meeting, Washington, DC;

MANHEIM, MARVIN L. (1985), "Research on Planning, Organizations and Decision-Making: An Essential Component of a Transportation Research Program;" *Transportation Research - A*, Vol. 19A, No. 5/6; 538-542;

REIN, MARTIN (1976), "The Fact-Value Dilemma;" *Social Science and Public Policy*; Harmondsworth: Penguin; 37-95;

RICHMOND, JONATHAN E. D. (1991), "Synthesizing the Political and the Mythical;" "Concluding Implications — On the Need to Burst Bubbles;" *Transport of Delight: The Mythical Conception of Rail Transit in Los Angeles*; MIT, Ph.D. dissertation; 291-310;

ROSENBLOOM, SANDRA (1985), "Research Questions on Normative Theories of Planning;" *Transportation Research - A*, Vol. 19A, No. 5/6; 533-535;

WACHS, MARTIN (1985), "Planning Organizations and Decision-Making: A Research Agenda;" *Transportation Research - A*, Vol. 19A, No. 5/6; 521-531;

10. Student Project Presentations

Student teams will present the findings of their term projects during the final session, and we will reflect on what we have learned during the course as a whole. We will ask how what we have learned about the assumptions of planners can help us expose and critique our own assumptions, and thereby help us to be better planners ourselves.