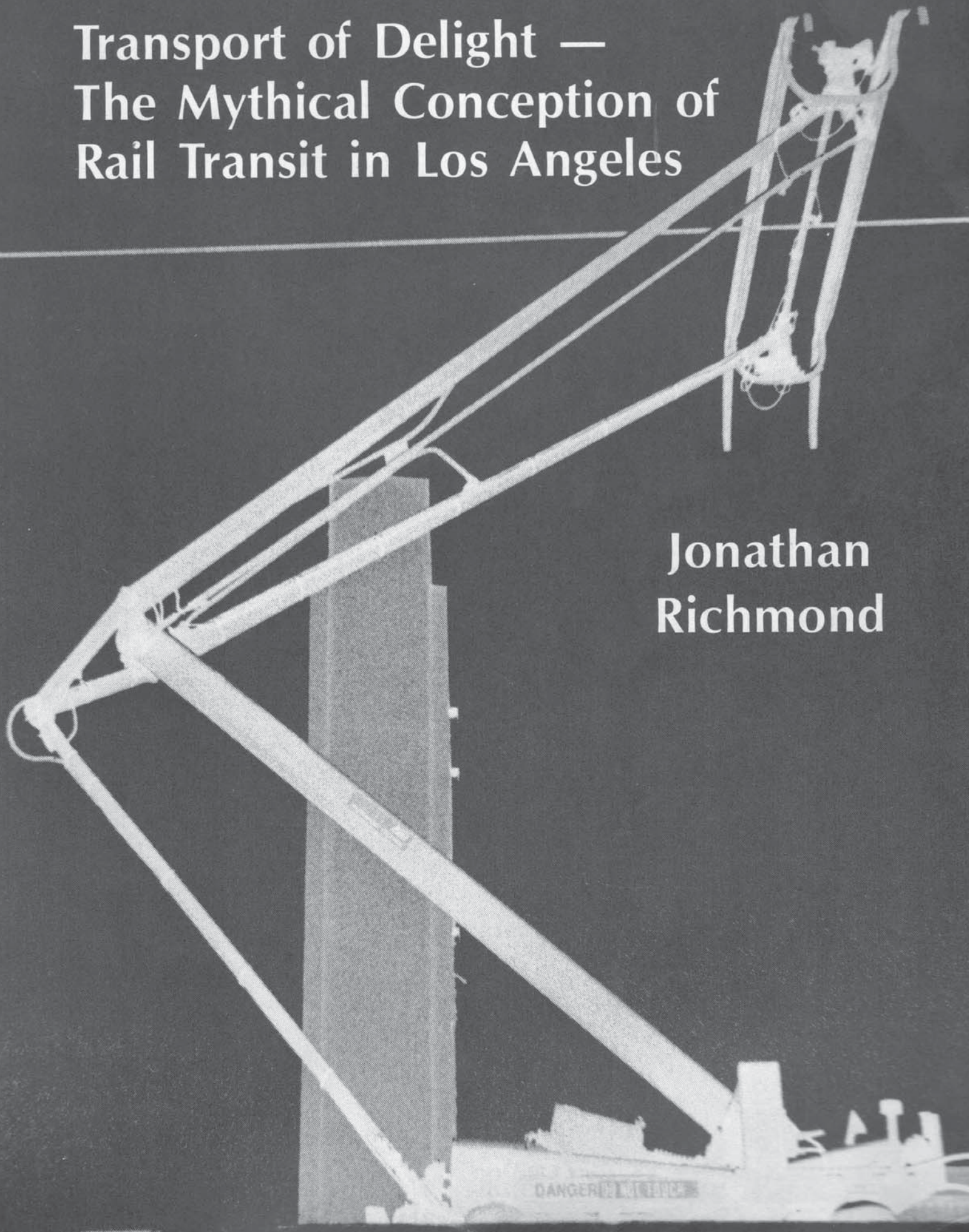


Transport of Delight — The Mythical Conception of Rail Transit in Los Angeles

Jonathan
Richmond



**Transport of Delight —
The Mythical Conception of Rail Transit in Los Angeles**

By

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Submitted to the Department of
Civil Engineering
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy

at the

Massachusetts Institute of Technology

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ABSTRACT

This study asks why a new rail passenger system for Los Angeles — which makes no sense from economic or social perspectives — has almost unanimous support, except in the academic community.

A historical account shows how Los Angeles' once extensive "Red Car" interurban rail system went out of existence because it no longer served consumer needs in an increasingly dispersed autopolis. A review shows that rail remains a poor choice precisely because of the dispersed form of the Los Angeles economy. There is better scope for improving transit by using buses. Ridership forecasting for the Long Beach "Blue Line" is next shown to be not only biased, but statistically invalid. Forecasting is shown to be done not to *make* decisions, but to justify decisions already made on other grounds.

A political analysis demonstrates how efforts to bring rail to Los Angeles failed until a consensus was reached, following decades of disagreements which had prevented decisions being made. The consensus came in a climate where newly-prominent environmental concerns had focused attention on transit as a vehicle for combating urban problems, making rail appear an increasingly favorable option.

But why did rail appear favorable? To explain this, we go to a theory of myth. Myths tell simple but powerful stories, which point to cures to problems, dependent for success on the often invisible assumptions inherent in the myth. Those assumptions emerge from a series of symbols, images, and metaphors ("symbolic processes") that are part of our everyday lives, and which provide simple and compelling messages as to what is good and bad in our world. The symbolic processes come together in a way which possesses an internal logic, within the tenets of the mythical realm. Coherency between the various symbolic phenomena offers evidence that the myth being examined is in operation.

Extensive interview transcripts are used along with other documentation to test for the operation and mechanism of a hypothesized mythical belief in the power of rail to help solve the transportation and certain other urban problems of Los Angeles. Images are found to give misleadingly favorable impressions of trains, compared to buses. Trains symbolize middle-class values. Through images of trains conveying residents of low-income Watts and Compton to college, employment, and recreation, the train also symbolizes connection in more than a transportation sense, even though providing the trains will not provide access to the opportunities symbolized. The rail system also symbolizes technological virtuosity and sex appeal; it carries nostalgic, romantic and religious connotations and is a symbol of community pride, independently of any transportation advantages it may provide.

A series of metaphors help describe why rail — but not bus — approaches will provide transportation solutions. A metaphor of "circulation" (as of blood circulation) is central to the understanding of transportation phenomena. The "balance metaphor" sees the transportation system as out of balance, and a new rail system as the way to restore balance. An "escape valve" metaphor sees rail as a way to provide relief to an overloaded system. Metaphors of "addiction" "natural order" and "evolution" are also found to structure understanding.

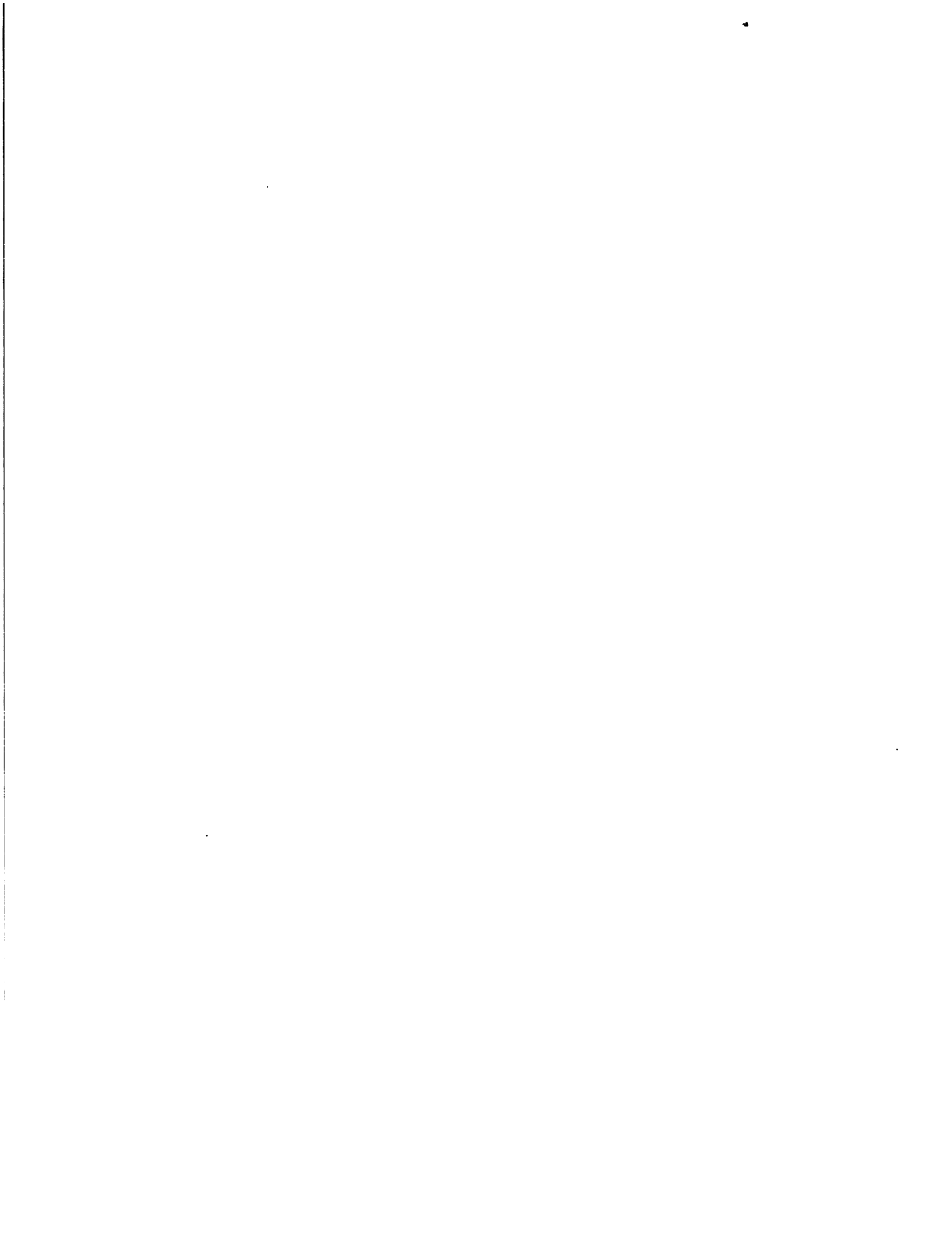
These symbols, images and metaphors are found to come together coherently to create the mythical powers ascribed rail to rejuvenate LA. Rail then provides a focus around which political decisions can be made.

It is concluded that a mythical belief in rail leads to bad decision making. It leads to the uncritical adoption of a particular technology, rather than to a discussion of social problems to be addressed. The real problems thereby remain untackled as well as unsolved.

To provide for better decisions, we need to find ways to surface the assumptions which constrain our creativity, to "burst bubbles" and go beyond boundaries, rather than remain entrapped within them. Perhaps the path to doing this lies in education.

Thesis Supervisor: **Donald Schön**
Ford Professor of Urban Studies and Education and
Head, Department of Urban Studies & Planning

To the memory of my mother





Train of Thought

I MUST ADMIT IT: I LIKE TRAINS. I'VE doted on trains as far back as I can remember. My first career aspiration was to be a guard on London's Underground: the power of train doors hissing open and shut mesmerized me, and I dreamed of pushing the buttons which remotely operated them.

It didn't take long to graduate to higher things: like so many boys, I wanted to be a train driver. At weekends I would take countless trips to nowhere-in-particular just for the joy of riding trains. I read the British Rail timetable for pleasure, memorizing alarmingly large parts of it.

The day of truth came when I needed to be in New York for an early meeting. Short of time, I foresook AMTRAK for Boston's Logan Airport and the air shuttle. Enjoying trains for themselves is all very well, but when I needed to actually go somewhere, I found I behaved with disdain for the amorous attributes of the technology.

I nonetheless became intrigued about how conceptions of technology — including the amorous ones I had myself experienced — might influence practical decisions in unsuspected ways. Although this study concludes that rail is a bad option for Los Angeles — based on how people *actually* behave — it is not primarily about the argument between building railways or busways. Whether buses or trains are “better” doesn't change the main focus of this work, which is about how we think.

While this dissertation explores how we conceive of technology, it is in the hope that we learn not so much about technology as about ourselves: If we learn about how we conceive things, it gives us new options to conceive of them differently. If my work leaves you thinking about things differently, then I will have succeeded.



Note on Updated Version

This dissertation was defended on February 4, 1991, before the Los Angeles Blue Line light rail service had been extended to its 7th & Flower Sts. terminal in downtown Los Angeles, and at a time when certain other data — on costs, for example — were only at a very preliminary stage. It is inevitably difficult to give an assessment to a project which has just opened and, in the interests of fairness, Chapter 3 was subsequently updated with such data as was obtainable up until May 15, 1991. The opportunity was also taken to make certain passages in other chapters more felicitous, to typeset the work in a slimmer version than the 731 pages it took in standard MIT thesis format, and to add a number of photographs.

Cambridge, Massachusetts, May 15, 1991

Photo Credits: *The photographs here and on the preceding page are by Prabhat Mehta. Mark Roberts took the picture for the Biographical Note. Photographs of the light rail system and of the Blue Line opening ceremonies are by the author.*

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THIS THESIS INVOLVED OFTEN lengthy interviews with large numbers of people; they are all to be especially thanked. They are listed in Appendix A, with the exception of those who wish to remain anonymous.

Some people provided extra-special help. Burke Roche, Deputy to Supervisor Kenneth Hahn, was not only generous with his time, but provided myriad leads to other fruitful interviews and sources of information. His loyalty to Supervisor Hahn was only matched by his openness to new ideas and his desire to pursue the truth. I am indeed indebted for his help. Supervisor Hahn is also to be thanked for breaking his usual rule on declining interviews of the type I requested, even if his decision to see me was not unrelated to the fact that I had telephoned his secretary virtually every day over a period of many weeks, and answering my request seemed to be the only way to get rid of me.

Supervisor Michael Antonovich gave considerable assistance, helping secure difficult to obtain data in addition to allowing me to conduct an interview. His invitation to the opening of the Blue Line provided a day I shall never forget. His deputy, Tom Silver, opened doors in many ways, and I am grateful. Michael Lewis, deputy to Supervisor Peter Schabarum, also provided considerable help.

Former Supervisor Baxter Ward provided one of the lengthiest interviews for this project, and I learned a great deal from it.

At the Los Angeles County Transpor-

tation Commission, Ed McSpedon greeted a potential "enemy" such as me with a remarkable sense of humor, and even wrote me a detailed personal letter providing information I had requested just days before the Blue Line opened, a display of professionalism and kindness quite beyond the call of duty.

The Southern California Rapid Transit District (SCRTD) Library was the site of much of my efforts to piece together documentation on the historical and political development of rail transit in Los Angeles County; the librarians gave me a good deal of personal attention, enabling me to track down and learn from the obscure but illuminating. Tom Rubin of SCRTD pointed the way to much useful information, as well, and provided a valuable critique of Chapter 3.

I also made use of the library of the Automobile Club of Southern California in Los Angeles, and received much valuable assistance from Jim Ortner.

One member of staff of Southern California Association of Governments showed me particular indulgence, although naming of this person is not possible since all SCAG contacts were on a basis of not for attribution. George Frank of San Diego Association of Governments provided much valuable insight into transit development in San Diego, while everyone at MTDB, San Diego was helpful, too. Bob Neer, Chairman of Seattle METRO, gave generously of his time, as did many others in Seattle, Portland, San Francisco, Santa Clara, Orange County, Vancouver and Washington, DC.

I was warmly received by the commu-

nity members I met in Watts, and received hospitality from Freita Shaw-Johnson, which I found quite touching. She told me a great deal about her community — as did the wonderful “Sweet Alice” Harris, Grace Payne, and several others — creating a picture of life in Watts that quite stripped away any stereotypes and perhaps made clear the vital truth that color, race and religion cannot mask the fact that we are equally human, and that any form of discrimination on such a basis is evil. State Senator Diane Watson, who represents the Watts community in Sacramento, showed a remarkable devotion to her constituents, which I admired, and appreciated as much as the time she generously gave me.

There are too many others who provided interviews and other assistance to mention; thank you to one and all.

On the academic front Don Schön was my thesis supervisor. Our many lengthy discussions of my ideas were invariably enlightening, and helped sharpen my approaches to inquiry; he at times changed my thinking where few others would have succeeded, and his criticism led to substantial improvements as one draft gave way to another. Thanks, as well, to Ralph Gakenheimer and Joseph Weizenbaum who were also on my doctoral committee at MIT.

Marty Wachs of UCLA served as an external committee member. Not only did he show an ability to uncomplainingly dredge through my work with a toothcomb, he provided me with a continual stream of articles, clippings, suggestions, enthusiasm, and encouragement. Unhesitating to answer the most unreasonable request for assistance, I cannot thank him enough. Perhaps I should also thank the electronic mail system via MIT’s Project Athena, which kept me in constant touch with him!

Daniel Brand, Vice-President of Charles River Associates in Boston provided a valuable critique of my work on

forecasting in Chapters 4 and 5; his commitment to the highest standards of honesty and integrity is inspiring. SCAG also kindly provided comments on my forecasting work.

C. West Churchman provided an intellectual influence which permeates every element of this dissertation. I first encountered West as a privileged member of “West’s seminar” at the University of California, Berkeley, an experience which left none of its participants unchanged. West taught that there is no event without ethical connotations, and that consideration of ethics must come prior to any action, a lesson never to be forgotten. A number of long meetings West provided during the course of this dissertation were significant in shaping its progress. Mel Webber, also of UC, Berkeley, provided many helpful suggestions, too, while Bill Garrison constantly reminded me that if I could never achieve the myth of objectivity that at least I could be subjective in fair and professional ways.

Alan Altshuler supervised my masters thesis, teaching me the difference between an “assertion” and a “proof.” His influence was significant in sharpening my approach to research, and it lingers on.

Yossi Sheffi, Head of the Transportation Systems Division of the Department of Civil Engineering at MIT, showed he believed in my project from the start, and provided unceasing support and encouragement. Having such a sharp — indeed brilliant — member of the quantelligensia show he felt my work was important sustained me in my efforts. On a practical basis, he made every effort to secure funding for me when none seemed available. Due to his influence, I developed and twice taught a new course at MIT, and his enthusiasm for my projects is indeed treasured. The Center for Transportation Studies at MIT provided a fellowship for one term. Its Director, Joe Sussman, also, approved the purchase of software I needed for my work, in addition to helping

with conference expenses. I am especially grateful to both Yossi and Joe for putting together a financial package on a last-minute emergency basis, which enabled me to graduate.

Frank Perkins, Dean of the Graduate School at MIT, helped iron out numerous complications associated with my program, and his sense of fairness and support for graduate students — widely acknowledged around MIT — is also much appreciated.

I was a Visiting Lecturer in the Department of City and Regional Planning at the University of North Carolina, Chapel Hill, for the 1986-87 academic year, during which I did much reading for the theoretical part of this dissertation. I am grateful to the University for having me.

As this is a time to look back, I also acknowledge the influence of my tutors at the London School of Economics, where I was an undergraduate: the succession of countless argumentative tutorials with John Martin, Ian Hamilton and Ken Sealy, taught me how to question assumptions and, indeed, what criticism is all about. The beginnings of my interest in serious social inquiry are rooted at St. Paul's School, however, and particularly with my Economics teacher, John Allport. His personal attention, encouragement of my interests, valuable guidance, and continual kindness will never be forgotten.

I was moved that 50 people turned up for my defense, and shall assume it was on the basis of intellectual curiosity and friendship, rather than because of the promised inclusion of a pornographic element! I was delighted by the intensity of the grilling I received from the quite involved audience; the final question of the defense, posed by Will Glass '92, an absurdly intelligent and inquisitive MIT undergraduate, led me to change an element of my conclusion before submitting the thesis, proving that defenses can be more than ritual events.

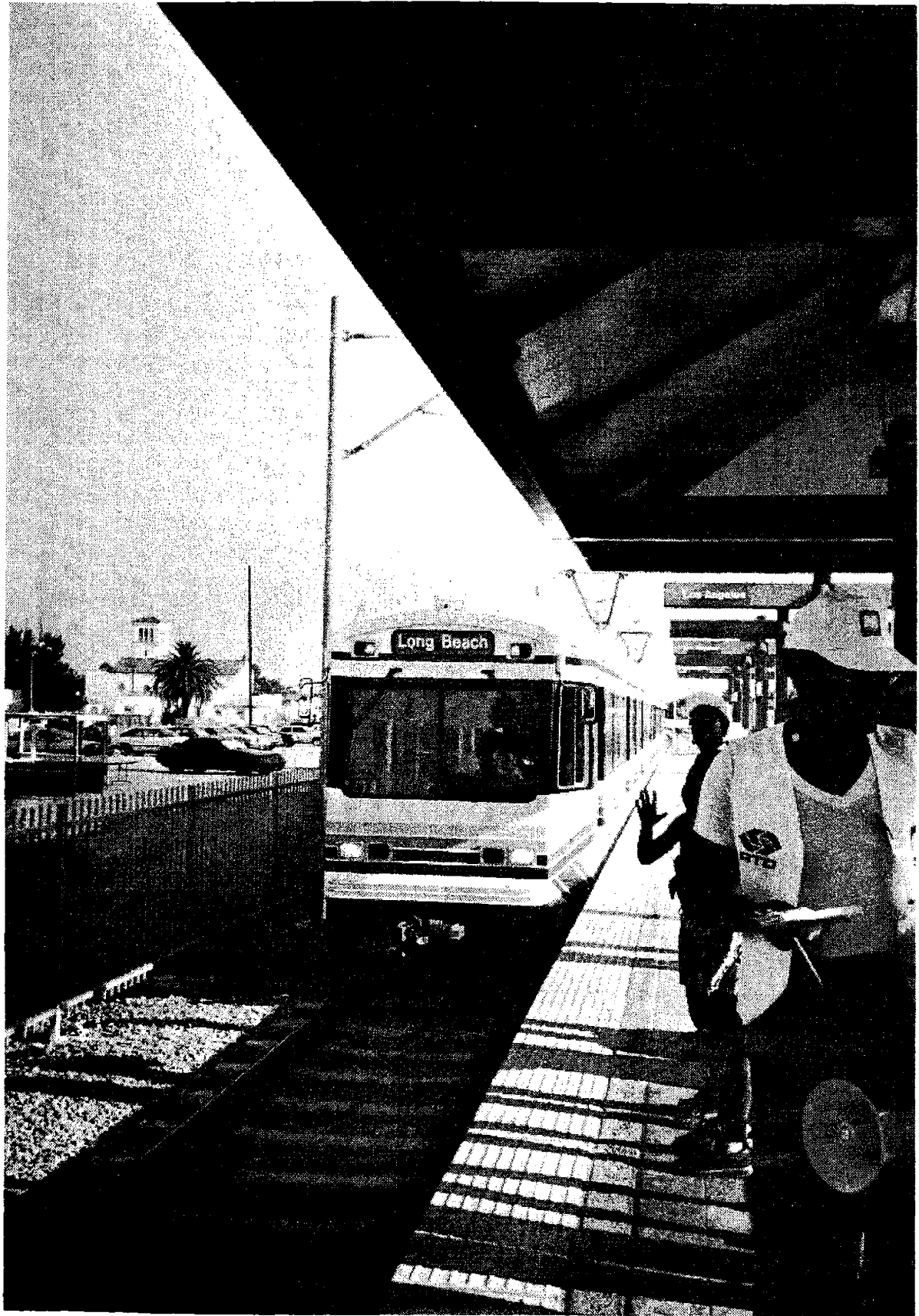
I also wish to acknowledge the friends who have supported me over the years. David Kazdan '81 has been suffering on his dissertation at Case-Western at the same time that I have been having such fun (!) at MIT; our e-mailings several times a week have chronicled our experiences and provided the mutual psychotherapy needed to continue. My attendance at his wedding to Laura Gooch '82 two summers ago was one of the happiest events in the last few years, equalled only by the wedding of another dear friend, Barry Surman '84 to Callie Pappas last summer. Barry was living in Orange County, California while I was attempting to pursue my field work, and his services as the perfect Jewish grandmother — rescuing me at weekends and ensuring that I overate — provided a wonderful boost to morale.

Eric Peyrard and I chronicled our activities in a vast sea of air-mail letters; Michael Thouless, Fritz Cronheim, China Altman, Rory O'Connor, and Adrian Wykes also supplied constant encouragement. Many MIT undergraduates provided a frequent cause to smile. I shall miss the gang at the Kosher Kitchen, and many others, too. *The Tech*, MIT's student newspaper, provided a place to hang out, veg out and churn out reviews for innumerable arts events. It also tolerated my presence during the many hours needed to typeset this dissertation, using the newspaper's Atex editing system, Compugraphic scanner and typesetters, and darkroom.

My grandmother was unfailingly astonished at the time I took to get the thesis done, and never stopped reminding me that "tu dois finir." I know she is glad that I have finally done so!

This thesis is dedicated to the memory of my mother, Diane, for whom I say:

יְהִי חֵן וְחַסְדֵּיךָ יְיָ אֱלֹהֵינוּ
עִמָּנוּ וְעִם כָּל יִשְׂרָאֵל



Man is born free and is everywhere in chains

— Tiresias (1984), *after* Rousseau

1 Introduction

A PROBLEM OF AGORAPHOBIA

WHEN COPERNICUS ARGUED IN 1543 that the earth rotates daily on its own axis and moves annually around a stationary sun, he was attacked by a Lutheran follower, Melachthan, since “the eyes are witnesses that the heavens revolve in the space of twenty-four hours” (Kuhn, 1957). Because we all see the world through the eyes of our own experiences and values, each theory carries its own set of assumptions which gives it meaning. Only through awareness of the shortcomings besetting the way we receive and deal with information do we stand a chance of finding a more ready path to understanding.

But not only are we unaware: we do not seek to be more aware. We suffer, says Boulding (1968), from agoraphobia, “the fear of open spaces, especially open spaces in the mind.” We identify with and are reassured by recognizable forms: we try to blot out the void and disorder of the unknown over which we have no control. Though one can only be wise, warned Harold Laski in 1930, “if he admits that his knowledge of the subject is mainly a measure of his ignorance of its boundaries” (reprinted as Laski, 1974, p. 99), we delude ourselves into believing that we have successfully closed in on the essence

of the subject under study in an effort to escape from the reality and consequences of our ignorance.

Thus, says Ackoff (1981):

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 [p. 53].

We behave most of the time as if we lived in bubbles (see Richmond, 1990a). 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 afforded by 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, but the assumptions of which we are so frequently unaware guide the results we reach and influence the choices we make. Unquestioned norms and procedures lead planners and politicians to typically only examine “alternatives” laid down on a

determinate path, rather than trace that path to its source to seek out more novel directions. As Alan Altshuler (1979), 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 [p. ix].

When we fail to lay “bare the character” of problems and focus instead on uncritically “preselected” solutions, we are apt to see possible policy choices only in terms of these solutions; were we to range more broadly in our inquiry, we might come up with options which could serve us better. Why, then, do we constrain ourselves?

This is a study (extending themes explored in Richmond, 1981, 1987) in the failure of thought and its causes. It starts with a bizarre decision: to construct a comprehensive rail passenger system in an environment where it appears incapable of providing any real benefits. It continues with an account of the political and institutional actions which led to that decision. It then develops and applies a theory which provides conceptions of understanding to explain actions which otherwise seem strange. In so doing, it shows how the bubbles which constrain our thoughtfulness and inventiveness get constructed around myths which themselves depend on the understandings formed through our history, cultural background and the experiences that make up our daily lives.

As Don Schön (1971) has pointed out: Underlying every public debate and ev-

ery 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 [p. 123].

Schön complains that we tend to “disregard the less visible process and to accept the ideas underlying public conflict over policy as mysteriously given.” This thesis is about revealing that “hidden” process and understanding how its operation precludes creativity from policy formation. Although it will include a detailed case-study in transportation planning to help accomplish this, its goals are general, rather than specific: it aims to expose the deficiencies in our thinking out and acting on problems in the hope that such knowledge can help point the way to better planning.

Research here focuses on processes of planning on two levels: On the one hand, it seeks to expose and understand the methods employed by the professional working or consulting for government in the context in which they are used. On the other hand, it is concerned with surfacing the — generally tacit — mechanisms by which politicians inform themselves and make decisions in the formulation of policy. A grasp of such processes is fundamental to an understanding of not only how transportation systems, but all planned systems, are planned and developed.

A study of light-rail policy development and planning for light rail in Los Angeles county forms the main case-study for the dissertation. Current light-rail advocacy in Los Angeles appears to reflect similar patterns in other American metropolitan areas, with the added interest that project funding is locally, rather than federally, initiated. Examples from other cities are included for comparison and corroboration.

In the following, the main case-study

is first briefly presented, the research methods and theoretical frameworks for the investigation are outlined, and a guide to the chapters ahead is provided.

LIGHT RAIL IN LOS ANGELES

SEVERAL PREVIOUS ATTEMPTS TO fund rail projects in Los Angeles had failed. But in 1980 Los Angeles County voters approved Proposition A, a measure to lower the base bus fare from 85¢ to 50¢ for three years, provide transportation funds for the discretionary use of local administrators and — most importantly — build a countywide system of rail rapid transit lines. With a preserved “Red Car” in the background, Los Angeles County Supervisor Kenneth Hahn spoke at a 1981 press conference. “Now we need light rail transportation,” he said. “It’s a priority for the nation, let alone for Los Angeles. Just travel the freeways; see the jammed bumper-to-bumper freeways.”

Only 54 percent of voters had been in favor of the proposition and its 1/2¢ tax increase, and delays resulted over the legal question of whether a two-thirds majority vote was required. But, on July 1, 1982 — amidst much fanfare — bus fares came down for the start of the three-year reduced-fare component of Proposition A and the sales tax went up to bring in the new Proposition A revenues.

In July, 1985, bus fares returned to their former levels. The Los Angeles County Transportation Commission (LACTC) — sponsor of Proposition A — now found themselves preoccupied with implementing their “pledge” to provide rail transit for county residents. They had by then selected a “light rail” approach, and had decided to proceed first with a line travelling south from downtown Los Angeles through the low-income minority communities of Watts and Compton to a terminal in the county’s second largest city, Long Beach. This had been the route

of the last of the “Red Car” interurban streetcars to pass out of existence.

Commuter rail thrives in many East Coast cities which depend on it to bring workers to town in the morning and send them home in the evening. Traditional urban centers — concentrated foci of employment activity — lie at the core of transportation networks branching out to suburbia. But the low density and widespread distribution of both population and economic activity in Southern California generates a complex pattern of transportation demands between a myriad of origins and destinations. This pattern calls for service more similar to a telephone network (which connects anywhere to everywhere) than to rigid radial public transportation; this does not augur well for rail solutions.

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. This view is supported by the conclusions reached in Chapter 3 of this study. Puzzling, then, that while basic questions as to the need for the revived streetcar system have been neglected, the project has been strongly supported on many fronts by both politicians and the public at large, so much so that in June, 1990, state ballot propositions were passed and then in November, 1990 a further sales tax measure was passed, all providing yet more revenues for rail passenger service. There has been very little dissent. Why?

A political study will first show how the decision to choose rail took place in

the light of the political workings of decision-making processes undertaken by elected officials. A further study will investigate how the benefits attributed to rail transit were derived and understood. The conclusion to be reached is, firstly, that the decisions out of which the Blue Line emerged were constrained by the limited possibilities eligible for inclusion on the political agenda of the day. Secondly, it is concluded that such decisions are both driven by and reinforce myths created from the mass of symbols, metaphors and images ("symbolic processes") which rule daily experience. Despite their imaginative qualities these myths possess the appearance and power of truth.

Symbolic processes present trains as speedy and efficient, making them seem attractive, even if trains don't take people where they want to go. If the loss of the Pacific Electric Red Cars is seen as a cause of the loss of "balance" of the transportation system — with its overloaded freeways — the return of the rails will appear to be the way to restore equilibrium. If trains are associated with romantic memories, and conjure up images of successful cities, they will be desired for those reasons, too. If rail is symbolic of rejuvenation, then it may be seen as a solution to deeper urban problems of poverty, even if, with the rails installed, poverty will run on as ever before. The train will be seen as a transport of delight: a technology which can be believed in to provide the simple answers we all crave.

PLAN OF THESIS

SINCE URBAN RAILWAYS PLAYED AN important role in the development of Los Angeles, a historical study of the rise and fall of the Pacific Electric "Red Car" system is first provided. Understanding why the system went out of existence is helpful to an evaluation of the case for a light rail system of similar specifications today. The contextual information a historical study provides also

gives clues as to how people who remember the old system understand the case for light rail today. The study draws mainly from secondary accounts, but also makes reference to proposals, articles, and other materials from the period under study.

Chapter 3 provides both an evaluation of the case for light rail and of the technical assessment provided in connection with public decision-making on the matter. The forecasting methodology used to predict ridership demand for the system is studied in-depth in Chapter 4. The ethical dimensions of such work are investigated in Chapter 5. Material obtained from interviews is employed to help explain how modeling work is understood and used.

Chapter 6 then provides an account of the political and institutional circumstances which led to the decision to put Proposition A of 1980 on the ballot, and to select the Long Beach line as the first light rail route to be brought into operation. This chapter depends heavily on an analysis of minutes and transcripts which describe political decision-making processes and on newspaper and other media accounts of these and related activities.

If we have accounted by this stage for how the elements of political power came together to enact a rail program, we have yet to gain an appreciation for the understandings which made rail seem appealing. Too often political analyses examine the interaction of interests and the outcomes of their struggles, but neglect to look at why interests have come to formulate their desires in particular ways. In this case, we will have seen that on analytical grounds, rail has no case but — as we shall see — rail has had many supporters. We need to know what it was that made rail seem good to its advocates and, if their perceptions of rail's benefits were misleading, how that could have been the case.

To trace the formation of such understandings, Chapter 7 proposes a theory of

myth, based on the human need for simplicity and abhorrence of complexity, and on the availability of a set of symbols, images and metaphors which come together coherently to create a myth which acts with the power of truth.

Chapters 8, 9, and 10 tests the power of the theory of myth to provide explanation by examining if its tenets explain concept formation and decision-making for rail transit in Los Angeles. A brief study of transportation technology decision making in Seattle is provided in Chapter 11.

Chapter 12 details and evaluates the attraction of light rail to the depressed communities of Compton and Watts, showing how benefits in terms of access to employment and other opportunities as well as to places has come to be symbolically associated with light rail, despite the lack of evidence such benefits would actually materialize. Transcripts from an extensive set of interviews provide a key source of evidence for chapters 8-12.

Chapter 13 synthesizes the findings resulting from application of the theory of myth with those of the political analysis of Chapter 6. Chapter 12 draws together concluding implications. An Epilogue presents the scene on the Blue Line's opening day.

RESEARCH APPROACH

THE PRINCIPAL ANALYSIS IN THIS dissertation relies on an extensive set of interviews conducted especially for this project, as well as on materials obtained from transcripts of political meetings and media sources.

A total of 209 interviews were conducted (see Appendix A for list of participants), 103 of them in Los Angeles County, the remainder in San Diego, Orange County, San Jose, San Francisco, Sacramento, Portland, Seattle, Vancouver, BC, and Washington, DC. Most interviews

were conducted over the summers of 1985 and 1986, with the remainder done at various later dates. Interview subjects included present and former elected officials and staff in a variety of organizations, as well as community representatives, and five university professors. A particular emphasis was put on the Los Angeles County Transportation Commission, promoter of Proposition A, but interviews were conducted at all levels of government including the Los Angeles regional cog, Southern California Association of Governments, which performed technical analysis for the Long Beach light rail Environmental Impact Statement, and city, state and federal representatives and staffs. With a large sample of transportation actors in Los Angeles County interviewed, responses can be taken as highly representative of the views of both decision-makers and professional staffs involved in transportation policy decisions there.

The interviews outside Los Angeles were conducted primarily for purposes of comparison, to see if the processes at work in Los Angeles were in evidence elsewhere, too. The Seattle interviews provided a particularly interesting comparison point with the others, for Seattle has decided to proceed with a bus project, rather than rail, at least initially.

A loosely-structured "guideline" questionnaire was used as a basis for interviewing (see Appendix B), but respondents were allowed to drift off the beaten track to expose their particular interests and perceptions. Those concerned with community issues of employment or racism, for example, were encouraged to speak on these issues, and not stopped if a question on a transportation topic elicited a response on another issue: the important point was to reveal what was utmost on the interviewees' minds. Allowing people to tell stories provided a basis for studying the coherences which held those stories together, so revealing the assumptions behind them.

Interviews were conducted using a tape-recorder, except where those being interviewed objected. Where confidentiality was agreed, the names of particular interviewees are not supplied. All interview material obtained at SCAG is used without attribution. In most other cases, names are given.

All interviews were transcribed from tape or notes (generating over 3000 pages), and 40 core Los Angeles County interviews (and one other interview) were comprehensively keyworded according to the subject in each chunk of text, responses given, and organization represented, using the textbase program FYI 3000 and the textbase/hypertext software IZE. This enabled the ready assembly of responses in particular areas or with particular slants, an important aide with such a large amount of text at hand. Sometimes this approach led to a fragmentation of data, and it was often valuable to read through complete interview texts at one sitting to gain a proper understanding of the perspective of the interview subject as a whole.

Evaluating the interviews required a form of literary criticism, in which validity depends on the functioning of a “logic” according to the rules of the theory under test. Metaphors, for example, are frequently complex and built on a series of related associations. We need to see if those associations fit together coherently. To test if a symbol is structuring understanding we first need a theory of the meaning inherent in the symbol, and then test if those meanings are structuring understanding in the texts. Discussion of issues of interpretation and validity is included in Chapter 7.

A NOTE ON RATIONALITY

RATIONALITY — WHICH ACCORDING to the dictionary is the pursuit of reason — has given itself a bad name. Critics have con-

tended that “rationality” has its limits (see, for example, Brubaker, 1984, Dror, 1968) but in doing so have smeared the very name of reason.

The problem is at least partly related to the fact that a particular *type* of reason — and one which is not, furthermore, always “reasonable” — has taken “rationality” and the concept of reason itself for its name. Friedmann and Hudson (1974) state that rationalism:

is predominantly concerned with how decisions can be made more rationally. . . . A decision (usually about the proper allocation of resources) will be called rational when it arrives at a single “best” answer to a *stated problem* [p.3] [my emphasis].

Under this approach, Schön (1983) states, “professional activity consists in instrumental problem solving made rigorous by the application of scientific theory and technique” (p. 21).

Given a “stated problem,” systematic inquiry is to evaluate the benefits and costs of alternative ways to solve it, and calculate which one is best. The question of what problem should be asked or how it gets framed — something not subject to quantification or to analytical reason — gets cast aside.

In the following study, what is popularly termed “Technical Rationality,” or simply “Rationality” will be referred to as “analytical rationality.” Analytical reason treats problems like machines, with a given set of parts: analysis implies a taking apart and evaluation of a set of parts. Analysis can determine which of two alternatives will be “best” according to *given criteria*. Analytical rationality functions within a “bubble” of given definitions and cannot, however, determine either whether those are the appropriate alternatives to evaluate — or whether some completely different approach should be taken — or whether the criteria are valid. The ability to follow the given criteria to answer the stated problem is what makes the process “rational.” As Churchman (1979)

says:

a whole rationalist economic theory was generated by the concept of a rational (economic) man; the theory is valid because of the way in which it defined rationality and not because it describes the realities of the human being. As we have seen, the same comment applies to academic model building. One defines an objective function to be thus and so. Then what "should be done" follows from the definition and has nothing to do with reality [p. 71].

The task of asking what problem should be addressed, and considering how inquiry on the subject of that problem should proceed will be called "reflective rationality" in this study, to give back the name of reason to one of reason's most essential tasks, and one which is sadly too often ignored.

Trying to Understand Narrowness

To West Churchman, (1982, p. 132), following his teacher Edgar Singer, the most crucial ethical question is: should a particular question be investigated at all? Asking one question, rather than another, is an ethical act in that answers to different questions imply the implementation of alternative sets of outcomes with divergent impacts on the lives of different people.

Connected with the design of appropriate questions for inquiry is the "sweep-in" approach. Given an initial question, related issues need to be "swept in" to broaden inquiry to reach for root causes. When a planner finds a system like a prison or hospital in difficulty, for example, Churchman says "The planner should search not for ways to make the prison or the hospital run more smoothly, but for the reasons why we have things like badly run prisons and hospitals" (p. 129).

Churchman complains about the narrow definition of problems "which provide feasible boundaries to the ethical issues, which need no further defense, i.e., which stop the conversation" (p. 7). Instead, Churchman calls for "an 'unbounded'

systems approach which must include a study of humanity, not within a problem area, but universally" (p. 8). Churchman is firmly a rationalist; he believes in the power of reason. But his approach does not consist of applying a narrow set of criteria to a given "problem." Rather, it involves opening up the boundaries of inquiry, guided by ethical principles. It regards all systems as part of larger systems, all parts given relevance only in relation to all other parts of all other systems.

Those of us who practice social science learn the hard way that there are no simple questions and that the process of addressing a specific question will eventually require answers to more and more questions [p. 117].

Questions of transportation are therefore also questions of urban form, of the history and identity of a community, of its distribution of resources, of employment, education, race. What is the use, for example, of studying how to provide transportation "access" to a particular employment site if the barriers to employment access are related to inadequate education or racial prejudice? Our role as planners, then, should not be to take a "transportation problem" as given, but to reflect on its definition and open up inquiry to reach for the root causes of social problems which may lie far beyond the scope of an initial simple problem formulation. This is the art of "bubble bursting" and of what will be termed "reflective rationality."

We will not be seeing Churchman's idealized approach in operation in either technical analysis or political decision-making in Los Angeles: instead we shall be observing the asking of only the narrowest of questions, the answers to which cannot effectively help cure the problems under study. This has disturbing implications for policy making and planning, and we therefore need to identify where and how things are going wrong. That is what this study is all about.



Henry Huntington

2 The Rise and Fall of the Pacific Electric: A Case-Study in Technological Evolution and Displacement

INTRODUCTION

“NOT ALL POETS EXPRESS themselves in words,” said the *Electric Railway Journal* (1927) in its obituary notice for Henry Huntington, who died on May 23, 1927. “The romantic and imaginative soul,” the *Journal* declared, “found an outlet for his feelings in organizing and directing railroads,” as well as through collecting art and philanthropy.

He was famous in his younger days as a director of railroads and in his older days as a pre-eminent collector of rare manuscripts and a connoisseur of works of art. His genius for acquisition was no less noteworthy, whether the object of his desire was a railroad or a Rubens, and the same characteristics which insured success in his early business ventures and won for him the reputation of pioneer and genius stamped him as a distinguished collector of books and works of art and entrenched him firmly in more than local affections [p. 981].

Thus, from the start we see notions of railroads intertwined with romance, of feelings capable of being transported as much along threads of steel as through the medium of the painter’s art.

History is too often ignored in social science or planning studies, but it is important to look back and understand both

the role of interurban railroads in bringing Los Angeles to life and why their function was displaced by the onset of automotive technology. Such knowledge provides an appreciation of why a mature city — with urban functions and travel patterns formed around the availability of the highway and the car — cannot return to dependence on a technology transcended by the automobile. It also illuminates the associations which linger on in residents’ minds to erroneously suggest that such a turning back of the clock could be desirable. This chapter will provide an account of the rise and subsequent displacement of interurban rail passenger service in Los Angeles County. A description of rapid transit proposals and of highway developments during this period will be saved for the next chapter.

The turn-of-the-century interurban railroad did sow the dispersed patterns of the Los Angeles of today. But, while the interurban gave birth to a low-density standard of living to which immigrants aspired, subsequent technological development provided a vehicle — the automobile — that answered far better to the Southern Californian dream of freedom of movement, and the interurban’s reign was over.

History shows that just when rail was being displaced by automotive technol-

ogies, a climate of misplaced optimism masked rail's inevitable decline as the major component in the passenger transportation system. Today we see the same unrealistic hopes afoot again. If the rail system that created Los Angeles resonated with poetry, we'll see that as part of modern-day popular folklore its dream lives on, even if the dream of the old can no longer give vitality to the new. Despite the myth that Los Angeles' Red Cars perished as the result of a conspiracy of automotive interests, we will here establish that the rail technology was in fact displaced because the new, automotive technology, served consumer needs better.

BEGINNINGS

ALL CITIES GROW AND DEVELOP through movement. In Los Angeles perhaps more than anywhere else, however, transportation innovations not only shaped the urban fabric of the city-that-is-not-quite-a-city, but fashioned its soul. The first settlers of the city California's Spanish governor, Felipe de Neve, named "El Pueblo de la Reina de Los Angeles" were eleven families who had made the difficult trek a thousand miles from Sonora and Sinaloa, Mexico. They came to start a farming community, and it was "formally certified" on September 4, 1781 (Treutlein, 1973). By the end of the decade, the Pueblo's population was 139 (Robinson, 1981, p. 29). When the first federal census was taken in 1850, it was 1,610.

In the pre-industrial city, the distance between home and work was limited by walking speed. "The effect was to set the radius of a city at about 2 miles, or the distance a man could walk in about 30 minutes" (Holt, 1972, p. 234).

As in so many other cities, it was the railroad which both opened up the West and signalled all change for LA:

When Los Angeles got its transcontinental rail connections in 1876, the Pueblo

chapter in its story ended and the modern chapter began. A more direct connection with the east was established in 1881, when the Southern Pacific completed construction work between Los Angeles and El Paso. Henceforth the story of Los Angeles is one of newcomers constantly pouring into its expanding area, an influx that continued year by year, resulting in early agricultural development, especially citrus, and the rise of tributary communities [Robinson, 1981, p. 88].

As Brodsky (1981, p. 63) relates, the railroads spurred the boom of the eighties, the first major influx of new inhabitants into the area. During the peak year of 1887, the Southern Pacific carried 120,000 people into the city, with the Santa Fe running three or four daily passenger trains, as well (McWilliams, 1973, p. 118).

From 1870 to 1890 the population of the provincial outpost of Los Angeles proper had jumped from 6,000 to more than 50,000, while in the same period about 85,000 new residents were added to the 15,000 previously living in the county as a whole. In addition, 30,000 more people could be found in newly created Orange County [Brodsky, 1981, p. 63].

The first railroads generally followed the routes of Indian, Mexican colonial, and American stage trails (Kirkman-Harriman, 1937), which in turn reflected the region's natural geography. Rail lines became the major axes for the emerging settlement (Brodsky, p. 64).

While agricultural settlements — such as San Bernardino, Riverside, Pasadena, El Monte, Pomona, and Long Beach — came into existence in anticipation of the transcontinental railroad, a much bigger boom occurred during the 1880s, with more than 100 towns established in Los Angeles County. "The railroads were not only the motivating factor in the boom, but the location of their lines influenced the alignment and provided the focus of the new subdivisions" (Nelson, 1959, p. 85).

The newcomers taking root in the

newly-developing Los Angeles were quite different from the relatively poor and unskilled immigrants arriving on the eastern seaboard.

Most of the new arrivals to Los Angeles were American-born, many came from the Middle West, and a large proportion were people of some means. . . With rural American backgrounds and the means to implement their ideals, the immigrants to Los Angeles pursued, even in those early years, an ideal of low-density, single-family living, well before the automobile placed that lifestyle within the reach of millions [Wachs, 1984, p. 298].

Los Angeles' "geography of the ideal" (Vance, 1972) presented its immigrants with the antithesis of the urban morphology of the traditional cities of the east. As Fogelson (1967) describes it:

Not for them multi-family dwellings, confined to narrow plots, separated by cluttered streets, and interspersed with commerce and industry. Their vision was epitomized by the residential suburb — spacious, affluent, clean, decent, permanent, predictable, and homogeneous — and violated by the great city — congested, impoverished, filthy, immoral, transient, uncertain, and heterogeneous. The late nineteenth- and early twentieth-century metropolis, as the newcomers in Los Angeles perceived it, was the receptacle for all European evils and the source of all American sins. It contradicted their long-cherished notions about the proper environment and compelled them to retreat to outskirts uncontaminated by urban vices and conducive to rural virtues. And though native [-born] Americans everywhere shared these sentiments, they formed a larger portion of the populace in Los Angeles than in other great metropolises. Here then was the basis for the extraordinary dispersal of Los Angeles [p. 144-145].

Los Angeles and the Interurban

In 1869, the first local rail line — from the Wilmington wharves to downtown — opened, followed in 1872 with a route from downtown to Santa Monica. The first streetcar line opened in 1874. Within thirteen years, there were forty-

three separate franchises for lines, operating in the City of Los Angeles. The first electric (as against horse, mule or cable-driven) one arrived in 1887 (Hunt and Amert, 1929, p. 190).

But if the railroad cutting frontiers from the east provided the major artery bringing migrant life to Los Angeles and — together with the early streetcar lines laid the seeds for fulfillment of the suburban dreams of LA's migrants — it was the interurban rail systems which spread new blood over a vast territory beyond that originally occupied by the Pueblo.



Karr (1973) points out that the interurban railroad was a hybrid: it operated on private rights-of-way like a steam railroad, but also on streets like a street railway. "The chief advantage over steam trains was that either single or multiple cars could operate on a more frequent schedule than a steam train of cars coupled to a locomotive. As said in *City of Santa Monica v. Jones* 104 C.A. 2d 463, 469 (1951) where the Pacific Electric operated an electric train:

Moreover, it may be added that the train stops at almost every street crossing to enable passengers to board or disembark from the trains. . . Steam trains during the period in question stopped only at one depot in each town.

“The railroads ran only limited daily passenger service between the villages and Los Angeles because the traffic hardly warranted frequent trains. The electric interurban changed the picture.” (Crump, 1978, p. 8). As Veysey (1953) relates:

and commercial center, even when the region’s population was quite small. While new industries and businesses concentrated near the downtown railhead in the days before motor trucks and telephones, the street railways made it possible for real estate speculators to



Los Angeles, the city which for many years possessed under the name of the Pacific Electric Railway Company the largest suburban and interurban electric system in the world, also became the largest city in area in the continental United States, its greatest geographic growth occurring in the very years when its electric railways were most vigorously expanding [p. 3].

While in Los Angeles — as in other cities — the railways were to focus on the core, Wachs (1984) underlines the fact that Los Angeles “was just growing to maturity as a city when street railways were introduced, and it had never developed a significant commercial and industrial core.” Street railways and interurban electric lines:

made residential growth possible at relatively long distances from the industrial

develop low-density residential estates in outlying sections catering to the obvious preferences of the newcomers. . .

Between 1890 and 1910, cable car and electric trolley lines were built by holders of large tracts of vacant land with the specific intention of subdividing that land and profiting from the sale of homesites made accessible to downtown by transit (Foster, 1971). Often mechanically unreliable, and even more often on unsound financial footings, the street railways rarely turned profits as transportation businesses, though they often contributed to huge speculative profits in real estate [p. 300].

As one prominent railwayman explained:

It would never do for an electric line to wait until the demand for it came. It must anticipate the growth of communities and be there when the home builders

arrive — or they are very likely not to arrive at all, but to go to some other section already provided with arteries of traffic [Los Angeles Examiner, Dec. 12, 1904].

Moses Sherman and Eli Clark began the first interurban operation — from Pasadena to downtown Los Angeles — on May 4, 1895, using portions of local lines between the two cities. On opening day, ten trolleys raced from one end of the line to the other (Crump, 1978, p. 10).

But it was Henry Huntington who was to build the largest interurban network in the nation: operating over 1,164 miles of track by 1923 and connecting points over 100 miles apart (Wachs, 1984, p. 300). “Surely Californians, and especially sons of Los Angeles, are both grateful and proud that Henry E. Huntington had a hand in the making of the West,” declared Huntington’s obituary:

For at the psychological hour in 1898 when the City of Los Angeles was cautiously courting prosperity along came the needed financier, who with foresight and courage projected a network of electric railways in the city which converted hamlets and villages into commercial and trading centers and made barren ground desired sites for homeseekers. Southern California, Henry E. Huntington and prosperity became a triumvirate the exploits of which will fill many pages of history [*Electric Railway Journal*, 1927, p. 981].

Huntington, unlike most electric railroad builders of the day, was well capitalized:

Trolley builders ordinarily cut costs by laying as much track as possible in streets, thus precluding the use of freight trains. Henry Huntington was wealthy enough to use private right-of-ways for the most part, thus permitting his electric railroads to do almost anything that a steam one could do [Crump, 1978, p. 12].

Huntington, together with a group of associates incorporated the Pacific Electric Railway Company on November 10, 1901. The first line to be built — which was to also be both the last interurban

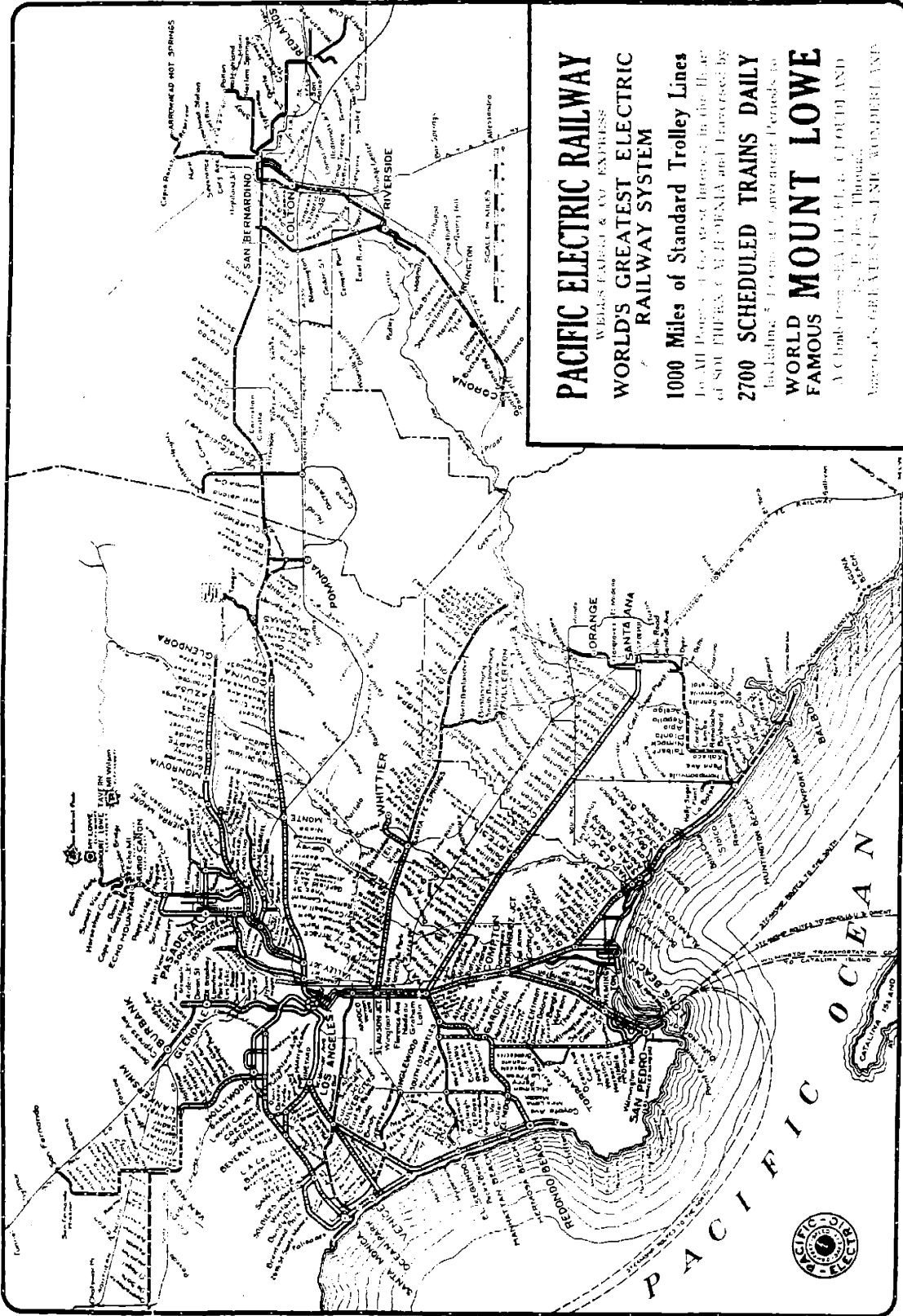
route to close and the first one to be resurrected under Los Angeles County’s Proposition A — connected downtown Los Angeles with Long Beach. The line opened on July 4, 1902, with the Red Cars of the Pacific Electric bringing 30,000 visitors (Crump, 1978, p. 13).

“The population of Long Beach, first community touched by the magic of the Big Red Cars, grew from a village of 2,200 residents to a city of nearly 18,000 in less than a decade. Most of its new residents arrived on the P. E”. (Crump 1978, p. 12). Watts, mid-way down the Long Beach line was also transformed by the trolley “into what was perhaps the first fully-fledged bedroom community in the city. Supporting only minimal commercial activity itself, it became one of the southland’s most important centers in the electric rail system” (Brodsly, 1981, p. 68, citing Adler, 1966, p. 22-24) “Not only were the peripheries of existing settlements built up, but no fewer than thirteen new towns resulted from his [Huntington’s] personal promotions, all but one located on his interurban lines” (Brodsly, 1981, p. 71, citing Glaab and Brown, 1967, p. 282). In this process, was “built not a city, but a series of connecting villages” (McWilliams, 1973, p. 169). “The Big Red Cars, traveling on right-of-ways lined by mile after mile of waxy-green orange groves, went through Covina, Claremont, Upland, Etiwanda, and Rialto en route to San Bernardino, Redlands, and Riverside — more than sixty miles from Los Angeles” (Crump, 1978, p. 21).

Comments Veysey (1953):

Photographs of such areas as Hollywood in 1910 reveal planted bean fields, waving ears of corn, and cow pastures — with the shining rails and trolley wire constituting the only urban feature to be seen. . . . When Pacific Electric built its tracks through the Cahuenga Pass into the hitherto remote San Fernando Valley in 1911, the move was instrumental in transforming the region from a flat, uninhabited expanse of sagebrush into its present status as a vigorous, substantial

LINE'S PACIFIC ELECTRIC RAILWAY IN SOUTHERN CALIFORNIA



PACIFIC ELECTRIC RAILWAY
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2700 SCHEDULED TRAINS DAILY
 Including 50000000 Passengers Per Year

WORLD MOUNT LOWE
 A Climax from SEA LEVEL TO 10000 FEET
 BY THE THROUGH ROUTE THROUGH
 MOUNTAIN'S GREATEST SCENIC WONDERLAND



residential community, all of which is located well within the Los Angeles city limits [p. 4]. . .

Newly established satellite towns near Los Angeles boasted of their accessibility by electric railway. The original nucleus of certain of these places was the Pacific Electric station itself: these localities owed their life and growth to the existence of the steel ribbons that connected them with Los Angeles [p. 5].

The population of Los Angeles, which had stood at just over 100,000 in 1900, more than trebled by 1910 (Veysey, 1953, p. 25). The metropolitan area as a whole grew from 180,920 to 507,300 residents over the same period, a decade during which "the electric trolley held a virtual monopoly of interurban transport" (Brodsly, 1981, p. 69). But trouble was already afoot for the Red Cars. As Karr (1973) documents, the only years after 1913 during which passenger operations made a profit were 1923 and some years during World War II.

THE CONSPIRACY THEORY OF BRADFORD SNELL

IT IS POPULARLY BELIEVED THAT the "Big Red Cars" of Los Angeles, together with streetcar systems in other cities, were eliminated by a conspiracy of "rubber interests" to replace them first with buses, and ultimately with automobiles. The "conspiracy theory" draws largely on a paper produced by a staff attorney, Bradford C. Snell (1974), for use during Congressional hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary. It is important to consider its claims, for they lead to the conclusion 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 which, as we shall see, historical evidence supports, is that the decline of the Red Cars was a function of a decline in the financial feasibility of operations, accelerated as automobiles came to Los Angeles and as rail services became decreasingly suited to meeting the population's transportation needs. This hypothesis suggests that the Red Cars became naturally extinct as they were displaced by automotive technologies which both caused changes in the Los Angeles urban form, and provided services better suited to serving its needs.

The Snell Claims

Snell (1974) introduces his report as: a study of the social consequences of monopoly. It shows that excessive economic concentration can restructure society for corporate ends. As an illustration, it focuses on three powerful automobile companies which eliminated competition among themselves, secured control over rural bus and rail industries, and then maximized profits by substituting cars and trucks for trains, streetcars, subways and buses. In short, it describes how General Motors, Ford, and Chrysler reshaped American ground transportation to serve corporate wants instead of social needs [p. A-1].

The study starts from an anti-auto view, lamenting that:

Unlike every other industrialized country, we have come to rely exclusively on large, gas-guzzling cars and trucks for the movement of passengers and freight. In the process, we have consumed much of the Nation's supply of oil, fouled our urban air with poisonous exhausts and turned our cities into highways and parking lots [p. A-1].

Snell claims that:

The demise of bus and rail forms of transport cannot, as some have suggested, be attributed to the public's desire to travel exclusively by automobile. Rather, much of the growth in autos as well as trucks may have proceeded from the decline of rail and bus systems [p. A-28].

General Motors, Snell states, saw that (more efficient) public transport could replace large numbers of automobiles and that it was to their advantage to eliminate this "competition:"

In the course of events, it became committed to the displacement of rail transportation by diesel buses and, ultimately, to their displacement by automobiles [p. A-28]. . . By the mid-1950s, it could lay claim to having played a prominent role in the complete replacement of electric street transportation with diesel buses [p. A-29].

Snell paints a picture of Los Angeles as a Red Car utopia destroyed by the curse of the car. Nowhere, he says, "was

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. Largely as a result, this city is today an ecological wasteland: The palm trees are dying of petrochemical smog; the orange groves have been paved over by 300 miles of freeways; the air is a septic tank into which 4 million cars, half of them built by General Motors, pump 13,000 tons of pollutants daily [p. A-3].

Snell's description is of violence being done to a living — almost human — or-



the ruin from GM's motorization program more apparent than in Southern California:

Thirty-five years ago Los Angeles was a beautiful city of lush palm trees, fragrant orange groves and ocean-clean air. It was served then by the world's largest electric railway network. In the late 1930s General Motors and allied highway interests acquired the local transit companies, scrapped their pollution-free

ganism. "In sum, GM and its auto-industrial allies severed Los Angeles' regional rail links and then motorized its downtown heart" (p. A-31).

In April, 1949, Snell says: a Chicago Federal jury convicted GM of having criminally conspired with Standard Oil of California, Firestone Tire and others to replace electric transportation with gas-or-diesel powered buses

and to monopolize the sale of buses and related products to local transportation companies throughout the country [p. A-32].

The court fined GM \$5,000, and its treasurer, H. C. Grossman, \$1.

General Motors' Reply

General Motors (1974) replied to Snell's report, saying it contained "false accusations, misleading inferences, and erroneous conclusions" (p. A-107):

For those who seek simple explanations for complicated urban problems, "American Ground Transport" provides a convenient scapegoat. . . It also provides a simple cure, namely the forced ouster of General Motors from the mass transportation business, presumably to clear the way for the return of the street car [p. A-112].

GM state, however, that "street railways failed for economic and demographic reasons which had nothing to do with any plot by General Motors" (p. A-112). GM refers to the violation of antitrust laws as having:

nothing at all to do with the replacement of streetcars by buses. There is not one word in either the Government indictment in the criminal case or the complaint in the companion civil case which charges GM with unlawfully scrapping or eliminating street railway systems [p. A-113].

The opinion in *U.S. v. National City Lines* (1951), GM states:

actually pinpoints the basic flaw in the current accusations that General Motors, for ulterior motives, destroyed healthy streetcar systems:

"In 1938, National conceived the idea of purchasing transportation systems in cities *where streetcars were no longer practicable* and supplanting the latter with passenger buses 186 F. 2d at S65; [emphasis supplied]" [p. A-114]. . .

The author [i.e., Snell] ignores the fact that Pacific Electric itself and its successors converted from rail service to bus service for a period of four decades. . . The interurban lines were not "severed" in 1940; some continued in

operation until the 1950s. They were abandoned in stages by Pacific Electric or its successor, pursuant to authority granted by the Railroad Commission, because of their rundown and unprofitable condition and because of a lack of patronage [p. A-116].

As we shall see, GM's claims are supported by the facts.

THE DECLINE OF THE RED CARS: A CASE IN DISPLACEMENT OF TECHNOLOGY

Jones (1985), reviewing the historical development of transit nationwide, points out that:

the demand for conventional transit service actually began to decline at mid-decade in the 1920s, and the transit industry's financial distress can be dated to the period before World War I [p. 15].

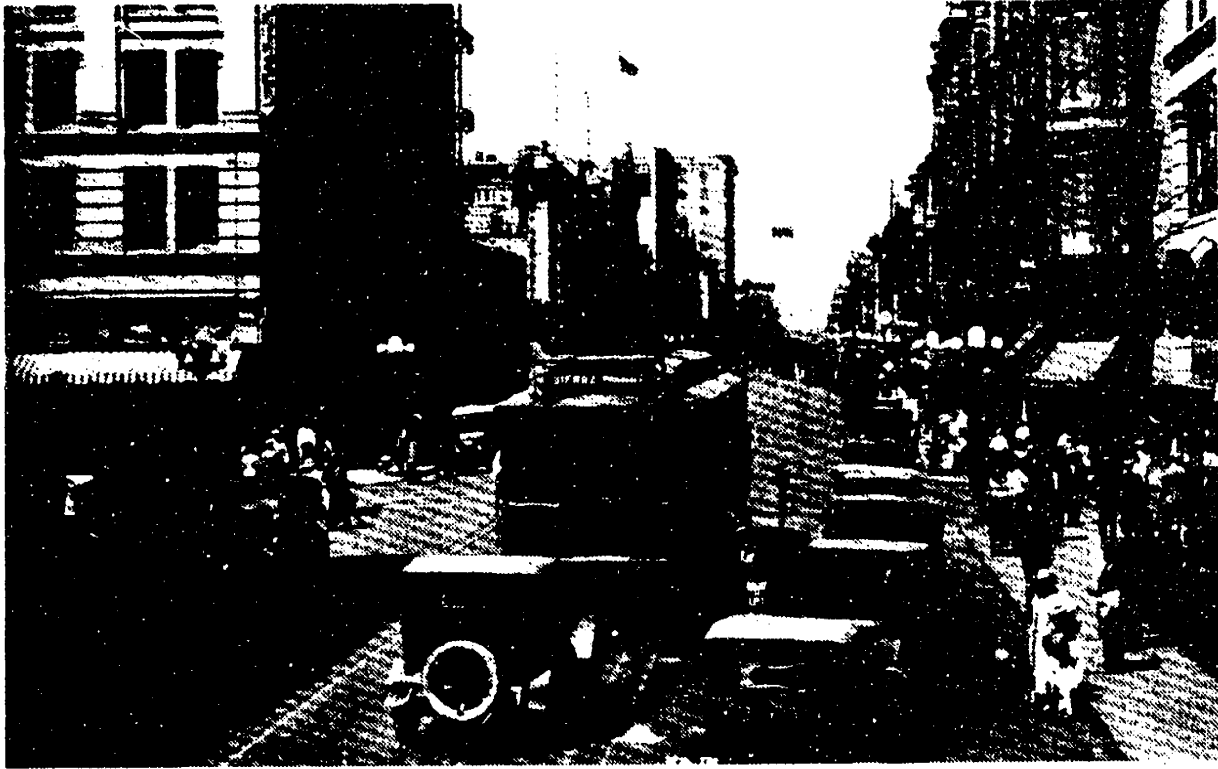
This national trend was certainly applicable to Los Angeles: "Even before 1920 there were signs of tightened belts among transit managements," reports Veysey (1953, p. 9). "Labor and maintenance costs were rising; patronage of street railways [in Los Angeles] was declining. And already the weakest streetcar systems were ceasing operation and selling themselves for scrap." Despite a slow increase in patronage from 1916 to 1918, ridership at the start of 1919 was still less than the peak of January, 1914. More significantly:

Pacific Electric rides *per capita* decreased markedly after 1912, reaching a low in 1916, then increased so slightly as to practically stand still from 1916 to 1918. In short, the company was slipping in its hold upon the public which it served [Veysey, p. 98].

Substantial increases in ridership in the early 20s took Pacific Electric ridership from 78.5 million in 1919 to a peak of 115.4 million in 1924. As Veysey (p. 158) reports, ridership then leveled off close to the 110 million mark and, after a surge in 1929, dropped to 106.9 million in 1930. The revenue peak had been in

1923; revenue then declined steadily until by 1930 it was beneath 1920 levels (p. 159).

parking spaces, and the greater expense of operating already is driving more and more people to the street car, the elevated, and the big bus with a regular oper-



The Automobile Makes its Mark

In 1915, when Los Angeles County had only 750,000 residents, it had 55,217 private cars: more than any other county in the country (Brodsly, 1981, p. 82). While there were only slightly more than 100,000 vehicles owned in Los Angeles County in 1919, by 1923 automobile and truck registration stood at 425,582 vehicles. During this period — one of booming population expansion — *per capita* ridership on Pacific Electric continued to decline, even while it was peaking in absolute terms. By 1930, there were 842,528 registrations in Los Angeles County (Veysey, p. 103/4).

Despite this, unrealistic expectations as to the role of rail abounded during the 1920s. In 1925, for example, an *Electric Traction* editorial stated that:

The congestion of automobiles, the many resulting accidents, the limited

ating schedule [*Electric Traction*, 1925, p. 522].

Even by 1929, Joseph Hallihan (1929), writing in *Electric Railway Journal* declared that:

Unquestionably the majority of people prefer to live within reach of public transit facilities. The ownership of an automobile by the family does not fully satisfy the daily transit demands for its different members [p. 912].

But, by then, signs that the automobile had brought about structural changes in travel behavior were well apparent. As Bail (1984) notes, “unfortunately, the anticipated growth of rail passenger traffic never came about, owing to the low density of residential development and the early swing to automobile travel” (p. 12) As Fogelson (1967) indicates, “the car did more than extend the railways’ radial line of settlement. It also increased the accessibility of sections by-passed by the tracks,

served places located far from the stations, opened up foothills where steep grades precluded profitable rail operations, and in these ways encouraged developers to subdivide isolated but otherwise desirable districts" (p. 92).

City maps drawn between 1902 and 1919 show what one would expect: that few new streets existed more than five or six blocks from streetcar lines [Foster, 1975, p. 476]. The automobile, however, permitted settlement of any area to which a road could be cleared. The result was the real estate boom of the 1920s. . . In some instances development actually shifted away from localities best served by transit lines [Brodsly, 1981, p. 82-83].

The rail system therefore both lost its monopoly on interurban service, and was unable to provide direct service to new areas opened up by the highway.

Of particular significance, the automobile took the focus of travel away from downtown Los Angeles. As Hilton (1967) puts it:

Rail passenger transportation was so inflexible that it could provide little but the trip to and from the central business district [p. 379]. . . 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 [p. 380].

"The newcomers who relied on their autos, encountered the predicted delays, discomforts, and costs driving to downtown Los Angeles," says Fogelson (1967, p. 179). But:

Instead of resorting to the electric trains, they simply avoided the central business district. Of every one hundred persons living within a ten mile radius of downtown Los Angeles, sixty-eight entered it daily in 1923 and fifty-two in 1931, a decline of 24 per cent. Even fewer commuted from farther away, for by the middle of the 1920s commercial and industrial decentralization enabled suburbanites to shop and work in outlying centers. And once the automobile not

only competed with the railway but also established the setting for the competition, the future of urban transportation rested with the motorcar as the past had with the train [p. 179-80].

Increasing congestion slowed down trolleys as well as cars. Meanwhile, during the 1920s the costs of automobile ownership steadily fell (Jones, 1985, p. 44).

Even if an interurban line was able to maintain its schedule, it could not compare with the private car in speed, convenience, and even cost. The situation deteriorated as the rail companies, short of funds, spent little on capital improvements, further damaging the streetcar's popular image [Brodsly, 1981, p. 92].

The automobile competed "selectively and insidiously," (Fogelson, p. 179), taking away weekend and off-peak leisure traffic, relative to peak-hour users.

"Hence, the motorcars deprived the railways of their cheap and remunerative casual business without relieving them of their expensive and unprofitable commuter service." Equipment previously in use all-day now lay idle outside the peaks. This structural change helps account for the falls in Pacific Electric revenues from 1923, even when total numbers of passengers held steady.

During the early 1920s, almost all excursion services were canceled by the Pacific Electric. Its most famous — to Mount Lowe — remained in operation at mid-decade, but saw a drop in patronage from 160,930 passengers in 1921 to 118,404 in 1925. In 1926:

a new joint enterprise was inaugurated, in which motor coach sightseeing tours operated by another company were combined with an afternoon visit by railway to Mount Lowe. This very fact is again illustrative of the inability of the railway, which could not wander from its fixed routes to include new attractions, to satisfy the demands of tourists in an automotive age [Veysey, 1953, p. 146].

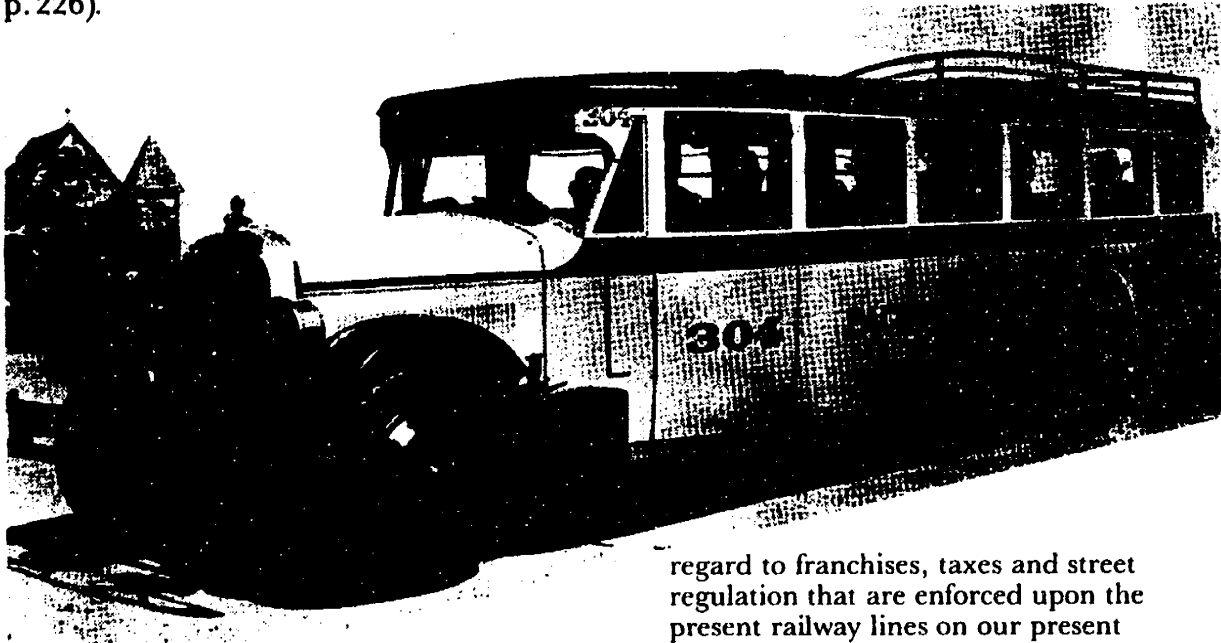
While the depression hit the Pacific Electric hard — by 1934 patronage was one-third below the 107 million passengers carried in 1929 (Crump, 1970,

p. 203) — automobile registrations dropped only slightly. “It has been noted. . . that the very last possession any family surrendered at this time was its car” (Veysey, p. 168). More to the point, the post-depression years saw automobile ownership mount: while there had been 843,536 vehicle registrations in 1931, and 808,640 in 1933, there were 884,521 in 1935 and over one million in 1937 (Veysey, p. 168). By contrast, while the number of interurban revenue passengers carried did increase from 60.0 million in 1933 to 70.0 million in 1936, it dipped again to 63.0 million in 1939. “It is interesting to note that during the entire period from 1932 to 1938, Pacific Electric lagged far behind the general degree of national recovery from the depression in terms of business indices” (Veysey, p. 226).

fare, but the existence of a good paved road nearby permitted organized bus competition to begin only three months later.

Veysey documents competition from jitneys dating from 1914: “By 16 December of that year, with eighteen hundred licenses then in effect, jitneys collected 150,000 five cent fares per day” (p. 29). By 1916, Pacific Electric President Paul Shoup was so concerned at the loss of his passengers, that he declared:

Your Long Beach lines have fallen to the point where they . . . do not even pay the transportation expenses, that is the power to move the cars over the tracks. Some of your tracks have disappeared, and others must go. It is up to the people of Long Beach to decide. If you want the Pacific Electric Railway to continue to maintain a system in this city you should impose the same conditions with



Competition with the Bus

The bus became a potent rival to the Red Cars as early as 1914, long before any claim could be made that General Motors unfairly promoted its cause at the expense of rail. As Bail (1984, p. 23) notes:

Pacific Electric opened its San Bernardino rail line in July 1914 with great fan-

regard to franchises, taxes and street regulation that are enforced upon the present railway lines on our present common carrier competitor [the jitney]. [*Electric Railway Journal*, LXVII, Jan-June, 1916, p. 715].

On July 12, 1917, Pacific Electric became a bus operator, itself. A competing bus service between San Bernardino, Highland, and Patton was taking away Pacific Electric streetcar passengers. Pacific Electric bought the bus line.

By this action it proved that before surrendering its passengers to competition on the highways, it would transform its

own service to include routes away from its private rights-of-way. It would buy out its competitors rather than attempt to drive them from the field by offering a distinctly superior rail service" [Veysey, p. 71].

Pacific Electric would also establish its own feeder bus services to reach outlying communities well beyond the economic reach of rail. As of January, 1927, Pacific Electric operated thirty-two bus routes over 200 route miles, carrying on average 820,000 passengers per month (Bail, p. 23). In 1930 it bought out Motor Transit, a major competitor.

Full-time PE rail passenger service to the Orange County points of La Habra, Yorba Linda, Stern, and Fullerton ceased soon after the acquisition, because the Motor Transit route between Fullerton and Los Angeles was more direct, and patronage did not warrant continuation of both services [Bail, p. 95].

During the early 1930s, bus design "improved in many ways, and most companies discovered that while rail operations were unprofitable, a bare margin of earnings could still be earned by substituting these internal combustion vehicles" (Veysey, p. 10). The bus showed it was earning favor with the public, and many articles in transit publications boasted of its attractions relative to the streetcar. One article (Stauffer, 1930) showed how "de luxe" bus service was being developed to attract those who had abandoned the streetcar for the automobile. Another article, from later that year (Stocks, 1930), points to the ability of the bus to provide a kind of direct service not available by streetcar to newly-developing low-density suburban areas:

At first, buses were looked upon merely as potential feeders to existing rail lines, in order that the railway investment might be preserved without loss to security holders. But the patrons of these feeder routes failed to take kindly to the necessity of transferring from [street]car to bus and it soon became apparent that unless through bus routes were operated

into the business centers of the community, the traffic would not support the bus service. . . . Then followed the idea of changing the feeder bus lines to through bus routes, the gradual elimination of poorly patronized trolley routes, and the substitution of suitable capacity buses. . . .

The extreme flexibility of this easy riding, rubber-tired transportation unit has demonstrated that it has many advantages both to the traveling public and to the transportation merchant. Instead of making extensions with track, buses have been used to develop new territory. Many single-track trolley routes have outgrown their usefulness and the bus is now giving better and more frequent service [p. 387-388].

A further article (Warner, 1930) mentioned that buses even coped better with congestion than did streetcars, since they could be re-routed to avoid it. "Express service" could be installed, furthermore, by "taking loaded equipment off congested thoroughfares and expressing them via the fastest possible route" (p. 746).

A 1936 article (Transit Journal, 1936) reported on "How the New Gas Buses Have Improved Earnings."

Because the new buses are faster and quieter [than streetcars], and particularly because they have been operated on more frequent headways, they have proved very popular with the riding public [p. 337].

In addition to patronage gains on many lines where substitution took place, "the operating costs have generally been reduced" (p. 337).

Thus historical evidence goes against the claims of modern-day rail proponents that people will prefer trains to buses because they are faster and more "modern," even if a train trip requires a transfer not needed when traveling by bus and operates at a lower frequency. Quite the reverse held true in the 1930s: the more flexible service made possible by buses suited the needs of Los Angeles better, and the same holds true today.

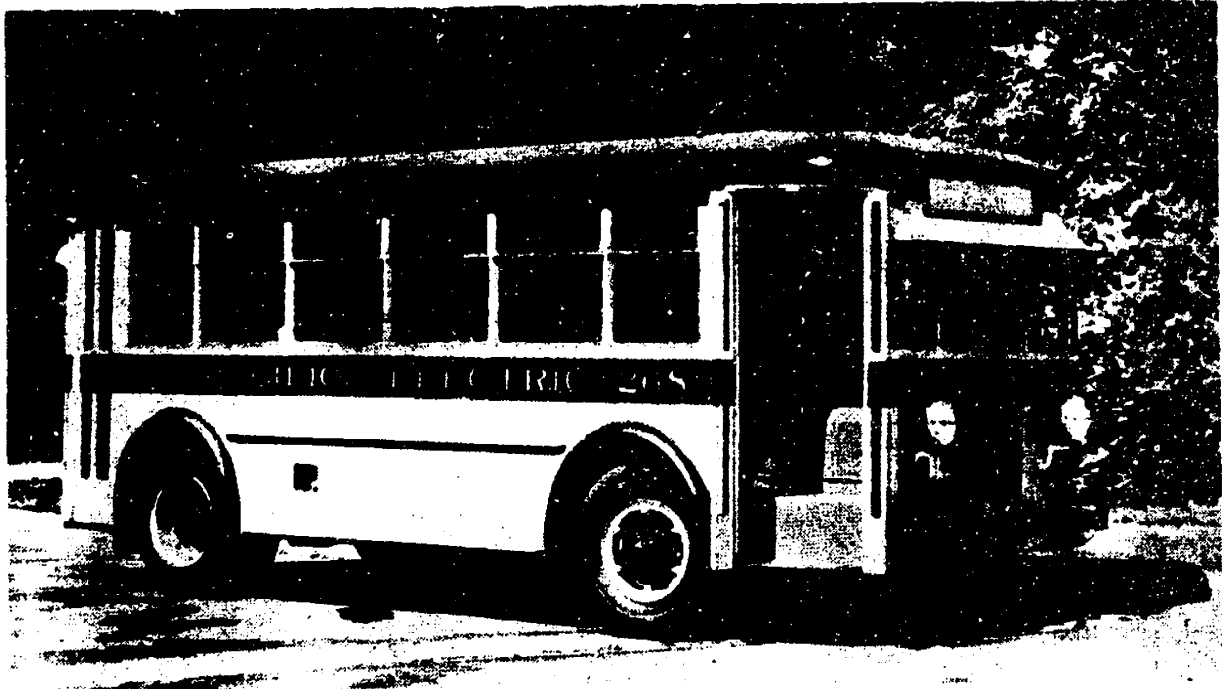
Pacific Electric Shifts to the Bus

As General Motors (1974) state in their reply to Snell:

The truth is that both the Pacific Electric and the Los Angeles Railway began to abandon streetcars before GM was even in the bus business and long before National City Lines or any of its affiliated companies were even organized [p. A-114].

In 1923, all but four of the streetcar

solescent and without capital funds for replacement; with competitive pressures from the automobile mounting; and with the effects of decentralization making the core-focused and inflexible interurban system ever less viable, pressure grew for Pacific Electric to shed its loss-making electric services, and replace them with bus operations. "From 1936 to 1940, Pacific Electric officials became openly favorable to motor coach substitutions on more im-



lines in Pasadena had been abandoned, to be replaced by "a complex system of motor coach lines" (Veysey, p. 131). This was the first large-scale replacement of trolleys by buses. In 1928, replacement of the Upland - Ontario interurban service with buses went ahead, the company arguing that buses would result in labor cost savings:

for not only would two-man streetcars be replaced by one-man buses, but a faster running time could be placed into effect, enabling the present schedule to be met by one bus as opposed to two rail cars. . . . It was the first instance of such a substitution in order to lower continuous operating expenses [Veysey, p. 134].

With existing streetcars becoming ob-

portant rail routes than had hitherto been affected" (Veysey, p. 183). The major rail link between Riverside, San Bernardino and Redlands was thus converted to road service on 20 July, 1936, "apparently with little opposition" (p. 183). "The company was becoming ever bolder in a conviction that [rail services] could profitably be replaced by motor coaches" (p. 185). During that year, the total miles of motor coach route exceeded total miles of electric railway route for the first time (*Transit Journal*, 1939, p. 11, cited by Veysey, p. 208): replacement had become a national phenomenon.

By 1926 15 percent of Pacific Electric's passenger mileage was accounted for by

travelers by bus, and this had grown to over 35 percent in 1939, the year *before* it is claimed that General Motors had any role in acquiring part of the system (General Motors, 1974, p. A-115).

The California Railroad Commission examined the condition of the Pacific Electric in an exhaustive survey during 1938-1939, finding excessive indebtedness, aging equipment and inadequate maintenance (Bail, p. 113). With service also deteriorating due to the increasing congestion on the roads and delays caused by at-grade road crossings, costs rising, and patronage hit by automotive competition, the Commission ruled that:

One of the logical sources of reduced costs is substitution of motor coach service for rail lines which were constructed at large investments and designed to carry traffic far in excess of that which now presents itself [California Railroad Commission, 1940].

In permitting conversions from rail to bus on the local lines of the Los Angeles Railway in 1941, the Commission (California Railroad Commission, 1941) had declared that:

New motor coaches of modern design with uniform high rates of acceleration and deceleration, high free running speeds and trackless maneuverability in replacement of obsolete, slow, noisy, rail cars restricted to use of tracks located in the street center, will expedite the freer flow of vehicular traffic and allow a more efficient utilization of the street surface.

Railroad abandonment proceeded apace; a particularly major conversion occurred in November, 1941, when all rail service on the Pomona and San Bernardino lines east of Covina was terminated.

This was somewhat surprising, considering the fact that rail equipment had been especially modernized for the service just eighteen months previously. According to Pacific Electric officials, more people in the intermediate area now lived along or adjacent to the highway rather than the rail line, and this was the controlling factor in the decision [Veysey, p. 219].

Post-War Decline

Jones (1985) notes that:

From its 1946 peak, nationwide transit ridership declined 26 percent by 1950 and another 28 percent in the succeeding four years. . . . The most precipitous loss of ridership occurred in the first years of the postwar period — *before* the freeway construction boom that followed the creation of the federal highway trust fund in 1956 and *before* congressional authorization of accelerated spending for the interstate highway system at a 90:10 federal-state matching rate [p. 74-75].

Jones cites three factors for the decline. "Normalization" — the end of gas and tire rationing, the return to "normal" peace-time employment levels, and the lagged introduction of the five-day workweek simultaneously increased the feasibility of automobile use and reduced the demand for public transportation. Secondly, while declining patronage — further discouraged by increasing fares and decreasing service levels — led to reduced revenues, postwar wage increases led to higher transit operating costs. Finally, the growth in personal income and automobile ownership not only further reduced the market for transit, but led to a re-organization of urban activities to serve an increasingly "auto-mobile" population. This dispersion of activities placed service needs quite out of sync with the kind of service transit could best provide.

Following the Second World War, during which Pacific Electric patronage had swelled, patronage fell off once more, while the trend towards automobile transportation continued and intensified. Service, especially in terms of frequency of rail service, continued to be cut back between 1948 and 1950, "responding to rapidly declining patronage" (Veysey, p. 276). While total passengers carried on the Pacific Electric fell from a peak of 182 million in 1945 to 102.7 million in 1951, "from 1945 to 1950 the trend on motor coach operation was one of surprisingly significant expansion" (Veysey, p. 283).

Pacific Electric rail operations had been profitable in 1943 and 1944 for the first time since 1923:

However, by 1946 the annual loss was \$2,200,000. In 1947 the loss climbed to \$3,426,000, and this loss was incurred on a gross rail passenger revenue of approximately \$10.5 million. If these amounts are converted into today's costs, the amount of loss is not only substantial but simply impossible for private enterprise to bear [Karr 1973, p. 16].

Bail (1984) succinctly describes the response:

When it became clear in the postwar years that there was no quick fix for a rundown rail plant operated by obsolete methods with antiquated equipment, PE looked for a more economical solution and found it. A straightforward evaluation was made at that time between gasoline and diesel buses, and as on every other large transit property in the country (Chicago's preoccupation with propane excepted) the same conclusion was reached. World War II had brought the technology of the diesel engine coupled with the hydraulic transmission to new heights of efficiency and reliability, and it was time to apply these advances.

The fact that General Motors had a better engineered product to sell and had, like a good many enterprising businesses, set up favorable financing arrangements, have somehow been held as "unfair advantages." Whatever happened to free enterprise, anyhow? [p. 190].

In 1948, Pacific Electric claimed that three-quarters of its 1947 passenger losses had been due to interurban rail operations and, petitioning the Railroad Commission, stated that "to do anything other than give serious consideration to possible substitutions of motor coaches for rail lines or to abandon service in some measure would be futile" (Veysey, p. 297, citing LA Daily News, Aug. 22, 1948).

On March 1, 1949, Pacific Electric filed for a sweeping series of rail passenger abandonments "which constituted the company scheme for modernization in its entirety" (Veysey, p. 297) On May 9,

1950, the Commission (California Railroad Commission, 1950) gave the go ahead for virtually all that had been requested. It found that Pacific Electric "cannot continue to operate its outmoded and obsolete rail facilities at the losses indicated in this record" and found that it was:

in the public interest to authorize the changes in service as provided in this decision. In so doing, we are taking into account applicant's commitment to provide new, modern motor coaches to replace the rail passenger facilities. . . The record clearly shows that the passenger rail operations of applicant have been conducted at a loss over a long period of time: On the other hand, its motor coach service has been operated at a profit.

A public outcry ensued, and the Los Angeles City Council did get the Board of Public Utilities and Transportation to temporarily rescind its approval, but the Board:

stating that it could not force the company to continue operating at a loss, unanimously reaffirmed its earlier decision shortly after the state decision had been made. Thus at last Pacific Electric was free to act [Veysey, p. 304].

Karr (1973) describes what ensued: Several rail abandonments were carried out in 1950. In 1953 the remaining rail passenger lines (and the by-then substantial motor coach operations) were sold to the Metropolitan Coach Lines. The passenger rail service was later entirely discontinued either by Metropolitan Coach Lines or by its successor [p. 17].

The Long Beach line was the last of the Pacific Electrics to go. In 1910, Long Beach service had operated every 20 minutes and taken 41 minutes for an end-to-end trip. The following year service was down to half-hourly, but express trains took only 36 minutes end-to-end. By 1926 the trip took 51 minutes, due to the effect of at-grade crossings and road congestion, in 1944 54 minutes and in 1954 60 minutes, with trains "usually" between ten and thirty minutes late (Crump, 1978,

p. 27). Frequency which had risen to quarter-hourly in 1946, was by then back to half-hourly.

Big Red Car service ended April 8, 1961.

The last interurban arrived in Long Beach shortly after midnight, and appropriately carried a contingent of Big Red Car fans [Crump, 1978, p. 28].

Streetcar service continued for a while on the local lines of the Los Angeles Railway which, like Pacific Electric, had been converting rail to bus operations as fast as possible. In 1958 both of Los Angeles' private operators sold their holdings to the Los Angeles Metropolitan Transit Authority. The Authority continued operation of the remaining local streetcar lines through 1963, when the MTA annual report declared that:

One of the highlights of 1963 was the successful conversion of the five remaining local streetcar lines and two trolley coach lines to modern bus operation. This changeover was accomplished smoothly after a concentrated public information campaign to acquaint the public with the added convenience, comfort and efficiency of the new operations in their particular geographic area.

Did General Motors Have an Impact?

That General Motors *did* have some impact is without doubt: As Jones (1985, p. 63) sees it, General Motors market domination dampened competition in bus manufacturing and probably retarded innovation in bus design:

In the absence of significant competitive incentive, few improvements in diesel bus technology were made after the 1950s, although improvements of European origin establish that the potential for advancement was not yet exhausted.

More importantly, perhaps, GM's dominance with a diesel bus product led to the preemption of routes and markets which might have been more economically served by the electric trolleybus:

As a result, the technological development of the trolleybus languished in the United States, while the diesel bus

emerged as the industry's predominant vehicle technology. . . The preemption of the trolleybus market by diesel buses left most properties operating a vehicle notorious for its noise, rumble, and fumes. While the diesel bus may have served its *users* well, it was generally held in low esteem by nonusers: motorists, pedestrians, cyclists, and the residents of homes abutting bus routes. Thus, it seems not too unlikely that the diesel bus served the transit industry poorly in terms of public image and public relations. . .

The National City Lines venture was, in short, a market-breaching and market-cornering strategy rather than an elaborate conspiracy to destroy the last competitive threat to the automobile. Its importance lies in the concentration of economic advantage in the bus manufacturing industry rather than in the supposed destruction of "viable" street railways. In any case, other developments that occurred during the depression years were more important for the future of the transit industry than was any role played by National City Lines. Unfortunately, all too many students of urban affairs have neglected these more important developments in the process of debating the conspiracy theory of transit's decline [Jones, p. 63-64].

Would Public Control have Saved the Red Cars?

As Brodsky wryly puts it: "It required no conspiracy to destroy the electric railways; it would, however, have required a conspiracy to save them" (p. 95). Public transportation was seen, however, as a private responsibility:

PE waited, in vain, for the formulation of a local transportation policy. On the state level, commitment to the growing freeway system was clear. While the politicians debated and the newspapers lamented, no coherent plan, much less one dollar of support came forth. Meanwhile, the increase in the number of automobiles and miles of freeway made any plan other than for bus substitution academic [Bail, 1984, p. 190].

As early as 1909, local government be-

gan to assume responsibility for road construction. The state began funding highway construction the following year (Fogelson, 1967, p.92), and the extensive freeway system, begun with the Arroyo Seco Parkway (later renamed the Pasadena Freeway), completed in 1940, was a state and, later, federal responsibility (more discussion of this in Chapter 6).

It can be argued, therefore, that government actively participated in promoting Los Angeles' highway systems, even if users contributed to the costs through taxes, while similar support was not provided for the interurban railroads. It should be noted, however, that urban street improvements were slow in coming during the 1920s, while by the close of World War II, only eleven miles of freeway had been opened in Los Angeles. By then the Pacific Electric had already been on the decline for well over twenty years.

More to the point, however, while it *can* be argued that government support might have saved the Red Cars, it is clear that it would have been futile for government to have done so, given auto-driven changes in the spatial organization of Los Angeles County which decentralized employment, shopping, services and recreation as well as residences. It was these fundamental changes which irreparably took away the Red Cars' market and left the interurban rail system as no more than a monument to a technological past, one now transcended by the highway, the car and the bus.

CONCLUSION

INTERURBAN RAIL PASSENGER SERVICE, provided largely as a spur to real estate ventures, played a crucial role in the creation of Los Angeles.

By providing new accessibility, the interurban opened up vast new tracts for real estate growth, facilitating the initial development of the low-density Los Angeles residents sought. But the automobile suited that lifestyle even better, and allowed changes in the city's spatial organization — further dispersal, infilling between rail routes, and a de-emphasis on downtown — which rail could not properly serve. Rail's market — and revenues — were lost to the automobile even in the early 1920s. Buses provided competition as early as 1914, and by the 1930s articles were appearing suggesting that buses could capture markets the interurbans had lost to the automobile, through greater flexibility, convenience, comfort and shorter headways than the streetcar could provide. Conversions from rail to bus services were a logical way of reducing costs, while maintaining service to a large number of points not economically reachable by the fixed-rail interurban.

The Snell report provides an example of ideas lagging technology in displacement. Snell thinks of Los Angeles in terms of the Red Car's heyday, and cannot see that the autopian town of ultra-dispersed urban functions and non-central-place-based transportation demands could not be served by the old technology. In fact, he is dreaming of the old Los Angeles associated with the Red Cars — “a beautiful city of lush palm trees, fragrant orange groves and ocean-clean air” — and will not countenance the reality of the new. We shall later see that the erroneous conspiracy theory, with its roots in the positive imagery of a rail-borne Los Angeles of yesteryear and its negative imagery of the freeway and the bus, was to play an important role in forming perceptions that rail had a place in the Los Angeles of the twenty-first century.

For instance, if rail rapid transit was even a way — much less the way to “cure” the traffic congestion and pollution problem, then why is congestion and pollution so bad in New York, Chicago, Boston and Philadelphia?

— Martin Wohl (1976, p. 55)

3 Evaluating the Case for Rail

INTRODUCTION

“**L**OOKS LIKE A WINNER SO far,” read the headline of the Jan. 21 1991 *Los Angeles Times* editorial praising downtown Los Angeles - Long Beach Blue Line light rail service:

Nowhere has the challenge for kicking off a mass transit system been greater than in car-crazy Los Angeles.

But now 18,000 commuters daily climb aboard the Blue Line for the run between Los Angeles and Long Beach. Those numbers wildly exceed expectations, climbing to three times the projections of six months ago when Blue Line set off on its inaugural run. Its initial success bodes well for Southern California mass transit. . .

The Blue Line’s ridership provides a useful gauge in assessing whether commuting Southlanders might hang up their car keys and give mass transit a try. . .

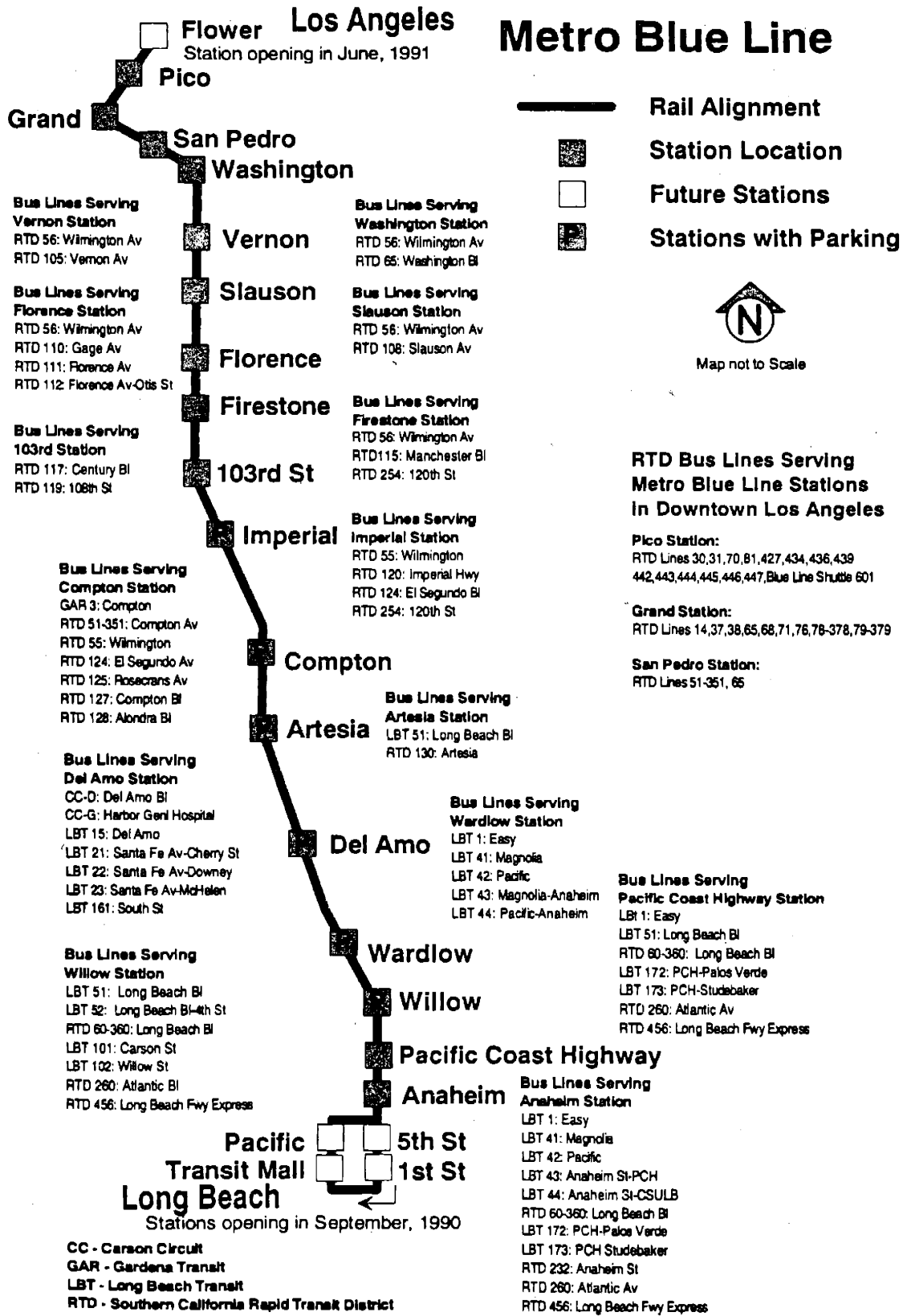
Freeing the region from the increasing paralysis of gridlock will make commuting easier, the air cleaner and provide wider access to jobs for those in the suburbs. The Blue Line is a splendid beginning.

All evidence indicates that the *Los Angeles Times* was wrong. The claim that ri-

dership is “wildly” exceeding expectations was based on estimates published by the LACTC just before the commencement of operations, and these were much less than originally forecasted. As indicated in a letter to the author from Rail Construction Corporation President/CEO, Edward McSpedon, dated, July 3, 1990: “We are conservatively estimating 5,000-7,000 riders daily initially, building to 12,000 with full system operations.”

The year 2000 daily estimate prepared by Southern California Association of Governments had been for 54,702 daily passengers (eg. LACTC, 1985, p. III-86). LACTC had initially estimated that first year patronage would be less: 35,000 passengers per day, based on growth curves observed on other systems (per Paul Taylor interview, Aug. 14, 1985).

A January 10, 1990 report on staffing and operating and maintenance costs (LACTC, 1990, p. 48), cited expected first year Blue Line daily ridership of 30,400 trips per weekday. An RTD report later that year (SCR TD, 1990a, p. II-14), however, assumed ridership of only 15,000 passengers per day during Fiscal Year 1991. The drop by LACTC to the 5,000-7,000 range just before opening



Map 3-1 Note: All stations were open for revenue service as of Feb. 15, 1991

guaranteed that the "estimate" would be "wildly" exceeded. In the flurry of data daily emanating from agencies, earlier projections are easily forgotten.

The opening of a tunnel into the central part of the downtown Los Angeles area on February 14, 1991 (with revenue service commencing on February 15) was, nonetheless, followed by further ridership increases: to 25,000 average weekday passengers (22,857 average daily — taking account of weekends) in February (Spivack, 1991), and 31,000 average weekday passengers (28,903 average daily) in March (Peterson, 1991). This performance is much closer to the original estimated patronage for the first year ridership of 35,000 daily passengers. Prior to light rail service, however, a local bus service — route 60 between Long Beach and downtown LA — was carrying over 31,000 daily passengers; and there were many other Long Beach corridor bus services to downtown LA, too. North-South parallel bus services in the corridor were already carrying many times the volume the light rail line has so far achieved and, as we shall see, at substantially lower cost.

Claims on light rail's abilities to reduce "gridlock" and pollution are invalidated by work performed for LACTC's own Environmental Impact process, while the claim to providing connection to jobs is unsubstantiated, as becomes clear from a study of labor markets, skill levels and other social factors to be discussed in Chapter 12.

Service Description

The Long Beach light rail operates over 21 miles from the 7th & Flower Station in downtown Los Angeles, through Watts, Compton, and Carson to downtown Long Beach (see Map 3-1). It serves 22 stations. Light rail technology is used, with driver-operated articulated rail cars:

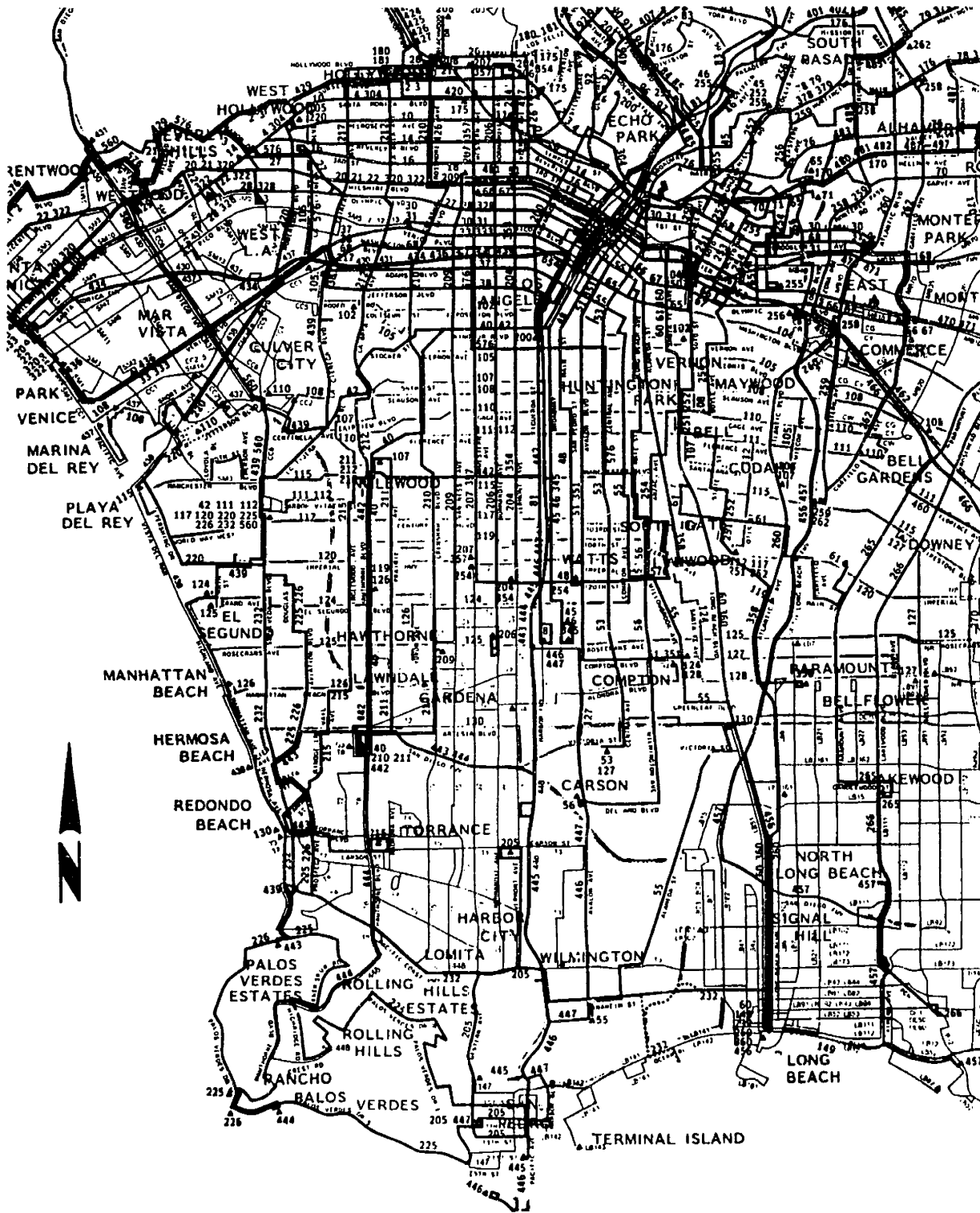
moving largely over surface tracks, interfacing with automobile traffic at numerous grade crossings, and including

approximately 6 mi of street traffic operation. There will also be about 1 mi of subway operation in downtown Los Angeles, plus several short stretches of elevated structure serving as flyovers across congested areas [Jester, 1989, p. 337].

Service was commenced on July 14, 1990, operating initially short of both termini, with connecting shuttle buses provided at both service ends. A complementary bus system has additionally been designed to provide feeder connections to the light rail, mostly through changes to existing bus lines. Other buses provide a grid system of services, operating north-south and east-west (see Map 3-2). The Wilshire Boulevard "Red Line" subway and Century Freeway "Green Line" light rail services are currently under construction, and will provide connections in downtown Los Angeles and Willowbrook (Imperial), respectively. Ultimately, the full Proposition A system is planned to provide service to the points shown on Map 3-3.

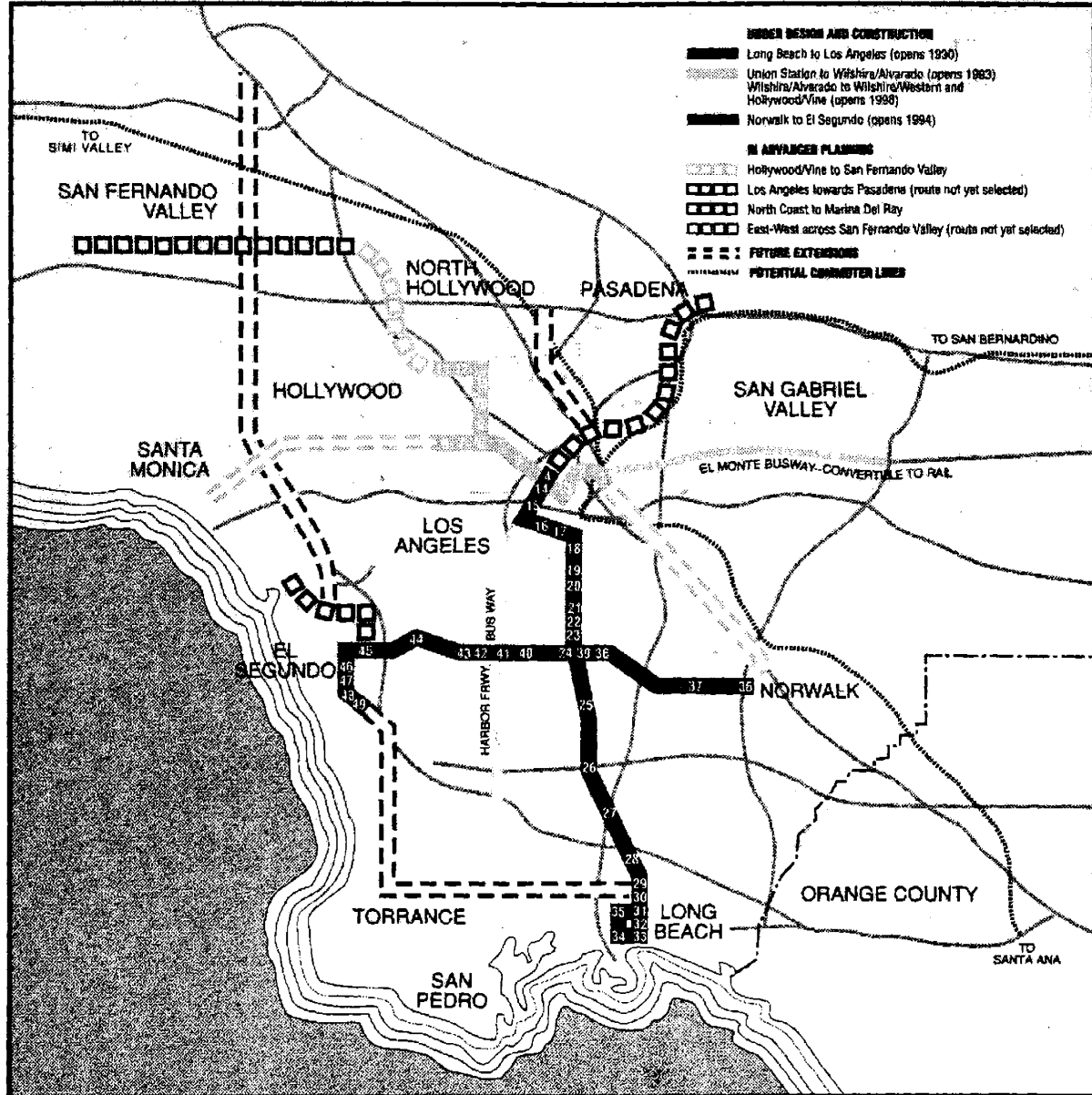
Light rail service has now been extended to both downtown termini, with full end-to-end revenue service available from February 15, 1991 (LACTC, 1991). Peak service is provided at 10 minute intervals, with 15 or 20 minute frequencies at other times. Service begins at 5 am daily, with the last train from downtown Los Angeles at 9:03 pm, and the last one from Long Beach at 7:50 pm. End-to-end trip time is 60 minutes.

Following a fare-free period through the end of July, 1990, a one-way full adult light rail fare of \$1.10 has been charged for any distance, the same as the local bus fare. The fare is substantially lower than the \$2.30 charged on express bus line 456, which makes local stops in Long Beach and downtown LA, and operates non-stop on the Long Beach and Santa Ana Freeways in-between. Consideration had been given to charging zone fares on light rail as on express buses; a September, 1989 simulation carried out by RTD, however, showed that while zone fares could be ex-



Map 3-2 SCRTD bus services

Los Angeles County Rail Transit Plan



STATION LOCATIONS

Red Line - Union Station to Hollywood/Vine

1. Union Station
2. 1st St./Hill St. (Civic Center)
3. 5th St./Hill St.
4. 7th St./Flower St.
5. Wilshire Blvd./Alvarado St.
6. Wilshire Blvd./Vermont Ave.
7. Wilshire Blvd./Normandie Ave.
8. Wilshire Blvd./Western Ave.
9. Vermont Ave./Beverly Blvd.
10. Vermont Ave./Santa Monica Blvd.
11. Vermont Ave./Sunset Blvd.
12. Hollywood Blvd./Western Ave.

Blue Line - Long Beach to Los Angeles

13. Hollywood Blvd./Vine St.
14. 7th St./Flower St.
15. Pico Blvd./Flower St.
16. Grand Ave./Washington Blvd.
17. San Pedro St./Washington Blvd.
18. Washington Blvd./Long Beach Ave.
19. Vernon Ave./Long Beach Ave.
20. Slauson Ave./Long Beach Ave.
21. Florence Ave./Graham Ave.
22. Firestone Blvd./Graham Ave.
23. 103rd St./Graham Ave.
24. Imperial Hwy./Wilmington Ave.
25. Compton Blvd./Willowbrook Ave.

Green Line - Norwalk to El Segundo

26. Artesia Blvd./Acacia St.
27. De Amo Blvd./Santa Fe Ave.
28. Wardlow Rd./Pacific Ave.
29. Willow St./Long Beach Blvd.
30. Pacific Coast Hwy./Long Beach Blvd.
31. Anaheim St./Long Beach Blvd.
32. 5th St./Long Beach Blvd.
33. 1st St./Long Beach Blvd.
34. 1st St./Pine Ave.
35. 5th St./Pacific Ave.
36. Studebaker Rd./605 Fwy.
37. Lakewood Blvd./Imperial Hwy.
38. Long Beach Blvd./Imperial Hwy.

Other Lines

39. Imperial Hwy./Wilmington Ave.
40. Avalon Blvd./117th St.
41. 110 Fwy. (Harbor Fwy.)/117th St.
42. Vermont Blvd./117th St.
43. Crenshaw Blvd./119th St.
44. Hawthorne Blvd./111th St.
45. Aviation Blvd./Imperial Hwy.
46. Mariposa Ave./Nash St.
47. El Segundo Blvd./Nash St.
48. Douglas St.
49. Freeman Ave.

Map 3-3

pected to produce greater overall revenues than flat fares, this would be at a cost of lost ridership. RTD is, however, currently reviewing the possibility of converting to a zone system. Fares are paid on an "honor" system: passengers use self-service ticket vending machines at stations or bus transfers, or they purchase passes. Sheriff's deputies check for fare payment as well as providing security coverage.

As Chart 3-1 and Table 3-1 show (From Pegg, 1990b), Blue Line ridership started extremely high: as many as 56,000 average daily weekend riders for the first weekend of free-fare operations, with a peak of 69,800 passengers on the second day of service, Sunday July 15, 1990 (only partial pre-startup service was provided the previous weekend). With fares coming into effect at the beginning of August, Blue Line ridership dropped, with paid

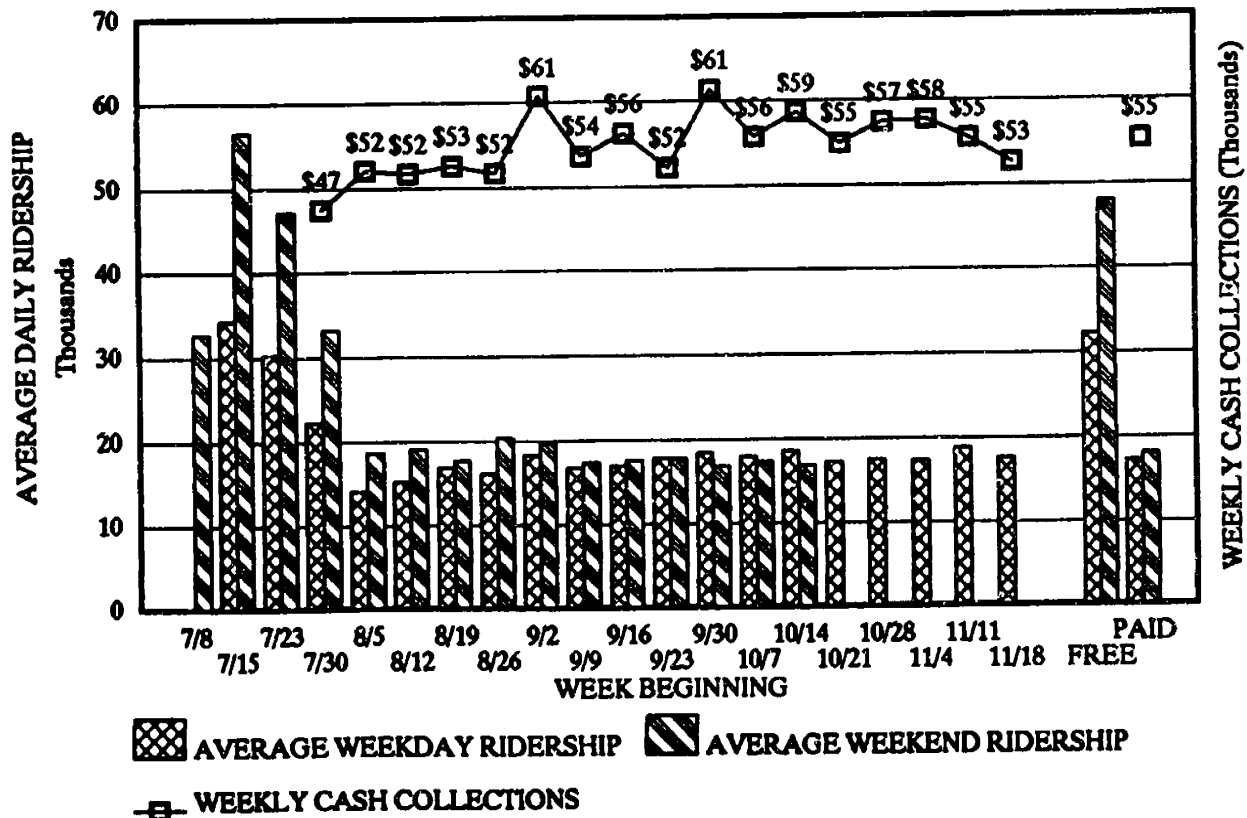
AVERAGE BLUE LINE WEEKDAY AND WEEKEND RIDERSHIP

WEEK BEGINNING	AVERAGE WEEKDAY RIDERS	AVERAGE WEEKEND RIDERS
July 8		32,600
July 15	34,200	56,400
July 22	30,220	47,000
July 30	22,240	33,100
August 5	14,060	18,730
August 12	15,147	18,990
August 19	16,830	17,739
August 26	16,100	20,350
September 2	18,320	19,750
September 9	16,720	17,400
September 16	16,960	17,550
September 23	17,840	19,900
September 30	18,420	16,900
October 7	17,940	17,400
October 14	18,540	16,900
October 21	17,300	
October 28	17,500	
November 4	17,400	
November 11	18,800	
November 18	17,550	
"Free" Period Average	32,175	47,900
"Paid" Period Average	17,214	18,137

Table 3-1

patronage averaging 17,214 passengers per day and paid weekend riders 18,137 a

BLUE LINE AVERAGE DAILY RIDERSHIP JULY - NOVEMBER, 1990



NOTE: Average Weekend Ridership Only Available Through Week of 10/14

Chart 3-1

day for the period under review (through the week beginning November 18 for weekday riders, October 14 for weekend riders). The opening of the tunnel to downtown Los Angeles took average daily ridership to 28,903 in March, 1991 (with average weekday daily ridership at 31,000), although with a possible error of plus or minus 25%.

EVALUATING TRANSIT ALTERNATIVES

“MY OVERALL IMPRESSION of this is that your transportation planners are trying to impose a 19th century technology on a 20th or 21st century city,” said John Kain (Head of Economics at Harvard University), as he addressed the Executive Committee of Southern California Association of Governments at a special session to which he and Mel Webber (of the University of California, Berkeley) had been invited to review the agency’s transportation plans:

I can’t understand, on any rational basis at least, this fascination with light rail. . . The reason is that light rail seems to be nothing more than a slow, low-capacity express bus system that can’t run on the city streets. . . [L]ight rail is incredibly more expensive than a well-designed express bus system [SCAG, 1983, p. 12-16].

Surmising that the attraction of light rail “has to do with the popularity of Lionel toy electric trains,” he concluded that:

Trains are lots of fun, but if you want to solve the region’s transportation system problems, and you want people to use transit, spend your dollars on something where you’re going to have some impact. . . and not to make a bunch of hobbyists happily.

We shall see (in Chapter 10) that Kain’s theory of toy train sets does indeed provide some explanation for the attraction of trains. By the time the conclusion is reached, we will appreciate why a state-

ment of economic facts — which made up most of Kain’s presentation — is likely to be inadequate for making a case to political decision makers whose approach to understanding is based on a quite different, symbolic, system. But this chapter will concentrate on providing an assessment of the case for rail transit in Los Angeles. In doing so, we shall see that Kain’s frustration typifies that of the academic profession as a whole. As was remarked in the introduction to the proceedings of one symposium (Gordon and Eckert, 1976), which concluded that “Rail rapid transit is probably the worst step Los Angeles could take to improve transportation:”

In reviewing what was discussed and learned at the conference, one remarkable fact should be underscored: the analysis and recommendations as to the form urban transportation policies should take was absolutely unanimous. On the one hand, it is novel for “the experts” to agree so conclusively. On the other hand, this agreement suggests that those who have taken a close and detached look at the transportation problems of this region have something important to communicate to society at large.

This author’s work (eg. Richmond, 1985, 1986, 1990b) has been in accord with this agreement.

In the following, research findings comparing the performance of bus and rail modes on a variety of transportation, land-use and related criteria will be presented. Much valuable evidence comes from the early experience of the BART (Bay Area Rapid Transit) system, which began operations in 1972 in San Francisco’s Bay Area, but there is also evidence emerging from more recent start-ups which similarly questions the wisdom of constructing rail as a solution to complex transportation and other problems. The initial performance of the new Blue Line will also be evaluated and compared with what might have been achieved with buses. A thorough investigation of the methods used for forecasting Blue Line ridership will be provided in Chapter 4.

SERVICE CHARACTERISTICS

Rail vs. Bus, or Line Haul vs. Access

THE PARSONS BRINKERHOFF (1956) basic design report for San Francisco's BART system stated that:

interurban rapid transit must be conceived as providing only *arterial or trunk-line* connections between the major urban concentrations of the region. . . We are convinced that the interurban traveler, facing the choice between using his private automobile or using mass transportation, will be influenced in his choice more by the speed and frequency of interurban transit service than by the distance he must travel in his own car or by local transit to reach the nearest rapid transit station.

Yet, as early as the 1925 opening of the Red Cars tunnel into downtown Los

Angeles, the importance of minimizing the difficulty of *access* to the service was quite clear. While the tunnel resulted in shorter trip times, surface streetcar lines — traveling in traffic — remained attractive. As the Board of Public Utilities (1926) reported:

Many people continue to use surface cars rather than to transfer to the tunnel or to walk to the tunnel from any distance. Objections are raised by patrons to walking the approximately 700 feet and down several ramps into the depot building to use the tunnel cars, claiming that it is quicker and less inconvenient to travel via the surface lines. This has resulted in the surface cars being unduly crowded [p. 23].

Figs. 3-2 and 3-3 show trip patterns between regional statistical areas: it can be seen that they lack focus. An almost universal criticism of rail in academic cir-

DAILY YEAR 2000 PA5 HOME-BASED WORK TRIPS BETWEEN SCAG REGIONAL STATISTICAL AREAS

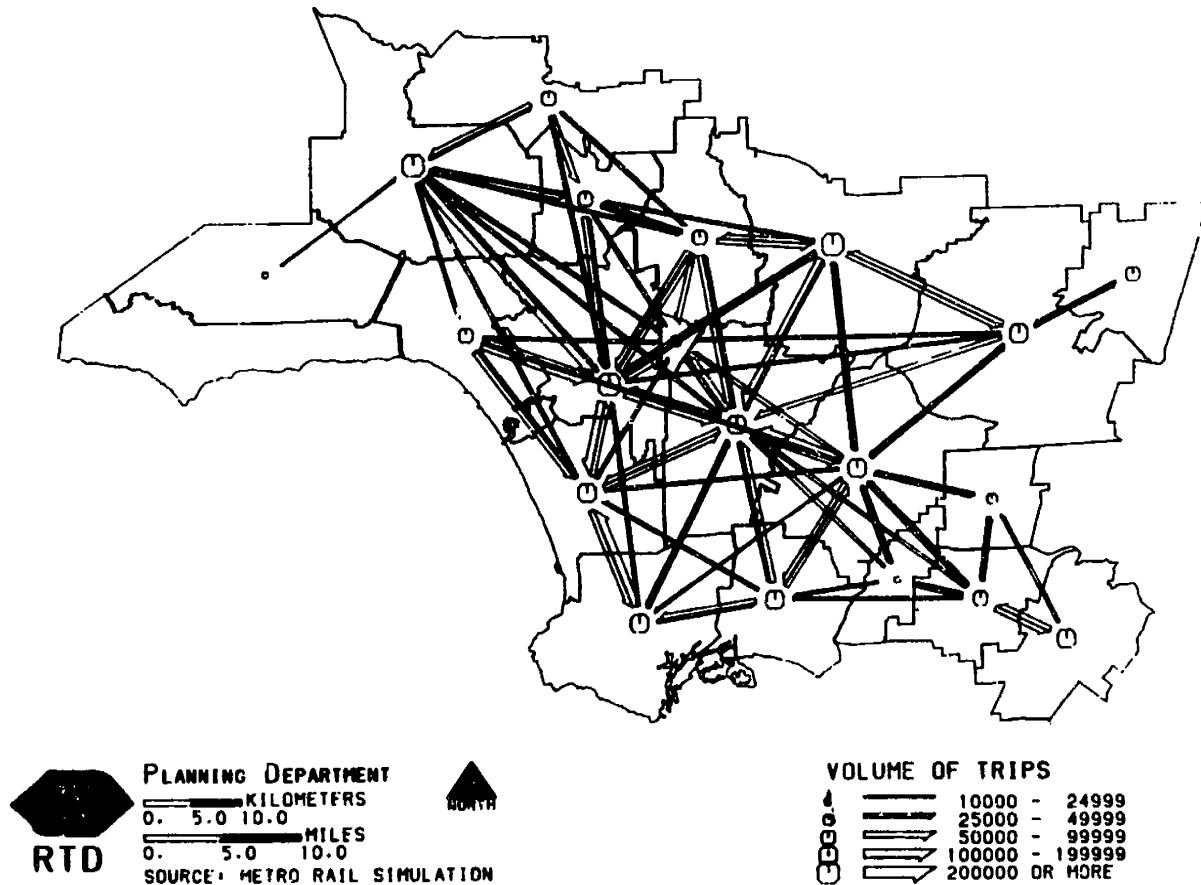


Figure 3-1

cles questions its suitability for providing service between a dispersed set of origins and destinations — such as are encountered in Southern California — precisely because of distances which must be traveled to reach rapid transit. As Mel Webber suggested at the SCAG meeting:

[A] transport system has to be able to connect people directly from everywhere to everywhere, in effect to offer random access. . . I suggest to you that the perfect model for a transport system is the telephone system, which has a connection directly from everywhere to everywhere. With the telephone, it's instantaneous. The closer you can come to instantaneous, direct door-to-door transport, the more likely people would use it. [SCAG, 1983, p.8]. . .

The reason we failed to eliminate traffic congestion is that the cost of accessing a rail system is high, and I think that's as true here as it was in the Bay

Area or more so. The reason it's probably more so is that your land use pattern is not linear; you don't match a railroad's geometry [p. 10].

Reviewing Baxter Ward's "Sunset Coast Line Proposal," then awaiting voter consideration at the ballot (it was to fail to get approval), Dyckman (1976) stated that "mean access time to the rail line is functionally related to the concentration or dispersion of people and activities." With the dispersed and non-centralized population of Los Angeles, the time needed to get to and from rail facilities will be disproportionately high, making rail an unattractive option for most journeys. "The conclusion that one reaches from examining the Sunset proposal is that it has undervalued the costs to the user of waiting, transferring, and interfacing with other "feeder" modes," Dyckman said.

DAILY YEAR 2000 PA5 HOME-BASED NON-WORK TRIPS BETWEEN SCAG REGIONAL STATISTICAL AREAS

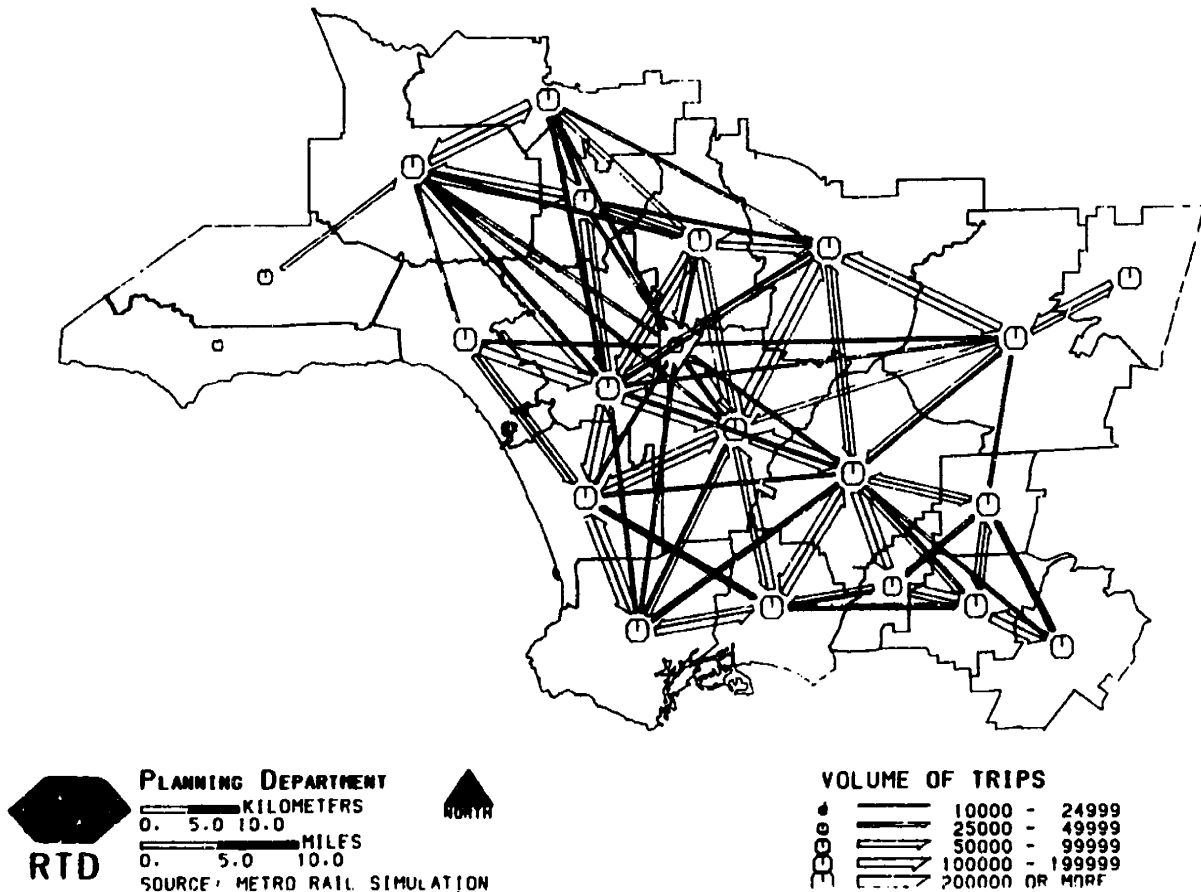


Figure 3-2

The findings of empirical research show that travelers do not select means of transportation merely on the basis of total journey time but, rather, put extra weight on time they must spend walking and waiting, either to gain access to a mode of transportation or to transfer between modes. In a study in Leeds, England, Quarmby (1967) found that people found time spent walking to be three times as onerous as time spent on the vehicle. Lisco (cited in Wachs, 1976a, p.98) found that Chicago commuters would pay approximately 2.8 times as much to avoid time spent walking as time spent riding. And in New York's Port Authority Bus Terminal, Henderson and Billheimer (1975) found walking time regarded as twice as unpleasant as riding time. McFadden (1974) obtained similar results from surveys of BART passengers.

Nash and Hille (1968) found that "avoidance of a wait of more than five minutes" was seen to provide the greatest perceived difference between the automobile and public transit in Philadelphia and Baltimore. National Analysis (1963) reported that the most commonly cited criterion for new system design — expressed by 84 percent of the more than 2000 respondents to a survey in Washington, DC — was that the "place to get off [should be] no more than five minutes from the destination." A 1973 survey in Los Angeles suggested adding sedan chairs to the transit system, as Angelenos would not even walk half a mile to a station or bus stop (*Los Angeles Times*, June 8, 1973).

The National Analysis study also found that 30 percent of interviewees found any kind of transferring between transportation modes objectionable, while 51 percent objected to specific aspects of transferring. Thus:

the conclusion may be reached that transfer, waiting, and walking time are significant as perceptual choice elements, *independent* of gross travel time and measures, and should be singled out as special elements of public transporta-

tion improvement programs (Algers 1975) [Wachs 1976a, p.99]. . .

It is the door-to-door, no wait, no-transfer features of the automobile that, by eliminating access time, make private cars so attractive to commuters — not its top speed. BART offers just the opposite set of features to the commuting motorist, sacrificing just those ones he values most. That was a fundamental mistake [Webber, 1976, p.34]. . .

Buses can provide something much closer to "door-to-door service" than can rail transit. While trains must usually rely upon autos as feeders, or must depend upon bus service and a time consuming mode change as part of a trip, buses can operate on local streets in residential neighborhoods and, after picking up their passengers, enter a freeway or a reserved lane for an "express" trip to downtown at a speed which approximates a rail vehicle [Wachs, 1976b, p.71].

With a rail system there will be more transferring, waiting and walking on average than with a bus system. The same bus can provide both local and line-haul service and — lacking attachment to a fixed track — can serve a far wider range of destinations than can be reached by train. The smaller vehicle can be economically used to provide direct service to destinations where rail could never be justified.

Currently, buses entering downtown Los Angeles provide stops every few blocks throughout the downtown area. The Blue Line has only one central downtown stop — at 7th and Flower Streets — although a Red Line Wilshire subway rail connection will be available to a limited number of other points.

The need for passengers to reach final destinations away from rail stations was shown by experience with the shuttle service linking the initial downtown Los Angeles terminal at Pico St. and central downtown prior to the opening of the Flower St. station. According to a September 14, 1990 memorandum from LACTC Executive Director Neil Peterson

(1990):

The concept of the "Metro Blue Shuttle" was developed by Commission staff to fill the gap between the Pico Station and the yet-to-be-completed 7th and Flower Street Station. The shuttle would link the two areas to afford Blue Line riders the same access to downtown they would receive when the complete rail line was constructed. It was not envisioned by staff as a circulator, distributing passengers to specific downtown destinations. There have been requests and inquiries as to the possibility of expanding the Blue Line shuttle to serve more than the immediate 7th and Flower Street area, perhaps to the 1st Street and Temple Street vicinity where city, county, and federal employee sites are situated. *The point being that Metro Blue Line riders, for the most part, do not have 7th and Flower Streets in downtown Los Angeles as their ultimate destinations* [my emphasis].

A survey conducted by RTD "indicated that most shuttle riders have *dispersed* [my emphasis] destinations among four quadrants in the downtown Los Angeles area." In other words, buses are needed to provide the distribution not possible with rail, forcing rail riders to transfer vehicles as against making a direct trip by bus alone.

A clear advantage of buses is that service may be geared to where it is most needed. Service, such as on the Long Beach line, often uses abandoned former railroad rights-of-way, going where the railroad goes, rather than where it is most needed. Much of the northern part of the Long Beach line lies to the east of the major area population concentrations. As LACTC Rail Construction Corporation Acting President/CEO, Edward McSpedon states (McSpedon, 1989, p. 427), "Although these corridors may not be convenient to residential trip origins they often provide a very politically attractive "path of least resistance" to LRT implementation." Use of such corridors causes relatively less disruption than when an entirely new right-of-way is put into place.

While the average Bay Area commut-

er lives 15.8 miles from his job, Los Angeles commuters travel only an average 8.9 miles to work (Webber, 1976, p. 2), making the access part of a public transportation trip a greater proportion of the whole and public transportation, consequently, relatively less attractive. When BART came into operation many passengers opted to continue using AC Transit bus service over the Bay Bridge to and from San Francisco because it provided for a direct trip, without the need to transfer to BART. With the shorter trips typical in Los Angeles, the bus is likely to retain a greater competitive advantage.

A grid of bus services currently operates along parallel streets in South Central Los Angeles, for example, terminating in downtown LA. Direct service to downtown is, therefore, provided for a widely-dispersed set of corridor origins. To use light rail, instead, passengers not living next to rail stations must take a crosstown bus to the rail station, rather than traveling directly.

Trip times from stations on the central part of the light rail route to downtown Los Angeles are shorter than by the local bus services provided, although bus trip times could be reduced were express service (using the Harbor or Long Beach Freeways) to be provided.

Bus route 56 currently takes approximately one hour to travel between Compton and downtown Los Angeles in local service; the light rail cuts the trip to 7th and Flower Sts. to 38 minutes, although passengers needing to reach other parts of downtown must transfer to a bus, extending both trip time and inconvenience. The local bus ride between Watts and downtown LA takes about 40 minutes. This is reduced to 32 minutes to 7th and Flower Sts. by light rail.

While trip times for mid-corridor passengers with both origins and destinations near the light rail stations have been shortened relative to those for bus travel, the need to transfer between bus and rail

eliminates the advantage for most others.

As will be discussed in Chapter 12, furthermore, few actual employment locations for South Central Los Angeles residents are actually served by the light rail service.

The preponderance of transit trips in South Central Los Angeles are of a local nature, rather than to downtown — an average bus trip is about 4 miles — and are as widely dispersed as the community's need for shopping, health care, and other service and leisure, as well as employment needs. Light rail cannot provide for most trips of this dispersion and short length, and for many of those it can serve, will lengthen journey time by requiring transfers between modes.

Because the light rail stops at all stations between Long Beach and downtown Los Angeles, the end-to-end travel time is actually longer than on the 456 Long Beach freeway express bus. A peak-hour trip on the bus takes 55 minutes, as against 60 minutes by train. It was originally planned that both express bus lines 456 and 457 — which operates to downtown Los Angeles from the eastern part of Long Beach — would be canceled once Blue Line service was in place. The RTD Board has approved the termination of 456 service, but will be retaining 457 operations, as a result of passenger protests in response to the plans for discontinuance. According to one member of RTD staff “We had an uprising like you wouldn't believe.” Taking the bus to the Blue Line station and transferring to the train would add 30-40 minutes to the trip, compared to direct service to downtown Los Angeles by bus. “We had huge numbers of people in the area say “we won't do it, we'll go back to cars,” and the response of the [RTD] Board was, “we'll keep it.”” The bus fare is \$2.30 one-way or \$78 for a monthly pass, and these passengers prefer to pay this higher price to go by bus than to travel by Blue Line at a one-way fare of \$1.10 or by purchasing a monthly pass for \$42.

Comfort

BART — with its upholstered seats, carpeting and smooth ride — was designed to be comfortable (Webber, 1976, p. 30), because it was thought that luxury would lure people who would not otherwise desert their cars. This turned out to be another wrong assumption. As McFadden (1974) found, following extensive interviewing, travelers were indifferent between riding on BART or on a bus, time and money costs being equal. The time and cost of the trip mattered much more.

This finding has been replicated, elsewhere, as is demonstrated in a literature survey by Wachs (1976a). Miller and Goodman (1972) reported that, while 90 percent of nearly 200 passengers on special “new feature” buses on the Shirley Highway in Washington, DC, rated schedule reliability as important to their choice of travel mode, no feature in the comfort or amenity category was rated to be nearly as important. While 71 percent thought air conditioning important and 62 percent felt that assurance of a seat was significant, other features — including improved leg room, larger windows, carpeting, and absence of advertising — were all significantly less important than fares, travel time and schedule reliability.

The significant conclusion to be reached about developing transit improvements is that commuter reactions have consistently shown that it is not necessary to provide luxurious interiors and plush environments in order to attract riders. Meeting basic physiological requirements, providing for a high probability of seat availability, and incorporating temperature control are the most critical aspects of comfort and amenity which should be addressed in vehicle design. To the extent that additional items of amenity, such as space for packages, might be incorporated in the design, the vehicles can provide greater attractiveness. Such features do not seem most critical in attracting patrons out of automobiles [Wachs, 1976a, p. 101].

The results of a recent survey in Los Angeles (Maritz Marketing Research, 1989) is consistent with all of the above findings. Asked what service improvement was most desired, 72 percent of current RTD riders and 54 percent of non-riders who responded called for more service — in the form of greater frequencies, new routes or extended operating hours — while only 7 percent of riders and 16 percent of non-riders who responded said that “cleaner, newer buses” were most desired. The results are in Table 3-2.

	Riders %	Non- Riders %
More Frequent Service	49	1
New Routes	7	18
Extended Hours	12	13
Cleaner, Newer Buses	7	16
Courteous, Helpful Drivers/Employees	14	11
Security	0.5	9
Other Improvements	5	9

Table 3-2 Service improvement most desired

Finally, we should note that while the claim may now be made that trains are more comfortable than buses, the reverse was happening in the 1930s. The “de luxe” buses of the era were specifically targeted at people who had left the streetcar for the automobile. In an article entitled “Opportunities for Profits in De Luxe Bus Operation,” published in 1930, for example, J. R. Stauffer (1930) describes the development of bus service for people lost by the streetcar:

The companies that are utilizing the de luxe bus have almost unanimously had one objective in establishing such service, namely a form of transportation to bridge the gap between the street car and the higher priced means of travel such as is afforded by the private automobile or taxicab. . . A new rider had to be found and the logical place was in that group of people who had previously left the streetcar for the automobile. It has generally been found that de luxe

bus routes equipped with the most modern type of vehicles do appeal to a class willing to pay a higher fare for a service which is fast, comfortable and convenient [p. 91-92].

Stauffer discusses the advantages of using smaller vehicles, where “shorter headways could be run with fewer empty seats” (p. 93), and cites examples where “patronage has been built up from those persons who rarely used the regular [rail] service, but were attracted by the new, distinctive vehicles and the advantages of the service they rendered” (p. 91).

One effect which should be noted is that the “glamour” of rail service may attract a short-term tourist interest by people who are not going anywhere in particular, but who are simply trying out the train as if it were a Disneyland ride. As an article by Seth Mydans in the November 21, 1990 *New York Times* stated:

The verdict among the Sunday riders of Los Angeles’s brand new experiment in commuter rail transport: better than the Magic Mountain amusement park. . .

“You’ll like it,” said John Skweres, a railroad buff who has ridden the Blue Line for pleasure almost every day since it opened in July. . .

Minor Cordon, an 18-year-old sailor in uniform, was enjoying the ride with his family, all of whom were turned in their seats to watch the graffiti and barred windows of the Los Angeles suburb of Compton glide by.

“Sometimes we go to the park,” he said. “Two Sundays ago we went to Magic Mountain. This is the first time we’ve ridden on the train. It’s nice. . .”

One passenger taking the train for purely pleasure purposes was asked if he would take the train at other times. “Maybe we’ll start taking the train more because of the gas prices and all that,” said Bryan Valdivius, 14 years old. . . “*But it depends on how far away the station is*” [my emphasis]. While the train might be a novel transport of delight, whether it is convenient for making a trip counts more than its glamour in deciding whether to use it for routine trips.

Buses Can Attract Substantial Ridership

With comfort seen by travelers as less important than the ability to provide a quick and convenient trip, buses have demonstrated the capability to attract substantial ridership, including from higher-income travelers who can more typically be expected to drive to work. There is no evidence to suggest that because of the supposed lesser comfort of buses potential rail passengers will avoid them. Chart 3-2 shows passenger miles by SCRTD bus services compared to rail rapid transit operators (with the exception of New York). Chart 3-3 compares RTD bus passenger miles to all light rail operators. SCRTD's bus patronage dwarfs all of them. Chart 3-4 compares RTD passenger miles to the other 19 largest bus operators, and RTD here is ahead of even New York (source of

charts: RTD).

As Miller and Goodman (1972) demonstrate with the results of their survey work, express bus service in the Shirley Highway corridor in Washington, DC is chosen not only because bus trip time is competitive with the automobile, but because buses provide an easy-access no-transfer and reliable service. 82 percent of express bus service users had a car available for the trip, while almost half the users of conventionally-operated service did not have the option of driving to work. The income of Shirley Highway users was also substantially greater than that of other bus users, demonstrating once more that provision of a fast and convenient trip will attract those who have a choice.

In summary, it was found that on many socio-economic and demographic dimensions, those electing to use premium

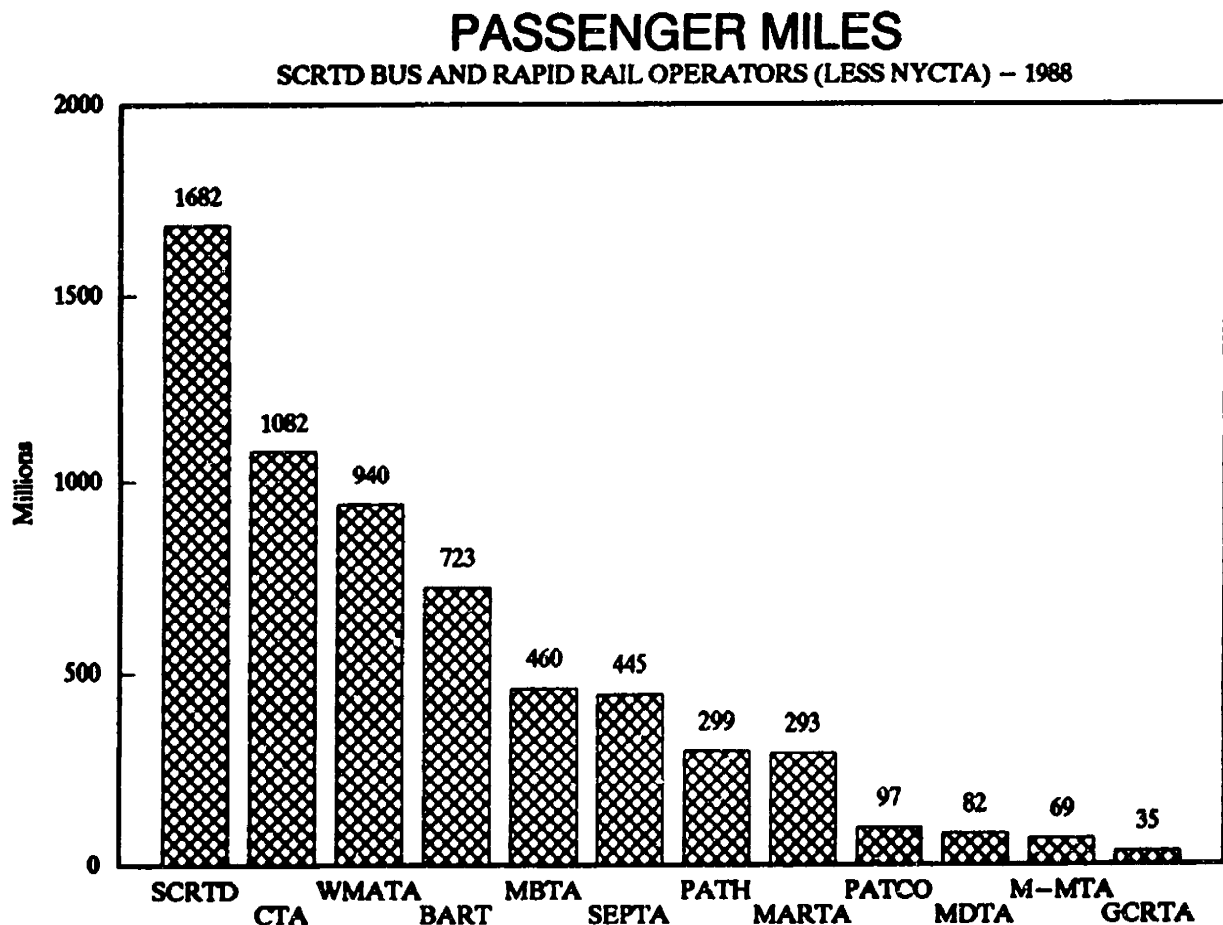


Chart 3-2

buses-on-freeways were more like the typical auto commuter than the typical bus commuter [Wachs, 1976a, p. 102]. . .

The most impressive statistic is that of all the commuters in the Shirley Corridor who lived in areas served by the buses and worked in areas served by the buses, some *forty percent* have elected to ride the bus transit system rather than driving to work [Wachs, 1976b, p. 72].

The El Monte Busway — on the San Bernardino Freeway in Los Angeles — provides bus priority lanes, as on the Shirley Highway. Buses travel express on the freeway, then branch out dendritic-fashion to serve many residential neighborhoods with no-transfer service. There is also substantial free parking at the El Monte station. This innovation — which dramatically reduced bus trip times compared to the service previously operated — has also been highly successful. As re-

ported by Crain (1974), while 80 percent of busway users had annual incomes of over \$10,000, pre-busway transit service included only 46 percent from the income groups above \$10,000.

While the El Monte Busway enables more direct service to be provided than would be possible with rail, it is also made available to auto drivers who carpool to work, encouraging the more efficient use of automobiles. While the busway — approximately half the length of the Blue Line — currently carries approximately 22-23,000 daily bus passengers, it is also used by 9,000 daily automobile carpools and vanpoolers (source: RTD).

Perhaps the most dramatic results achieved from bus service innovation come from Ottawa, the only North American city to have put in place a comprehensive capital facilities program for bus

PASSENGER MILES

SCRTD BUS AND ALL LIGHT RAIL OPERATORS - 1988

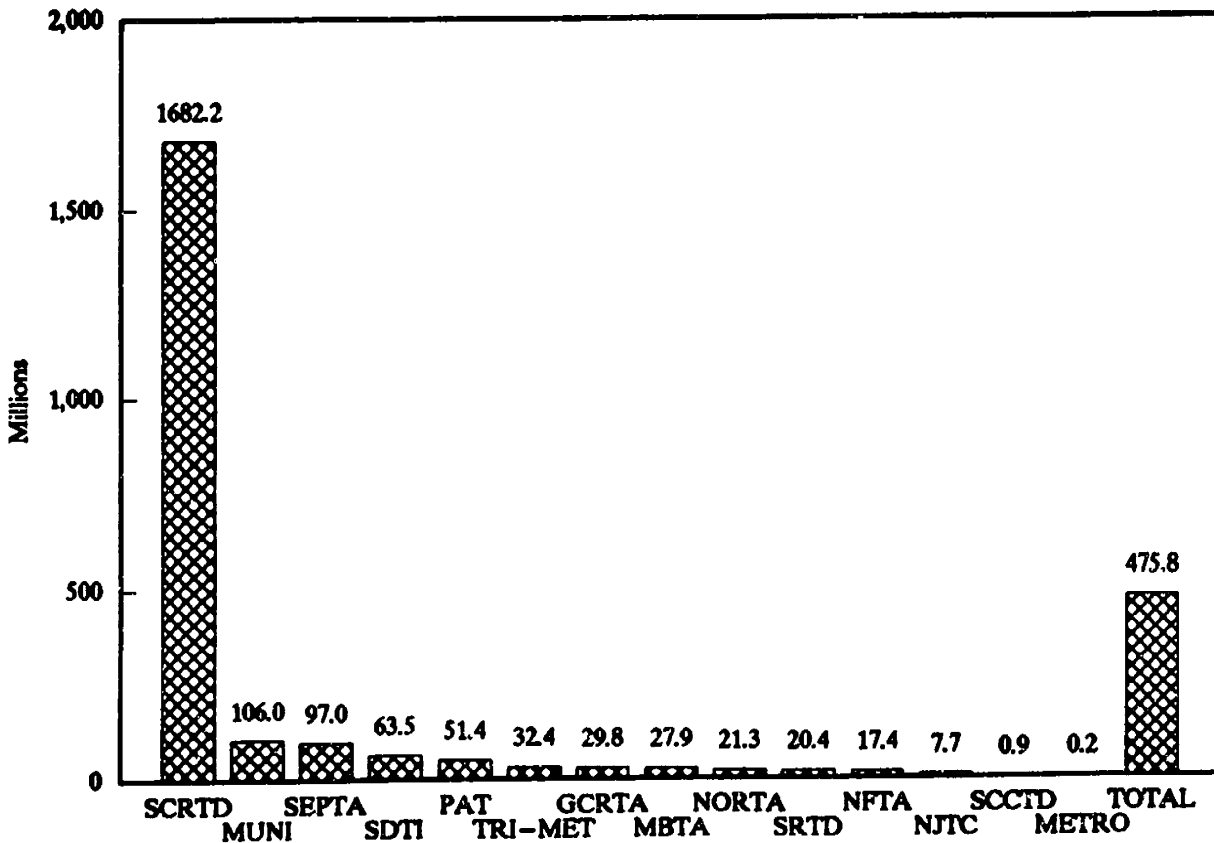


Chart 3-3

service improvements equivalent (or greater) in scale to the rail facilities being provided elsewhere. Most importantly, Ottawa did not simply add bus services of the slow, local type previously provided, but provided a restructuring which made service attractive to those who previously drove to work.

The Ottawa transitway consists, in its initial phase, of 31 km of two-lane roadway and 28 stations for the exclusive use of buses. There is an additional lane at stations to allow buses to overtake each other. There are three bus stops on each platform.

The system operates just like any other rapid transit facility with vehicles, which in this case are buses, stopping at every station. In addition, ramp access is provided for express and limited stop routes so that a direct no-transfer service is provided between the residential street sys-

tem and downtown and other major trip generators. The stations provide weather collection and a full range of information services. Fare collection remains on board the buses [Bonsall, 1985, p.9].

In addition to the transitways, bus priority measures include 10.3 km of peak period bus lanes, an 0.3 km bus mall, transit priority at several traffic signals, and bus terminals of varying size and level of priority, mostly associated with suburban shopping malls. "These measures coupled with the extensive use of express services have produced an average speed improvement of 34% over the past ten years" (Bonsall, p.5). In addition to all-day local and peak-period express and limited-stop services "linking all residential areas with the downtown and other major employment centers," the Ottawa plan includes the phased development of

PASSENGER MILES

Twenty Largest Urban Bus Operators - 1988

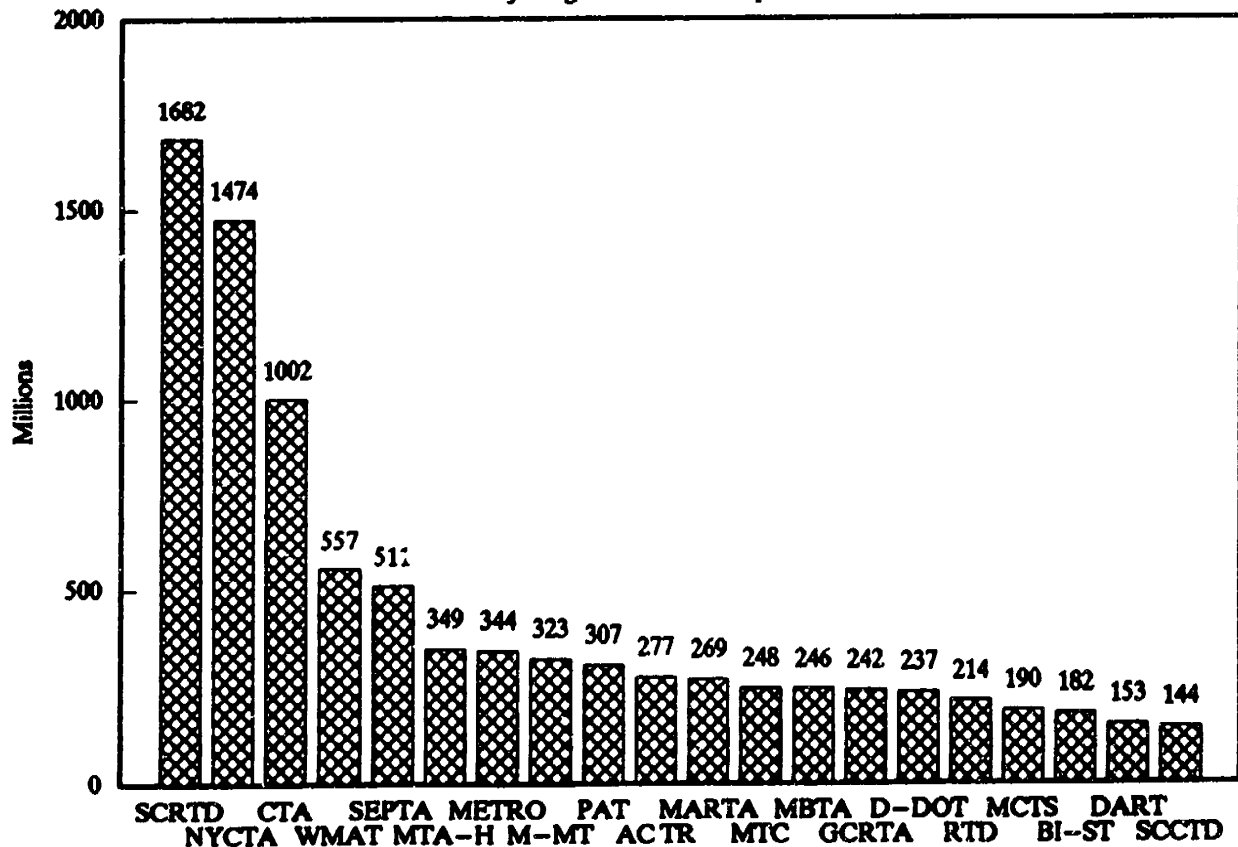


Chart 3-4

transit terminals as focal points for regional activity centers. "This approach has encouraged modal split to transit as high as 30% for shopping trips to some suburban shopping malls."

Total transit ridership increased from 37.5 million in 1972 to about 87.2 million in 1984.

In percentage terms, these figures mean that OC Transpo now carries approximately 30% of all vehicle based trips 24 hours a day compared with 16% in 1972. . . Current figures also show that more than 70% of all downtown peak hour work trips are made on transit. . . [D]espite an overall increase in downtown activity, the transit share has grown sufficiently to cause an actual reduction in the number of cars parked downtown compared with ten years ago [Bonsall, p. 13-14].

The lesson from Ottawa is that a spectacular increase in ridership was achieved solely from improvements in bus service. The speed and reliability of buses was increased to make them competitive with cars. The advantages of rail service were provided, with the significant additional capability of providing direct service to residential neighborhoods, combining express operation on the line-haul with local distribution. And passengers demonstrated that it was these characteristics — rather than mere speed of line-haul or luxury in the vehicle — which attracted them to travel by transit.

The *Times* editorial with which we began assumes that the Blue Line's then achievement of 18,000 daily passengers is new or unique. While ridership has since increased to an even more impressive-appearing 31,000 weekday daily Blue Line passengers, ridership on RTD local bus line 60, which provides local service between downtown Los Angeles and Long Beach, had a weekday ridership of 31,801 passengers at the time Blue Line service opened, while lines 53 and 55, both of which run on local streets between Watts and downtown LA, each had riderships in excess of 14,000 daily passengers, 29,019

combined (source: RTD). Local buses can handle substantial volumes of passengers, and provide walking-distance access to service for a larger number of people by operating on several parallel streets, rather than on just the highest volume routing.

Ease of Use

Rail systems may sometimes give the impression of being easier to use than bus systems: trains operate over a limited network of routes, and stop at well-identified stations, usually equipped with maps and other information systems. Bus stops, in contrast, are often poorly marked, lack schedules, and may cause confusion to the new user if there are a variety of different services stopping at a particular location.

While regular commuters will become acquainted with how to make their particular trip after a few journeys, there is no reason why bus use should not generally be made as "user-friendly" as rail use by the provision of better information. Just because bus information may currently be poor doesn't mean it has to stay that way. The experience in Ottawa is encouraging:

In Ottawa-Carleton a computer based telephone information system was installed in 1980. Users of the system which now handles 700,000 calls a month, simply dial 560 plus a four digit number which is the number of the bus stop at which they want information. The computer then provides the elapsed time until the arrival of the next two buses serving the stop in question. The user therefore need not arrive at the stop until one or two minutes before the arrival of the bus. Measurements taken when the system was first installed showed ridership increases of up to 8.2% in the off-peak, which were sufficient to pay the system costs in one year. The same system also drives television monitors in major transit focal points such as shopping centres so that shoppers can easily schedule their shopping to suit the availability of transit service [Bonsall, 1985, p. 6].

ENVIRONMENTAL FACTORS

Congestion Relief

WHILE PASSENGERS MAKE DECISIONS on how to travel primarily based on trip time and cost — not on levels of comfort or luxury — and there is no reason to expect that a rail service could attract more travelers than a bus service of comparable service quality, caution must be used when making claims that *either* mode could contribute to a meaningful reduction in freeway congestion in an urban environment such as Los Angeles.

As Webber (1976, p. 8) points out, as against the 258,000 weekday passengers forecasted, only 131,400 were using BART in June, 1976. "Although the *Composite Report* expected that 61 percent of riders would be diverted from private automobiles, in fact *only 35 percent formerly made the trip by car*. Half of BART's transbay riders were found to have come from buses "which BART has replaced — at very high cost" (p. 12).

BART initially reduced the number of cars on the streets and highways by 14,000 (not 48,000, as forecast). In turn, in accordance with the Law of Traffic Congestion (which holds that traffic expands to fill the available highway space until just tolerable levels of congestion are reached), other people began driving their cars on trips they would not otherwise make [p. 8].

As Altshuler (1979) puts it, the existence of congestion "signifies the existence of a great deal of latent highway travel demand, ready to be expressed as and when additional highway capacity becomes available" (p. 434). If cars are taken off the road, the "cost" in terms of automobile trip times on the highway is reduced, and additional automobiles attracted. Congestion, Altshuler says, also helps to maintain transit ridership: if road speeds were to actually increase as a result of transit improvements, transit would ironically become a less competitive option

compared to the automobile!

There was, in fact, a reduction in auto travel throughout the San Francisco region during the 1974-5 period. But the Bay Bridge, which runs parallel to BART, experienced a smaller proportional reduction than the other bridges across San Francisco Bay. "Traffic congestion *even* on the Oakland Bay Bridge and its approaches did not go away" (Wohl, 1976, p. 57).

As Hilton (1976) states, BART had the advantage of paralleling a highway crossing of a water barrier with a toll acting as a disincentive to driving, but:

has apparently been able to reduce daily vehicle counts on the San Francisco Bay Bridge by about 2 percent, or 4 percent in the peak rush hour. There is no reason to believe that a rail system in Los Angeles, which is without water barriers or toll crossings, would be able to do that well [p. 95].

In another example, Hilton comments that the Quincy Line of Boston's MBTA is believed to have only taken 900 to 1,000 vehicles per day off the Southeast Expressway. "The Southeast Expressway, however, carries between 80,000 and 120,000 vehicles per day. Thus the diversion cannot be perceived, relative to the daily variance."

The Southeast Expressway experience is consonant with Lave's (1979) "Law of Large Proportions" which states that:

The biggest components matter most. . .

A small improvement in a major component makes more difference than a large improvement in a minor component. The application of this law is particularly striking because of the enormous difference in the relative size of the two components.

With such a small proportion of Los Angeles passengers using public transportation, even a large increase in transit patronage would be unlikely to have a noticeable effect on congestion, especially since any slight initial improvement in speeds would simply attract more vehicles to the facility, returning it to its former equilibrium level of congestion. This is

not to say that public transportation cannot increase mobility — more *capacity* is certainly provided, if only used by a small percentage of travelers. But if congestion is to be reduced, action must be taken to change the ways in which highways are operated, actions such as charging tolls, controlling access through the use of ramp meters, and increasing parking charges for those who use them. Such measures may be unpopular, of course, and — for that reason — politically tough to implement, but providing transit of any sort is no substitute for going through with them.

While overall congestion reduction cannot be expected from implementing improvements in transit, by whatever mode, exclusive bus facilities — if open to carpools — do provide for the avoidance of congestion by drivers who share their ride, something not possible with rail facilities.

Southern California Association of Governments (SCAG) (1984b) conducted an analysis of likely traffic impacts in the Long Beach corridor of the operation of light rail service, assuming attainment of the full ridership they predicted (a forecast to be critically examined in the next chapter). For the route eventually selected, only 1,385 Long Beach corridor passengers who would otherwise have traveled by car were forecast to use transit because of the presence of light rail. The other light rail users, according to SCAG, were people who would otherwise have traveled by bus, but who would now be attracted to light rail because of its supposed ability to enable them to complete their trip faster.

Because some automobiles are driven carrying more than one passenger, the actual reduction on vehicle trips on the road system — given adoption of the light rail system which was chosen — according to SCAG, was only 1030, 0.3% of the 270,288 vehicle trips projected for the corridor. In no alternative studied was the

reduction found to be greater than 0.5% (see Table 2, p. 7.1-6).

The conclusion reached was that: From a county-level or even a corridor-level, the LB/LA LRT project has only a very minor positive impact on traffic. Within the LACBD, it appears that east-west traffic might experience a small increase in congestion levels and only an insignificant decrease in north-south traffic. The southern portion of the Midcorridor and Long Beach, however, show significant decreases in traffic volumes especially with the LA River Route alignment [which was not, however, adopted]. The northern portion of the Midcorridor shows almost no traffic volume impacts — positive or negative — from the project [p. 7.1-9.10].

While Crain (1974) reports that 48 percent of new bus riders on the El Monte Busway previously used automobiles rather than buses for the same trip, a *November 8, 1990 on-board survey found that 63 percent of Blue Line passengers had previously traveled by bus, while only 21 percent had driven. Six percent had been driven by someone else — such as in a carpool — while 6 percent had walked and 4 percent were making a trip by rail they would not otherwise have made. Putting aside passengers who had previously traveled by bus, only 37 percent, or 6,438 out of the average weekday ridership of 17,400 for the week in question were “new” transit passengers.*

Does Removing Buses in itself Reduce Congestion?

Providing new rail service may be seen to reduce congestion merely by taking buses off the street. The evidence for such an assertion is, however, slight. According to the *Highway Capacity Manual* (Transportation Research Board, 1985):

when buses are in motion either in exclusively bus traffic or in mixed traffic, under uninterrupted flow conditions over a broad range of levels of service, their equivalency factor will be *approximately 1.5 passenger cars* [p. 12-10].

In other words, while a peak-hour bus on a freeway may carry 50 passengers, its

effect on road space is no worse than that caused by 1.5 automobiles. Given the small number of buses in operation relative to automobiles, their negative effect on traffic when operating in continuous motion is therefore unnoticeable.

Looked at another way, the buses *increase* the capacity of the road system by taking up less room than the automobiles they displace. One example in the *Highway Capacity Manual*:

assumes a maximum freeway capacity of 1,800 vph [vehicles per hour] without buses, a bus-passenger car equivalency of 1.5, and occupancies of 1.5 and 50 for cars and buses respectively. As the number of buses on the freeway increase to 300, the total person-capacity increases from 2,700 to nearly 17,000, while the vehicle capacity drops from 1,800 to 1,620 [p. 12-4].

In city streets, where buses make regular stops, the matter is different. If stops are made in a lane:

not used by moving traffic (for example in a curb parking lane), the time loss to other vehicles is approximately 3 to 4 sec. per bus. . .

Where buses stop in a normal traffic lane, the time loss involves the dwell time for buses plus a time loss for stopping and starting, and the associated queuing effects on other traffic [p. 12-10].

The queuing effects are typically 6 to 8 seconds, according to the *Manual*. The *Manual* also translates buses making city street stops at signalized intersections into automobiles equivalents. If a bus stops for 20 seconds where traffic signals are green 50 percent of the time, the bus is equivalent to seven automobiles in the traffic stream. Where it stops for 45 seconds, where there is 60 percent green time, the bus is equivalent to fifteen cars.

It is clear that buses are a part of congestion on city streets, although, even in the last example given, it may be argued that a peak-hour bus will typically take more than the fifteen cars to which it is said to be equivalent off the road. When

measures are taken such as the provision of separate curb lanes at bus stops which keep buses at rest out of the regular traffic flow, the impact on traffic is minimal.

A case may also be made for providing bus-only lanes on city streets — providing the equivalent of the exclusive right-of-way enjoyed by trains. In Seattle, a bus tunnel is being constructed, providing a facility similar to a rail subway: of course, buses can be run on city streets at lesser cost, but if a fair comparison is to be made between buses and trains, it could be argued that they should be evaluated operating under equivalent conditions.

Where light rail lines operate in city streets, they also occupy space which could be taken by other traffic. At-grade crossings also impose delays on road traffic when it is stopped to allow trollies to pass. As one *New York Times* (Nov. 21, 1990) article put it, Blue Line riders “gazed in wonder at the lines of traffic backed up at the crossings.”

If long-haul buses are replaced with rail services in urban environments such as Los Angeles, furthermore, buses are not necessarily eliminated, as city street feeders are still required to provide distribution between rail stations and final destinations.

Reducing Energy Consumption

As Lave (1979) remarks:

If we compare the actual measured operating efficiencies of the average car being sold this year and a modern rail transit system (say, BART in San Francisco), we find that the difference in efficiency between them is much less than the energy efficiency difference between the average imported car and a standard-size American car. That is, people who switch car sizes can save more energy than those who switch to trains [p. 39].

Because of the “Law of Large Proportions,” Lave declares that:

The fact is that transit’s potential contribution to solving the energy problem

was always insignificant. . . That is, cars use most of the energy, and we ought to concentrate on improving their efficiency. . .

Alternatively stated, if we increase the fuel efficiency of the average car from 15.0 mpg to 15.2 mpg, we save more energy than we do by doubling transit patronage. Public transportation cannot make any significant contribution to energy conservation in the near term, and even in the long term its contribution is likely to be insignificant.

SCAG did find that the light rail project would result in energy savings, compared to a no-project alternative. Annualized regional transportation energy requirements were calculated. With the Broadway/Spring light rail routing, 822,800 billions of BTUs were found required, as against 823,426 billions of BTUs with the no project alternative. This represents an annualized saving of 1338 billions of BTUs, or 0.16% of the total estimated no project requirement. On the other hand, the "All Bus Alternative" was found to save almost as much energy: 1120 billions of BTUs, or 0.13% of the total estimated no project alternative (see Table 10, SCAG, 1984b, p.8.2-14-8.2-15). In other words the bus alternative to light rail (which as will be seen in the next chapter was designed extremely poorly) was found to perform comparably to light rail in terms of saving energy.

Reducing Pollution

While trains may operate on electricity, the power to operate them has to be generated, and this process may cause pollution elsewhere. Nonetheless, the advantages of localized reductions of pollution in city environments which might result from the introduction of light rail might be thought valuable.

Buses, on the other hand, also reduce pollution: a bus produces far less emissions than would result from the cars it keeps off the road. On the other hand, diesel buses do produce harmful particulates, although the proportion of these

contributed by buses as compared to other diesel vehicles such as trucks is low. The answer to this problem, however, might be the development of buses using "clean" fuels such as methanol.

For the same reason that transit improvements cannot be expected to have a significant impact on reducing energy consumption, however, they are unlikely to have a noticeable effect on air quality in a city such as Los Angeles.

SCAG (1884b) concluded that, comparing a case study taken of the:

Broadway/Spring and No Project alternatives shows a decrease of only 43,000 VMT as a result of the project. The average speeds [on highways] during the AM and PM peak periods would increase only marginally. *Neither of these two factors contribute to any meaningful change in the level of emissions or in the ambient air quality in the project study area (p.8.1-18) [my emphasis]. . . [In addition,] it is found that none of the light rail alternatives would have a significant localized air quality impact compared to expected conditions without the project [p.8.1-27].*

This conclusion assumed, once more, that SCAG's predicted ridership — which as we shall shortly see is quite unrealistically high — would materialize. If less riders than forecasted were to take to the rails, the beneficial effects would be still less.

DEVELOPMENT IMPACTS

THE FOLLOWING PROVIDES A DISCUSSION of the ability of rail transit projects to have effects on urban development patterns in general. The special case of the potential of rail to bring about renewal in depressed communities such as Watts and Compton is considered in Chapter 12, where it will be concluded that given depressed economic conditions, rail lacks the potential to spur community renewal.

Rail is often said to be a valuable tool in encouraging the formation of more

concentrated development patterns. Toronto is frequently held to be a city where the a new rail transit system precipitated development. Heenan (1968), for example, has claimed that \$10 billion out of a \$15 billion increase in assessed property valuation over the ten years following construction of the rail system's first segment was directly attributable to the transit system. However, as Knight and Trygg (1977) point out, Heenan failed to consider the effects of other factors which encouraged downtown office development in Toronto or to compare Toronto's results with those of other cities. "Many policy-makers have been misled by this widely-publicized overstatement" (p. 233). Kovach (1974) found that other large Canadian cities with no plans for rail transit systems had similar or greater growth rates over the same period.

Many commentators (Heenan, 1968, Marcou, O'Leary & Associates, 1971 and Kovach, 1974) have said that rapid transit shaped and intensified development in Toronto. But, claim Knight and Trygg, "the transit system alone did not cause these impacts" (p. 235). The city enacted several pro-development policies, including the payment of density bonuses around stations, encouragement of coordinated station development with developers to provide direct access from office, retail or apartment buildings, and city zoning changes to permit much higher intensity development, especially near stations (City of Toronto Planning Board, 1963, 1971).

Toronto planners and developers interviewed in our check of these results agreed that these incentives were essential in inducing the extent and type of development which occurred [Knight and Trygg, p. 235].

"BART was intended to do far more than bring commuters into San Francisco; it was conceived from the start as a regional system that would foster the growth of the entire Bay Area" (Webber, 1976, p. 5). As Webber points out:

BART officials like to claim credit for the spectacular change in San Francisco's skyline; they say it is a direct result of improved commuter access from the metropolitan region. However, they also argued from the outset that BART was primarily needed because forecasts of impending downtown office employment raised the specter of the ultimate traffic jam [p. 13]. . .

Large-scale office construction in other Western and Midwestern metropolitan centers suggests that the building boom might have happened anyway, for many of them have had similar booms, although none except Chicago had anything like BART in sight. During the 12 years following BART's successful bond election, San Francisco's high-rise office buildings were expanded by 4,200 square feet for every 1,000 people in the metropolitan region. By contrast, Houston, the automobile city *par excellence*, added 5,500 square feet per 1000 population, Chicago 4,500, and Dallas 3,500 [p. 14].

Knight and Trygg add that downtown San Francisco:

was experiencing an increasing amount of construction activity even before bonds were approved for financial backing of the BART transit system. . . Lee and Wiech (1972) have estimated that much if not most of this new development may be due to conditions completely independent from the presence of BART.

As in Toronto, certain density bonuses were made available for buildings at or near downtown San Francisco BART stations (Libicki, 1975).

However, as in Toronto, many other forces also acted to encourage and concentrate Bay Area office development in this location. Moreover, there is little evidence of any substantial land use impacts outside the CBD station areas (Gruen, 1977; Lee, 1973, Wells, 1973) [Knight and Trygg, 1977, p. 236].

BART has nonetheless consistently been acknowledged as one of the key forces involved in development (Lee and Wiech, 1972). Webber does concede that "surely BART was part of the generating force, for it was a massive piece of the big

construction set" (p. 14). It is not possible to claim, however, that the development would not have happened in the absence of BART.

While two modest office buildings did appear in Berkeley and Walnut Creek in response to BART's arrival, suburban stations for the most part "stand in virtual isolation from urban-development activity, seemingly ignored by all except commuters who park their cars in BART's extensive lots" (Webber, 1976, p. 15). Development near the Fremont BART station occurred at a slow pace relative to that of Fremont as a whole (Wells, 1973). "This suggests that mere accessibility and land availability are not enough" (Knight and Trygg, p. 240). "The problems to be solved are complex; land development is not a simple function of transportation" (Garrison, 1979, p. 525).

Webber (1976) comments that BART added only a small increment of accessibility to existing levels, "scarcely enough to have significantly affected the location plans of many households and firms" (p. 16). As he said at the SCAG Executive Committee meeting to which he was invited:

The Bay Area, like the Los Angeles area, like all Western cities, has a very high concentration of roadways. . . . If you did a contour map of the accessibility, it would be a flat plane almost. . . . some ridges along the freeways, of course, but very high levels all over the place. BART came along and created a few points of high accessibility at its station stops, which were spaced at 2 1/2 miles, but that was a little peak on top of this big, high plateau, and it did not seem to have made enough difference to developers who were putting in offices or housing, etc. . . . We've got too much accessibility already with the automobile highway system, and we can't make enough difference with a rail system to change the land use pattern [SCAG, 1983, p. 9].

While Cervero (1984) is substantially more optimistic about the development potential of light rail than most, he stress-

es the need for pro-development actions to encourage such activity and agrees that for some cities "the current auto-highway system seems so firmly rooted that any major structural changes in urban form seem unlikely" (p. 146). Developers certainly seek accessibility, and when the Red Cars provided it, they catalyzed the development of Los Angeles. A new light rail system today, however, adds negligible accessibility compared to the extensive highway system of Los Angeles, and cannot, therefore, be expected to attract development relative to locations with existing substantial highway access.

Finally, we should question whether centralized patterns of development, said to result in connection with rail system construction, *are* desirable. As Altshuler (1979) says: "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" (p. 435). 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."

CAPITAL COSTS

CAPITAL COSTS FOR RAIL SERVICE expansion are almost invariably greater than for similar bus-based improvements, although rail advocates often claim such extra expense is justified by the higher levels of ridership and lower levels of operating costs they say rail systems can achieve. As we have seen above, there is no justification for the claim that comparable-quality rail service will attract more passengers than buses. As we shall see in the next section,

potential operating cost savings for rail as against bus services in low density cities are also highly questionable.

The record on projecting capital costs for rail systems has been poor, to judge from the extent to which actual costs have exceeded projections. BART was to cost \$1 billion, but actually cost \$1.6 billion. The Lindenwold Line across to New Jersey from Philadelphia was supposed to cost \$54 million, but cost \$92 million. The South Shore extension of the Red Line in Boston started off as a \$74 million dollar project, but ended up at \$111 million (Wohl, 1976, p. 59-60).

All four heavy rail and three out of four of the light rail projects Pickrell (1989) examined cost substantially more than projected: the worst performer was Washington METRO, which came in at 156 percent over budget in nominal dollars, and at 83 percent over budget even with inflation-adjusted dollars. Of the light rail systems examined, Buffalo was 59 percent higher than estimated (51 percent in adjusted dollars), although Sacramento was only 17 percent (13 percent adjusted) over, and Pittsburgh was 11 percent under budget in adjusted dollars (Pickrell, 1989, Table 3-1, p. 33).

The San Diego Border Line presents an exceptional case: the at-grade system which operates on an existing right-of-way for most of its length was built on a "no-frills" basis for the budgeted amount of \$85.8 million (McGean et. al., 1983 p. 7-2-7-3). At the other extreme, the most spectacular increases of all are associated with the downtown Los Angeles - Long Beach light rail project of the Los Angeles County Transportation Commission.

The Long Beach line, to be modeled on the San Diego experience, was originally heralded as a "low-cost" answer to the corridor's transportation problems (see *Los Angeles Times*, November 11, 1984, for example), increased from an initial estimated cost of \$146.6 million in 1981 to \$877 million on opening day.

A Caltrans feasibility study (Caltrans, 1981) put the capital cost at \$146.6 million. Parsons Brinkerhoff (1982b), under contract to the LACTC, estimated "baseline" costs of \$194 million in 1982 dollars, which translated into a range of \$254-280 million when escalated to account for inflation (p. 10). This higher estimate was said to account for certain costs (such as right-of-way acquisition) which the consultants said Caltrans had omitted (p. 18). This was the estimate associated with LACTC decision making and which, enabled Supervisor Dana, for example, to compare the project favorably with the "highly expensive" Wilshire subway and claim that it would "make maximum use of limited dollars" (LACTC meeting, March 24, 1982). The April 15, 1982 *Long Beach Press-Telegram* announced that the commission had given the "go-ahead for the proposed \$194 million train last month."

As Rich Connell reported in the October 20, 1985 *Los Angeles Times*:

Predictions that the Long Beach line could be built quickly for about \$200 million faded soon after the line was selected. Transportation Commission officials said they found that a workable and politically acceptable system required double tracks, a downtown subway, street improvements in downtown Long Beach and other costly additions not initially anticipated.

As of October, 1983, the project was said to cost between \$350 million and \$400 million (*Los Angeles Times*, October 16, 1983). By the May, 1984 Draft Environmental Impact Report (LACTC, 1984, p. I-80), the capital cost estimate was in the range \$393-561 million for a variety of options. The November 11, 1984 *Los Angeles Times* quoted then LACTC Executive Director Rick Richmond as discounting the possibility that the project would reach \$1 billion in capital costs, although he admitted that "things beyond our control" could drive costs up to somewhere between \$500 million and \$600 million. The June, 1985 is-

sue of LACTC's "The Rail Way" announced that the estimated cost of the project was \$595 million in 1985 dollars.

Costs continued to climb as described in an article by LACTC's Edward McSpedon (McSpedon, 1989). The relocation of pre-existing Southern Pacific railroad tracks led to "numerous and substantial" complications.

As might be well expected in a case where the owner (SPTC) does not bear the burden of the construction costs, the railroad has been extremely stringent in the application of its construction approval authority, resulting in change orders to contracts and pending contractor claims totaling hundreds of thousands of dollars [p. 428-430].

LACTC was also required to provide a \$50 million railroad protective liability insurance policy.

The physical configuration of the SPTC trackage has also added to the cost of the LRT project. . . . At heavy traffic locations it has been necessary to grade-separate the LRT to avoid crossing conflicts with the railroad. . . . Because the alignment of the railroad is being shifted, it has meant physical changes to each of the 37 railroad grade crossings in the midcorridor. . . . The cost of relocating and replacing freight railroad facilities is estimated to exceed \$40 million [p. 430-431].

"Perhaps the most greatly underestimated difficulty," McSpedon says, concerns dealing with other right-of-way users: it was necessary to relocate, replace, remove, or protect 2,300 individual utility lines (p. 432).

In addition, extra costs have been imposed due to demands by municipalities, for grade-crossing improvements, upgrades of adjacent streets and sidewalks, installation of new street lighting, computerized traffic signals and signage, addition of landscaping, and construction of new fences and retaining walls, for example. Due to demands by the City of Compton, four miles of Southern Pacific track running through that city was removed and replaced in a corridor to the

east at an additional cost of \$67 million, \$57 million paid by LACTC, \$10 million by the City of Compton (largely through a long-term zero-interest loan from LACTC) (p. 437-439).

In a letter to the author dated July 3, 1990, Edward McSpedon declared that "Forecast total cost is \$887 million." The final cost is likely to be yet higher. At a Joint LACTC/SCRTD meeting on December 5, 1990, for example, Supervisor Hahn called for the construction of two new grade separations a year for the Blue Line "to improve safety and to deter adverse publicity" (LACTC/SCRTD, 1990, p. 3). Also for safety reasons, all the fencing at intersections is being replaced at a cost of \$40,000 per intersection (source: RTD), and change orders continue to come through each month, adding to capital costs. One senior RTD source is currently estimating expected final total capital cost for the Blue Line at close to \$1 billion.

As McSpedon concludes in his article (McSpedon, 1989), while the use of existing rail corridors "will always be high on the list of least-undesirable alternatives" for "the construction of a new rail transit facility in a mature, densely developed urban area with the objective of minimizing construction costs through maximum use of at-grade construction," the use of such corridors "will probably be much more costly, time-consuming, and complex than might be presumed initially" (p. 441). The initial expectation that the light rail would be a low capital cost option for bringing improved transit to Los Angeles is therefore clearly false.

Capital costs of bus alternatives are generally less than for their rail equivalents. In the East Corridor from San Diego to El Cajon, for example, the most favored of the bus alternatives considered was estimated to cost \$99.16 million in 1983 dollars, as against \$145.59 million for the rail alternative eventually selected (MTDB, 1986, p. 2-37). In Ottawa, an

LRT alternative was estimated to cost 50 percent more than the \$277 million estimated cost of the 31 km bus transitway selected (Bonsall, 1985, p. 11).

One clear cost advantage of a bus alternative, is that it does not always have to travel on its own right-of-way: while bus priority lanes may be desirable through congested areas, buses can travel in mixed traffic at other times, averting facility construction costs as well as providing direct service to a larger number of potential destinations. But, while capital costs are higher for rail than for bus options, the claim is made that lower operating and maintenance costs will more than compensate. This claim bears further examination.

The "All-Bus Alternative" considered in demand modeling (see next chapter) was not routed via any segregated right-of-way, but on local streets. According to one RTD calculation, \$168 million would need to be spent to provide the buses and operating yard facilities needed to operate a bus service equivalent to the Long Beach light rail. While some of these might be routed express to downtown via the freeway (and the Long Beach Freeway is one of the few uncongested highways in Los Angeles County), most extra transit service would logically serve to augment local bus service on a wide variety of routes, reducing crowding conditions as well as upgrading service.

OPERATING AND MAINTENANCE COSTS

COMPARING THE OPERATING costs of rail and bus systems is not simple. Rail systems invariably have bus systems feeding them, which consume resources which should be charged to the rail system. The kind of innovative bus operations which might have been adopted in the absence of rail have the potential for operating at lower per unit costs than current bus sys-

tems, furthermore. Such potential for innovation is generally neglected in alternatives analyses conducted by agencies whose leaders have already decided they want rail. Comparing rail operating costs with current systemwide bus operating costs can also be misleading, since rail is generally operated in the highest volume corridors, and a bus service operated under such conditions in the absence of rail could be expected to perform better than buses operating in corridors of lower demand or than the bus system as a whole.

Pushkarev and Zupan (1982) produced a generalized study of the comparative costs of bus and rail operations, which a comprehensive review by Pickrell (1985) shows to be invalid. Pushkarev and Zupan found that light rail was justified at extremely low passenger volumes (as little as 3,800 per peak hour for surface operations) because of lower costs relative to buses. The inefficient operating practices associated with the conventional bus services Pushkarev has in mind, furthermore, lead to the assumption that more labor would be needed for bus operation than if a more efficient bus operating plan had been assumed. While buses were assumed to operate beneath their productivity potential, rail costs were over-optimistically estimated, Pickrell (1985) says:

These idealized minimum labor requirements are unlikely to be realized using available rail transit technology and current operating procedures and should be modified to reflect realistic conditions in the labor markets and other components of the urban environment in which transit must be produced and deployed [p. 13].

Pickrell (1989) reports that out of four heavy rail and four light rail projects considered, only Sacramento's light rail system showed lower operating costs — 10 percent lower — than projected and, in that case, the results were for 1988 while the forecast was for 2000. The Buffalo light rail system's costs in 1989 were 12 percent above those projected for 1995,

and Portland's 1989 costs were 45 percent above those forecast for 1990. Two of the heavy rail systems studied did considerably worse. Furthermore:

both forecast and actual data *understate* the full costs of operating rail service, because they omit the costs of operating the network of feeder bus service on which they rely to generate much of their ridership [p. 47].

In Portland and Atlanta more service was provided than originally forecast, so expenses could be expected to be higher. But, "for most other projects, actual vehicle-miles of service are more typically only one-third to slightly over half of those originally planned." Taking account of service actually operated, Sacramento's operating expense per rail vehicle-mile, for example, was 63 percent above forecast, Buffalo's 128 percent above and Portland's 14 percent. Miami's heavy rail was 323 percent above. Sources of higher costs, Pickrell says, include underestimation of labor and energy prices and overestimates of productivity. The fact that actual rail operating speeds were generally lower than those forecast contributed to such overestimates.

Experience in San Diego

Pickrell does not provide comparisons between rail costs and the costs of alternative bus operations. A cross-fire between Tony Gómez-Ibáñez of Harvard University and MTDB Director of Planning and Operations, William Lieberman, illustrates the difficulties of making such comparisons. Lieberman (1986) asserted that Gómez-Ibáñez had misrepresented costs in his article (Gómez-Ibáñez, 1985), which stated that light rail operating costs were higher than for the bus line the service replaced. "The operating cost per revenue passenger is actually about 12 percent less for LRT than for the former South Bay bus lines," Lieberman said. "Had the author investigated cost per passenger mile, he would have discovered even more dramatic reductions, in the

range of 25-30 percent in favor of light rail."

Gómez-Ibáñez (1986) replied, agreeing that certain data had been misinterpreted in his article due to errors in published statistics, but pointing out that he had nonetheless incorporated several assumptions favorable to the light rail in his calculations. No feeder bus costs were charged against the light rail in the Gómez-Ibáñez analysis, for example. More fundamentally, Gómez-Ibáñez argued that even if operating costs were lower for the rail than a bus operation, when capital costs were taken into account, rail performed substantially less well:

The LRT's capital cost per passenger is still four times higher than the bus, however, and thus the LRT's total cost per passenger (operating plus capital) is still double that of the bus.

While many of the federal analytic requirements were avoided for the initial San Diego light rail line, since it was built without federal funds, a full alternatives analysis was required and carried out for the East Line, from San Diego to El Cajon. The level of operating costs for rail and bus alternatives forecast for this line was the subject of considerable debate between the San Diego MTDB and the Urban Mass Transportation Administration (UMTA). A statement in June, 1984 (UMTA, 1984b), commented that operating and maintenance costs differences between light rail and buses:

seem uncharacteristically high. One reason for this is that the MTDB has assumed that two full shifts of bus drivers would be required to operate the express bus routes, even though these routes only operate during peak periods. Another is that the MTDB's analysis does not account for the fact that express buses operating on a reserved facility use less fuel than those in mixed traffic.

Adjustments followed, but meetings were called for September 24 and 25 "because we observed peculiarities in the revised O & M cost estimates and patronage forecasts — peculiarities which were

not explained in the results reports." A principal issue was the fact that the:

Express Bus alternative continued to have O & M costs that are \$3 million per year greater than the Phase I LRT alternative. . . . The \$3 million O & M cost difference persisted because the TSM and Express Bus alternatives continued to assume two full shifts of drivers for the express routes and appeared to assume too many mechanics and service people [Memo. from Ed Thomas, UMTA to Bridgid Hynes-Cherin, UMTA, Oct. 19, 1984].

MTDB was asked to complete a sensitivity analysis based on the use of part-time bus drivers. The Final Environmental Impact Statement (MTDB, 1986) retained the \$3 million cost differential, putting annual bus operating and maintenance costs at \$20.3 million, as against \$17.2 million for the light rail (p. 2-40-2-41).

A "sensitivity analysis" was conducted, with the assumption of the use of part-time drivers for express bus service. This resulted in savings of "a little over" \$1 million. Part-time operator use on the LRT alternative was also modeled, and said to save \$90,000, netting a slightly more than \$910,000 relative improvement in bus performance, and reducing the differential between bus and light rail to about \$2.2 million.

Computing UMTA's cost-effectiveness index, which considers marginal capital, operating and maintenance costs and travel time savings divided by marginal riders (and which itself merits an extensive critical review) resulted in an index value of \$2.87 per new rider for the best of the LRT alternatives and \$3.12 for the best of the bus alternatives (MTDB, 1986, p. 6-11) — an insignificant advantage to the light rail. These results did *not* reflect the potential improvement in bus performance to be gained from using more part-time drivers. As a July 1, 1985 memorandum from Associate Administrator for Grants Management Robert McManus to then UMTA Administrator,

Ralph Stanley commented, the:

sensitivity analysis performed by the MTDB showed that the bus options would be more cost-effective [in terms of *total* (including capital) costs] than LRT if more part-time drivers were assumed.

Evaluating this San Diego case is made especially difficult because a part of the El Cajon rail route — as far as the Euclid station — had already been approved by another process. Extending rail service to El Cajon makes this initial section of light rail line perform more efficiently than now, as it adds El Cajon passengers traveling downtown who traverse this segment. Although the possibility of having El Cajon passengers travel by bus to Euclid and then transfer to light rail was considered, this was found to be less cost-effective than having them travel all the way into downtown on the bus. The loss in time necessitated by a transfer to light rail made such a trip less attractive to passengers relative to a no-transfer bus trip to downtown San Diego.

The express bus to downtown alternative is burdened with the cost of light rail operations to Euclid, even though in the preferred bus option, passengers would not use light rail, and even though in the absence of a planned extension to El Cajon, the Euclid part of the line would not likely have been built. Given that the Euclid part of the route *had* been approved, however, the alternatives analysis had to include its costs. In its absence, the express bus alternative would have performed relatively better financially, when compared to light rail.

Innovation in Ottawa

A failure to reflect possibilities for innovative bus operating policies in studies conducted in local environments where light rail is favored makes a comparison between optimally operated bus systems and light rail extremely difficult. The only study found which modified bus operations to improve on conventional practices was conducted in Ottawa, and here the

findings were illuminating.

Increases in operating speed from the transitway and other bus priority measures leads to lower bus operating costs. The operator, OC Transpo, furthermore, plans to use articulated buses for up to 40 percent of its fleet. "Preliminary experience has demonstrated their cost-effectiveness because of their 50% to 60% greater capacity than standard buses" (Bonsall, 1985, p. 7). OC Transpo employs an innovation they call "interlining" for scheduling 40 percent of their fleet. Under this policy, an express bus with peak-hour demand in one direction only, avoids wasting time in returning to its original starting point empty by instead traveling to the start of whichever is the nearest route requiring service, and starting to pick up passengers again there:

As a result, in a single peak period, a bus may operate on three or four different routes. This scheduling practice, which requires a computer based scheduling system, reduces the peak vehicle requirements by between 10% and 12% compared to a traditional non-interlined solution [Bonsall, p. 8].

In Ottawa, the passenger demand varies significantly with distance from downtown. Opportunities to short-turn trains are limited, however, "so that except in the central area, the train capacity exceeded the demand." Buses can be turned around wherever appropriate, and capacity can be much better matched to demand. "The result is that a smaller proportion of the service included partially filled vehicles."

With a rail system, Bonsall says, lay-up time is greater for the buses which feed the rail service than on an all-bus operation, because trips are shorter and lay-up a greater proportion of total time. With a rail system, there would also be less opportunity for interlining buses.

The result is that the busway system was both cheaper to build and cheaper to operate than LRT in Ottawa-Carleton.

The alternative rail option was dis-

carded, therefore, other than as a long term solution, because it was projected to be 50% more costly to build and 20% more costly to operate than the busway system. This cost comparison included the costs of the total transit system in each case. The lower operating cost occurred because of the busway's closer demand/capacity relationship, savings from interlining and a lower proportion of lay-up time [p. 10].

Operating Costs on the Long Beach Line

As the LACTC Staff Requirements and Operating and Maintenance Costs Plan (LACTC, 1990) stated:

Assuming operating costs as estimated by RTD, the Blue Line would be less cost effective than other LRT systems in terms of cost per vehicle mile, cost per peak vehicle, and (except for Buffalo) in terms of cost per vehicle mile. The Blue Line would also be less cost effective than any of the existing heavy rail systems used in the comparison [Atlanta, Baltimore, Miami, Philadelphia & Washington], except for Miami (but only in cost per vehicle hour).

Using the costs estimated by LACTC presented in this report, the Blue Line would be more cost effective than with RTD's estimated costs, but still less cost effective than most other LRT systems. Relative to the heavy rail systems, the Blue Line would be toward the low end of the range of cost effectiveness [p. 49].

Despite these higher costs:

Except for security, which must be provided in full at the outset, the general philosophy of the staffing plan is to hire maintenance personnel on the "lean side," since the staff can be increased later, based on actual operating experience. . . [S]ince the facilities and equipment are new, extraordinary maintenance will not be required initially. Second, much of the equipment will be under warranty for one to five years after the revenue operations begin. Third, the available fleet (54 cars) is much larger than required to provide initial service (26 cars). This means that vehicle maintenance routines will not have to be performed as often on any one vehicle as

would be the case with fewer spares [p. 2].

In other words, while these costs may be relatively "low" now, they can be expected to rise in the future. According to one member of RTD staff, maintenance costs are already proving to be higher than forecast and will be higher than budgeted for the first fiscal year of operations, "because they built a tinker-toy."

Until first-year results are in, it will be difficult to obtain an accurate understanding of the operating cost/revenue/subsidy performance of the new light rail service, especially as RTD currently anticipates total operating and maintenance costs for the first year to be in the region of \$38.9 million (as against the \$33.6 million budgeted), but as yet has no documentation on this. Higher than budgeted security costs are among the extra expenses, as is an extra \$2.5 million of self-insured liability insurance provision. Using current estimates is made speculative by a lack of prior experience of ridership or costs. An attempt follows to present such information as was available up until May 15, 1991.

Table 3-3, taken from the Fiscal Year 1991 Proposed Annual Budget of the Southern California Rapid Transit District (SCRTD, 1990b) provides a modal comparison of operating revenue and expenditures. The total budgeted operating expenses for Blue Line service — \$33.6 million — are higher than were estimated in the most recent amendment to the LACTC figures (contained in Padron and Associates, 1990). As of June, 1990, the LACTC estimate of first year Blue Line costs was \$27.7 million. RTD — the operator — contended that LACTC (which is paying for most of the first two years of Blue Line deficit with Proposition A funds) had underestimated costs; LACTC maintained that RTD had overestimated them. The Final Environmental Impact Report (FEIS) for the Blue Line (LACTC, 1985) had estimated annual

Blue Line gross operating cost at \$12.5 million (p. III-86), *assuming 54,702 weekday daily passengers.*

The FEIS had estimated revenues at \$8.4 million, making for a farebox recovery rate of 67 percent. With estimated first year revenues of only \$1.5 million, as against operating and maintenance (O & M costs) costs of \$33.5 million, the RTD budget assumed that light rail would cover only 4.5 percent of its costs from the farebox. Ridership has, however, turned out to be higher than the conservative estimates issued shortly before opening. As of May 15, 1991, an unofficial RTD estimate of first year Blue Line revenues was \$3.6 million — allowing for the ridership above that anticipated by the budget — and estimated first-year costs were \$38.9 million. *That makes for an expected farebox recovery of 9.3 percent during the first fiscal year of operation. RTD bus operations, in contrast, are expected to cover 41.7 percent of operating and maintenance costs.* A large part of Blue Line costs are attributable to security charges in the form of a \$12.2 million contract with the Sheriff's department. This compares with a total security bill of \$9.0 million for the entire RTD bus operation and its expected 412 million annual passengers.

The above cost and revenue figures allow for a build up of ridership during the first year. For purposes of measuring relative performance at time of writing, and putting any possible bias to the favor of light rail, let us imagine that the March 1991 ridership levels (31,000 per day weekdays, 896,000 for the complete month) were to have held for the *entire* 50-week fiscal year of operations, and that average farebox collection is \$0.63 (source: a "high" RTD tentative estimate from April, 1991: takes account of transfer passengers, elderly, handicapped, and various passholding passengers). This would have produced revenues of slightly under \$6.4 million, still covering only 16.4 percent of operating and mainte-

**Southern California Rapid Transit District
Fiscal Year 1991 Budget**

MODAL COMPARISON OF OPERATING EXPENDITURES BY EXPENSE CATEGORY (\$000)

FIGURE 6

EXPENSE CATEGORY	BUS	LIGHT RAIL	HEAVY RAIL	AUTOMATED GUIDEWAY	TOTAL
LABOR					
NON-CONTRACT SALARIES	66,182	7,238	5,542	155	79,117
UTU WAGES	172,457	1,226	0	0	173,683
TPDA WAGES	6,052	2	0	0	6,054
TEAMSTERS WAGES	1,311	0	0	0	1,311
ATU WAGES	71,076	144	26	0	71,246
TCU WAGES	19,306	739	16	0	20,061
CONTRACT WAGES SUBTOTALS	270,202	2,111	42	0	272,355
LABOR SUBTOTALS	336,384	9,349	5,584	155	351,472
EXPENSE TRANSFERS	(8,509)	(997)	(5,588)	(155)	(15,249)
FRINGE BENEFITS					
FICA	27,578	853	0	0	28,431
PENSIONS	11,977	370	0	0	12,347
HOSPITAL, MEDICAL & SURGICAL	41,028	1,269	0	0	42,297
WORKERS' COMPENSATION	29,682	918	0	0	30,600
UNIFORM & TOOL ALLOWANCE	1,681	60	0	0	1,741
TRAINING	499	18	0	0	517
OTHER	3,475	109	4	0	3,588
FRINGE BENEFITS SUBTOTALS	115,920	3,597	4	0	119,521
SERVICES					
PROFESSIONAL & TECHNICAL SERVICES	16,497	13,611	0	0	30,108
COMMISSIONED AGENTS	1,601	50	0	0	1,651
OTHER	7,166	2,958	0	0	10,124
SERVICES SUBTOTALS	23,663	16,569	0	0	40,232
MATERIALS & SUPPLIES					
DIESEL FUEL	22,231	0	0	0	22,231
REVENUE VEHICLE PARTS	29,385	395	0	0	29,780
OTHER	15,729	337	0	0	16,066
MATERIALS & SUPPLIES SUBTOTALS	67,345	732	0	0	68,077
UTILITIES	6,857	1,840	0	0	8,697
CASUALTY & LIABILITY					
P./PD RESERVES	18,878	584	0	0	19,462
OTHER	2,126	1,228	0	0	3,354
CASUALTY & LIABILITY SUBTOTALS	21,004	1,812	0	0	22,816
TAXES	2,160	67	0	0	2,227
MISCELLANEOUS EXPENSES					
TRAVEL & MEETINGS	372	42	0	0	414
DISCOUNT ON SALE OF CURRENCY	2,910	90	0	0	3,000
OTHER	2,080	73	0	0	2,153
MISCELLANEOUS EXPENSES SUBTOTALS	5,362	205	0	0	5,567
INTEREST EXPENSES	6,023	187	0	0	6,210
LEASES & RENTALS	6,221	190	0	0	6,411
TOTAL OPERATING EXPENSES	<u>582,430</u>	<u>33,551</u>	<u>0</u>	<u>0</u>	<u>615,981</u>
	*****	*****	*****	*****	*****

Table 3-3

nance costs, *even assuming that these costs were to have been no higher than the \$38.9 million currently expected* (although they would in reality necessarily have been substantially higher, to accommodate the year-round higher ridership assumed here).

The bus operating and maintenance cost per passenger, based on budgeted ridership and operating costs is \$1.41. For light rail it is \$12.43, although the actual result is expected to be lower due to the higher than budgeted ridership.

Once more looking to examine the most favorable scenario for rail, assuming that all fiscal-year operations are at the ridership levels attained in March, 1991 but — once more unrealistically to the favor of light rail — that fiscal year costs were no more than currently expected for the lower overall actual fiscal year ridership, operating cost per passenger comes to \$3.85. If we deduct an (optimistic) average revenue of \$0.63 from each of these, rail operating and maintenance cost subsidy is \$3.22 per passenger, more than four times greater than the \$0.78 subsidy per passenger on the bus.

While there is currently no data on average trip length on light rail, Rubin (1990) assumed that the average light rail trip would be 8.1 miles long, as against 4.0 miles on the bus, based on a UTPS ridership forecasting model run. "The average trip length for all light rail systems, as per the UMTA 1988 Section 15 Annual Report, was 3.1 miles, which could lead to some questioning of this assumption," Rubin (p. 9), however, reported. Even adjusting for the 8.1 mile light rail trip assumption, (while keeping all fiscal-year ridership at the March, 1991 level and leaving fiscal-year costs at the expected level for the lower actual ridership), *subsidy per passenger-mile on the Blue Line is still over twice as great as that on the bus*. With the most unrealistically generous of assumptions, then, rail operating and maintenance costs are substantially greater than for bus service. If we factor in the fact

that most rail passengers (63 percent according to the November 8, 1990 survey) are former bus passengers who would have remained on transit at lower subsidy cost in the absence of the light rail, the subsidy per *new* transit passenger is even higher.

It should be further noted that many of the densely-patronized local bus lines operating on the Long Beach corridor show above-average productivity with respect to revenues versus costs compared to RTD service as a whole. This conclusion derives from study of performance data in a 1985 RTD Line Performance Trends Report (SCRTD, 1985). More recent data on specific bus lines was not made available. But, computing Long Beach - downtown LA local line 60 operating cost at the RTD bus operating cost average brings an annual cost of \$15.7 million (assuming 365 day annual operation), compared to the expected \$38.9 million — more than double — for the Blue Line, while before the Blue Line began operation the 60 was already carrying the weekday ridership the Blue Line attained in March, 1991. If we deduct the currently-anticipated revenues for the fiscal year, that makes for an expected Blue Line deficit of \$35.3 million. If we assume the average bus farebox recovery of 41.7 percent applies for line 60, the deficit for the bus route comes out at \$9.2 million, only 26 percent of the Blue Line deficit, even though the Blue Line has only carried the ridership levels of this bus route for a part of the fiscal year.

RTD estimates that in the first year of Blue Line operations, there will be \$108,200 in extra bus costs associated with the Blue Line, but that assuming the planned phased cancellation of duplicative bus routes, \$5.3 million will be saved in bus costs in 1992 (SCRTD, 1990a, p. II-8) as passengers are transferred to the more costly light rail system.

Operator costs make up a lower *proportion* of light rail costs than bus costs.

According to the LACTC/Padron breakdown (Padron, 1990), 33 operators are required for the Blue Line beyond the first two months of operation (at which point manning is increased). Total staffing for transportation services, vehicle maintenance, and facilities maintenance is 145, excluding general and administration and contracts. The operators are estimated to cost 5.5 percent of the Blue Line total budget beyond the first two months, according to the LACTC/Padron estimates. Using RTD budget data, light rail operator costs take up 3.4 percent of the light rail budget, while bus operators take up 29.1 percent of the bus budget (source: SCRTD, 1990b). Based on RTD budget data (and assuming again an as yet unsubstantiated 8.1 mile light rail trip as against a 4 mile bus trip) the operator cost per passenger mile is \$0.05, while for bus it is \$0.10, or double the light rail amount.

While this might be used to conclude that the light rail service is less operator-intensive — and therefore less costly — than comparable bus service, the rail amount has to be adjusted by some proportion of the cost of the Sheriff's deputies who check passengers for fare payment in addition to providing security. On buses, the driver verifies that the correct fare has been paid. The cost of the fare inspection function must be added to driver costs to make a proper on-board personnel comparison between bus and rail modes.

While the above numbers come from budget data, one RTD analysis has compared the passengers carried per operating position — including Sheriff's deputies, other security costs, and other operating personnel — on the Blue Line and RTD buses for the month of February, 1991 (see Table 3-4). It found that the Blue Line took over two and one half times the direct labor to transport a passenger than it took a bus, and almost two and a half times when "jointly allocated" positions were included. Even adjusting

once more for RTD's currently assumed difference between bus and rail trip lengths, rail is shown to take 1.29 times as much direct labor to move a passenger one mile as a bus, while it takes 1.24 times as much with joint positions allocated.

Looking at the full operating costs, it is clear that light rail service in Los Angeles is substantially more expensive than bus service. In addition to fare inspection, items exclusive to rail operation impose costs avoided by buses. Facilities maintenance for the entire bus system — with its expected 415 million passengers for fiscal year 1991 — for example, is only 2.6 times that for the one light rail line, which would carry an all-year load of 10.5 million passengers, assuming March 1991 ridership were to be attained for an entire year. Stations, tracks, and catenary have to be cared for, and service provided to fare collection machines. While rail is still in the preliminary stages of operation and more complete data is needed for a full evaluation, every indication so far is that light rail provides poor value per operating subsidy dollar compared to the bus. When sustained all-year Blue Line ridership at March, 1991 levels implies covering only 16.4 percent of operating costs, even assuming only expected total first fiscal-year costs, which were lower than would have been necessary to transport this volume of passengers for the full year, the difference from the average bus fare-box recovery of 41.7 percent is so great as to leave little doubt as to the comparative operating subsidy inefficiency of light rail.

OPPORTUNITY COSTS

WHILE OPERATING COSTS ARE higher for light rail services than for buses, the capital expense of the light rail system — \$877 million — must also be remembered, and the question asked what else might have been bought with the

**RIDERS/EMPLOYEE
BLUE LINE VS. BUS
FY91**

	JOINT POSITIONS NOT ALLOCATED		JOINT POSITIONS ALLOCATED	
	BLUE LINE	BUS	BLUE LINE	BUS
AUTHORIZED POSITIONS:				
ORIGINAL BUDGET	186.0	6,975.0	219.5	8,052.6
SUBSEQUENT REVISIONS	31.0		31.0	
TOTAL AUTHORIZED POSITION	217.0	6,975.0	250.5	8,052.6
LESS: AUTHORIZED CAPITAL POSITIONS	(19.3)	(52.0)	(19.3)	(52.0)
AUTHORIZED OPERATING POSITIONS	197.7	6,923.0	231.2	8,000.6
ADD: LASD SWORN POSITIONS	125.0		125.0	
LASD SUPPORT POSITIONS	13.0		13.0	
CONTRACT SECURITY GUARDS	22.0	17.3	22.0	17.3
TOTAL EQUIVALENT OPERATING POSITIONS	357.7	6,940.3	391.2	8,017.9
ESTIMATED FEBRUARY AVERAGE WEEKDAY RIDERSHIP	25,000	1,270,000	25,000	1,270,000
PASSENGERS/OPERATING POSITION	69.9	183.0	63.9	158.4
BUS/RAIL RATIO		2.62		2.48

Table 3-4

money. A study by Rubin (1990) examined the total life-cycle costs of providing transit services by light rail as against bus. Full capital costs of both rail and bus services were included. Rubin did a comparison over a projected thirty-five year period, assuming 30,000 average weekday passengers carried on the Blue Line and a forecasting model generated average Blue Line trip of 8.1 miles, as against 4.0 miles by bus.

The methodology leads to the conclusion that for the same level of funding, we can either afford to build and operate the Blue Line for 30 years or operate 430 buses for 33 years (including the cost of

building the operating divisions to support these new buses). For the same cost, however, the buses would produce over four and one-half times as many passenger miles and over nine times as many passengers. This result is reached even though the assumptions utilized tend to favor the Blue Line on several important issues.

Another approach to considering opportunity costs involves consideration of possible policy changes for levels of bus services and fares on the RTD bus network as a whole.

Fare reductions present one promising path to gaining increases in ridership. As

Wachs (1991) reports, “dozens of transit fare changes have been monitored, and we know with reasonable certainty that changes in transit fare have elasticities in the range of -0.3 to -0.4.” A 10 percent reduction in fares, for example, can be expected to lead to a 3-4 percent increase in ridership.

Massive fare changes, or outright eliminations of fares have been known in certain instances to bring about much larger, though often highly localized changes in ridership. In Auburn, New York, elimination of a 25-cent transit fare led to a jump in monthly patronage from 18,000 to 88,000. In Seattle, elimination of fares within a special downtown transit-free district resulted in an estimated three-fold increase in intra-CBD trips, while in Portland the creation of a fare-free zone is regarded as the major cause of a nine-fold increase in ridership within that specific zone (Barton-Aschman

and Associates, et. al. 1981) [Wachs, 1991].

As Chart 3-5 (source: RTD) shows, the Proposition A bus fare reduction in 1982 took ridership out of a trough at 359.5 million annual passenger bus trips and to a peak of 497.2 million passengers in 1985, an increase of 137.7 million passengers, or 38 percent over three years. Some of these passengers will be people making trips they would not otherwise have made; the rest are people who formerly drove, carpooled, or walked. All trips represent increased use of transit.

Paying for the immediate effects of the fare subsidy — which reduced fares for existing as well as for new passengers — meant an initially large subsidy increase, but the rate of subsidy increase slowed as new passengers increased at a rate faster

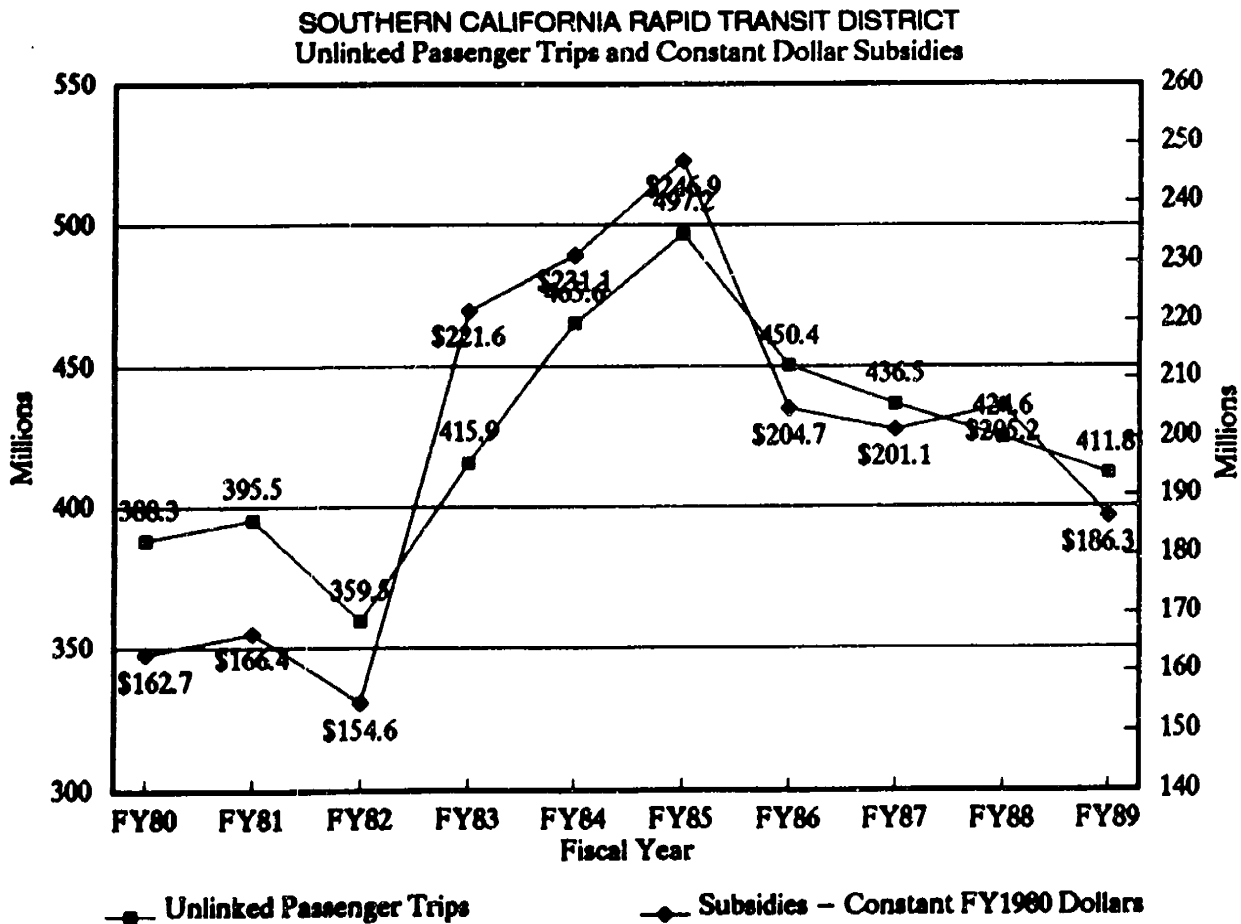


Chart 3-5

than increases in service provision. At the end of the fare reduction period, annual subsidy costs stood at \$246.9 million, compared to \$154.6 million at the beginning, an increase of \$92.3 million, or 60 percent.

Without attempting to annualize capital cost and interest payments on the light rail investment on any imaginary basis, let us just ask what might have happened if the \$877 million had been invested, say at 8 percent. That would have produced income of \$70.2 million per year. RTD regression analysis shows that 84 percent of the ridership change is explained by the fare changes. The increased subsidy of \$92.3 million can then be said to have generated 115.7 million out of the 137.7 million new passengers. On a similar basis, a \$70.2 million increased subsidy might be expected to net 87.9 million new passengers (assuming a linear relationship).

Even if the light rail service eventually achieves its target of 54,702 daily passengers, and even if we extrapolate this to annual ridership on a 365 days per year basis, the light rail only achieves 20 million annual trips. Even making the untrue assumption that all of these were new trips, rather than trips by former bus passengers, that implies a more than four times higher ridership gain for the bus fare reduction per unit cost than for the light rail project. If we were to assume realistic light rail ridership levels and recognize that most new light rail users were already traveling by transit — on the bus — the disparity would be even greater.

During the fare reduction period service was increased, but not in line with ridership. This resulted in heavy overcrowding on many lines, proving that people will take the bus because of its convenience and cost, and not be deterred by a lack of comfort. For a longer term fare reduction, increased capital investment in the bus fleet would be necessary, while existing buses will probably have to be re-

placed more frequently than light rail cars, but as we have seen from Rubin's (1990) analysis, fully-costed new bus service costs much less to provide than rail or, to put it another way, far more passengers will be carried per subsidy dollar if buses are employed than trains.

When the fare reduction ended as of July 1, 1985, and the Proposition A funds formerly used to support it went to light rail construction instead, bus patronage fell dramatically: down 46.8 million annual passengers in just one year — or more than twice the annual passengers to be expected on the Long Beach light rail under the most optimistic assumptions. The downward trend in bus travel continued. The implication is clear: quite apart from whether it makes sense to spend money on exclusive right-of-way capital projects for buses or trains, subsidizing fares on existing bus services will have a far greater effect on encouraging transit use than providing light rail services ever will. As one RTD official commented on the Proposition A fare reduction ridership gain:

This is the largest increase in transit utilization I've ever seen. We took this ridership gain and tossed it away. . .

The cost of the \$.50 fare was 20% of the Proposition A money. Rail now gets 35% , and that's just for construction.

In an April 27, 1990 memorandum from RTD General Manager Alan Pegg, Controller-Treasurer Tom Rubin, and Director of Management Larry Schlegel, (Pegg, 1990a) the Board is warned that:

Since our ridership peak in Fiscal Year 1985, the reduction in subsidies, requiring offsetting fare increases, has been principally responsible for the loss of 86 million riders a year or 17% of ridership. To put this into perspective, the 86 million riders lost over a four-year period is greater than the number carried by the ninth largest bus transit system in the United States.

To look to the future, the most opti-

mistic forecast is that the that the combined Red Line. . . , Blue Line, Green Line, Pasadena Line, and Valley Line ridership will be approximately 160 million riders a year by the early 2000's. An optimistic forecast will be that one-half of the rail riders will be new transit riders. . . This would mean that these five new transit lines would add 80 million transit riders per year — six million *fewer* than we have lost since Fiscal Year 1985, principally because the subsidy that used to pay for the Proposition A \$0.50 fare went to pay for rail construction.

However, unless a new source of bus operating funding is found, bus ridership will continue to decrease. The Commission's present plan is that all costs of rail operations will come out of funds now used for bus operations (after a two-year start-up funding period for each new rail line). The Blue Line will cost approximately \$25 million in Fiscal Year 1991 [\$38.9 according to the latest expectations]. The total operating cost of the five rail lines scheduled to be in operation by the early 2000's will approach \$100 million per year in Fiscal Year 1990 dollars. If no new funds are found, the cost of operating rail will come directly out of bus operations.

Compounding this problem will be the high subsidies required to operate rail systems. We presently project the Blue Line operating ratio at approximately 7%, compared to over 40% for bus operations. This means that to carry one passenger on a rail mode, we must take bus service off the street that would have carried far more than one passenger. And yet, the vast majority of rail riders can only get to and from a rail line by taking a bus [p. 7-8].

The following statement is then made, without note of its inconsistency with the results stated above or within itself:

While no one doubts that rail is an absolute necessity for urban mobility in Los Angeles [my emphasis], funding the construction and operations of rail out of bus funds could prove to be extremely counter-productive [p. 8].

"LOOKS LIKE A LOSER SO FAR"

WHILE MARCH, 1991 RIDERSHIP levels on the Blue Line of 31,000 daily weekday passengers approach the initial forecasted first year ridership of 35,000 daily passengers, this ridership is not significant when compared to loads transported on parallel bus lines. Not only was the capital cost of the light rail project far above that anticipated, furthermore, but operating costs and revenues — even judged on artificially favorable bases — show very low productivity compared to existing bus services.

A ridership of 31,000 daily weekday light rail passengers would be a reasonable expectation, when compared to the similar number carried on the local Long Beach - downtown LA bus 60 alone: the train provides faster service between many of its stations, but provides far fewer stops than the bus. The high ridership on an overcrowded bus system attests to the fact that passengers care far more about the convenience than the comfort of the trip.

While rail has shortened trip times starting or ending in the mid-corridor, (although not end-to-end) compared to bus travel, this is only attractive to passengers who can conveniently reach rail stations. For others, a direct trip on the grid bus system will remain faster overall. With most area trips of a short-distance, local nature, getting to and from stations makes up a relatively high proportion of total trip time, making light rail unattractive for such journeys.

For a given operating budget, a memorandum from three of the most senior RTD officials indicates that less passengers will be carried on transit — bus and rail — systemwide with the Blue Line than without it. Because initial surveys show that the Blue Line is proving relatively unattractive to former automobile commuters compared to those who for-

merly traveled by bus, it will take few cars off the road. It will have no noticeable effect on pollution emissions or energy use, either. It is not realistic to expect gains from economic development stimulated by the arrival of the train. On a practical basis, far more passengers would be transported by transit if Proposition A money had continued to subsidize bus fares and/or paid for expanded bus service, rather than going to construct light rail. The only claim to success the project might have is as an amusement park ride; it is unclear, however, whether this is an appropriate function of publicly-funded transportation investments.

The Outlook for Light Rail in Los Angeles County

The outlook for other light rail projects in Los Angeles County is also poor. The dispersion of trips and low density of the county makes rail an unattractive option because of difficulties getting to and from rail stations. Having a larger rail network in place will be unlikely to give rail an advantage "greater than the sum of the parts," since trips involving different trains would be circuitous, slow, and would require transfers.

It is hard to evaluate likely operating and maintenance cost performance on other light rail lines. There is insufficient adequate data on operating cost experience for bus and rail systems with similar characteristics, for which all costs — including bus feeder costs — are charged. While Blue Line performance so far shows results for light rail far inferior to bus, The San Diego El Cajon Line experience suggests that light rail operating costs might — under certain circumstances — be in the same range as bus alternatives, or even less, but the low efficiency of the bus options offered in the alternatives analysis, and the confounding factor of having part of the light rail line already approved prior to alternatives analysis for

the remainder, precludes the reaching of any definitive conclusions. Given disparities between operating costs in San Diego and Los Angeles, it is also not clear that the costs in the one city can be validly extrapolated to the other.

The case study of Ottawa is especially interesting, for it is the only case where an entirely innovative approach was taken to bus system design. The fact that bus service capacity can be better tailored to patterns of demand than rail, and that the use of practices such as "interlining" add to the efficiency of equipment use, present bus service in a far more positive light than the conventionally-operated bus systems generally assumed in alternatives analyses. In the Ottawa case, this resulted in a significantly higher operating cost-/subsidy efficiency for buses than for light rail. More research is needed, to compare the characteristics of alternative transit systems, with the bus service drawn up along innovative rather than conventional lines.

It is not unreasonable to accept MTDB's assertion that their South Line, from San Diego to the Mexican border, has a better farebox recovery rate than the buses it replaced. That is a very special line, however, as it attracts a large flow of tourists as well as commuter traffic, smoothing out the peaking effects which keep transit costs high. Counting capital costs in turns the tables, however, and makes rail less attractive than the bus, even in this instance.

As LACTC's Ed McSpedon admits, capital costs for further light rail construction in Los Angeles County are likely to be higher than anticipated. They will be far higher than the costs of providing equivalent bus service. The El Monte Busway system has proved more attractive to people who would otherwise drive than the Blue Line so far because it provides fast one-bus service, serving a wide range of residential origins and also circulates throughout downtown, letting passengers

alight every two blocks.

In terms of reducing congestion, pollution, and energy consumption, however, neither bus nor rail developments are likely to have a noticeable impact: it is necessary to look to improvements in automobile performance and highway efficiency if any mark is to be made here. Increases in parking prices could, however, have a valuable effect in encouraging more people to use transit.

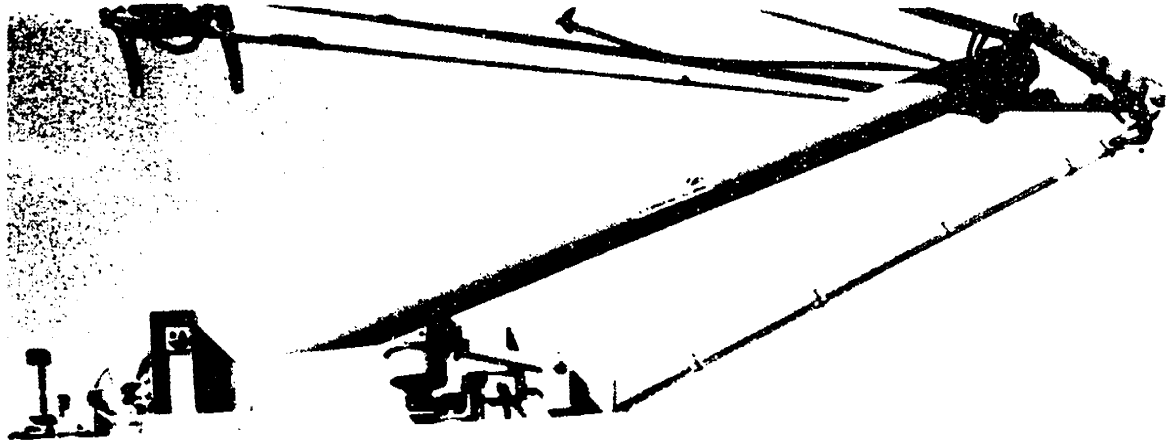
There is unlikely to be any significant development impact from having most of the light rail lines terminate in downtown LA; if there was such an impact, however, its most noticeable effect would likely be an increase in downtown congestion.

In the above discussion, we have made a critical assumption: that somehow money should be spent on some sort of transit improvement, whether rail or bus. Yes, if we are to ask Churchman-style questions and expand our inquiry from its immediate assumptions, we need to question whether this is the right question: perhaps there are other needs more urgent than

transportation on which resources could be spent. It turns out — as we shall see progressing through this study — that transportation metaphorically represents all sorts of other benefits, whether in terms of community development, the enhancement of job prospects, and in general bettering the lot of the poor. We will question such assumptions in Chapter 12.

For now, we conclude that light rail can only provide a service unmatched to the travel needs of Los Angeles County, and at a far higher overall cost per new transit passenger than would be incurred by reducing bus fares and/or developing bus services instead. There would be no significant environmental benefits, either.

We are therefore left with a massive mystery: why, when it makes no sense, is Los Angeles County proceeding with massive rail construction plans? In the next two chapters, we examine the ridership forecasting process for the Long Beach line. In Chapter 6 we begin to unravel the mystery.



This dissertation does not initiate constructive criticism or attempt to find new solutions to an existing problem, but is a cheap editorial aimed at hurting SCAG's professional image.

— Written comment from SCAG staff member on draft of this chapter

4 Inventing Demand for the Long Beach Line

FORECASTING IS AS OLD AS THE HUMAN desire to know tomorrow's history today: it responds to a fear of the unknown. The Ancient Greeks formalized forecasting in the institution of The Oracle — at Delphi, for example — which “helped reduce uncertainty, often by relying on the principle of self-fulfilling prophesy” (Benveniste, 1977, p. 43).

Today's attempts to picture the future perform a similarly reassuring and stabilizing role in society, even if they are the result of technical analysis and involve complex computer programs. How could we formulate economic policy without a forecast of where the economy is going? How can we decide on the number of weapons we will need without a forecast of what the other side will do? “Transit systems, power plants, hospitals and airports are constructed only after forecasts have demonstrated that a “need” exists for their services, and that their costs are justified by expected benefits” (Wachs, 1985, p. 246).

Computer modeling has become so accepted and commonplace in both the social sciences and government that

“many educated people treat computers and the ensuing recommendations as fact” (Mulvey, 1983). The desirability of quasi-scientific approaches is intensified by their apparent ability to provide simple and clear-cut answers to complex problems. Given our basic intolerance for uncertainty, it is reassuring to have “hard numbers” — which we may presume were “rigorously” obtained — to tell us in which direction to go. But, as Schön (1983, p. 44) remarks, “formal modelling has become increasingly divergent from the real-world problems of practice.”

While the apparent complexity of high-powered techniques lends them authority, all quantitative models — however complicated — must simplify. As Chorley and Haggett (1967) point out:

the most fundamental feature of models is that their construction has involved a highly *selective* attitude to information, wherein not only noise but less important signals have been eliminated to enable one to see something at the heart of things [p. 23].

To simplify, “rules” are needed to decide both what is relevant information and how the chosen information is to be processed. These rules — or assumptions —

are chosen subjectively, not determined “objectively,” but color the whole analysis of which they form the fabric. Models are therefore a compilation of judgments, not science-based “value-neutral” tools.

A mathematical statement has no social content of itself: it is correct or not to the extent that it follows the rules of mathematics. But mathematical statements, though empty of themselves, may powerfully *organize* information; they do so according to the assumptions under which they operate. Danger lies when, according to Hoos (1969), “in the absence of clearly specified limits and conditions, the assumptions and biases of the analyst are taken as representative of the real system under study.”

The problems introduced by models exist on a number of different levels, but they center on the need to adopt a series of assumptions given the lack of necessary validity of any assumptions in particular. The biggest assumption is that the model in use is simulating relationships central to the problem at hand. In many cases, however, the model is merely simulating the interactions of variables which are easy to represent. Model relationships act as surrogates for the real problems — such as of environment, mobility and equity — which are often thornier, not directly amenable to quantification, and which may therefore remain unaddressed.

On a basic level, there is scope for political agendas to influence which assumptions get chosen: if leading politicians wish a particular project to proceed, it is tempting to go for optimistic assumptions which will make it appear attractive. In some cases this manifests itself in outright dishonesty, in the deliberate misapplication of techniques (see Kain, 1990). In many other instances, however, there is no such simple black-and-white case of unethical behavior. As Martin Wachs (1985) explains it:

forecasts often require so many assumptions that there is leeway to allow the

forecaster to satisfy both organizational goals and technical criteria. Indeed, if he or she has become a “team player” and has internalized the goals of the agency, there may not even appear to be conflict between the two loyalties [p. 257].

On a number of deeper levels, the very nature of computer modeling — with its basis in technical expertise and ability to process information only in predetermined standardized formats — arouses questions about its desirability for social decision-making, even given the best of honest intentions on the part of those doing the modeling work.

To start with, public officials, concerned with policy questions, generally know little about the technical methods by which forecasts are obtained, and are therefore in a weak position to critically evaluate them. Those preparing the forecasts, in contrast:

are usually drawn from the ranks of social scientists, engineers, and planners whose education and professional identity are based primarily upon technical methodological skills. They are likely to believe and promote the belief that forecasting is impossible without the use of computers, mathematical methods, and complex data sets.

Sophistication in the technique of forecasting is more apparent, however, than real. Computers are used because there is often a great deal of data: many variables, many units of analysis for each, several time periods. These conditions lead to the requirement for training in mathematics, statistics, data manipulation, and computer programming. But together, such skills ensure no special perspective on the future, and there is relatively little theory derivable from the social sciences to help one arrive at reasonable core assumptions [Wachs, 1985, p. 253].

Given a lack of theory with which to choose assumptions, the door is left open for arbitrariness in their selection. On a micro scale, there are frequently dozens of detailed assumptions which must be made for any particular forecast. At what rate will the population grow? How will the

geographical distribution of housing and employment develop? How many times will people be prepared to change vehicles during a trip? Given several mathematical functions which "fit" a given data set, which should be chosen? And so on. . .

Perhaps one of the most egregious practices is the unfounded use of scientific analogues for social processes. Despite a lack of proof that such theory maps from the domain of the physical to the world of the social, work upon which it is based can look impressive — and it does appear to provide an answer. Brewer (1973) demonstrates this phenomenon at work in his account of modeling for the Community Renewal Program of the City of San Francisco, which uses analogies from chemical kinetics and physics. "The assumptions, built into the rent pressure relationship," for example, "are offensive to sense, common or otherwise," he says. But:

if a model builder has never been sensitized to the details of a specific empirical context, one should not find fault with his great inferential leaps, from decaying isotopes to decaying houses or from expanding and collapsing magnetic fields to expanding and collapsing rentals.

We shall see a similar problem in the use of a Newtonian gravity model for transportation forecasting below.

In the San Francisco case, it was not simply that a bad job had been done, as one operations researcher Brewer interviewed pointed out, but that the city planners had wanted to ask detailed questions which the model could not address. But, says Brewer, "even though the model can't answer "those kinds of questions" it was decided to build in so much detail that those questions nonetheless appear to be asked." As we shall see below, although the model used for Long Beach forecasting is incapable of picking out flows on individual transit lines — such as the Long Beach light rail line — (as against representing an aggregate of parallel transit lines), it *appears* capable of providing such detail, and is used to do so even though

the results have no statistical significance.

Ascher (1978, p.202) terms the reliance on old core assumptions "assumption drag," and it is a problem endemic in forecasting. Assumptions made at the time a model is formulated may quickly become invalidated; yet, the model may live on, especially if costly work — in conducting surveys, for example — was required to set the model up. A model established at a time of gasoline plenty, for example, might well be invalid at a time of shortage, but the model might continue in use.

From the perspective of the user of a previously-developed model, it can be easy to rest unaware of problems with outdated or otherwise invalid assumptions when running the model, and difficult to fathom their complexity, even if an attempt is made to do so. Technicians who make forecasts often run data through already-prepared packages. In some cases, models can be run through such commonly-available spreadsheets as Lotus or similar products. The spreadsheet can display varying levels of detail: different columns can be assigned to display each step in the operation, or whole algorithms may be programmed into just one cell. Such set-ups can be used to make forecasts. Rarely is every step displayed, and it is much easier to simply use the model as supplied than to attempt to dismember it and put its assumptions to critical test.

Even sophisticated users, who make attempts to check behind the scenes of the models they use, can easily be foiled in their attempts to understand the assumptions upon which those models are based. Not only is it often difficult to verify matters such as the validity of sample surveys upon which estimation of the model formulae may be based, but many assumptions for input to one model — on population growth and distribution to be used in a transportation model, for example — may be the product of *other* models, with their own webs of assumptions. It be-

comes impossible to trace everything to the source, and the result is that unreasonable and sometimes absurd assumptions can be unknowingly allowed to influence forecast outcomes.

A more general problem than the use of old assumptions (to which a technician's answer may be made that the modeler is at fault for not using newer ones) is that the modeling process *inherently* uses "old data," since we have no evidence of what the future will hold other than our experience up until today. Although past data must be relied upon, it may not be an indication of the future, especially as actions taken as a result of the forecast may change that future. Patterns of the past, furthermore, might not form a *desirable* program for the future.

We come, via this path, to realize that our model may encapsulate a view of the future we have not knowingly sanctioned. The model takes on a political life of its own, one which might be quite independent of the intentions of the technician who established it or — a few steps down the road — of the technician feeding in the data and extracting the results according to "correct" technical procedure.

Jacques Ellul (1964) conceives of the villainous "la technique" (the soul of forecasting) in anthropomorphic terms: it is something created by humans, but which becomes a monster which turns against its maker, and which can do so without its maker even being aware of it:

It was long claimed that technique was neutral. Today this is no longer a useful distinction. The power and autonomy of technique are so well secured that it, in its turn, has become the judge of what is moral, the creator of a new morality [p. 134].

Joseph Weizenbaum (1976) illustrates this phenomenon in remarks on modern warfare where:

it is common for the soldier, say the bomber pilot, to operate at an enormous psychological distance from his victims. He is not responsible for burned chil-

dren because he never sees their village, his bombs, and certainly not the flaming children themselves [p. 239].

The pilot follows correct technical procedure and — part of a machine himself — does not need to be aware of what he is doing.

Computer systems can similarly divorce their users from the realities of the real world, and therefore from responsibility for the actions taken as a result of those computer operations: "In the recent American war against Viet Nam," writes Weizenbaum:

computers operated by officers who had not the slightest idea of what went on inside their machines effectively chose which hamlets were to be bombed and what zones had a sufficient density of Viet Cong to be "legitimately" declared free-fire zones, that is, large geographical areas in which pilots had the "right" to kill every living thing [p. 238].

The computer provides the authority for action. Similarly, responsibility appears to rest with the computer, rather than with the person executing its instructions.

Leamer's (1983) study of the use of econometric models to determine the efficacy of the death penalty in reducing murder, provides another example which illustrates both the extent to which prior assumptions influence predicted outcome, and how a model can itself tacitly encapsulate a moral outlook independent of the user's intentions. Leamer finds that a regression of murder rate on variables thought to influence murder:

leads to the conclusion that each additional execution deters thirteen murders with a standard error of seven. That seems like such a healthy rate of return that we might want just to randomly draft executees from the population at large [p. 41].

But the conclusion changes when the set of variables thought relevant to the model is altered. A result which looked convincing under one set of assumptions loses credibility when those assumptions

are changed. "Individuals with different experiences and different training will find different subsets of the variables to be candidates for omission from the equation" (p. 41). So a right winger will look to the punishment variables and regard others as doubtful, while "an individual with the bleeding heart prior sees murder as a result of economic impoverishment" (p. 42).

So the conservative "finds" that execution has a strong deterrent effect upon murder, while the liberal "finds" that execution actually encourages further murder.

The death penalty case — "perhaps the single most important use of multiple regression so far" (Fisher, 1980) — presents a two-fold problem: in the first place the outcome is most heavily influenced by the prior beliefs inculcated into the assumptions, rather than by the data they purport to analyze; but, secondly — and on a deeper level — not only are the assumptions employed in the procedure subject to "bias," but the procedure *itself* reflects a point of view — the implicit belief that the death penalty *should* be used if it will deter murder — which might be rejected were it to be brought to the surface and directly subjected to critical attention.

The uncritical use of statistical analysis therefore has the potential to distract us from deciding whether society *should* — as a matter of principle — have the right to kill someone, a debate which is embarrassing because it exposes the roots of our ethical values, lays them open to criticism, and leaves us uneasy since there is no "sure" solution. It is tempting for those on both sides of the death penalty debate to stand behind the illusion of science provided by the apparent precision of econometric technique. But when opponents become entangled in technical arguments over the alleged deterrent effect of capital punishment, their case is weakened because the "right to kill" is tacitly (if unintentionally) presupposed by the

calculus employed. (See Kelman, 1985 and MacIntyre, 1985, for penetrating discussions of the assumptions of utilitarianism).

Quantitative techniques, then, are not simply subject to abuse; their use for honest purposes may imply a set of beliefs which their users might reject were they aware of them. "The quantitative approach tends to divert our attention away from the evaluation of the concepts and variables themselves. . ." says Young (1979). "We can thereby be drawn unwittingly into an uncritical acceptance of the overall framework of theories and approaches to nature and society" (p. 68-69).

In summary, there are objections to forecasting-as-practiced on a number of levels, some related to how users conduct forecasts; others related to flaws inherent in the forecasting tools themselves; others at the boundary of these two cases. Users may knowingly misuse models, but they may also be placed in a situation where, given choices of assumptions all of which are technically justifiable, it seems quite professional as well as ethical to choose those assumptions which are most politically convenient. They may, furthermore, use complex models without checking and — in many cases — without being able to check — the full implications of the assumptions upon which their forecasts are based.

On a deeper level, "la technique" has a political life of its own, representing particular questions asked, and asking them from a series of value positions implied by the model's structure, rather than with the user's knowing assent. The ready virtuosity of the model produces results of apparent solidity and reliability, and attention is not only diverted from the more fundamental questions which the model does not ask, but from the values the model presupposes, values which we might not want reflected in our policy choices.

Chapter 5 will examine the larger ethical implications of modeling, considering issues of responsibility on the part of clients purchasing modeling, practitioners performing modeling, and the non-technical decision-makers who consume its results. Lower level, but significant, questions about the reliability of models in performing the task to which they are assigned will be discussed here.

Can a model process a complex set of data on social phenomena and come out with a meaningful forecast of conditions many years hence? This chapter (of which an earlier and summarized version appeared as Richmond, 1990c) will examine in depth the attempt by Southern California Association of Governments (SCAG) to model future ridership demand on the downtown Los Angeles - Long Beach Blue Line light rail service. Its critical finding will be that because the model is incapable of distinguishing between ridership on the light rail line and on adjacent bus lines, it is incapable of producing meaningful forecasts of light rail ridership. Error will be shown to compound at every stage in the model's complex progression, as questionable assumptions are combined to create a house of statistical cards just waiting to be tumbled. Analysis of the Long Beach study will be preceded by a description of recent experience in demand modeling.

DEMAND FORECASTING AND ALTERNATIVES ANALYSIS

STOPHER AND MEYBURG (1975) describe the "transportation-planning process" as a series of seven technocratic 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 (p. 60). The quantitative models they describe play a key role in the federal system of transit project evaluation known

as "Alternatives Analysis," and are fundamental to the analytical work conducted by public agencies faced with the need to make transit investment decisions.

The Urban Mass Transportation Administration (UMTA) of the US Department of Transportation requires applicants for federal capital grants to complete Alternatives Analysis. The results of this are used in rating the merit of different projects competing for federal funds. "The rating system has been designed to provide a rational approach to the allocation of Federal funds in a setting where the demand for Federal assistance far exceeds available resources" (US DOT, 1984a, p. 1).

This federal approach applies the techniques of systems analysis to quantify the costs and benefits of alternative projects within particular cities and to establish whether they fall within a threshold of cost-effectiveness which might make them eligible for federal funding. Quantification is central to its operation, and an emphasis on precision in translating phenomena to be evaluated into quantitative terms is seen as central to ensuring the "rationality" of the approach.

The primary emphasis here is on transportation service and the mobility it provides. Several other considerations, ranging from economic development to pollutant reductions to energy conservation, are secondary, but are so closely related to improvements in mobility that they are implicitly included in the Federal objectives and the evaluation system [p. 4].

A major contribution to evaluation is made by ridership demand forecasting, since a significant relationship is seen to hold between the benefits a project will bring and the number of riders it will carry.

Since the Los Angeles County Transportation Commission planned to build the Long Beach light rail with the proceeds from an extra half-cent sales tax enacted by Proposition A of 1980 and with-

out the use of federal funds, the agency was not required to perform a federal alternatives analysis. As part of the Environmental Impact process, however, an analysis was conducted with many features common to the federal process. In particular, several alternative projects were considered, including an "all-bus alternative," and one which involved no change in transit service levels beyond those already provided in the SCAG Regional Transportation Plan. Ridership forecasts were prepared for each alternative considered, although costs were only estimated for the light rail alternatives.

The record of demand analysis in predicting ridership for a number of recently-opened rail projects will be briefly examined, before proceeding with a detailed case-study of the Long Beach analysis.

The Recent Experience of Demand Analysis

A recent federal review (Pickrell, 1989) laments the substantial errors in forecasting ridership and costs for a number of newly-constructed rail passenger systems — ridership has almost invariably been over-estimated, costs under-estimated — and calls for measures to assure greater "accuracy" in future forecasting efforts.

It is certainly possible that decision-makers acting on more accurate forecasts of costs and future ridership for the projects reviewed here would have selected projects other than those reviewed here, at least in some cases [p. xiii].

The report looks at the experience of ten cities which have gone ahead with new rail passenger systems, and compares the forecast ridership and costs with those actually achieved. The forecasts reviewed are those in effect at the time a local decision was made, usually as reported in the Environmental Impact Statement for the project in question. Forecasts for a number of the projects were subsequently revised downwards (and this was to happen in the case of the Long Beach light rail,

too), but Pickrell argues for critiquing the numbers used for actual decision-making.

Pickrell faced a number of problems in making comparisons. In particular, long delays ensued between planning and constructing the rapid transit systems in Washington, DC, Atlanta and Baltimore, while Portland forecasts applied to 1990, not the actual start-up date, and that system also opened behind schedule. Buffalo forecasts applied to 1995, Sacramento to 2000, making comparisons difficult in those cases, too.

According to Pickrell, "Only for Washington DC's extensive Metro system has actual ridership reached as much as half of its originally forecast level." There, the number of passengers it carried during 1986 was 28% below that forecast to use a similar system expected to operate during 1977" (p. 14). Miami attained 85% below forecast ridership, while other heavy and light rail systems achieved weekday ridership levels that varied between 54% and 71% below what was forecast. The Miami downtown people mover had 74% fewer riders than anticipated, the Detroit people mover 83% less. While it can be argued that Portland, Buffalo and Sacramento comparisons are not reliable for the reasons cited above, and that these systems could be expected to have lower riderships than were estimated for future dates, the overall divergence between forecasts and performance is dramatic, suggesting a major failure of forecasts to reasonably picture the future reality.

The pitfalls of making assumptions about an uncertain future are well-illustrated in the cases of Miami and Sacramento, where:

the decision to invest in rail transit was made during a period of growing transit use, yet the subsequent introduction of rail service occurred during a period of declining ridership — a trend that rail service has been unable by itself to reverse [p. 21].

Pickrell cites a number of sources of

“errors” in the forecasting work he evaluates, including the use of inappropriate demographic assumptions about city populations and the number of downtown employees who would be served by a new rail system; differences between the level of rail transit service that actually gets provided as compared to that assumed in projections; and differences between assumed and actual automobile costs and travel speeds.

He finds that “only in a few instances do errors in demographic projections appear sufficiently large to contribute significantly to over-estimation of future ridership” (p. 23).

He does not attribute a significant proportion of the difference between forecast and actual ridership to differences in rail service levels, although in almost all cases the frequency of actual rail service is inferior to that assumed in forecasts. Pickrell finds that feeder bus service to suburban stations on the eight radially-oriented rail projects studied — important in bringing passengers to and from stations — has often fallen short of forecast levels:

This difference seems likely to contribute most to explaining the gap between forecast and actual rail ridership in Miami and Sacramento, where the number of buses operating in feeder service during peak periods appear to be much smaller than was originally anticipated. Current feeder bus coverage also appears to be somewhat less extensive and frequent than originally planned in Buffalo and Portland [p. 27].

Assumptions on costs of travel by automobile “probably did not contribute significantly to the large errors in forecasting rail ridership” (p. 27).

Together, these errors in “inputs to the patronage forecasting process” were found to:

explain *less than half* of the observed gap between predicted and actual weekday rail passengers except in Buffalo (where errors in the input assumptions appear sufficient to account for the entire difference between forecast and actual rail ridership) and in Portland [p. 29].

The remainder of “errors” Pickrell concludes:

must have arisen from other less obvious sources, including the structure of the ridership forecasting models themselves, the way in which they were applied, or the misinterpretation of their numerical outputs during the planning process. Whatever its exact sources, the consistent over-estimation of future ridership on recent rail transit projects suggests that the levels of travel and related benefits currently provided by these substantial investments are generally far below those that originally led local planners and political officials to make them [p. 29].

Pickrell also finds that both capital and operating costs have tended to be seriously under-estimated, and concludes that the combined effect of over-estimation of ridership and under-estimation of costs has contributed to a failure to select the best alternative transportation strategy for the various cities considered:

It is important to recognize that this would still have been the case *even if forecasts prepared for each of the alternatives studied were subject to the same degree of inaccuracy*; since the systematic tendency to over-estimate ridership and under-estimate capital and operating costs documented in this report produces a bias toward the choice of capital-intensive transit improvements such as rail lines [p. 68].

The bias arises because the higher the passenger volume (to be spread over the high capital costs), the greater the *relative* efficiency of rail against bus.

The picture Pickrell presents, then, is one where decisions are made on the basis of “an increasingly formalized and rigorous planning process” (p. 1) but that because of *technical* failures, the models used have provided unsatisfactory results:

Recognizing the sensitivity of local transportation officials’ choices among alternative transit improvement projects to the reliability of their projected future ridership and anticipated costs, it is important that steps be undertaken to improve the accuracy of forecasts prepared to support future transit investment decisions. These steps should include spe-

cific technical improvements in the procedures used to develop and check cost and ridership forecasts, some of which have already been at least partially incorporated into UMTA project planning guidelines. They should also include subjecting forecasts to review by outside experts, as well as acknowledging to local officials and the public that the resulting forecasts are still accompanied by considerable uncertainty [p. xiii].

After a brief introduction to the practice of ridership demand modelling, forecasts for the Long Beach light rail line will be examined in detail to illustrate not just sources of over-estimation in modelling but problems endemic to the modelling process itself. As we shall see in Chapter 5, the problems of the process run far deeper than just technical issues. Not only is the process itself inadequate, but the assumption that it is in fact used to make decisions is untrue, at least in the case study examined here.

The Practice of Ridership Demand Modeling

“The basic concern of transportation systems analysts is to be able to anticipate the consequences of any proposed change in a transportation system,” writes Mannheim (1979, p. 58) in his introduction to his chapter on “The Demand for Transportation.” To do this requires the modeling of human behavior in response to change, and elaborate procedures have been developed to accomplish this. As will be seen, however, despite their complexity, demand models must deal with so many assumptions and so much uncertainty that they are inadequate to their stated objective. Their use in the context of dynamic social change also brings into question the static view of the world they necessarily adopt.

Despite its failings, ridership demand modeling is institutionalized as a necessary part of the transportation planning process — and many authors place the task at the core of planning activities. Stopher and Meyburg (1975), for exam-

ple, outline the “transportation planning process” as follows. An inventory is to first be taken of existing travel and land use, socioeconomic population characteristics and existing transportation facilities. A series of forecasts follow: “of land uses that should occur in the forecast period, and then of the demand that may be anticipated and the way this will occur throughout the region” (p. 60). Four models are used: (1) to gauge total demand; (2) allocate it between origins and destinations; (3) allocate it between competing modes of transportation; and (4) allocate it amongst the set of available network paths. Finally, alternative strategies for providing transportation are evaluated in light of the above, and policy choices for planning are made.

The conduct of these transportation studies and their general structure is based on the premise that the demand for travel is repetitive and predictable, and that future transportation systems should be designed to meet a specific, predicted travel demand. This demand is itself based on an analysis and extrapolation of current travel, and an investigation of this relationship to the patterns of population, employment and socioeconomic activity [p. 60].

Planning as defined here is to take place by following a pre-defined procedure. Planning is a technical problem; there is a “correct” way of doing it; and there is a “solution” to the transportation “problem.” The systems analysis the authors prescribe:

provides a framework for a *systematic* approach to solving *complex problems* under conditions of *uncertainty*. The technique provides an approach in which *objectives* are defined and *alternatives* are assessed against these objectives. The entire process is carried out in the framework of identified *systems* and *subsystems*.

This process will now be examined in more detail, specifically in the context of its application by Southern California Association of Governments in modeling the expected ridership on the Los Angeles - Long Beach light rail line.

DEMAND MODELING AND THE LONG BEACH LIGHT RAIL LINE

“I KNOW THE MODEL OVER-ESTIMATES. . . You can quote me on that. It overestimates.” So said a member of the Southern California Association of Governments (SCAG) staff of the modeling technique used to project that in the year 2000 the Los Angeles - Long Beach light rail line — with the particular route which was eventually selected — would each day transport 54,702 passengers, a forecast adopted by the Los Angeles County Transportation Commission (LACTC) as a result of their environmental impact process, and a number constantly cited in the media as the decision to construct the Long Beach line moved forward. As documented in Chapter 3 as Blue Line opening date approached, forecasts were revised substantially downwards, enabling the *Los Angeles Times* to editorialize in January, 1991 that ridership of 18,000 was three times that projected six months previously. We will here examine the sources and basis of the original projection of 54,702, as this was the forecast in use at the time of decision making.

As part of environmental impact assessment for the Long Beach light rail project, SCAG produced a report on “Patronage Estimates and Impacts,” (SCAG, 1984b) under contract to LACTC: SCAG was retained in the role of a private consultant and paid \$200,000 for its work. Ridership forecasts were prepared for seven alternative light rail routings, for an “all-bus alternative,” and for the adopted Regional Transportation Plan (RTP) system with planned light rail lines *removed* (in other words, a “no-build” alternative). All of these forecasts were for the year 2000. A forecast was also prepared for the 1980 base year, without light rail. This was provided for purposes of “validation,” to see — in other words — if the model could properly replicate already-existing conditions.

In addition to the development of ridership forecasts, SCAG provided an analysis of the likely effects the Long Beach light rail project would have on road congestion, pollution, and other areas of environmental concern. As was illustrated in Chapter 3, the findings here were less optimistic than the high ridership forecasts would suggest: the light rail project, SCAG said, “has only a very minor impact on traffic” because most users would be people who formerly took the bus, rather than automobile drivers. Nor would the light rail project “contribute to any meaningful change in the level of emissions or in the ambient air quality in the study area.”

SCAG, in short, had produced an impressive-looking forecast of ridership on the light rail line, but rated the system poorly in terms of the benefits it would bring, as compared to the continued operation of transit systems equipped solely with buses. These negative findings received little publicity, compared to the spotlight shone on the ridership forecast, which was repeated in countless media accounts.

Given the role of SCAG’s ridership forecast in legitimizing the project, it is important to understand the basis and evaluate the reliability of the analysis which produced it. This demands an approach on a number of levels: “did the way the model was used produce reliable results?” is a different question from “can the model produce reliable results at all?” Both must be asked. A further question concerns whether technical improvements can bring greater reliability in forecasting, or whether the uncertainties and unknowns make such modeling a futile if not an impossible task. Finally, the desirability of the modeling approach as a means of project evaluation should itself be evaluated.

Modeling

SCAG conducts travel demand forecasting in the context of the “urban trans-

portation planning process” developed by the US Department of Transportation, and which:

has evolved to a generally accepted and widely applied practice. In this process, planners develop information about the benefits and impacts of implementing alternative transportation improvements. This information is used to help decision-makers (elected officials or their representatives) in their selection of transportation policies and programs to implement. Thus, the planning process *leads* [my emphasis] to development and adoption of the Regional Development Guide Plan, the Regional Transportation Plan, the Transportation Improvement Program, and the Air Quality Management Plan [SCAG, 1984a, p. 170].

A “complex set of interrelated models” (p. 172) is used to forecast travel patterns. “As it would be carried out for a complete forecast of regional travel, SCAG’s Regional Transportation Modeling System has many applications involving more than 100 separate executions of computer programs” (p. 172).

The steps SCAG takes in modeling follow the standard process described by Stopher and Meyburg (1975), which will be outlined below. Having assembled a base of socio-economic data and land-use forecasts, a four-step model is applied. In “trip generation,” the total trips made by a particular market segment are estimated for each zone of the region under study. “Trip distribution” then forecasts how the total trips originating at each zone will be distributed among possible destinations. “Modal split” forecasts what proportion of travelers will use transit and which proportion automobile. “Network assignment,” finally, assigns forecast trips to paths through the transportation network.

The modeling process will now be examined in detail. As will be seen, the approach taken by SCAG involves the use of a substantial number of questionable assumptions about what is essentially an unknown future. The compounding of likely error from piling one fragile as-

sumption upon another serves to render the results SCAG reaches meaningless. As we shall see from study of the results of SCAG’s “validation,” the model is in fact *incapable* of predicting the demand for travel on a *particular* transit line, such as the Long Beach Blue Line, since it cannot differentiate between the demands for the use of parallel lines packed close to one another.

Inventory

The first of the seven steps that Stopher and Meyburg outline in their description of the “transportation planning process” is the compilation of an inventory: “Basically, the inventory comprises the development of a data base for evaluating existing travel demand and existing transportation performance, and a basis for predicting demand and future system requirements” (p. 61).

An inventory is first taken of the activity distribution in the area under study. Information is then collected on how people currently travel, how often and on which facilities. Demographic data is collected on both the size of the total population and its socioeconomic characteristics. Finally, the capacity of existing transportation systems and their level of service characteristics are determined.

There are two basic functions of data: it is needed to establish the relationships described by the models in use (in technical terms, to “estimate” the coefficients which act on the variables under consideration in the model); and to provide inputs to be processed by the models themselves.

A number of difficulties emerge at the inventory stage. Most basically, data inventories represents how things are now. This might not make for a desirable model of how we would like things to be in the future; yet, this data is used in constructing a model to predict the future. Data used by SCAG in setting up model relationships mostly comes from a 1% sample survey of travel behavior conducted in

1967. While factors such as changes in behavior resulting from increased population and congestion, shifts in employment patterns, or other factors can be estimated in data assembled for input to the model, the mathematical relationships of the model itself — estimated as they mostly are on a 1967 basis — do not allow for them.

As one SCAG staff member said:

Most of the travel surveys were funded by the FHWA late 60s and then the money dried up, and noone's conducted any surveys since. We did one, a short one here, a follow-up in '76 and they adjusted some of the interception points — they didn't change the trip rates. In fact, some of the trip rates do change, but we don't have any new information to change them. And so we have to go with the assumption that nothing's changed since '67.

Secondly, there are problems in how current conditions are represented in the inventory, especially descriptions of existing transportation networks. These problems will be further discussed under "network assignment."

Land-Use Forecasts

The next stage of the urban transportation process, as described by Stopher and Meyburg and by SCAG, requires the forecasting of a variety of data to itself be used as inputs to the demand forecasting methodology:

Forecasting future urban systems that the transportation system is to be designed to serve requires an estimation of the intensities and spatial distributions of population, employment, social activity and land use. Socio-economic data for a future year is derived from the region's growth forecast policy, a product of SCAG's ongoing Development Guide Program. . . The current growth forecast policy, called the "SCAG-82 Growth Forecast Policy" was adopted by the SCAG Executive Committee in October, 1982. It is the culmination of extensive analysis and discussion by SCAG committees, local government, and other affected/interested parties and agencies [SCAG, 1984a, p. 174].

Each of these inputs results from separate forecasting efforts. The reliability of transportation forecasts — conducted with their own host of assumptions — is therefore contingent on the reliability of the plethora of assumptions employed by a separate group of planners working with their own sets of unknowns. It is common for those conducting transportation forecasts to be unaware of the details of how each of the inputs to the models they are using were arrived at. This became clear during interviewing at SCAG, for example.

Factors such as population and the distribution of employment can be highly significant in influencing the number of riders a potential new means of transportation might attract. The number it might draw, given "today's" population and employment base might be extremely modest, suggesting only a modest diversion from pre-existing alternative transportation modes. The effects of population or employment growth forecasts, "both notoriously prone to error" (Hall, 1982), can multiply the estimated potential ridership manyfold beyond the effect of introducing that new mode alone. That growth — and the associated growth in ridership — is, however, far from assured.

As Hamer (1976) comments:

The projection of future urban growth has proved to be beyond the capacity of the techniques now available to urban planners. Whether the techniques used are judgmental, as in San Francisco, Los Angeles, and St. Louis, or "statistical," as in Atlanta and Washington, the results depend heavily on the whims of local planning agencies. The lack of substance of such projections is readily apparent when naive technicians create confident estimates of what will be built around each rail rapid transit station, or of how many persons will travel between any two points at any given hour of the average weekday in the year 2000. Even [in] those areas, like Los Angeles, which have experienced repeated revisions of future forecasts, the transit planners seem incapable of comprehending the simple fact that such projections are

meaningless [p. 248].

At SCAG, the "adopted growth forecast policy reflects regional and local growth policies, and is intended to represent the best judgment of association membership in terms of a likely and viable direction for the region" (SCAG, 1984a, p. 174). This "best judgment" represents a consensual political agreement on how SCAG representatives would like growth to be shaped in the region. Thus, the politically-determined assumptions of one forecast form the building blocks for the construction of another forecast. The computerization of value-judgments lends them the appearance of truth, helping to obscure the political process by which they were determined.

In addition to employment projected by the adopted SCAG-82 forecasts, "the LACTC consultants identified some planned commercial developments within the Los Angeles - Long Beach corridor that would attract trip-makers who might use the light rail line" (SCAG, 1984b, p. 2-15). The employment generated by these developments was added to that assumed under SCAG-82, and the extra transportation movements implied by this additional employment were then calculated. This is problematical, since SCAG-82 forecasts already include a certain level of projected employment increase for the areas where these developments are to be located. This implies a degree of double counting. There is also a biasing in favor of light rail implied by specifically including those new developments which might attract light rail ridership, as against those which might be better served by other means of transportation.

Finally, there are problems in the way the number of trips to be generated by these developments is calculated. When only the acreage of a development is known, SCAG says (p. 2-15), the number of trips is generated by a regression equation. For a planned 14-acre shopping center at the intersection of Imperial High-

way and I-105, for example, the regression equation was used to estimate 9,670 daily trips by all modes. Of these, 500 were said to be work trips (implying an employment base of 250 if each person makes one trip to work and one going home each day), even though such shopping centers' "employment is usually under 200" (p. 2-15). A member of SCAG staff was unable to explain the discrepancy. "I don't know. I don't know if it's a typo," he said.

A comment on a draft of this chapter by SCAG asserted that the 500 work trip estimate was reasonable, since people made other work-related trips apart from travel to and from home.

Trip Generation

"Trip generation" and "trip distribution" involve building a picture of the *total* transportation market by all modes of travel. Total travel by all modes is then divided among competing transportation modes in a "modal split" model. The problem 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 gets a proportionate slice, the more its predicted patronage will be. Errors both in estimating the total market and in dividing it up will affect forecast validity.

Trip generation, as defined by Stopher and Meyburg, consists of "the estimation of the total number of trips entering or leaving a parcel of land as a function of the socioeconomic, locational, and land-use characteristics of the parcel." The trip generation model SCAG uses "estimates the number of person trips generated by the residents of each analysis zone on an average weekday. It does not consider their other characteristics such as direction, length, or duration" (SCAG, 1984a, p. 174).

Predictions of distributions of population, employment and other activities and land use for the forecast year are taken as inputs. Base-year relationships between these distributions and the trip-making between the zones which represent the different parts of the city are extrapolated to produce estimates of how many trips will be made to and from each of the zones in the year for which the forecast is to be prepared based on the population, employment and so on estimated to then prevail:

The underlying rationale for trip generation can be seen as comprising a number of factors. First, travel is an aspect of derived demand. The frequency and distribution of travel is a function of the distribution of activity and land use in an urban area. Second, it is assumed that the intensity of travel to or from a given zone is a function of the activities and land uses that are contained within that zone. It is then assumed that the intensity of travel can be estimated independent of the transportation service provided and independent of the set of opportunities available. This particular assumption is one that perhaps is most suspect of all those used in the trip-generation modeling process. Next, it is assumed that relationships between trip rates and zone characteristics may be assumed to remain stable over time. Finally, it is assumed that trip making and activity may be related by the specification of trip purpose. There is a heavy focus on trips to and from home, at least in part because these trips form a major part of total trip making in the urban area [Stopher & Meyburg, p. 109].

While factors such as car ownership, family size, income, number of persons 16 years and older, number of persons 16 years old and over who drive and distance from the CBD can be used in trip generation, at SCAG "a basic assumption of the model is that the best indicator of trip generation is the number of vehicles owned" (SCAG 1984b, p. 2-6). The number of households owning zero, one or two or more vehicles is estimated, based on the ratio of single housing units to total units, the ratio of population to total units

and median household income. "Trip generation rates. . . developed from survey data by cross-classification techniques are then used to estimate the number of trips generated by the volume of each type of housing." While *all* trips are estimated on this basis, those trips which do not start or finish at home are reallocated on a basis of population and employment.

A key problem with the method of trip generation is that the 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. While this may seem reasonable in auto-pian Los Angeles, there are unsettling normative implications to this procedure. A relationship is presupposed between the ability to purchase cars and the propensity to travel. Areas with a high proportion of households with no cars or one car are said to produce fewer trips proportionately than areas with a high proportion of households with two or more cars, and these volumes are ultimately used as a source of estimating the *demand* for transit.

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 alternatives. 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, if more opportunities to travel are provided than are currently available, residents of poorer districts might travel more. 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 areas than in parts of town which are, in fact, more heavily "transit dependent." The "latent" demand of the poorer areas is, of course, much harder to gauge, for it is itself related to social policies and the values upon which those depend, variables not subject to quantification.

Trip Distribution

Trip generation tells us how many trips will be made, not *where* they will be made. A trip distribution model provides this information. This is most frequently accomplished by use of a gravity model:

This model is based on the concept of Isaac Newton's Universal Law of Gravitation, which states that the attractive forces between two bodies is proportional to the product of their masses and inversely proportional to the square of the distance between them [SCAG, 1984b, p. 180].

Newton's Law of Gravitation has the following form:

$$f_{12} = \frac{GM_1M_2}{d_{12}^2}$$

where f_{12} = Force of attraction between bodies 1 and 2

M_1 = Mass of body 1

M_2 = Mass of body 2

d_{12} = Distance between the bodies

and G = The gravitational constant

In the transportation application, the body masses are replaced by the total volume of trips sent out from or attracted to each zone on the network. This volume, calculated in the previous "trip generation" model, is a function of factors such as population and employment which, therefore, indirectly constitute the "masses" under study. The trip distribution model distributes this total volume between the different origins and destinations. As in the Newtonian model, distance (generally specified primarily in

terms of travel time) acts as a form of "friction," which constrains attraction. (See discussion in Stopher & Meyburg, p. 140-158.)

We end up with:

$$T_{ij} = \frac{P_i A_j (F_{ij})}{\sum_j A_j (F_{ij})}$$

where T_{ij} = Number of trips generated by zone i and attracted to zone j

P_i = Total number of trips produced (generated) by zone i

A_j = Total number of trips attracted to zone j

and F_{ij} = A measure of the spatial separation of zones i and j , generally an inverse function of travel time.

The gravity model provides a metaphorical representation of a complex problem of social science in vivid, easily understandable terms. Such simplification and clarification is a hallmark of metaphor (see Lakoff & Johnson, 1980). This borrowing from physics also gives the impression of scientific rigor, for which planners yearn. Yet the mapping from physical bodies interacting in space to human bodies commuting across cities lacks theoretical grounding. People do not interact across space in the same way as objects, no matter how tantalizing it may be to pretend that they do. A large employment site, for example, may not generate a large number of trips to and from a residential area if the jobs available are not suitable for the residential population. Non-traditional cities with their dispersed and specialized activities provide a particular obstacle to modeling by this method.

In the case of the SCAG application, a number of problems emerge. Most significant, is the failure of the gravity model approach to match residential population

demographically with the types of employment appropriate to the educational and skill characteristics of residents of the neighborhood in question. Thus, for example, the presence of financial sector jobs in one area, and of an unskilled workforce in another area, will lead to the distribution of trips between those areas even though such trips would not occur in practice. This has a particular impact for the Watts and Compton communities with their largely unskilled workforces, for whom work opportunities are mostly scattered in an arc to the east and west, rather than to the north and south (the dispersion of work trips is indicated, for example, by census data prepared for the *Los Angeles Times*, October 20, 1985: see Diag. 4-1.) The model therefore leads to the prediction of movements which would not in practice materialize. In SCAG's review of a draft of this chapter, this serious problem was confirmed: "In the discussion of the SCAG application of gravity model to trip distribution, he has a reasonable argument for work trip but not for other trip types."

According to one SCAG staff member interview, furthermore:

The computer absolutely does not know that jobs in Watts do not pay enough to attract people that work in Long Beach — they just know that there is a job there. They know that the people in Long Beach work because they have a certain household income. And there is not a model in the country that has income at the employment area in order to have a rational trip distribution. So the model is just a simulation. It works fine for overall travel on a regional basis. On a strict corridor — without income at the destination or without salaries at the destination — the model cannot connect people coming from high-income areas to places where there are jobs that would pay enough. People get off at an average of seven miles, which would get them from Long Beach up to Watts or from downtown to Watts. It doesn't take into account the socio-economic factors that might prevent the lily-white people from Long Beach from riding up to downtown.

Said Paul Taylor, then deputy Executive Director of the LACTC:

What you're trying to do is get an aggregate picture of behavior. And you can't get down to such an atomized approach as to say, will this job here be held by a white person from here, a green person from there or a blue person from there?

The claim that the model might perform better on a regional level does not lessen the problems it has in gauging travel which might be drawn to the Long Beach light rail service in particular; and, it is the potential demand for this service which is the subject of the study. The gravity model, in short, cannot represent travel over a complex, dispersed and multi-focused urban landscape. The patterns of travel it produces for the Long Beach light rail show that its formulation bears no relation to actual travel patterns in the corridor.

A last point worth making is that travel times used for trip distribution are based on the highway network alone. The transit network — and specifically the new light rail service — has no role in influencing how the model distributes trips.

Modal Split

Modal split consists of slicing the "cake" sized up by the previous trip generation and trip distribution models.

The basic rationale of modal split is the assumption that travelers, either individually or in groups, make rational choices between the available modes, based in part upon characteristics of those modes, and in part upon characteristics of the travelers. It is assumed that this evaluation is performed within the constraints imposed by the purpose and destination of their trip, and their attitudes towards alternative transportation system characteristics [Stopher & Meyburg, p. 175].

There are a number of ways modal split may be accomplished, but all deal with predicting how consumers will behave when faced with alternative choices with different characteristics. The most

often considered characteristics are the time taken to complete a trip, the cost of a trip and the frequency of departures by a particular mode of transportation. These and other factors can be seen as barriers to an ideal trip which would take no time at all and be free of charge. The negative effects of time, cost and the need to wait for a departure can be seen as a form of "disutility," and the objective of the "rational" consumer to minimize the disutility incurred. Regression analysis can be used to construct a demand function based on utility analysis.

The LARTS (Los Angeles Regional Transportation Study) model SCAG employs uses a binary mode split model. The model does not allocate travel to each individual mode of transportation, but splits it only between automobile and transit use. While more advanced models do include separate algorithms for rail and bus modes, the binary model lumps them together as if they had the same characteristics. Actual allocation to a particular type of transit only occurs in the network assignment stage of modeling, which comes next.

The LARTS mode choice model is "a demand function based on time expressed in terms of marginal utility. Marginal utility is defined as the difference in disutility between transit and other modes" (SCAG, 1984a, p. 181).

The function is specified as:

$$U = (Tr - Ar) + 2.5 (Tx - Ax) + (Tc - Ao)/(0.25I)$$

- where U = marginal utility
- Tr = transit running time
- Ar = auto running time
- Tx = transit excess (access and waiting) time
- Ax = auto excess (access and terminal) time
- Tc = transit fare cost
- Ao = auto operating cost

and I = zonal median household income
(SCAG, 1984a, p. 181)

Time spent reaching transit and waiting for it is weighted by a factor of 2.5 to allow for the fact that travelers find this time less pleasant (and therefore of greater disutility) than time spent on the vehicle itself. This factor is usually, however, only associated with transit — not automobile — usage, since no transfers between vehicles are required and since the vehicle takes the traveler directly from origin to destination. Some studies may apply this factor to time for auto parking and walking in central business districts.

SCAG does not specify how or why this factor was also applied to parts of auto trips, and staff were unable to supply this information. When asked how "auto excess time" was arrived at, one staff member replied "I have no idea. It's something that we inherited when we brought the model over from Caltrans. . . I'm not quite sure what the access time is. . . there's a table in the computer, somewhere."

As will be discussed in validation, below, the mode split formulation produces a consistent overestimation of transit usage. A last point to be noted here is the lack of current empirical data employed in the estimation: mode choice is a function of a number of behavioral characteristics observed on an aggregate basis; such information as *actual* current transit usage is not used as part of the model, although it is employed during validation for comparison with predicted data.

Network Assignment

Some of the greatest problems in the modeling occur during the final stage in the travel forecasting process, which involves the assignment of trips to alternative routes in the highway and transit networks. It is important to note that only at this stage is a choice made between rail

and bus transit modes.

Before investigating how assignment to the network occurs, we need to understand the nature of the network, itself. As Stopher and Meyburg point out, both because surveying work results in a:

sample survey and because the amount of data for an urban area is so vast, conventional transportation studies utilize some sort of spatial aggregation over the entire region for which the study is being made [p. 61].

Trips are said to originate and terminate at the "centroids" of a honeycomb of "analysis zones" into which the region is divided, and for each z_i which data is aggregated.

The actual zone structure that is arrived at exerts considerable influence on the accuracy and validity of later analyses. This is particularly so when those analyses employ zonal mean values as representative of the entire zonal population, and utilize a point centroid of a zone as an areal representation of that zone [Stopher and Meyburg, p. 61].

As part of the aggregation process, a coded network is constructed:

This is effectively an abstraction of the existing network of highways or transit routes into a graph of links and nodes. It is *not* usual that the coded network specifies every single link in the real-world system. It is usual, however, that the network will include all major links that are used by through traffic and all rail lines used, as well as bus routes [p. 62].

For SCAG's Long Beach study, the highway system is "represented by a set of links that describe the road segments in the network," including supply attributes for "total travel time and distance" and "total travel cost, including out-of-pocket vehicle operating cost and parking costs at the terminal end" (SCAG, 1984b, p. 2-5).

The transit system is: represented by a set of transit line descriptions, i.e., the list of links (route segments) that constitute the route, the headway of each route or line, and a set of all the links in the network. Headways and average bus speeds are generally ob-

link is assigned a length in tenths of miles and an average speed crossing the link, or a computed running time in tenths of minutes. In addition to transit links, there are links that provide walk or auto access, walk egress, and transfers between adjacent lines if there is no common station [p. 2-5].

The transit network provides these attributes of transit supply: "Total travel time, broken down into waiting time for first boarding, waiting time for subsequent transfers, and in-vehicle time," and "total travel cost, including transit fare, transit fees, and parking charges" (p. 2-5 - 2-6).

Parts of the network providing access to major links would not normally be coded for a regional study. Instead, abstract "load links" are created to represent that part of the trip taken getting to and from major transportation facilities. These links represent an average of access facilities to each zone centroid (the point which represents the zone as a whole).

The use of zones and representation of whole zones by one point introduces an element of coarseness that can make the model poor at making comparisons between alternative transit modes operating within the same zones. The use of abstract links for representing access to major transportation facilities requires the making of assumptions about how access is to be "averaged." There is a large measure of subjectivity in making such assumptions, and they may not be representative of large parts of the zone which do not conform to the "average." Where rail stations have parking lots, "auto connector links" may be added to represent the possibility of driving to a station. In other cases "walk links" may be put in place. In all cases judgment is required and there is no one "correct" answer.

There are a number of serious problems with this specification. Firstly, while the "centroid" represents the origin/destination for all points in a zone, it is not necessarily true that all points in a zone

are equally accessible to a particular transportation system: some parts of a zone may be nearer a light rail station; other points more convenient to a bus stop. Moreover, because the model deals only with "centroid" trips, the effect of having more than one transit stop in a particular zone cannot be represented: the stop most convenient to the centroid for a given trip will be selected by the model, others ignored.

Clearly, however, the more stops on a system, the more accessible it will be, compared to a system with fewer stops. Recognizing that having more than one station in a zone "not only influences the ridership forecast, but also distorts the station volumes" (SCAG, 1984b, p. 2-14), certain zones containing more than one light rail station were split by the SCAG modelers. The same was not, however, done with respect to bus services, and the advantageous effect of having bus lines crossing a zone with stops every few blocks — as compared to a single light rail station — is not represented in modeling. "Bus stops are every 2 or 3 blocks. And you don't have that in this model," said one member of SCAG staff.

While the details of walk-time assumption are not specified in SCAG's report, a SCAG staff member provided the information that within the Long Beach corridor this was mostly in the range of 2 - 5 minutes. "This is an average walk time within the zone. . . If the lines are 1/4 mile apart, then the average walk distance will be 1/8 mile. . . We're saying that all the trips around here have the same access time." For the purpose of defining "lines," bus and rail lines are put together. Thus the fact that the single light rail line will on average be a longer walk from residences than the choice of multiple parallel bus lines is not allowed for.

The basis on which a path for a given trip is selected is a:

minimum impedance criterion based on the assumption that the trip-maker always takes the shortest route available.

Impedance is simply the total time in minutes that it takes to traverse a given path from the origin zone to the destination zone; it includes the times transit passengers spent waiting, walking, and riding the various modes [SCAG, 1984b, p. 2-11].

A key problem is a failure to weight access and waiting time more heavily than on-vehicle time, as is done in the mode-split part of the model. Thus, while the inconvenience of transferring may be represented in the choice between transit and automobile, *it is not specified in the choice between transit modes*. Each transit transfer (subsequent to initial boarding) is said to take one-half the headway (the length of time between departures) of the line the passenger is transferring to, and *up to four transfers are allowed*.

The model is sensitive to the nearest tenth of a minute. It will therefore allocate *all* the traffic for a given trip to a route involving four transfers, but involving as little as *one tenth of a minute less travel time* than a route with no transfers or one, two or three transfers. Not only is this unrealistic: it biases forecasting in favor of rail. It does this because, with only one north-south rail line — as compared to several parallel bus lines — rail trips generally require more transfers than do bus trips, and the inconvenience of these transfers is not represented.

Commented Paul Taylor then of LACTC, on hearing that up to four transfers were allowed: "That's ridiculous." [But that was included in the model, he was told]. "I know. But it all comes out in the wash, I submit."

While the modal split part of the modeling — which predicts what proportion of travelers will opt for transit (including both bus and rail modes) and which proportion for automobile — imposes a penalty to reflect the fact that people find time spent transferring from vehicle to vehicle more inconvenient than time spent on the vehicle itself, no such penalty is applied in modeling the choice between rail

and bus modes, which occurs during the network assignment stage of modeling. With a light rail departure every six minutes, only three minutes is allowed by the model for waiting for a train. For very small assumed time savings over an alternative direct bus link, passengers are said to instead use buses to get to and from light rail stations, and then transfer to light rail service. According to a SCAG staff member “most of the trips that are using the light rail line are coming off buses.” Especially given the slow speed of light rail service, it is unlikely that such transfers would actually take place except where the direct bus service is terminated. Plans for such termination apply only to express service, not the local bus services with which the light rail would compete, although some local service quality reductions are planned.

A member of SCAG staff was asked if the failure to reflect the fact that people prefer not to have to transfer between vehicles properly in modeling was adding a lot of people to the light rail who probably would not use it. He replied:

And the Metro Rail [Red Line], yeah, sure. That's part of the problem, I think. . . People don't really behave that way. They don't select their paths that way. But the model doesn't know that.

The problems with this modeling assumption were especially brought home with the forecasting results for the northern part of the light rail line, where bus lines operating adjacent to the light rail line run at high frequencies.

In initial runs, a SCAG staff member said, the passenger loadings on the light rail links in downtown Los Angeles were zero:

The lines would get unloaded before they got to Spring St. What happened was you come up here, and then you turn up Washington. In here, passengers were all jumping off because there was a bus line that came up one of these streets — Central Avenue — and went into downtown and it was much faster — remember, they had on the surface only 8

mph [light rail] operation. People will not change — in the peak hours these buses, they're all jammed to capacity; they're standing. . . *I had to change the speeds on those bus lines so they would not get off [the light rail] and go this way. . . It was a fictitious path. I reduced those speeds so they would stay on the LRT [my emphasis].*

But, while such special adjustments were made to eliminate these unrealistic transfers, similar adjustments were not made to eliminate unrealistic transfers from buses to light rail. The source of the unrealistic predictions of people's willingness to transfer is in the inappropriate model specification, but the “solution” was to knowingly use false data on trip times to smooth out selected errors, rather than to change the model. Commented a SCAG staff member:

We made some adjustments *in* the model, not the model itself — you cannot adjust the model because it's based on regression analysis, unless you go and collect new data and perform a new regression analysis.

One problem resulting from the “all or nothing” assignment of trips to the shortest route, is that insertion of an “auto connector” link to a planned park-and-ride lot on the light rail route has the effect of attracting an unrealistic flow of rail passengers. This happens because an auto connector link is essentially like a very fast bus connection, and makes access to the light rail seem extremely quick. The assumption made that everyone for whom the auto connector would be faster would use it presupposes that all such people would have access to or would wish to use cars, which is clearly wrong, especially in low-income areas. The failure to represent the inconvenience of transfers adds further bias here, for an unrealistic preference is shown to be given for slightly faster trips involving drives to a light rail station as compared to direct trips by bus. Commented one SCAG member of staff: “there's park-and-ride auto connector links in there which automatically — right there is an overestimate.”

This problem is, in fact, even more severe on the East - West Century Freeway light rail line, for which SCAG projected 98,000 daily riders. All Century Freeway light rail stations have park and ride lots, and so were assigned auto connectors which effectively made it appear that all transit users produced by the mode split part of the model within a five mile radius of a station would drive to the station and transfer rather than take a direct bus, according to one member of SCAG staff. In reality, many — especially those without access to cars — would continue to use existing bus services.

The model was also tried out without the assumption of auto connectors, this staff member said, resulting in substantially lower ridership for the Century Freeway light rail service. These lower projections were not included in the results SCAG provided the LACTC, and the staff member refused to provide information on exactly how much lower that projected ridership was.

A further problem concerns the setting of transit service frequencies, themselves. Setting peak-hour light rail headway at 6 minutes on the Long Beach line (as compared to the 15-minute headway operated in San Diego, for example) results in a substantial attraction of passengers as compared to competing buses on lower frequencies, since the model is so sensitive to the time taken for a trip. While it might be argued that growth in population would require a higher rail service frequency than for current markets, this argument should be equally applied to bus services, with their frequency set to reflect similarly increased demand. *Bus frequencies are, nonetheless, left at current levels, resulting in a substantial bias to light rail.*

There is a further disturbing aspect of frequency choice: setting a high frequency for light rail in modeling generates an apparently substantial light rail ridership, and so makes the case for the service look

good. When service is actually started, however, and actual ridership doesn't look so promising, frequency can be lowered and the argument made that were the model to reflect the frequency actually operated, it would predict results more realistically. Those results, of course, might not have been high enough to have justified the service in the first place. As LACTC staff member Jim Sims commented "It's a chicken and egg thing."

The running time and frequency of the original Pacific Electric service had varied with demand over the years. Scheduled running time for the "limiteds" ranged from 36 minutes in 1911 to 60 minutes in 1954, an increase caused mostly by auto traffic interference. In 1946 (one of the highest patronage years), frequency was 15 minutes (Caltrans, 1981, p. 8). If, at that time, with the automobile alternative far less available than it is now and the freeway system unbuilt, a 15-minute frequency was adequate, it seems unlikely that a 6-minute frequency could be justified by a new light rail line with trip times worse than the Red Car maintained while at its lowest ebb and with the current competition of a mature highway system.

As a potential added problem, SCAG's methodology is *incapable* of estimating the effects of differences in fares between rail and bus modes on light rail ridership, since cost is not a factor taken into account by the model when allocating passengers to rail or bus. Early plans called for a zone fare system, similar to that used for pricing express bus services. A review (Deloitte/Kellogg, 1989) drew attention to the substantial price increase this would mean for pre-existing local bus users who might potentially use rail instead and commented that "there has apparently been no attempt to estimate the effects of higher fares on ridership." A decision was made to initially price light rail at local bus rates (with a one-way fare of \$1.10 for any distance), removing most of the effects of this oversight. It is unclear,

of course, what pricing policy will be in years to come, but the inability of the SCAG model to price rail and bus services differently precludes study of an important factor affecting demand.

Bus Service Assumptions

RICHMOND: *Line 456 is actually a bit faster into downtown than the trolley. So we're saying that if they had left line 456 in place, then everyone who had a choice would carry on getting on the express line 456, rather than getting on a trolley.*

SCAG staff member: *MmHm. . .*

There are a number of issues concerning the specification of certain assumptions supplied to SCAG by LACTC. These assumptions included a "complementary bus network" designed to feed light rail stations. They also involved the elimination of certain competing express bus service from the transit network to be modeled, notably Long Beach - downtown Los Angeles freeway express 456. The deleted bus service would, in fact, have been faster than light rail for trips from one end of the line to the other since, while the light rail service will make all stops, the bus travels directly on the freeway.

Since assignment to transit links is on the basis of minimum time paths, leaving the bus service in would have resulted in *all* trips originating in Long Beach and destined to downtown Los Angeles being assigned to the bus by the ridership model, and none to the light rail. "And, of course, the reason they took it out is to force those riders to use the LRT," said one member of SCAG staff.

All-Bus Alternative

No, [the way] it [was designed] doesn't make any sense. . . it was more political.

— SCAG staff member
(on All-Bus Alternative)

In addition to forecasting ridership for the light rail service, an "All-Bus Alternative" to light rail was selected for modeling by LACTC on the basis of work by Parsons Brinckerhoff/Kaiser Engineers. While the chosen light rail alternative was forecast to have 54,702 daily boardings, the All-Bus Alternative was forecast to achieve only 21,983. For this latter forecast, pre-existing express bus lines were kept in the system and a new route paralleling the light rail line was added. To reduce competition with this new bus line, the headways of two pre-existing local bus services were increased.

The "alternative" operates at low speeds in local traffic, taking a total of 86 minutes to complete its end-to-end journey. Of interest is that while a six-minute headway — comparable to that of the planned light rail service — was applied to this extremely slow and uncompetitive service, a comparable frequency was not provided for existing express lines, nor were new express services considered, traveling from Watts to downtown LA, for example: to have done so would have been to make such lines more competitive than the light rail.

In the All-Bus Alternative, there was an overall *reduction* in service, with respect to the full Regional Transportation Plan system, because headways on competing lines in the corridor were increased. In addition, obvious improvements which might be made under an alternative strategy of improving bus service — such as implementing express service from mid-corridor points to downtown Los Angeles — were not incorporated. Nor were frequency increases to local lines applied — an obvious alternative use of light rail funds. The "alternative" was, therefore, little more than a "straw man," and not representative of the types of changes which could lead to real improvements in bus service. Even so, while the 86-minute route is itself seen to carry less than half the passengers of the light rail, total corri-

corridor transit home-to-work trips with the "alternative" are forecast at 78,021, only 2.6% less than the 80,163 trips forecast for the light rail alternative which was eventually selected.

The poor design of the "All-Bus Alternative" is particularly brought home when it is considered that forecast corridor home-to-work trips *without* either light rail or the supplementary alternative bus route were forecast at 78,778 trips, slightly *more* than with the "All-Bus Alternative" in place. The alternative is therefore forecast to do *less well* than the service already planned under the Regional Transportation Plan (RTP).

A comparison between the chosen light rail service and the pre-existing RTP bus network, however, yields some particularly significant observations: total corridor transit daily home - work trips *with* light rail service in place come to 80,163 (SCAG, 1984b, p. 6-2), or only 1.7% more than under the pre-existing RTP bus network. Transit usage for the year 2000, either with or without LRT, is forecast to be substantially greater than 1980 base year corridor home-work daily transit trips of 53,200, *an indication that the increase in ridership is attributable to forecast population increases, rather than to improvements in corridor transit services.* As SCAG (see SCAG, 1984b) reports, "the increase in travel demand from 1980 to 2000 is almost entirely due to population growth, because trip generation and distribution are largely independent of the transportation system" (p. 6-1).

The results from modeling of the "All Bus Alternative," in conclusion, do not show that light rail can perform better than alternative improvements in bus service, but only that the bus system "improvements" considered were poorly designed. Comparison of light rail ridership performance with the already-planned bus system shows, furthermore, that putting in the light rail system does not result in significantly higher corridor transit ridership.

Effects on Other Rail Service

A study was also conducted of the likely impacts of alternatives on *other* major transit facilities. The results are bizarre, and no explanation for them is provided. While the "Year 2000 without [LRT] project" alternative produces 381,889 total trips on the Wilshire subway, which is to connect with the Long Beach line at the 7th and Flower Streets station in downtown Los Angeles, the "All-Bus Alternative" produces 402,790 passengers for the subway, 5.5% more.

While one light rail alternative produced a 4 percent increase in Wilshire subway patronage, compared to having no light rail, the chosen alternative was shown to result in 0.2 percent *less* passengers on the Wilshire subway than without any light rail service (SCAG, 1984b, p. 7.3-1 — 7.3-2).

Producing Final Results

The forecast results produced by the model reflect home-to-work trips only. To generate full day ridership, these results were divided by .54. According to a member of SCAG staff:

SCAG did a survey of light rail properties around the country, and the average [percentage of trips made up by home to work trips] appeared to be 54%. . . . And the .54 is used throughout this.

The particular relationships of peak to off peak ridership, or its responsiveness to lower planned off-peak operating frequencies of the Long Beach rail line, compared to those of peak-hour service, were not specifically considered.

Validation or Invalidation?

As a test of model performance, a "validation" was performed.

The purpose of model validation is to evaluate the ability of the model to predict with an acceptable degree of accuracy the travel characteristics in a given region at some future time. Validation is basically carried out by comparing the predictions (model output) made by the

model to observed data collected during the same target year. Furthermore, if there are areas of weakness in the predictions made by the model, validation identifies these areas for further analysis and evaluation. Usually, validation is an iterative process in that needed network modifications become apparent from initial model evaluations, and these modifications lead to better correlations between predicted and observed results [SCAG, 1984b, p. 2-22].

Accordingly:

with 1980 socio-economic data from the census together with the 1980 highway network and the 1980 Sector Improvement Plan transit network, the transportation model was run through its four stages to produce a forecast of 1980 travel.

The modal split/trip distribution models predicted that 55,590 home to work trips were made by transit in the Long Beach corridor in 1980, *more than double* the 27,579 trips reported in the 1980 census. In trip assignment, *"the model predicted 80 percent more boardings (174,023 vs. 97,248) on SCRTD bus lines within the Los Angeles - Long Beach corridor than were observed."* (p. 2-24).

The over-prediction was largely attributed to the fact that the planned headways upon which the model was based were not in effect in 1980, providing a cogent example of the tendency of actual headways to deviate from those assumed in modeling. The headways of five lines were subsequently adjusted to those actually in effect in 1983. The effect of headway changes was dramatic: a change from initial model headway of 5.0 minutes (a bus departure every five minutes, in other words) for line 53, for example, to actual 1983 headway of 7.9 minutes, reduced predicted ridership from 30,652 to 22,683 passengers.

Total transit ridership with the new headways was forecast at 110,824, still 14 percent higher than actually observed. This remaining bias towards transit is therefore still reflected in final forecasts produced for buses and light rail.

While the 14% overall over-estimate might not appear to be drastic, errors in forecasting ridership on particular transit lines is substantially more significant (see Table 4-1). For some lines, ridership was underpredicted — by as much as 92%, as compared to 1980 actual ridership — and for others it was over-predicted by as much as 138%. For lines for which a direct comparison was possible with 1980 actual ridership data, the average error in prediction was 59%.

While SCAG did not report the results of any statistical tests to compare the goodness of fit of "expected" (or estimated) data with "observed" (actual) data, a Chi-Squared test was conducted by this author for these twelve lines, with the null hypothesis, H_0 , that the actual observed distribution of ridership on these lines is given by the model distribution. Since Chi-Squared tests require the sums of the expected and observed data sets to be equal, expected data (which indicated a total over-estimation, as compared to observed data) was factored down so that its sum equalled the sum of observed data. The test, then, is valid, for testing whether the model is distributing patronage between the lines in the same proportions as are implied by observed data, not for examining the degree of over-prediction.

The function of Chi-Squared used in this instance, then, was:

$$\text{Chi-Squared} = \sum \frac{(O - fE)^2}{fE}$$

where O = Observed data
 E = Expected data
 and f = A factor to equate $\sum O$ and $\sum E$, in this case .91413.

The data used are shown in Table 4-1.

The value of Chi-Squared comes out at 57572 which, with eleven degrees of freedom, required rejection of the null hypothesis at the 99% confidence level, with the implication that the modeled distribu-

Observed	Expected (before factoring)
6526	5349
16062	4950
14967	22683
6150	6855
22134	30878
3402	939
6393	9395
3516	6683
1014	81
1507	1355
1506	459
1066	2538
TOTAL	84243 92156

Table 4-1
Data for Chi-Squared test

tion of passengers across the twelve transit lines bears no relationship to the actual observed distribution.

There is a small problem in the application of the Chi-Squared test that the data are not entirely independent — one traveler may use more than one transit line. The value of Chi-Squared is so large, however, that its use for inference in this instance is valid.

Commenting on the failure of the model to predict ridership on individual lines, one SCAG staff member said, “you have to look at it in the aggregate, not the disaggregate. . . You find that you cannot compare the boardings line by line.” If these errors in predicting ridership line by line occur in validation, the same degree of error is to be expected in actual forecasts, including for the light rail service, which is represented as just another transit path, no different from a bus route path. This leads to the most damaging defect of the forecast: *the forecast was conducted precisely to produce a disaggregate result, for the light rail service ridership in particular. But, as we see, the model cannot satisfactorily separate out and predict the flows on particular transit lines, and*

the expected error rate for light rail ridership forecasting is therefore so great as to render the forecast meaningless.

Presentation of Results

In any exercise where error exists, it makes sense to present ranges within which it may be reasonably expected that results may lie, rather than giving single numbers, subject to substantial error. SCAG presents only single numbers, however, for each of the alternatives considered.

“Going through this, we’ve seen so many places at which error can creep in. How can we have confidence in that 54,000. Wouldn’t it be better to have a range?” a SCAG staff member was asked during an interview. This was the reply:

Well, I have to give the numbers that come out of the model, because we’re comparing alternatives, and some of the numbers are so close together that if I gave you a range it would become meaningless. In fact, they looked at it and they said, [then LACTC Long Beach project manager] Dan Caufield said, this means to me that they’re the same. And I said yuh, for all practical purposes, but I’m just giving you specific numbers that come out of the model for identification purposes.

But, what I’m saying is, if it’s an overestimate, if the patronage estimate is too high or too low, that’s something for the decision makers — they have to evaluate the model.

It could be argued that it is not the *ranges* which would be meaningless, however, but the actual results produced, since by the SCAG member’s own admission there was no practical difference between the performance of the alternatives.

Report Production

The SCAG report — for which LACTC paid \$200,000 — is difficult to decipher because it is, in fact, a compilation of a number of smaller reports and memoranda stapled together, not a final work product. Many tables are not typed

out, but reproduced in indecipherable handwriting. Several sections lack summaries or conclusions, making them hard to understand. There is no overall conclusion to the report.

According to one member of SCAG staff:

My boss told me to write this in three hours, and we were running out of money. I told him I couldn't do a half-assed job. So I spent a lot of time putting this together. And you'll notice it's pretty rough. But it's there.

The SCAG report was not widely distributed; its results were, instead, put into the Environmental Impact Report (LACTC, 1984). But "if you read the EIR, there's nothing in there about what the modeling — they just took the numbers. So we had to put something together" a staff member said.

Earlier Studies

SCAG's forecasts were not the first to be produced, and it is instructive to compare the methods as well as the results of earlier work with SCAG's. In October, 1981, Caltrans published the results of a "feasibility study" into light rail transit from Long Beach to Los Angeles. It was based on the use of existing Southern Pacific right of way and city streets for the trackage, and construction cost was estimated at \$150 million.

A simple method was used to estimate patronage:

An assessment of the northbound morning peak-period (6 - 9 am) patronage on ten relevant Southern California Rapid Transit District (SCRTD) routes now operating within the Long Beach line corridor served as a basis for estimating peak-period light rail ridership demand [p. 32].

1979/80 bus occupancy data indicated a morning peak hour patronage of 5,100. With a Los Angeles DOT cordon count that indicated that about half of peak patronage is between 7:30 and 8:30 am, a morning peak light rail patronage of 2,500

was generated, with weekday patronage estimated at 15,000 and 7,500 on the weekend.

Of the 10 bus lines included in the study, those closest to the light rail line right of way:

were statistically weighted at or near 100% of the cumulative occupancy counts, whereas lines located at or near the corridor's outer limits were trimmed back in some cases by as much as 40 percent [p. 33].

The following year Parsons Brinckerhoff (1982a) built upon the Caltrans estimates. In addition to using data from existing bus operations:

Another task was a review of the current and projected conditions in the project corridor that affect transit patronage. This review covered demographic and land use characteristics within the potential service area of the proposed LRT line, the projected capacity deficiency in the road network along the corridor, existing transit operations and usage in the corridor, and connectivity of the proposed LRT line with a regional transit system. The review of the corridor-specific conditions provided the basis for a judicious adoption of experiences gained from comparable operations to the project. Existing data on demographic and corridor travel projections prepared by Los Angeles Regional Transportation Study (LARTS) and Southern California Association of Governments (SCAG) and transit data provided by Southern California Rapid Transit District (SCRTD) were utilized for this task [p. 2-3].

These sources of potential ridership were considered: prior bus users, prior car users, and new transit trips induced by the presence of the project. While data on existing bus lines was used to gauge potential diversion from buses:

potential diversion from prior car users and new transit riders were estimated based on data available from comparable transit operations as well as the projected road network capacity deficiencies in the corridor [p. 20].

Using existing corridor transit usage patterns and the typical range of peaking

and access modal characteristics of comparable transit operations, "estimated daily ridership was then factored to derive estimates of peak-hour volume at maximum load point, and mode of access." As a reasonableness check, estimates were compared with results obtained on the then recently-opened San Diego - San Ysidro light rail line.

It was assumed that only parallel bus lines within one mile of the proposed LRT alignment would be affected by the rail service. It was estimated that 17,900 passengers would be diverted from these lines. But:

because the Los Angeles - Long Beach Corridor is not projected to experience significant highway congestion in the near future the proposed LRT line would have less potential for auto trip diversion than in other corridors of the region. Therefore, it was estimated that 15% of the initial ridership for the baseline LRT project would be from prior auto users and other non-bus sources (induced trip making, pedestrians and others).

In all, 21,000 daily passengers were estimated for the new service. Saturdays were assumed to have 60% of weekday volume, Sundays 40%. While these estimates were based on the assumption of a 1982 service, escalation factors of 2% and 5% were provided to produce daily patronage of 30,600 (with 2% growth) or 53,000 (with 5% annual growth) in 2000.

Parsons Brinckerhoff (1982b) also examined the potential ridership of an automated guideway transit (AGT) and cable-supported transit (CST) system. 23,500 daily riders were estimated for an AGT line, 23,100 for a CST system. Patronage was not estimated for a bus alternative.

During August - October, 1982, Caltrans ran light rail patronage estimates, on the LARTS system to be later used by SCAG, forecasting 15,013 daily home to work trips (27,802 total daily trips) for the defined "Baseline" system, a substantially lower estimate than SCAG was to later

obtain. In SCAG's (1984b) report, a comparison is made between SCAG forecasts for the light rail alternative known as the "Broadway-Spring Couplet" for which SCAG produced a forecast of 29,401 home to work trips (54,446 total daily trips) and the Caltrans forecasts:

This difference is attributed to differences in both socio-economic data and in the networks. First, the Baseline LRT was run on SCAG-82A, whereas the Broadway-Spring Couplet LRT was run on SCAG-82 socio-economic data; when the Broadway-Spring H-W transit trip table was loaded onto the Baseline LRT network, the LRT carried 19,859 boardings, an increase of 4,846 over the 15,013, demonstrating the effect of the new growth forecast. Some of this increase is attributed to the effects of splitting zones and adding special attractors. In another test, SCAG loaded the Broadway-Spring H-W transit trip table on to the 2000-RTP (i.e., the without-LRT) system, which resulted in 27,470 boardings; this indicated that 1931 trips on the Broadway-Spring LRT resulted from network changes: higher frequency bus service to the LRT, and elimination of the Long Beach Freeway Express and Park-Ride buses, in the Complementary Bus network. The rest of the higher boardings on the Broadway-Spring LRT can be attributed to the 6.0 minute headway; the Baseline LRT had been assigned a 13.0-minute headway [p.6-2].

In other words, *5,680 out of the total 12,457 difference in Home-Work trips (10,519 of the 23,069 difference in total daily trips) is attributable to differences in frequency assumptions alone.* Meanwhile, there is no guarantee that the system will operate with the planned frequency.

The earlier studies, especially the initial Caltrans study, have one particular advantage over the SCAG approach. While Caltrans adopted an essentially back-of-the-envelope approach, it is simple and its assumptions visible. It also uses empirical data, especially on existing bus ridership.

SCAG, in contrast, but in common with other studies conducted for alterna-

tives analysis, employed a complex multi-stage model using generalized — not corridor-specific — behavioral information mostly based on a 1967 survey.

In conclusion, we can note that the different studies used different approaches and assumptions, and produced different results. Differences in the frequency assumption alone illustrate the effects that assumption choices — which are ultimately subjective — can have on the results produced, without any guarantee that they will be replicated in reality.

In Summary: Problems Compound at Every Stage of Modeling

The model — or perhaps more accurately the system of models — we have just examined does not come close to representing real-world transportation-choice behavior, and the problems inherent in its structure, compounded by the problems introduced during its implementation, take it ever further from the possibility of realistic representation. If modeling is complex, it is also error-prone, and the errors introduced at every stage of analysis contribute to a final result that is quite meaningless.

We start with the initial model calibration and its representation of conditions in 1967 (with some updating in 1976), and failure not only to reflect changes since then, but its implicit normative assumption that the patterns it does represent are necessarily desirable as planning objectives, when projected into the future.

At the next stage — land-use forecasts — we see the uncertain assumptions of a variety of other modeling efforts cascading into the transportation model in use. Model users are obliged to accept assumptions on population and development established elsewhere in what is essentially a political process. These external speculative assumptions, which have frequently changed in the past according to the political winds of the day, turn out to have a major impact on the

size of projected ridership, since increased population and development indicates a greater demand for a new rail passenger service. If the projected population and development increases fail to materialize, then neither will the ridership.

The estimation of trip generation nicely reflects the tendency to concentrate on what Godet (1979) has referred to as “better lit” aspects of the problem. Information on car ownership is readily available, and is used to generate the total number of trips expected to begin and end in each zone of the network. This implicitly (and not necessarily deliberately) biases results against poorer areas — with lower car ownership — since it presumes that these areas will have a lower demand for transit services, given their lower current consumption of transportation as indicated by car ownership.

Trip distribution provides a prime example of the dangers of relying on physical analogues, alluring in their simplicity but which — in reality — bear little relationship to the problem at hand. A Newtonian gravity model provides an attractive metaphorical understanding of how people interact across space, a conception, moreover, that is simple and concrete. It also looks “scientific” and rigorous. But people don’t behave like objects under the spell of physical forces. The failure to take demographic patterns into account — the fact that a particular employment site may be ill-matched to the skills of a given residential neighborhood — is problematic under the best of circumstances, and a fatal flaw when dealing with the complex and diverse urban morphology of Los Angeles County. Another layer of not just error but misrepresentation is piled onto that already accumulated.

At this stage, as well, there is no evidence of any sort of *deliberate* misrepresentation: just difficulties arising from taking an attractive and easy representation, whether or not it matches the situation at hand.

While modal split provides a substantial overestimate of the market for transit, the network assignment stage of the model drives the final nail into the analysis. Access to competing modes is not properly represented. The “minimum impedance criterion” (which assumes people will always take the fastest route even if it involves the need to transfer vehicles up to four times on a trip), and the failure to represent the inconvenience of getting access to a mode or transferring between modes at this stage of the model causes routes to be chosen which people would in reality reject.

The need to make a myriad further assumptions causes more problems: these must be chosen subjectively, but have a massive effect on results. How does one choose frequency when the assumption of high frequency will guarantee a high rail ridership forecast but when actual start-up demand or operating budget may subsequently warrant a lower frequency which the model would have predicted to produce fewer riders? Bus service assumptions have to be provided, which may or may not materialize. And so on.

In most cases the assumptions chosen — given a choice — were optimistic with respect to rail. In modeling an “all-bus alternative” the assumptions chosen were unfavorable to the bus. Many assumptions were dictated by the LACTC, and not selected by SCAG.

The validation part of the exercise showed up the failure of the model, but this was not properly acknowledged. In addition to overall over-prediction for transit, *the model proved incapable of distinguishing between loads on competing individual links in the network, with no statistically-significant relationship showing between the loads the model predicted and those actually observed (according to a test by this author). Since the model cannot pick out flows on particular transit lines, it cannot distinguish the demand for the light rail line from the demand for parallel bus*

lines. It is therefore useless for forecasting light rail demand. The result for light rail was nonetheless taken, and given out in absolute terms (rather than as a part of a range). Thus we have a case of the model being used to ask questions which it can't answer, of providing detail in the face of massive error.

We have seen two basic sorts of error here: “errors of convenience,” and “errors of optimism.” The Newtonian gravity model provides a convenient representation of interaction, for example, even if it in reality bears no relationship to actual flows of travel in a complex urban environment. The use of automobile ownership to gauge travel demand as a whole is also an “error of convenience.” There is surely no intention to impose a bias against people in areas of low auto ownership, but the assumption used nonetheless does so. “Errors of optimism” include a whole range of assumptions such as of transit service frequency, willingness of passengers to transfer, and development sites which will generate transit ridership. There are also “errors of pessimism” relating to the performance of a possible alternative bus service. In Kain’s (1990) study of ridership forecasting in Dallas, he referred to such errors as “deception.”

Altogether, a model quite disconnected with real world travel patterns combines with a set of over-optimistic assumptions to produce light rail ridership forecasts which are both inflated and of no statistical significance: which are meaningless, in other words.

Was the Model Used Properly?

A basic question to ask at this point is: “Was the model used properly?” The modeling work SCAG conducted could certainly have been done to higher standards. Different sets of assumptions could have been used, for example, to reflect different scenarios. A fifteen minute frequency could have been modeled along with a six minute one, a restriction could

have been placed on the number of transfers people would make, a more favorable bus alternative could have been considered. Different population growth and development assumptions could have been tried out.

The ranges produced, however, would have been so wide as to be meaningless. The pretense at precision produced by the exact presentation of singular results is, of course, also meaningless, but exudes far greater confidence.

Perhaps yet more significantly, using more reasonable assumptions could not have rescued the modeling, since it is structurally flawed. Its gravity model approach fails to properly represent demographic information crucial to shaping transportation demand. And the methodology is in any case incapable of distinguishing between the demand for close together lines, so cannot pick out the potential demand for the light rail line in particular. The problem, then, is not primarily one of the need to use the modeling system better but of whether it should have been used at all: clearly, it should not have been.

Can Modeling be Improved?

If this modeling was inadequate, could some other procedure have done the job better? The methodology used has been superseded by improved techniques in use elsewhere (particularly in Europe), and an argument could be made for their introduction. It is possible to depict the inconvenience of transferring realistically, for example. Mode-specific characteristics can be better modeled. But, even so, while a scenario with a single trunk line might be more successfully modeled, the level of error in distinguishing between loads on closely parallel competing transit lines makes the task an impossibility within any reasonable range of reliability.

Furthermore, the sheer scale of assumptions required for large-scale models, the effect of the cascading of one set of

fragile assumptions into another — with error ever mounting — makes the task hopeless. The modeler is made more helpless because of the impossibility of comprehending what the model is actually doing, lacking the mental capacity to visualize all the intricacies of the model working at once; or knowledge of the assumptions coming from so many different sources; or an appreciation of the reliability of the data of many years past upon which the model is based, but which is not subject to any ready form of verification.

GENERALIZING THE FINDINGS

TO WHAT EXTENT CAN THESE findings be extended to modeling in general? Firstly, the overprojection is quite consistent with the case-studies reviewed by Pickrell (1989) and also Hall (1982), Hamer (1976), and Richmond (1982, 1983). But, beyond questions of deliberate manipulation (an accusation leveled, especially by Kain, 1990), is the matter of whether models can in principle reliably produce the results claimed.

The UTPS procedure used in Los Angeles is based on similar principles to that used elsewhere: in other cities, distribution is also done by way of gravity model, in other cities assumptions about population growth mix in with those on transit improvement to produce a degree of likely error so high as make any possibility of making useful inferences slight. The need to *choose* assumptions makes all such modeling efforts necessarily subjective — and subject to political influence. The compounding of errors from the combination of a vast array of unknown futures builds a complex structure, which in reality is no more than a house of cards.

In fact, a far stronger case — if such modeling is to be done at all — is for a “back-of-the-envelope” type of approach, such as was taken in the early Long Beach line modeling efforts, using information

on existing transit usage and a few variants of a small number of simple assumptions to get an order of magnitude idea of the potential for ridership of a new service. Such an approach has a semblance of reality: data on today's actual travel is being used, rather than some product of a metaphor from physics, combined with speculative assumptions about future population and employment growth. The lack of complexity enables the user to *understand* what is being done. The back-of-the-envelope approach promotes an awareness of the fragility of the results — no more

fragile, in fact, than those of the super-models — but more humble and less liable to provoke transports of self-delusion.

Back-of-the-envelope approaches don't look impressive though. It feels better to have the false sense of security endowed by the use of something more complex.

While the forecasts we have seen may be useless in terms of portraying likely actual patterns, they are nonetheless powerful in a political sense. A deeper look at ethical aspects of forecasting will be provided in the next chapter.

RICHMOND: *What is the role of technical analysis?*

LACTC COMMISSIONER: *I think it's to protect our asses.*

5 Questions of Responsibility in Forecasting

AS STANISLAV ANDRESKI (1972) recounts, the great Swiss mathematician Euler got into an argument about the existence of God while staying at the court of Catherine II of Russia. He asked for a blackboard, and wrote:

$$(x + y)^2 = x^2 + 2xy + y^2$$

Therefore God exists.

“Unable to dispute the relevance of the formula which they did not understand, and unwilling to confess their ignorance, the literati accepted his argument” (p. 127).

The continued power of quantitative methods and, in particular, the alleged omniscience of the computer, continues to dazzle us today. This is especially so in the case of forecasting which, as we saw in the previous chapter, is a dark art, but which can endow biased guesstimates with seemingly “scientific” validity.

With large amounts of public money squandered on such witchcraft, there are profound ethical questions demanding attention. What is the responsibility of the client, the modeler and the politicians who are the ultimate consumers? What ends does modeling ultimately further, and to what extent is such work political? To what extent does it produce information with which to make decisions, as against legitimating decisions which have already been made?

This chapter examines these questions, drawing particularly on interviews of modelers, other agency staff, and political staff, to explore understandings of what modeling does, what it is used for, and who is responsible for what it says and what it accomplishes. The findings will be depressing. Modeling turns out to be a charade to legitimate rail projects already selected for other reasons. And if the neatly-printed output is not necessarily the work of overt dishonesty, it is a product of self-delusion, in which responsibility goes no further than the “correct” execution of black-box procedures coaxed — through the use of a plethora of over-optimistic assumptions — into producing politically-happy results.

THE RESPONSIBILITY OF THE MODELER

THE WAY MODELERS AND THEIR clients define their ethical and professional responsibilities can be extremely narrow; the result can be a loss of overall responsibility, leading to forecasting which is deficient or misleading. In the case of modeling for the Long Beach light rail, we will see the modeler’s view of ethics as limited to considerations of the execution of technical procedures, and both modeler and client passing overall responsibility from the one to the other.

Asked about the ethical considerations of doing forecasting, one SCAG modeler replied: "My ethical considerations were to leave the numbers relatively untouched," in other words to use the model as far as possible according to specification, and to report the findings. The responsibility was to use the procedure properly, not to ask whether the procedure was either asking or answering appropriate questions.

Asked about problems with the modeling system in use, one SCAG staff member said "it was the only one available." And, on the assumptions on routings of bus systems to accompany the light rail, he said "The system was defined for me. They [LACTC] told me what the Complementary Bus System would be. So I didn't invent any of this myself. They told me." And, even though parts he was "told," such as the "All-Bus Alternative" didn't "make any sense," he felt his job was to use the information specified, not to challenge it.

Peter Stopher, co-author of *Urban Transportation Modeling and Planning*, then working at Schimpeler-Corradino on projects for SCRTD, was asked if he would refuse to do work should he not be happy with the conditions specified, and replied:

If I refused to do it, basically, I'm going to end up out of business. I'm not sure whether I've really examined in depth the ethics one way or the other, but if I am asked by a client to do any particular job, whether it's patronage estimation or something else, I know that because generally the client that is directing what I do is not skilled in the same technical areas that I am, doesn't necessarily understand the ramifications of that, that the client may specify something the client thinks they want that I don't believe is what they should be getting from a technical and professional standpoint. To the extent I can, I will persuade the client to change their specifications of what they want. To the extent I cannot do that, then I will generally live with what I am directed to do, do the best job that I can as a professional.

Stopher, who was not at all involved in work on the Long Beach project, was, however, critical of the relationship between LACTC and SCAG on that project, especially of the way in which LACTC specified assumptions SCAG was to use, assumptions which affect how well light rail would be shown to perform:

In my experience, clients that I have worked for do not specify assumptions to that level of detail. That's a very unusual situation. I think it has to do somewhat with the characteristics of the two agencies in this case, particularly the fact that neither one of them is really very experienced in the business of patronage estimation. It also seems to me to be a little bit questionable in general to have a public agency, SCAG, operate like a consultant. I have some very considerable reservations myself as to whether that's a truly appropriate role. I think one of the things that is important for a private consulting firm, such as the one I operate in, is that we can often be asked to come in, should be asked to come in, as somewhat more than an objective outsider. We don't have anything in particular to gain, locally, as proponents or opponents of any given transit project.

Such problems in the relationship were reviewed with a member of SCAG staff, who replied:

I told you before, you have to learn to live with the system. You have to learn not to let the system beat you down. I wrote this report to say, hey, I did an honest job. You gave me the model, you gave me the system, I used my professional judgment to make some adjustments, so I don't get ridiculous numbers; but, here it is folks, I did an honest job, and I've got all the fucking tabs here, and tapes down at USC to back me up. I'm going to archive all this shit, that's LA - Long Beach.

This member of staff continued, describing a meeting at LACTC during which:

we admitted that the model overestimates. And some of the other problems we were concerned about were things like the year 2000 socio-economic projections; who the hell knows, you know, whether it's going to take place? They're

reasonable, we think they're reasonable based on trends. . .

Actually, the truth is, to do a thorough professional job, you look at several states of nature. You look at several probable states of nature; not just one. But, who models that? We weren't asked to do that and, besides which, we generate SCAG '82 and SCAG essentially says — I disagree with my own agency?

I'm an engineer. I'm trained as an engineer. . . And there's only one forecast that we work to. That's what we use.

Asked if he was happy with that forecast, he replied "that's not for me to say." He insisted, however that:

I did an impartial analysis. We technicians did an impartial analysis. . . Like I said before, it's up to the decision makers to evaluate the model and the modelers, like a good submarine commander. A good submarine commander evaluates his sonar man and his communications man, otherwise he doesn't really know what's going on. But they don't do that. They take the numbers and use it for their purposes. Whatever purpose they have. We modelers are objective. We have to be.

The view we see, then, is that there is a responsibility to do work in a technically correct way, not to question the inputs or assumptions behind that work. The analyst is like the bombardier over Vietnam in Joe Weizenbaum's illustration: just running a machine according to the specifications of the equipment and instructions from outside, and not responsible for the consequences of doing so as long as he's followed his "orders" — whether mathematical or oral — correctly.

LACTC member Christine Reed would agree with the staff view that since the users of advice were ultimately responsible, they could lay the ground rules to be followed by the "prostitutes" they hired:

I guess it's subject to manipulation sometimes, and the responsibility is the people who are asking for the technical advice, they're accountable in the end. And they're the ones that if they only

want one number instead of a range of numbers and their whole system doesn't work, then they're the ones with egg on their face, they're the ones with nothing but one rail line and no more Prop. A. I mean, you know it will be the Commission members and the Supervisors who will have to live with that in the future and, you know, if SCAG didn't like the kind of work they were doing, they should not have bid on it. They were doing that under contract. I mean, they have no right to complain [that they were told to work with inappropriate assumptions]: they were a prostitute just like everybody else, in a sense.

If those seeking advice specify model assumptions, however, this conflicts with the aim of contracting with outside "experts" to conduct a supposedly "impartial" analysis. This is especially problematic when the client lacks the knowledge to understand the technique for which assumptions are being supplied. It is even more troublesome when the client not only cannot understand the procedure, but is more interested in the results than in the way they are obtained. As the SCAG staff member commented: "Those people [LACTC staff] never came over and asked me any questions about this report." Asked why not, he replied:

I don't think they understood it. I don't know. Maybe they understood it and they accepted it. . . They just took the patronage numbers and went with them. That was it. They were only interested in getting those numbers in the EIR report there. . .

In any modeling endeavor, or any situation where you have an agency like the LACTC engaging either SCAG or a private consultant — anybody — generate patronage numbers, it is up to the LACTC people, including the Board, the Commission, the committee members, you know — Jacki Bacharach and the others besides the staff. They have to evaluate the model. They have to make judgments. . .

They gave us the definition — this is the line, these are the stations, and we ran the model and said this is the patronage. . .

ran the model and said this is the patronage. . .

They liked the numbers — the numbers were not too low that it invalidated their basic premise that they need to build a line in the LA - Long Beach corridor. I mean, there are political considerations.

If I came out with a number like 12,000, they would have said SCAG doesn't know what it's doing. They would have gone somewhere else. It's like if you want to get a diagnosis, you find a doctor whose going to give you the pill you want, right?

Dan Caufield, then project manager for the Long Beach light rail for LACTC, was asked about the reliability of the LARTS modeling system SCAG had used to forecast ridership. "I don't know," he replied:

The fact is that SCAG is the regional transportation agency. We want ridership, we go to SCAG. I'm not going to question the way SCAG does ridership. I don't need to know if it's reliable, or any other thing. . . We don't have time to argue. I've got the biggest light rail in the States to build. We've got to get something built. And provide the public with it, whether it's right or wrong. . .

What is significant about the number, it's only the first digit.

How could that first digit be verified, Caufield was asked? "It's confirmed by horse-sense," he replied.

Another LACTC staff member, Richard Stanger, indicated that responsibility for the results lay with SCAG:

So we used other peoples' information, which took the monkey off our back when we were questioned about it. When we were questioned about it, we could say well, if you can get them to change their numbers, then we might change our priorities.

In short, we see each side refusing to take responsibility for the technical work performed. SCAG — under contract — felt obligated to work under assumptions given to it, even if they were not felt to be reasonable. And SCAG's work was seen to be "impartial" so long as its procedures

— however flawed — were correctly executed.

LACTC, the "submarine commander" whose duty the SCAG modeler said it was to evaluate "his sonar man," meanwhile felt responsibility for the work lay with SCAG. LACTC showed little interest in the inner-workings of the model, which was certainly not understood by Commission members, most of whom had not even seen the SCAG report and most of whom would not have been able to understand it even if they had seen it: the main thing was to get a result.

UNDERSTANDINGS OF MODELING

IT IS IMPORTANT TO NOW EXPLORE how modeling is understood by its users. While a minority trusted in the results of modeling, far more recognized the political nature of the procedure and the way its output was employed. In providing a basis for political legitimation, however, there was nonetheless a quite strong element of self-delusion, a belief that science was somehow, if only in the most marginal of ways, being invoked and that this was, therefore, better than nothing.

Few of those interviewed had a purely naive belief in the powers of modeling. Princess Goldthwaite, transportation aide to Los Angeles City Council Transportation Committee Chairwoman Pat Russell, however, painted the traditional picture of technical information informing decisions: "We have various agencies that we have turned to, professionals, who give us the data that we need to come to our conclusions," she said. Asked how she knew the SCAG forecast of 54,000 daily riders for the Long Beach line was reliable, she replied:

Well, they use professional techniques, the latest technologies that are out there, not just speaking off the tops of their heads. They have used the most compre-

hensive technology to project these kind of things that we have available. Any time you're projecting, you're not going to make the mark, I mean, we're not infallible beings. Hopefully, they're not too far off the mark.

[But you thought it was a fair and valid way they went about doing it?]

Yes.

[Suppose forecasts suggested few people would use the Long Beach trolley. Would you still support it?]

I don't think so, but I think we have gone beyond that point now.

Debbie George of Supervisor Deane Dana's office believed in the possibility of framing the problem in terms amenable to modeling, and allowed for the possibility that forecasts "could be perfectly accurate." Jacki Bacharach, then Chair of LACTC, also talked of the possibility of "accuracy." "I guess I believe in the science of modeling, but I think you have to use it in sort of a common-sense fashion," she said.

Long Beach Councilwoman Eunice Sato, an opponent of the light rail project accepted the possibility of "accurate" modeling, too:

I think they should have done a better analysis. . . I'm not a technician in that regard, but I know there must be someone who knows how to make projections. Not me, not me, but I think there's somebody who can do it. Not somebody in the company who wants to put the system in.

While there was some talk of the "latest technologies," the "science of modeling," and "accuracy," others supported modeling less as an absolute arbiter, than as a "safety net" against making bad decisions on other grounds. As LACTC Commissioner Marcia Mednick said: "I think that if the scenario was negative, the line would not get as far as it does. And, to Commissioner Christine Reed, the value of technical analysis was that:

You've narrowed the realm of possibility with the technical documents. They'd be all over the map otherwise. . . The technical work narrows the realm of possibil-

ity and forces the politicians to think a little bit about what they're doing and makes them choose between reasonable alternatives, and maybe they don't choose the most A1 4-star choice, maybe they choose the 2-star choice, but they don't choose the goose egg.

Technical work "establishes some parameters and some limits," said Jim Sims of LACTC staff:

It puts some limits on it. In other words, we couldn't have gone with a rail system which was a total dud. If the model showed it was a total dud, it showed that it caused extensive environmental damage, couldn't have gone with it, established some limits.

What you had in essence was you had a range of opportunities there which the modeling and technical process shows ok these are — the output from the technical process shows that these are an acceptable package of alternatives. The political process then decides which one of those to take, even though, in the scoring system, one of those may score higher than the one selected. But in the political scoring system, something else scored higher. But I think the technical process is essential in order to weed out the things that really don't work. . . We as technicians and bureaucrats, our job is to establish sort of some limits and some parameters.

Christine Reed put it this way, when asked if people weren't interested in finding out what the benefits were:

Well, yuh, they were sort of. But I think that basically they had, unless there was overwhelming evidence to the contrary, a horrendous environmental decision, or horrendously negative statistics, but given some ooshee jello bowl realm in the middle of so-so statistics, then basically nobody gives a shit. So that the work of the statisticians and the analysts is important to the degree that it keeps you out of horrible trouble on the negative side. That's what it does. And me as a politician. It keeps us out of horrible trouble.

So we do all this work and we get all this analysis, and they run all these numbers and they do all this environmental stuff and then you have all that stuff and you look at it all and you see a realm of possibility that's quite large and maybe out on the far edge, some realm you know realm of the negative that you

don't want to get into. To me that's the value that all this has, and I mean I am saying this in a general sense, it has to do with other decision making other than transportation, I mean I've been 10 years now as an elected official, and this doesn't just go to the County decision-making process, but works here in the City pretty much the same way.

Technical work, in short, is seen by some to be capable of having some positive role in terms of avoiding potentially bad choices, but only in a very broad sense. The evidence of the previous chapter suggests this is wrong: forecasting can give credence to a bad choice.

Many Believed Forecasting is Unreliable and Inherently Political

Everything is estimated optimistically. If you start with a pessimistic estimate, it never gets built.

— SCAG staff member

Many of those interviewed were skeptical about the value of modeling such as was conducted by SCAG for LACTC. Gerald Leonard, who formerly worked for former Los Angeles County Supervisor and rail proponent, Baxter Ward, stressed the "self-serving" role of forecasts. "You let them prove your own point for you." "I thought SCAG was looking into a crystal ball," said LACTC Alternate Commissioner Ted Pierce:

and it was kinda cloudy. I don't really perceive right now having 55,000 riders a day. . . And how they came up with these figures I don't know. That's why I say I think it's a glass ball. 55 sounds good.

"You could have changed assumptions to produce 100,000 or 25,000," he was told. "I know," he replied.

Alternate Commissioner Blake Sanborn knew that:

probably the 54,000 was a medium ground of a number of different ideas. I think it's a pretty safe number; that's why it's being used. Noone's going to go out and say 100,000 and noone's going

to say 25,000 so they're going to say 50.

In that case, he was asked, why do the computer work in the first place? "Or draw it all from a hat and take an average of it," he replied. . .

Carmen Estrada, member of the RTD Board questioned the forecasts, since "it's clear that they're high in almost every other city where the projections have been made." Los Angeles Councilman John Ferraro meanwhile chipped in: "Of course, they weren't going to hire somebody that's going to say, wait a minute, you're going the wrong way." Long Beach Councilman Edgerton, like Eunice Sato a light rail opponent, compared the political pressures on modelers to the pressure put on Galileo to conform. "Political pressure can make you believe a lot of different things," he said. Sato, despite her beliefs in the potential of modeling if honestly done, was similarly distrustful:

What did they feed into the computer to make it come out that way. ? You can put in what you want to. . . You and I know that if somebody wants to do something they hire a consultant to prove what they want to do.

And, said Compton Councilman Maxcy Filer: "Whatever I want to, I can put into a computer. A computer will spit out anything if I program it right."

Others saw forecasting as a marketing device, rather than a tool for evaluation. "Often ridership projections are being done strictly as sales tools," said LACTC Rail Construction Committee member Manuel Perez:

The forecast is public relations. . . It's a little indelicate, but basically true: A patronage forecast is just like a marketing plan for a development. . . The selection of the LA - Long Beach line, it was chosen because it had already been deemed that this would be the first line.

Craig Lawson, transportation adviser to Mayor Bradley, saw things the same way:

These guys are building these buildings down here with the assumption that they're going to be leased. And that's

the way that they get their financing. They tell their bank and their investors this thing is going to be leased and we're going to have the whole thing filled up. Well, how do you know that? Do you have signed contracts? Most of the time they don't. So, it's like any construction project. You have to have a certain assumption that you base it on, and the assumptions I think for transit in Los Angeles are we are going to continue to grow, we are going to continue to need this. And that the studies that I've seen show that this is going to be a worthwhile project.

What makes this view of forecasting as a tool for advocacy disturbing is that, while private developers seeking financing can be expected to maintain that their buildings will be leased, public bodies using public funds are expected to promote the public interest, rather than to "market" one particular view of it.

While any banker will be expected to check the reasonableness of developers' claims, furthermore, there is no similar check on the light rail claims, which are made by the very agency entrusted to protect the public good.

Perhaps the ultimate use of forecasts as a political tool came as Blue Line opening date approached and, as shown in Chapter 3, ridership forecasts steadily fell. Providing an unrealistically *low* opening day estimate of ridership enables subsequent results to look favorable by that standard, even if they are poor according to the original promise. This is precisely what happened when the Jan. 21, 1991 *Los Angeles Times* praised a ridership level of 18,000 as "three times" that forecast six months previously.

While forecasting can be seen as a tool for salesmanship or for misrepresentation, there is a more subtle view of the role it performs: forecasting can serve a function of making us feel secure about what we are doing, of deluding us into thinking that our decisions — in fact based on other grounds — are legitimate and correct. This view is examined below.

Forecasting as Legitimation and Self-Delusion

"The use of doing it," said one member of SCAG staff:

is that you've got to have some justification that is acceptable to the public and the politicians beyond an intuitive feel. And engineering has established itself as a valid profession that people respect. Every time people drive over a bridge, people are putting intuitive faith that the engineer knew what happened when he designed the bridge. When public money pays for a project, people have intuitive faith that the engineering methods are advanced enough that it's worthy of the investment. The model is used to validate what is intuitively acceptable.

The modeling does not come — as pictured in the ideal world of Stopher & Meyburg — before and as the spur to decision-making — but *afterwards*, and serves to give the aura of science to decisions which have been made for other reasons. As one other analyst, who preferred not to be identified, commented:

They [LACTC] liked these numbers. The numbers were not too low that it invalidated their basic premise that they need to build a line in the LA - LB corridor. . . The fact that LA - LB was going to be built was a foregone conclusion. I think this is fundamental to your whole study.

And, as we shall shortly see, many politicians only accepted those elements of the forecasting that concurred with their prior beliefs, rather than using the forecasts to *form* their beliefs.

People feel uneasy, however, about letting "intuitive" beliefs, hold sway, and like to feel they are backed by the wisdom of science. Said Manuel Perez, "Basically [forecasting] is to establish a comfort level for decisions being made. . . PR is a comfort level. This is the best available information."

"How they came up with those figures, I don't know," said Ted Pierce. "That's why I say I think it's a glass ball." Were there benefits, then, to doing

the forecasts he was asked?

There can be. I think they were a positive force for the Commission and the people who were really pushing the LA - Long Beach line in the very beginning to say, ok, looking back, here's SCAG, I mean it's a credible organization, and they've said that their 55,000 people daily will ride this thing. That's incredible. With that ridership we ought to do it. So what it does is it gives confidence to the people who are promoting it as well as to the general public who are listening to the pleads to build this thing.

Former LACTC Executive Director, Rick Richmond, also said there was a need to have something solid: "But I just think we need some numbers. You've got to do some work based on some numbers. So you produce the numbers."

As Alternate Commissioner Blake Sanborn said:

The politicians seek to have a technical backup so that they on the face of it look as though they are analyzing information by the experts and making a determination that this is what should happen.

Barna Szabo also talked of "comfort." You have to have some comfort level," he said:

You can't go on gut feelings; you can't go on politics. . . You're going to have legal challenges. You're going to have editorials. And, you're going to have to respond to those with some of this data. You can't go by the seat of your pants.

Forecasting, then, provides a form of legitimation, and it can provide confidence to those promoting a rail system. The numbers appear solid, and can provide a basis for self-delusion, grounds for believing in what you are doing.

Reactions to SCAG Negatives

The need to believe in what you are doing is basic, and one human reaction to maintain security in one's judgment is to filter out information which does not accord with one's views. One of the most interesting sets of responses collected during interviewing came after respondents were

informed of the negative findings SCAG had made relating to the Long Beach light rail project; in particular, of the low volume of travelers expected to switch from automobile travel to the light rail, and of the negligible improvements to highway congestion expected as a result of the new rail service.

In their answers, respondents tended to reflect their prior-held beliefs, rather than to accept other conclusions to be drawn as a result of the information provided. And, if negative information was in some cases accepted by those who already believed light rail should go ahead, other reasons were given as to why the line would be valuable, despite such findings.

Two LACTC staff supported SCAG's view that few people would desert their cars for the train. As then Executive Director Rick Richmond said:

I don't think we've ever contended that [traffic would be immediately reduced on freeways]. That argument will cause you to never make any kind of transportation investment of any significant scale. . . Any public transit investment, be it for express bus or railway only takes other existing transit people, not only, but primarily draws its usage from existing transit use.

LACTC's Jim Sims (who previously worked for SCAG) also accepted the negative SCAG results:

I think it's clear that the real impacts on air quality will be minimal, it will be positive, but it will be minimally positive, and I think the impacts on congestion will be minimal direct impacts. I think, probably, at least initially, the number of people attracted from automobiles into transit, who would not otherwise have used transit at all, would be a small number.

But Paul Taylor, LACTC deputy Executive Director at the time, credited light rail with "having the capacity to do more travel without doing harm to the air quality." He was then shown the SCAG study (SCAG, 1984b), and immediately discredited it:

What is this? I don't even know what this thing is. I don't know what they're trying to do with this either. Never seen it. But then you and I know that it's simply what SCAG is up to most of the time, anyway.

Taylor was given one SCAG estimate on light rail versus heavy-rail costs (SCAG, 1985, p. 12), which indicated that the LACTC light rail projects did poorly compared to the heavy rail. "That's so outrageous as to be laughable," he replied. "One can only hope that no-one reads this stuff." On the question of how many light rail passengers would be former automobile travelers, rather than bus users, Taylor said: "I don't believe that the people are mostly going to come out of the buses." "Although that's what the documents for your EIR said," he was told. "Yuh," he replied.

Richard Stanger of LACTC also refuted SCAG's finding that only a minimal number of people would be enticed out of their cars: "I'm not sure that that can really be believed," he said. "If that was the case, then I do think that it may be a questionable investment."

Debby George of Deane Dana's office was one of those who had not previously seen the negative SCAG information, even though some of it was contained in a recently released glossy magazine from SCAG entitled "Crossroads." Told that only 1600 people per day were expected to transfer from automobile to light rail, she replied:

Only 1600? Where did they get those figures? I think it's much more than that. It has to be much more than that. . . I would challenge if that is right, personally.

LACTC Rail Construction Committee Citizen Member, Allan Jonas, told that SCAG was forecasting that for the most part light rail would take people out of buses rather than cars declared: "I don't believe it." Alternate Commissioner and Norwalk Councilman Bob White felt similarly: light rail will "reduce tremen-

dously the number of cars that will be on our local freeways," he said. "I would think that about 10 to 20 percent would leave their cars home and take the light rail." Presented with the SCAG data indicating the small expected transfer from automobiles to light rail, he said:

I don't agree with them. I don't agree with them on that because those statistics like, er, it almost makes me think that SCAG is in the other corner, maybe fighting this, I don't know why they would. . . I'm just saying that I can't believe that it would affect only 2% of the cars off the freeway. . . My answer to that would be that because of advertising and publicity and working on this and having a good public relations firm or public relations within the LACTC, that you could certainly improve that 2 to about 10.

Long Beach Mayor Ernie Kell also reacted against the SCAG findings. Told SCAG only expected a minor positive impact on traffic, he said:

I would take exception to that. #1, if you take a bus off the freeway, you're removing a vehicle, a good sized vehicle at that. So you are taking traffic off of that, and I think that once this line comes in and people find that they can park their car and ride up and enjoy the paper, and have less traffic to worry about, I think you're going to find more people riding it.

Ted Pierce also gave SCAG limited credibility when SCAG produced findings which did not go with his beliefs, since, he said, SCAG Executive Director Mark Pisano "is totally against rail, and he just generates that to a lot of his staff people. . . He likes buses, I guess."

One way in which uncertainties about forecast-year performance were rationalized, was to argue that if there might be problems at the start, all would be well in the long-term. On the SCAG projections for total ridership, Allan Jonas said: "But if they fudge on the side of optimism, I can forgive them, because in the long-run they'll be true."

The projections are made for a *particu-*

lar year, however, not for the “long-run.” Jonas’ opinion is another case of the application of prior beliefs to overcome any technical deficiencies. Alternate Commissioner Ted Pierce also gave the long-term view:

There’s a possibility, I think what will happen with the line if it’s done in a positive manner, I think it will generate in the future as the area grows, and it’s there people will start using it.

Christine Reed agreed that if only the small expected number of passengers transferred from auto to light rail, “it wouldn’t be worth it,” but added that:

I think we’ll get more than 1000 minus trips [out of automobiles], I really do. . . . When the line to the airport goes in, then it will get used more and when there are more lines it will be used more.

Burke Roche, transportation adviser to Supervisor Kenneth Hahn gave a similar argument: the line would do better once interconnecting lines were built, he said. “And I do think if you provide a decent system, that they’re not going to be coming in the same bumper-to-bumper.”

When told that SCAG was forecasting that only 1600 current daily automobile users would use light rail instead, Barna Szabo, Commission alternate and employee of Wrather Corporation (in development) did not refute the claim, but found other grounds for supporting light rail:

That to me is the wrong way of looking at what light rail can do for you. . . . What light rail can do, it relates very well to certain land-use patterns, and can also enhance certain land-use developments.

In short, those findings of SCAG which were un-supportive to the light rail interest were easily dismissed by those who supported light rail.

What we see are not the user’s thoughts being focused by technical results, but results being projected through the lens of the user’s mind. While SCAG’s high ridership projections were useful in providing a “comfort level” to legitimate

the choice of light rail, SCAG’s findings that there would be few advantages to light rail in terms of reducing congestion or pollution did not go along with prior beliefs, and so were rejected.

THE ETHICAL PROBLEMS

TO SOME EXTENT, THERE ARE clear-cut ethical problems in the way forecasting work is conducted. The assumptions LACTC provided SCAG were politically driven to be to the advantage of rail. And one SCAG staff member saw his organization as acting like a doctor who prescribed the pill the patient wanted, whether or not it was the best medicine for the job.

More problematic — because ethical issues thereby get pushed to the background — is the degree to which technicians are required to act according to the routine of their part of the pie, rather than consider the perspective of the pudding as a whole.

The prime responsibility of the technician appears to be to operate as an efficient cog in a large machine, performing the prescribed task without asking questions outside the routine imposed. Under this view it is possible for a member of SCAG staff to both be aware of gross deficiencies in the work produced and to say that an “honest” job has been done. The modeler’s place is seen as somewhere on a production line: the inputs coming from the stage before, to be processed and spewed out to the next stage. “I’m trained as an engineer.”

The question of asking if the right question is being asked — Churchman’s (1982, p.132) first task of ethics — is not even relevant. The machine-like way in which the task proceeds blinds its participants to such matters, allowing them to delude themselves into thinking they are doing the right thing just by following the given instructions correctly. In many

ways, they operate like the computers they employ: there's an algorithmic understanding of the work to be done. And the uniquely human ability to go beyond given procedures and look at things differently when the need arises is overlooked. Like the Vietnam bombardier Joseph Weizenbaum cites, the modeler's brief is pre-defined and restricted. And that restriction enables the modeler to escape responsibility.

The model itself becomes a political actor; it carries powerful political messages, although neither model developers nor users may be aware of them. The use of car ownership data to gauge demand for travel, cited in Chapter 4, which biased results against poorer areas, presents one such example of the model-as-politician.

The model is in many ways part of a larger system of avoiding responsibility. Use of the model presupposes that if a certain "demand" can be found for the given technology — in this case light rail — relative to costs, then the project should go ahead. The situation is comparable to Leamer's (1983) death penalty case discussed in Chapter 4: Just as the desirability of execution is assumed if execution results in less murder, the potential for the light rail project to be desirable, given the results of certain ridership/cost tests, is assumed. Questions about where people in different neighborhoods actually want to travel; of how they might best be served; of who should be given preference in being served; of how present travel patterns might desirably be changed by new transport services; these questions are not so much ignored as given presupposed answers by the model.

The model assumes, for example, that people in neighborhood A will travel to workplace B, even if the work there is unsuitable. The assumptions of today's travel patterns, furthermore, are implicitly carried forward to tomorrow's, with discrimination against those with fewer travel op-

portunities today, and without consideration that they might in fact be better served by some system other than rail.

UNDERSTANDINGS AND USES OF MODELING — SUMMARY

THE POLITICIANS RECEIVING THE results are supposedly responsible for them, even though they lack the technical understanding to evaluate them. But to all accounts, that doesn't seem to terribly matter. From a look at their understandings of modeling, a curious picture emerges, one in which modeling serves as a visible symbol of rationality at work, while at the same time it contributes little to actual decisions: given the way things work in practice, the lack of understanding seems of little consequence to the functioning of the daily routine.

Few interviewed had completely naive beliefs in technical analysis, although there was some conviction to an idea of "accuracy," an impossible concept since, with the number of assumptions entailed, and the changes the new system will itself produce on its environment, conditions on opening date will never be the same as those assumed by the model.

Many questioned both the reliability of modeling and the political nature of forecasting, although some saw technical analysis as a means of tempering the worst effects of political distortion, a check on choosing the most absurd of options. But "given some ooshee jello bowl realm in the middle of so-so statistics, then basically nobody gives a shit," said Christine Reed.

Forecasting was seen in some quarters as a marketing, not an evaluation device, a means of persuading "investors" that a project was sound. This is the theme taken up throughout the studies of Hamer (1976). As indicated by the comments of others, forecasting functions to promote

an atmosphere of self-delusory confidence in the project. It's not so much a question of outright dishonesty. In fact, in many ways, it's quite the opposite: there is a need for something solid to anchor pre-existing beliefs. There is a need for justification "beyond an intuitive feel. And engineering has established itself as a valid profession that people respect." Solid and impressive numbers can be produced, to be quoted in the press and attain the status of proven fact. A "comfort level" beyond intuition is required, and forecasts provide something which appears to be substantial. "You can't go by the seat of your pants."

A strange double-standard seems to simultaneously exist: there does appear to be awareness of the fragility of forecasting; yet, because that very fragility is concealed in hard-looking numbers produced by chunks of electronics and steel, there is something reassuring about them, something to suggest that science, rather than intuition, is being invoked.

Perhaps the most interesting comments made during interviews on the subject of modeling, were responses to the less well-publicized negative findings SCAG reached on light-rail performance. For, in nearly all cases where SCAG results contradicted prior beliefs, SCAG was thought to be in the wrong. Under such circumstances, the technical solidity of SCAG's work provided little comfort. Technical analysis was most acceptable when it fell in line with prior beliefs, and of little relevance when it ran counter to them.

Forecasting — a Mythological Ritual; an Unethical Exercise

From the above it is clear that the belief in modeling as a scientific means of driving the "transportation planning process" seen by Stopher & Meyburg and as embodied in the UTPS procedures promulgated by UMTA and employed throughout the nation, is mythical. While

Pickrell (1989) may state in his UMTA study that "decision-makers acting on more accurate forecasts" might have selected projects other than those reviewed, the evidence from the Long Beach case is that this is unlikely to be true. Interviews conducted for this project in San Diego, San Jose, Sacramento and Portland, Oregon, also indicated that decision-makers had made up their minds prior to the conduct of technical analysis.

In all of the cases Pickrell reviews, too, technical analysis was in fact propelled by a local interest in having a rail system, and alternatives to rail considered as part of analysis were a function of UMTA mandate, rather than local desirability. Technical analysis, then, appears to serve a ritual function: it gives an aura of respectability to decisions which have been reached on other grounds, rather than focusing the decisions themselves.

It is an expensive exercise, with high costs for extensive computer processing. Yet, while all this money is spent to produce meaningless results, virtually no attention is paid to asking the pregnant questions concerning the most pressing questions of human and social needs and of how government should address them. While the computer provides an easy answer, the real problems go ignored. And that is a real ethical problem.

The model is solid and provides easy if expensive answers. Its very make-up lies in the concrete easy-to-get-grips-on physical world. Trips are "generated" and "distributed" like electricity. Sight is lost of the fact that the trips are made by *people*, and that social decisions have to be made about who is to be served and how, that issues of poverty, education and race should be part of the equation. But the Long Beach light rail project — like the rail projects considered by Pickrell — came into focus as what Altshuler (1979, p. ix) refers to as a "preselected solution."

Hall (1982) calls for widening frameworks of analysis to include the:

positive and negative effects of the investment on other people. Some of these effects might be quantifiable in terms of money, others in non-financial terms, others might not be quantifiable at all. Nevertheless, they should all be included, and an attempt should be made to judge the relative importance, difficult as that may be. Further, as far as possible the analysis should identify the groups on which costs and benefits will fall, so that an attempt can be made to judge the distributional consequences [p. xxvi].

Hall continues, saying:

This approach, I believe, would have avoided most of the planning disasters in this book — and others unchronicled here, including doubtless others still to come. There would never have been a Concorde [p. xxvi].

But Hall seems to neglect the fact that *the projects came first, the studies afterwards*. Something powerful brought the projects into focus. Who is to say that any sort of technical analysis played more than a ritual role in decision-making?

If, then, the espoused “rational” processes for technology selection are not being used to make decisions, what does lead decision-makers to choose rail? This is the question to be addressed for the remainder of the dissertation. We will see ultimately that the choice of rail results from a mythical understanding of the benefits to be thereby derived; and that the myth of technical reason provides legitimation for the believed mythical powers of rail.



Kenneth Hahn upon arrival at Long Beach on the first Blue Line train

I'm the author of Proposition A. Which is the first tax measure that was ever voted for successfully by the people of Los Angeles County. Terribly unpopular for a politician to advocate a tax. Verboten. But I did it. And the people supported me. I was born in Los Angeles. I've been in public office 39 years, and I've seen all these measures cemented in talks; in talks and fancy charts, and studies and plans — would fill this room — but there's been no action. Faith without works is dead, the Bible says.

— Supervisor Kenneth Hahn (from interview)

6 The Political and Institutional Makings of the Los Angeles County Light Rail Program

INTRODUCTION

IT TOOK POLITICAL ACTION FOR PROPOSITION A to be placed on the ballot and voted into law. Designation of the downtown Los Angeles to Long Beach route as the first light rail line for construction was also necessarily a political process. This chapter both documents the interplay of interest groups involved in promoting — or opposing — rail transit, and the processes which eventually led to a consensus among elected officials to go for rail.

What we are about to see are two sorts of games at play in a changing environment. We shall first see those for and against rail at play, translating their contrasting dreams of improved urban life into transportation modes associated with concentrated or dispersed forms of settlement. The train went along with concep-

tions of a concentrated city, the automobile with the ideal of a dispersed autopolis. This game of interests was played on and off from 1925 up until the run-up years to Proposition A of 1980.

As the 1970s developed, we shall see, the previously universal appeal of roads became tarnished, and this changed perception opened the door for the case for another form of transportation — rail transit — to powerfully emerge.

During the 1970s, and particularly during the latter part of the decade, frustration grew among politicians that they were unable to agree on transportation policies, and the stage was set for the dramatic game that in one meeting of the Los Angeles County Transportation Commission (LACTC) was to give birth to a politically-viable Proposition A. In this game, Supervisor Kenneth Hahn crafted a proposition with elements to buy both the

Commission votes he needed to put the proposal on the ballot and the electoral voted needed to make Proposition A law. This was a game not played under rules of competition in which there are winners and losers, but designed to make as many people as possible seem to be winners. It was a game in accord with the tenets of the LACTC, formed in 1976 to bring consensus and action to the Los Angeles transportation policymaking process.

This account begins with a brief description of the development of highway interests, pointing to the universal appeal of highway development in an increasingly automobile-based society. It then traces the political and institutional development of rail rapid transit from 1925. It identifies a key shift in political climate away from highways and towards transit and the birth of the Los Angeles County Transportation Commission to provide coordination, direction, and action in transportation policy.

The success of Supervisor Kenneth Hahn in forming a coalition is accounted for in its setting of an LACTC anxious to show accomplishment. The subsequent selection of the Long Beach line as the first to receive rail is then described.

At the end of this account, we will have grasped the political dynamics which culminated in the opening of Los Angeles' reborn rail system on July 14, 1990, but will still be left with a puzzle: if beliefs did translate through political processes into decisions and actions, how were those beliefs formed? Why did rail advocates believe that the benefits they associated with their preferred courses of action would actually materialize? These are questions which the typical "political" analysis ignores, but which are central to a real understanding of the appeal of rail in Los Angeles. They will be the subject of the subsequent analysis.

HIGHWAY INTERESTS: EVERYONE

GENERALLY SPEAKING, PRIOR TO the run-up to Proposition A, Los Angeles transit proponents associated the development of rail facilities with the promotion of a downtown-based urban form; highways were, in contrast, associated with a dispersed metropolis. It is instructive to contrast the forces which propelled the freeway system into existence with those acting in favor — and in opposition — to the development of rail rapid transit.

As early as 1909 local government began taking responsibility for road construction. A \$3.5 million bond issue was approved that year by the Los Angeles County Board of Supervisors. The next year the state began allocating funds for highway construction (Brodsly, 1981, p. 84, Fogelson, 1967, p. 132).

As population poured into Los Angeles and auto ownership grew, so did congestion, particularly in downtown. (Brodsly, p. 84-85). In response, the Traffic Commission of the City and County of Los Angeles (despite its name, a voluntary membership association, mostly of local businesses) retained three renowned planners, Frederick Law Olmsted, Jr., Harland Bartholomew, and Charles Henry Cheney, who completed *A Major Traffic Street Plan for Los Angeles* (Los Angeles Traffic Commission, 1924) 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 called for to limit its effects. "Extended-through highways, interdistrict bypasses, boulevards and parkways all were proposed to provide programmatic support for a dispersed and multicentered urban form" (Brodsly, p. 88).

The letter of transmittal accompanying the *Plan* indicated that it was assumed that the road system was not just to be a response to a transportation need, but to be a vital element in shaping the city: "In short," it declared, "we believe the *Major Traffic Street Plan* here presented provides a broad, practical, well-balanced scheme for handling traffic towards which *the city can advantageously grow, and to which it may gradually adjust itself*" [my emphasis]. By the end of the 1920s, "a pattern of opening and widening of streets had been established which had a tremendous impact upon the future" (Foster, 1975, p. 165).

The Regional Planning Commission began work on a County plan, producing reports emphasizing the relationship between highways and land use. A minimum lot size "consistent with the development most desired in California cities. . . to avoid overcrowding in the ultimate stage of developments" (Los Angeles County Regional Planning Commission, 1931, p. 42) was specifically recommended.

In 1933, a quarter-cent of the state gas tax was set aside for highway construction and maintenance within cities, increasing to a half-cent in 1935 (Brodsly, p. 112).

In 1934 planning got underway for Los Angeles' first freeway — the Arroyo Seco Parkway — and construction began in 1938, ending two years later (Brodsly, p. 97). It was paid for from a variety of sources, including the state, city funds, and gas tax revenues from Los Angeles and South Pasadena (Goodwin, 1965, p. 93-94). Public transportation, meanwhile, remained financially a private venture.

The first published proposal for a comprehensive freeway system came from the Automobile Club of Southern California in 1937. Its representation of the club's auto-owning members and their preferred lifestyle was clear from the start:

We wish to emphasize that the Los Angeles area has grown up with the automobile. Motor vehicle transportation has shaped its growth to the extent that the business and social life of the area is today vitally dependent upon the motor vehicle for the major part of its transportation. If street and highway congestion continues to increase, the day is not far distant when the automobile will in many parts of the area have lost its usefulness. At this time, the economic loss resulting from readjustment alone will have reached a staggering total. . . Future orderly growth is vitally dependent upon the establishment of a system of transportation serving all parts of the area from letter of transmittal.

The report called for a system of freeways, and:

as the Automobile Club plan was based on traffic flow and projected population pattern, the influence of the highway system is readily apparent, particularly in the interdistrict routes that would completely bypass the traditional central business district [Brodsly, p. 99].

By the 1941 publication of the *Master Plan*, (Los Angeles County Regional Planning Commission, 1941) the need for freeways was made explicit in a public plan:

In fact, the inescapable conclusion is that as the population of the Metropolitan Area passes from four to six million, one of the *two eventualities will have to be faced — a drastic reduction in the proportion of automobiles to population, or the relief of the highway system by supplemental freeways*, taken and partially completed long before that time [p. 33].

Brodsly describes the Los Angeles County Regional Planning Commission (1943) publication, *Freeways for the Region*, as "mostly a propaganda device aimed at convincing government officials and the public not only of the necessity but also the urgency of freeway construction"

(p. 105). "All motorists in Los Angeles County," the report said, "and this means all of us, have felt the need for some superior form of motorway in this region to supplant the existing highways" (p. 12). Once more the Los Angeles ideal is associated with highway development: "Satellite communities, well planned within themselves and in relation to a freeway system [would]. . . provide a better way of living and still preserve the social and economic advantages of the urban center." Freeways would be "facilities which are deliberately designed for the decentralized community" (p. 26-27).

By 1946, the pressure for freeway building was yet higher, local and state governments, automotive organizations and local business interests coming together to support the Los Angeles Metropolitan Parkway Engineering Committee report, *Interregional, Regional, and Metropolitan Parkways*. "The urgent need for freeways was detailed; the lack of sufficient funds was decried" (Brodsly, p. 115).

The Collier-Burns Highway Act of 1947 increased the state gas tax and introduced other new taxes to be pooled in a highway tax fund, thereby providing both "the ideological and financial support necessary for a full-scale [freeway] construction program" (Brodsly, p. 115). Large-scale freeway building took place over the next decade.

The activity in California was paralleled by highway enthusiasm throughout the United States, as demand for automobile purchases and usage escalated following the close of World War II, leading to the launch of the National System of Interstate and Defense Highways in 1956, for which a national highway trust fund, much like the one established in California and other states, was set up to reimburse 90 percent of the planning and construction costs of qualifying routes (Brodsly, p. 116).

Alan Altshuler (1979) tells the story from a national perspective:

The great era of highway building got underway in the late 1950s. Both this policy, and the neglect of mass transit by American governments until very recent years, were squarely in the tradition of following the private market. The highway program in particular was consistently defended by its supporters on the ground that it served a visible public demand, as demonstrated in the marketplace, on the highways, and in the voting booths [p. 26]. . .

By the early 1950s, the automobile industry was intensely concerned that motor vehicle sales, which had been on a steeply rising curve since 1945, would stagnate or decline unless the highway system were expanded to keep pace with the growth of motor vehicle usage. Along with such major allies as the oil, steel, rubber, and trucking industries, together with their labor unions, the auto industry began to orchestrate a public clamor for vigorous public action to deal with congestion. . . *It is important to keep in mind, however, that there was widespread public support and that the market forces to be served by highway construction were already sweeping the field in the marketplace. Thus those who lobbied successfully for increased highway construction were able to operate within a highly congenial framework of popular taste, market behavior, and apparent political predisposition. . . [my emphasis].*

The media of the time indicate the apparently uncontroversial nature of the campaign. The material generated by the auto industry and its allies was printed in every popular journal of general circulation, month after month. Dissent was virtually nonexistent. The same pattern prevails in the record of congressional hearings on the interstate highway program. There were disputes about financing but none about the desirability of the program itself [p. 27]. . .

Highway interests were generally viewed in the 1950s and 1960s as constituting one of the two or three most powerful lobbies in American politics [p. 28]. . . [but] the highway lobby had a receptive popular audience. The American romance with the automobile was in floodtide, and few had yet begun to associate highway development with such negative consequences as community disruption, air pollution, and vulnerabil-

ity to international oil embargoes. Far more simply, new highways were associated with the economic benefits of congestion relief and the pleasurable experience of free-flow driving [p. 30-31].

Nineteen Fifty-Six saw a 1 1/2-cent California state gas tax increase (it rose a further one cent in 1963, making state gas tax 7 cents, with an additional 4 cents levied by the federal government (Goodwin, 1965, p. 324-346)). The California Freeway and Expressway system followed in 1959, its authorizing legislation providing a freeway grid for metropolitan Los Angeles which would put all urban areas within four miles of an on-ramp.

The building of California's freeways was, in short, a politically obvious choice. In fact, as Brodsky puts it, "what is most apparent in so many of the planning reports is the perceived lack of real alternatives" (p. 136). While highway-building was also taking place in other large American cities, the freeways went particularly well with the Los Angeles lifestyle, and had as their supporters all who wanted to be a part of that dream. What could be closer to the ideal of the "American Way," than a government acting to provide what its citizens clearly wanted? Awareness of the negative environmental impacts of highways had yet to emerge as a policy issue.

THE POLITICAL AND INSTITUTIONAL DEVELOPMENT OF RAPID TRANSIT

WHILE HIGHWAY BUILDING IN Southern California was a response to public demand, rail transit system development proved to be far more controversial, lacking sufficient political or popular appeal to stimulate major action until Proposition A was passed in Los Angeles County in 1980. At stake were the quite different political associations of the two transportation concepts: while freeways went along with the dispersed, low-density

dream which brought Angelenos to Southern California, and had mass political appeal, rail transit systems focused on downtown, for a long time enjoying only localized support and seeming foreign to those who came to Los Angeles to avoid the concentration and congestion of the traditional cities of the east.

Los Angeles did get an early rail subway in 1925: At a cost of \$9 million — paid for by the Pacific Electric as a private venture — and 4325 feet long, it provided a double track express right-of-way for the Pacific Electric Red Cars, terminating in the basement of one of the largest office buildings ever built in downtown. As a transit journal of the time relates its opening was seen as a great day for Los Angeles, but specifically for downtown:

The christening of the new subway terminal was a memorable event in the story of Los Angeles' progress. It was witnessed by 1,500 persons who swarmed down glistening ramps into the heart of the earth itself to jostle each other for honors of making the first memorable passage. . .

The official dedication of the subway and its terminal was preceded by the greatest luncheon in the history of the Los Angeles Chamber of Commerce and by an inspiring parade, led by a brass band, through the downtown streets [Electric Railway Journal, LXVI, Jul.-Dec., 1925, p. 1087].

While in 1923, Pacific Electric management had proposed a whole series of subways, radiating from Pershing Square, the decision to terminate the Hollywood tunnel at Hill St. for financial and engineering reasons, largely ended the plan (Veysey, 1953, p. 113).

Pacific Electric was not, however, the only actor at play, and interests were to emerge to promote the case for rail even as Pacific Electric's financial condition worsened and it moved to discontinue rail services. As Veysey (p. 328) relates, downtown interests — merchants and realtors — had formed the Central Business District Association, the Los Angeles Traffic

Association, the Downtown Businessmen's Association and the Chamber of Commerce, and these organizations were to support the first plan for a comprehensive system of grade-separated rail rapid transit, produced by the Chicago consulting firm of Kelker, De Leuw in 1925.

The Kelker report was in many ways to set the way for all future attempts to bring rail transit to Los Angeles: it set a tone of ruthlessness, citing the development of rail as necessary for the health and growth of Los Angeles; it presented a solution to social and economic problems in engineering and construction terms; it acted to impose a vision of the traditional city, marked by a concentrated center and suburban periphery, on a city which had already shown it was different; it sought to impose that vision in steel.

Kelker De Leuw cast the response to the Los Angeles transportation problem in terms of growth *per se*, rather than looking for the implications of the dispersed *form* of growth already well in evidence:

Los Angeles has become a large metropolitan center and it is of vital importance, at this time, that transportation facilities be planned upon a scale commensurate with the present and prospective development of the City and County. The phenomenal growth in population and industrial activity, together with the tremendous increase in street traffic, makes the construction of rapid transit lines not only necessary but imperative if an adequate, quick and convenient means of public transportation is to be provided and traffic conditions are to be improved [p. 1].

To meet the need, a system of rail rapid transit lines was proposed:

providing high speed service with few stops — for long haul traffic between the central business district and the intermediate and outlying sections of the urban area [p. 3]. . . Rapid transit lines should be the backbone of the transportation system of a metropolitan city. They furnish facilities for high speed train service and make possible the transportation of large numbers of people over great distances in short periods of time [p. 4].

An emphasis was thus put on speed and capacity. That speed and capacity was to be focused on the downtown core.

Kelker De Leuw called for improvements to interurban lines too, stressing speed of service once more:

Facilities for high speed operation of interurban trains in urban territory are essential and can be supplied in Los Angeles, without duplication of expenditure, by constructing additional tracks on the structures of the proposed urban rapid transit system. Such improvements within the urban areas, coupled with the elimination of grade crossings at the important highways in the territory between them, will make possible the maintenance of high speed service [p. 5].

In all, the plan called for the construction of 26 miles of rail line in subway, and 85 miles on elevated structures. Kelker did recognize that:

The desire of the average citizen to own his own home has caused the single family dwelling to predominate and the absence of large apartment buildings is noticeable. Such a condition is very desirable, but it is one of the prime factors which makes the construction and operation of rapid transit lines on a self-sustaining basis, a difficult financial problem.

The consultants did not, however, therefore conclude that a rail network would be unsuitable, but that it would need to be subsidized: "If the city's *unequalled position*, when compared with other large cities with respect to the number of families per dwelling, is to be maintained, it must continue to spread and this spreading can be accomplished only by providing rapid transportation *at a reasonable rate of fare*" (p. 6). If the cost of rapid transit construction were shared by riders, by "the property benefited" and by "the public at large," the report continued, "then the extent of the rapid transit system may be proportionately increased" (p. 7). Accordingly, funding through city and county bonds and assessments was called for.

To understand the consultants' ratio-

nalization of rail, it is important to note their eastern orientation:

In comparing Los Angeles with other large cities we find the closest analogy in the city of Chicago. Chicago, like Los Angeles, is the center of a vast agricultural territory, and the principal factor in bringing about its rapid growth was the construction of a large number of railroads serving this territory and terminating in Chicago. Los Angeles is the terminus of three transcontinental railroads and in addition has the advantage of a splendid harbor [p. 25].

Kelker De Leuw's work implicitly holds that like Chicago and other cities, Los Angeles did revolve around a core, even if its periphery was built at a lower density. It ignored the evidence which even then was strongly developing to show that this was untrue. This mistake, nonetheless, accorded with the political interests of the downtown organizations which had backed Kelker's efforts.

The report attracted the critical attention of the City Club of Los Angeles, which set up a committee for its review (City Club of Los Angeles, 1926). The committee argued that rapid transit would in fact run counter to the goals of congestion relief, since its downtown focus would attract more congestion. Representing the interests of a dispersed Los Angeles, rather than those of downtown in particular, the review declared that:

the great city of the future will be a harmoniously developed community of local centers and garden cities, a district in which the need for transportation over long distances at a rapid rate will be reduced to a minimum [p. 4].

Shortly after publication of the review, a fight ensued over two proposals: one involving the construction of four miles of elevated line in downtown LA, which would have aided the Kelker De Leuw plan, the other calling for a Union Station near the original Pueblo site and without elevated railway connections. The rail companies, Los Angeles and other regional chambers of commerce, many civic

groups and all major local papers except for the *Los Angeles Times* supported the elevateds (Brodsly, p. 154). The *Times* (1926) opposed having "hideous, cluttering, dusty, dangerous, street darkening trestles in our downtown."

Voters narrowly defeated the elevated proposal, and the Union Station plan went ahead instead. The Kelker De Leuw proposal was shelved along with the elevateds. As Brodsly points out:

The Kelker, De Leuw proposal was submitted after the *Major Traffic Street Plan* had already been approved and partly funded. Since the proposal followed almost immediately upon the ideological and financial commitment to automotive transportation, it is questionable whether area voters would have approved the bonds necessary for the system's construction, had they been given the choice. One can only imagine the strength of the *Times* opposition to a bond issue for elevated lines. And it certainly did not help that the most articulate municipal policymakers were members of the professional middle classes, and in Los Angeles that meant they were automobile commuters. If elevateds would help to ease traffic congestion, the proposal was certainly worthy of consideration, but the prime concern was to make life easier for the automobile [p. 155].

Clashing political interests reflected conflicting urban dreams. The politics of central city support was outgunned by those who demanded a dispersed metropolis: Nirvana was not to be concentrated in an urban core.

Support for rail was not, nonetheless, to die. Despite the continuing decline of the Pacific Electric and the conversion of rail services to bus operation, as described in Chapter 2, a 1933 proposal (Baker, 1933) called for grade-separated rapid transit on a system of four basic routes. Baker "catered to the merchants of downtown Los Angeles by urging a pattern of transportation that would stabilize the existing central business district, rather than one that would further encourage decen-

tralization" (Veysey, 1953, p. 171). *A Transit Program for the Los Angeles Metropolitan Area* (Los Angeles Transportation Engineering Board, 1939) followed in 1939, calling for long-term rail rapid transit development, including routes on freeways, and shorter-term operation of express buses on freeways.

In 1945, city officials brought in leading transportation consultants to address business and civic leaders. This led to the formation of the Los Angeles Chamber of Commerce's Metropolitan Traffic and Transit Committee which, in turn, formed the Rapid Transit Action Group (RTAG).

The group invited 800 business, civic and political leaders for the release of *Rail Rapid Transit — Now!* (Rapid Transit Action Group, 1948) in February, 1948 (Adler, 1986, p. 10). The cover showed a train traveling at speed and urged that "It's needed," "Now or Never," and that "It Costs Less." In the forward, the report announced that "Autos are too expensive for most people. Both autos and buses congest the streets." Turning to p. 1, the reader is informed that:

Our people *must* have rail rapid transit to take full advantage of the still limitless area where we make our homes. It is every man's desire to have a plot of ground free from the grind of factory and office. He wants to make his family secure. He wants time to play and he has pride in his own fireside. Rail rapid transit will develop many new communities and will enhance the growth of old. Our people need not huddle in the shadow of office buildings nor gather close to the factories. Rail rapid transit will make it possible for us to live where we like and work where we please.

Speed is stressed in the report, as is acceleration, comfort and quietness. Several benefits of rail are listed, including the reduction of congestion. "Those who do not have to use automobiles will be attracted to rail rapid transit service," and as a result, "This will make driving easier and will reduce competition for available

parking in congested areas" (p. 5).

System ridership is forecast at 220.5 million per annum, bringing in revenues sufficient to cover costs. For financing, bonds were called for, to be issued by a new "Metropolitan Rapid Transit District patterned somewhat after the Metropolitan Water District." In addition, the District would have the power to "recommend a tax levy only to pay any portion of principal or interest which is not paid from revenue," but not to subsidize operating costs (p. 11).

Not surprisingly, downtown interests favored the RTAG proposal, while business and property-related groups who had already invested in substantial office/commercial centers outside downtown were opposed. (Adler, 1986, p. 11-12). Those favoring concentration wanted rail; those after a dispersed metropolis didn't, and this was to be the persistent pattern of support and opposition until the lead-up to Proposition A of 1980.

Legislation was proposed to create the Rapid Transit District RTAG wanted (see Adler, 1986, p. 13-14). The League of California Cities adopted a resolution to oppose it. Long Beach Councilman Ramsey declared that "local shoppers would travel to Los Angeles to buy a spool of thread if this high speed rail line should be operated," and the Long Beach City Council unanimously opposed the legislation. The *Santa Monica Evening Outlook* wrote an editorial:

It is designed to save the downtown shopping district of Los Angeles at the expense of other districts and at terrific cost to all taxpayers. No real economic need for it exists beyond the need of downtown Los Angeles merchants to reverse a 25 year old trend [April 18, 1949].

Another local paper complained of the "selfish, well-organized, and richly-financed downtown supporters" (*Southwest Wave*). In April, 1949, the Los Angeles City Council voted 8-6 against creating a rapid transit district, reflecting the many

council votes from outside the downtown area. RTAG's plans were dead.

In 1950 the California Assembly Interim Committee on Public Utilities and Corporations (California Legislature, 1950) released a report based on public hearings and a survey. The survey found that while 40 percent of respondents favored one of three fixed-rail options offered — a monorail system, and two types of conventional rail system — 47 percent called for buses on freeways, and this latter proposal received the committee's endorsement. In mid-1950, however, a former Air Force pilot, George Roberts, proposed a monorail to link Van Nuys (in the San Fernando Valley) and Long Beach. Governor Warren appointed a state commission to look into this, and in July 1951 the Los Angeles Metropolitan Transit Authority (LAMTA) was created, empowered to construct and operate such a monorail line. Nothing further came of the proposal during the next eighteen months. But other and more fantastic schemes continued to be advanced, including the Hastings Electric Railplane System, involving cars "sliding between an upper and a lower rail at speeds of one hundred fifty miles per hour" (Veysey, 1953, p. 273).

In 1960, the Los Angeles Central City Committee and the Los Angeles City Planning Department (1960) issued *Los Angeles Centropolis 1980: Economic Survey*, in which great concern was expressed over the decline of the downtown:

Should the present trend continue without any improvement, twenty years from now the central section will account for an extremely small share of the total assessed values of either county or city properties. Clearly, in view of the tremendous public and private investment in structures and public utilities in the area, it is a matter of direct concern to the entire city and metropolitan area that the value of these equities be preserved [p. 4-5].

One of the advantages of the central city was said to be that *it* supported rapid

One of the advantages of the central city was said to be that *it* supported rapid transit, rather than merely that rapid transit supported it:

A strong rapid transit system requires an active and well-populated Central City Area. One of the key solutions proposed for the ever increasing problem of traffic congestion in the Los Angeles area is the development of effective rapid transit. Local transit systems work at maximum efficiency only when they are organized to transport large numbers of people to and from a compact, intensively developed central business district [p. 5].

The report also called for "high density multiple dwelling units" close to or within the central city (p. 35) and for corridors along the transit routes to be "re-zoned for higher density uses" (p. 36).

The Southern California Rapid Transit District (RTD) replaced LAMTA in 1964, under state mandate to build a rail rapid transit system, using sales tax financing if voters would approve it. As Adler (1986, p. 44) points out, however, the City of Los Angeles was only given two out of the eleven seats on RTD's Board of Directors. Four were given to other cities in the county, and the remaining five went to the County Board of Supervisors.

Southern California Association of Governments (SCAG), created in 1965 for "discussion, study, and development of recommendations on problems of mutual interest of orderly development of the Southern California region," (SCAG, 1968) was given the task of coordinating regional transportation. It represented all Southern California counties except San Diego, and Los Angeles did not contribute a dominant part of its membership.

In the same year, Daniel, Mann, Johnson and Mendenhall (DMJM) completed a report for RTD which, as Hamer (1976) puts it, "proved to be an extraordinary effort that attempted to reconcile existing and projected locational behavior in

Los Angeles with the necessity for rapid transit" (p. 180). The study provides an alternative to the inefficiencies of sprawl in which:

high densities and high levels of economic concentration are developed in an organized manner. This would permit substantial economies of time as well as services such as utilities, police and fire protection. . . and could easily be accomplished by overlaying the current "spread city" pattern with very high capacity travel arteries in the form of [rail] rapid transit [DMJM, 1965, p. I-4 and I-5].

Also in 1965, the Los Angeles Chamber of Commerce set up a Citizens Advisory Council on Public Transportation. "The council was composed overwhelmingly of businessmen (fifty out of sixty-four, or 78 percent) and included representatives of some of the largest businesses in Los Angeles" (Whitt, 1982, p. 84). Two years later the Council (Citizens Advisory Council on Public Transportation, 1967) published *Improving Public Transportation in Los Angeles*, a report which called for a new rapid transit system, citing benefits of increased property values as well as greater mobility and the reduction of traffic congestion. "In some cases, such as Downtown Los Angeles and mid-Wilshire," the report declared, "rapid transit may make the difference between sound economic growth and ultimate stagnation" (p. 94).

The report saw the central area as being "expected to continue to have the greatest population density and employment concentration of any area by 1980" (p. 20-21), while "high rise construction activity is expected to continue a strong tendency toward centralization" (p. 24). As Whitt sees it:

In sum, it is clear from this planning document, put together under the supervision of businessmen, that a principal benefit of the proposed transit system was its presumed ability to nurture the tendency towards centralized urban development. The system was seen as a way of raising land values and increasing

the accessibility of large financial and administrative businesses in the central area in such a way as to encourage the centralized expansion of these functions [p. 86].

RTD sponsored a ballot proposition — Proposition A of 1968 — for a half-cent sales tax to fund an eighty-nine mile rail rapid transit system, to be both larger and more expensive than San Francisco's BART. The August 8, 1968 *Los Angeles Times* reported that:

Meeting at the Los Angeles Chamber of Commerce's headquarters, the new citizens committee drew a nucleus of 75 top business and civic leaders. It set a goal of \$750,000 to mount a major public information program.

In the event, \$458,612 was raised, with 85.6 percent of these campaign contributions in favor of the proposition coming from business, and 46.6 percent of contributions from five central zip code zones, indicating the drive from central city business (Whitt, p. 90).

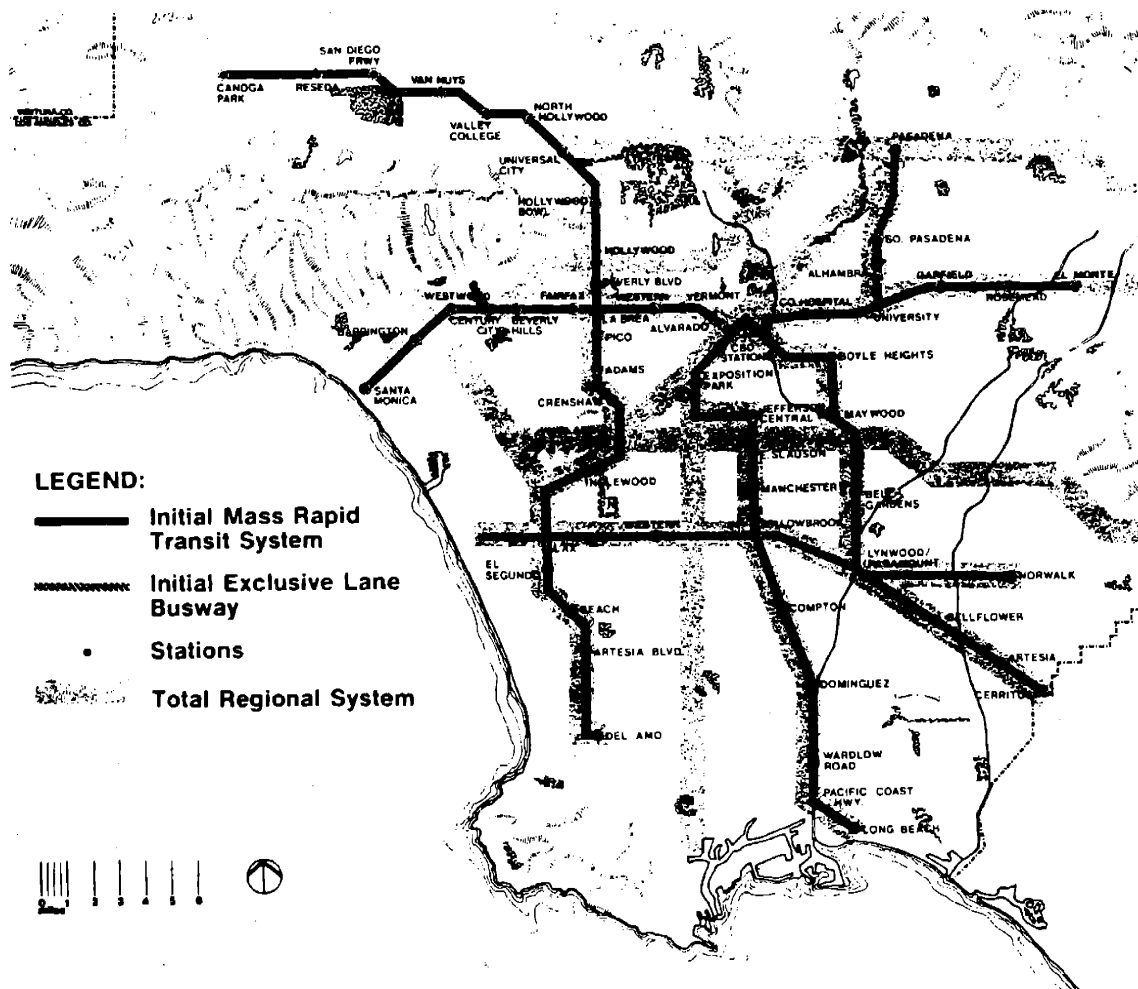
The City of Santa Monica — located well away from the core and seeking to preserve an identity separate from Los Angeles — predictably came out in opposition. A memorandum from the City Manager to the City Council (Scott, 1968), accuses RTD of overstating the benefits assigned to the system, declaring that:

The system will provide little or no service to large areas of the county at an economic cost to all areas which is astronomical," and concluding that "In many respects the fundamental justification for the proposed system appears to be a real estate and business promotion proposal for the metropolitan business community rather than a transportation service system. . . Dr. Wohl. . . observed. . . "The downtown area does not enjoy the competitive role it used to, and these interests are fighting to regain their former dominance. If they can get somebody to build a rapid transit system to serve the area and have the public pick up part of the tab for it, on the questionable argument that what helps downtown helps the entire metropolitan area, so much the better for them" [p. 1 & p. 4].

In the event, the proposition only won 44.7 percent of the vote and, needing 60 percent, failed.

A year later, a principal from Kaiser Engineers (one of the consulting firms in-

In the interim, RTD had turned their attention away from rapid rail. Indeed, on November 12, 1971, state Senator Mills accused RTD of a "negative attitude" to rail and called for the start of construction



INITIAL PROGRAM AND ULTIMATE SYSTEM

Map 6-1 The consultant team's recommended system (SCRTD, 1973)

involved in the 1968 proposition) backed establishment of the Committee for Central City Planning, an organization funded by downtown corporations and committed to downtown renewal (Hamer, p. 192). In 1972, *Central City Los Angeles 1972/1990* was published. "As always, the failure to build the rail rapid transit system is assumed to lead to stagnation and decay" (Hamer, p. 192).

of at least one major rail transit line. (Kagan et. al., 1972, p. 24). As the *Los Angeles Times* put it, RTD had "emphasized buses and forgotten rail." But then, the *Times* reported, "political pressure" had resulted in the hiring of consultants — including most of those involved in the *Central City Los Angeles* report — for a new study (SCRTD, 1973).

The consultant team recommended a

250-mile rapid transit system, with an initial rail system of 116 miles, to be accompanied by 24 miles of busways, for a cost of \$6.6 billion over a 12-year period (See Map 6-1). A 3/4¢ sales tax was recommended for funding (this became 1¢ on the ballot).

The report indicated that in 1990 1.05 million people would use rapid transit, out of which 706,000 would be people who would otherwise have driven:

As a result, congestion on freeways and arterial streets will be reduced. . . Much of the attractiveness of transit will be to people traveling to centers of activity. Today, for example, about 38 percent of work trips made to the LA/CBD are by transit. With rapid transit, this number will jump to 65 percent [p. 30].

The highest usage corridor was said to be Wilshire Boulevard, with 42,000 one-way riders per day estimated at the maximum loading point. SCAG followed up by doing their own forecasts, in which the Wilshire maximum load was only 30,900 daily passengers. Further study by Voorhees & Associates (who had produced the initial forecasts) reduced this still further to 17,900 (Hamer, p. 198-199).

As Hamer observes, these results shocked other consultants on the team. "Given both the commitment of RTD and its downtown lobby to a rail network, the Voorhees effort had to be put into a "proper" perspective" (Hamer, p. 200), one founded on a "common sense" which supported political advocacy of rail and which was not documented by any analysis:

However, all the results. . . are contrary to common sense and seem to ignore the realistics [*sic*] of everyday life in the Los Angeles area. At a minimum, it should be expected that the. . . [Phase III] system. . . potential would be on the order of 2,500,000 patrons rather than the 1,500,000 to 1,600,000. . . calculated on a daily basis] Kaiser Engineering and DMJM, 1974, p. III-12 and III-14].

Completion of Phase III study produced network maps which did not specify

particular routes; "instead, broad bands of color overwhelm county maps and provide the illusion of rail transit terminating in every homeowner's garage" (Hamer p. 202).

SCAG, the regional agency, neither specifically approved of rail transit in particular nor of the program as a whole, although it did approve the creation of specific transit *corridors*. The proposed system, SCAG said, "would use much of the region's transit improvement funding to heighten the mobility of a small portion of the population — and that improvement would come in the long run" (SCAG, 1974, p. 25).

The high capacity fixed guideway system encourages long work trips, and thus the conversion of open space into low-density urban communities. Employment would continue to locate in major centers, creating even greater disparities between the residential and employment centers. *This is counter to regional goals* [SCAG, 1974, p. 28].

Citizens for Better Transportation, chaired by Los Angeles Mayor Tom Bradley was formed to campaign for the sales tax ballot measure, Proposition A of 1974. Thornton Bradshaw, president of Atlantic Richfield Company (ARCO), owner of the massive Atlantic Richfield Plaza in downtown Los Angeles, was appointed Chairman of the Executive Committee. Bradshaw was recommended to Bradley by the Los Angeles Chamber of Commerce, which also supplied recommendations for membership of the finance committee (Whitt, 1982, p. 97). \$562,827 was collected for the campaign this time, with 93.6 percent contributed by business.

Again, there was the tendency for business contributions to come from the central area of the city. . . Rapid transit support still came almost exclusively from business and most of that support was located in the central area of the immense region [Whitt, p. 99].

Once again, the proposition pitted central-area political interests against those from the many smaller centers scat-

tered across the Los Angeles metropolitan area. A group of mayors and chambers of commerce from Pasadena, Glendale, Beverly Hills and various smaller communities bought a full page ad in the *Los Angeles Times* in which Proposition A was described as:

regressive and inflationary [and. . .] for the benefit of major corporations along Wilshire Boulevard and downtown Los Angeles who will profit most by so-called rapid transit [November 4, 1974].

The next day 46.3 percent of Los Angeles County voters supported the proposition. It failed.

A Change in Political Climate

In 1970 Senator Mills had authored Proposition 18, which was to make available highway funds to be used for building rapid transit. "The highway lobby vigorously opposed this move and donated large amounts of money for the campaign against it" (Kagan et. al., 1972, p. 18). Proposition 18 failed. Mills tried again with Proposition 5 of 1974, which allowed local areas to vote part of the state highway trust fund for transit purposes. It was more restrictive than Proposition 18, excluding operating and maintenance costs from eligibility to be funded in this way. It passed.

The 1973 Federal Aid Highway Act provided state and local officials the option of using highway funds to instead fund transit improvements. 80 percent of capital costs could come from federal sources. Proposition 5 — available to supply the remaining 20 percent — provided the possibility for some rail building without a popular vote, and from this was born the idea of a "starter line," a line to be built as the first segment of a regional rapid transit system to be put in place over the long-term.

By now, many issues were making transit seem a more attractive option. With controversies about urban expressway construction — and its effect on the

urban environment — and questions of freeway congestion and atmospheric degradation in the foreground, the ideological appeal of transit, as Altshuler (1979) puts it, had now become extremely broad:

Whether one's concern was the economic vitality of cities, protecting the environment, stopping highways, energy conservation, assisting the elderly and handicapped and poor, or simply getting other people off the road so as to be able to drive faster, transit was a policy that could be embraced. This is not to say that transit was an effective way of serving all these objectives, simply that it was widely believed to be so [p. 36].

In addition rail transit systems were being built in other cities with federal funds, focusing attention on the mode. An explanation of why issues beyond federal funding made rail transit so attractive among transit options will have to await exploration of the understandings of rail versus bus transit in subsequent chapters. But, here it may be noted that the changed environment in which transit — as against highway — developments were being understood was conducive to attracting support for transit from parties who had previously been indifferent or opposed.

In March, 1975, RTD formed a Rapid Transit Advisory Committee (RTAC) to choose the route for this starter. Argument now revolved not so much over whether or not to have rail — with the CBD for and the more dispersed communities against it — but over whether the CBD should be the primary beneficiary or whether the more dispersed centers should be counted in, too. There were two major competing system possibilities, one involving extensive tunneling via Wilshire Boulevard, with terminals in North Hollywood and South Central Los Angeles, the other making extensive use of existing rights of way and stretching the far longer distance from Canoga Park in the San Fernando Valley to Long Beach, via the Los Angeles CBD.

The shorter line was preferred by Los

Angeles Planning Director Cal Hamilton, the Los Angeles Chamber of Commerce and SCAG. The longer route was backed by Supervisor Baxter Ward (into whose district the San Fernando Valley fell) and by the many cities the line would serve. RTAC opted for specifying the corridor — San Fernando Valley - Long Beach — but not a specific route.

Argument over which route should be adopted continued. At California Senate hearings (California Legislature, 1975) the Los Angeles Chamber of Commerce supported the Wilshire subway, which would best serve its members. The study the Chamber had sponsored was said to have shown that the Wilshire route was “technically” if not “politically” better, attracting more riders by going through a denser corridor. RTD President, Byron Cook, Supervisor Baxter Ward, Long Beach Mayor Clark and Rolling Hills councilwoman Dorothy La Conte called for the longer route.

In August, 1975, Los Angeles Mayor Bradley gave his support to the Wilshire subway. Long Beach Mayor Clark criticized Bradley for endorsing “a system that will be totally within Los Angeles” (*Los Angeles Times*, August 14, 1975).

The RTD Board now voted for a rail line from downtown Los Angeles to Long Beach as the first priority, avoiding for the moment the question of which route should be taken to the north, and placating politicians of the County’s second largest city, Long Beach, whose congressional representative — Glenn Anderson — was a key player in the fight to get federal support for rail transit in Los Angeles. UMTA Administrator Robert Patricelli, however, advised RTD to study the whole corridor. The study — performed by Caltrans — found for the downtown Los Angeles - Long Beach route, with the northern routes to both follow later.

More local-level disagreements ensued, a SCAG member finally recommending that RTAC endorse a combina-

tion known as “U” to UMTA. “U” used a four-part program which included the Wilshire subway; a people mover for downtown; bus improvements in general; and freeway bus services in particular. This program was adopted by the RTD Board in September. There was little rail involved, but the bus-on-freeway program would provide service to the dispersed areas of Los Angeles County and beyond.

As Adler (1986) relates, there was still no local consensus on what to do. When UMTA Administrator Patricelli visited Los Angeles in December, 1975, he found Supervisor Hayes and a Citizens Advisory Panel appointed by Mayor Bradley criticizing the People Mover; Supervisor Kenneth Hahn — representing low income areas such as Watts — calling for spending money to improve bus services and keep fares low as a top priority over rapid transit; and the Executive Director of the Central City Development Corporation endorsing both the subway and the people mover (Adler, p. 53).

County Supervisor Baxter Ward was now becoming increasingly visible on the transit playing field. Ward had unsuccessfully run for Mayor of Los Angeles in 1969, but he was elected a county supervisor in 1972. According to one report (*Reader*, March 14, 1980), Ward “seeks no campaign contributions, receives no campaign contributions, and points out that he is therefore absolutely beholden to no one.” “Familiar to Southland residents as a well liked television reporter for 17 years,” (Shaffer, 1980), Ward entered the fray with a clean image.

In 1974 Ward had convinced the county to purchase and refurbish a train for \$2 million to be used for commuter service. It had been referred to in media criticism as “Baxter’s choo-choo.” Amidst the confusion over which way to go over transit proposals in Los Angeles, he now prepared his own plan to present to the voters. Known as “The Sunset Coast Line,” it presented a futuristic vision of a

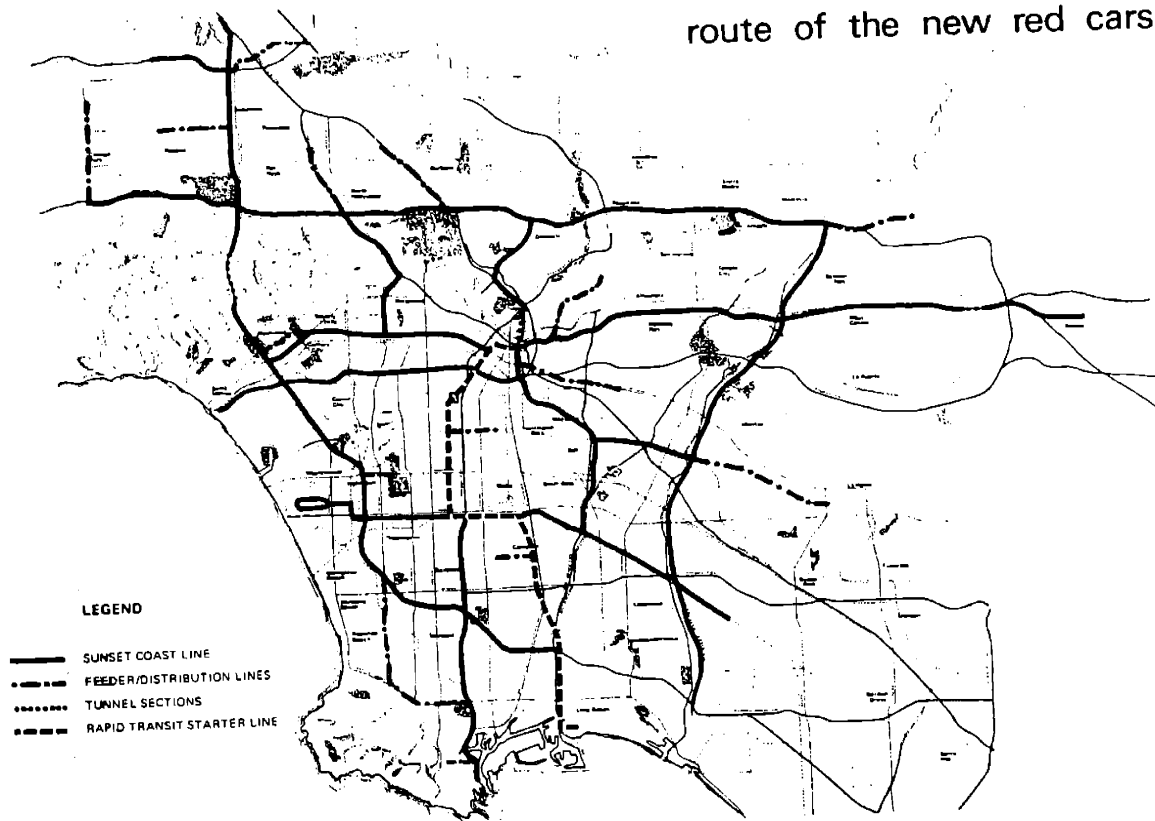
the sunset coast line



rail transit utopia unified by 230 miles of heavy rail main line operating at 85 mph, and 51 miles of light rail (Ward, 1976, p. 6) (See Map 6-2). Monorail service

would also be provided as feeders. The estimated cost was between three and four billion dollars in 1976 dollars (p. 11).

route of the new red cars



Map 6-2 Proposed route system for Baxter Ward's Sunset Coast Line

Our headline is TRANSIT — 281 miles of it.

And the bottomline is COST — 10 cents a day.

Ten cents a day will be the average cost for each resident in Los Angeles County in the sales tax issue that we propose.

Those ten cents will build the finest transit system in the world. It will be the newest, fastest, and most comfortable.

And to both the headline* and the bottomline*, there is this footnote:

*It will improve the air considerably.

Ward's ballot measure — asking for a half-cent sales tax to fund his plan — failed.

SCAG included the four-part program in its Regional Transportation Plan in April, 1977, with Los Angeles City Council endorsement following in September. The state, County of Los Angeles, City of Long Beach and RTD also agreed to the program, without full agreement on the rail element (Shaw et. al., 1979, p.95).

Institutional Change

The continuing failure to reach agreement on what to do at the local level, and the resulting reluctance of federal administrators to provide transit funding for Los Angeles, had meanwhile attracted the attention of state legislators. As Shaw et. al. (1979) put it:

Los Angeles has numerous agencies in the transportation arena — each with a piece of the action. Add to this brew the regional, state and federal agencies and we have an intergovernmental maze [p.46].

AB 1246 of 1976 created the Los Angeles County Transportation Commission as an answer to the transportation stalemate, and the Commission began work on January 1, 1977. The Commission included the five county supervisors, as did the RTD Board; it also included three representatives from the City of Los Angeles (RTD had two); one from Long Beach, and two from the smaller cities

(RTD had four from the smaller cities):

In one move, the main decision makers were brought together to discuss, decide and act in concert, whereas the transportation policy history was often noted by disagreement, lack of coordination and progress. The Commission powers are for short range planning, resource generation and allocation, policy and program development, project selection, and new system development [Shaw et. al., 1979, p.1]. . . A phrase most often used to describe the purpose of the LACTC and what it should do is, "Los Angeles — get your act together [Shaw et. al., 1979, p.46].

"Unlike SCAG," a staff budget memorandum (LACTC, 1978) announced:

We are not regional planners; unlike Caltrans, SCRTP and other implementing agencies, we are not builders and transportation system operators. To the Commission is entrusted responsibility for policy setting, programming of federal and state funds and priority-setting, among competing projects.

The legislation called for transportation policy to:

avoid undesirable duplication of transportation services, achieve the operation of a coordinated and integrated transportation system which will reduce auto usage and dependency, reduce the consumption of scarce and expensive energy fuels, and reduce the levels of auto related air pollution [Sec. 130001, (c)].

In working towards this, LACTC was to coordinate the operation of all public transportation services with the county so as to achieve efficient operation thereof and shall resolve all jurisdictional disparities between public transit operators" (Sec. 130250). "Fiscal authority" for rapid transit or other guideway systems was given to the LACTC (Sec. 130257).

As the Commission was starting up: the nation's newest, locally initiated fixed rail rapid transit system (BART — Bay Area Rapid Transit System) was under construction and opening its first sections in San Francisco. Though it was coming on line behind schedule and with cost overruns, it was opening. A spirit of "it can be done" was in the air and blew

to other areas — specifically Los Angeles [Shaw and Simon, 1981, p. 22].

LACTC Chairman, County Supervisor Kenneth Hahn, in a statement of goals in January, 1978, reflected a feeling that the public:

want their leaders to act — not to study and restudy things endlessly. . . It is time that we act decisively together to get on with the needed transportation improvements [cited in Shaw et. al, 1979, p. 54].

Hahn called for agreement on the construction of “one segment of rapid transit” as well as a number of bus programs and closure of gaps in the freeway system.

Caltrans had leadership responsibility for freeway transit, and in September, 1978, came up with a proposal for “significantly increased bus service on the County’s freeway system and the construction of busway and station facilities to encourage bus and carpool riding.” The study found that:

Buses appear to be more suitable than any other form of mass transportation to serve the entire County with a reasonable capital expenditure and within a reasonable time. They are also competitive in terms of operating cost. Exclusive guideways with buses, carpools, and vanpools operating along them will be able to accommodate peak hour travel forecasted for 1990 that would otherwise require construction of at least two equivalent freeway lanes in each direction [Caltrans, 1978].

At the LACTC meeting on January 10, 1979 (LACTC, 1979b), Supervisor Hahn praised his fellow commissioners. “I’m amazed to find out that when I’ve asked each one of you, “I want you to put for the first time not any political interest or subdivisions at heart, but the goal of transportation for 7 million people,” each of you has done it” (p. 2).

Handing over the Chair to Commissioner Ed Russ, he warned that a further oil crisis could put:

Our entire economy and transportation needs. . . in jeopardy. The automobile

and the trucks will be put aside. There will be rationing and people will say, “why didn’t you build a system that people can use to go to work, go to school, go home? That’s why it’s so important to have these alternate plans for rail and buses on the Century and Harbor freeways. . .

And this Commission, if you keep the same dedication, the same spirit, will solve every major problem and somebody someday will say, “We’re thankful for the Commission. The Los Angeles County Transportation Commission had the vision and had the will to provide good transportation for our people.” And I thank you for this beautiful experience this year.

Hahn’s references to energy problems reflected recent experience of oil shortages, while issues of congestion and pollution — and Los Angeles’ failure to deal with them while federal money went to other cities to build rail systems — became increasingly visible. The Commission’s 4-part program continued to reflect a focus on bus-on-freeway development, with only the Wilshire line included for rail development. Baxter Ward, of course, wanted to change that and, ultimately, with his influence on Proposition A of 1980, he did.

Ward had remained actively involved in the rail development program despite his ballot proposition defeat in 1976. In 1978, he came up with the “Sunset Ltd.” (Ward, 1978) a scaled-down version — 56.9 miles long — of the “Sunset Coast Line,” and put an “advisory” on the November ballot, asking which route voters advised LACTC to develop, given a choice of three. The results were:

RAIL transit from LOS ANGELES INTERNATIONAL AIRPORT to UNION STATION via elevated and at-grade structures along the Century and Harbor Freeways, and subway from the Convention Center to Union Station 52%

BUS and carpool guideway from LOS ANGELES INTERNATIONAL AIRPORT to the LOS ANGELES CONVENTION CENTER, via elevated and

at-grade structures along the Century and Harbor Freeways 26%

SUBWAY from UNION STATION to the WILSHIRE DISTRICT 21%

The result was used by Ward to demonstrate greater public support for a longer, lower-cost rail route, compared to the Wilshire subway or bus rapid transit. He wished to try another ballot proposition in November, 1979, this time for an assessment district (levies being placed on homes and businesses) to fund a proposal of the same scope as the original "Sunset." "The assessment district would guarantee [local matching funds for] the federal funding for Wilshire," he noted, in addition to providing the rest of the extensive system planned (LACTC, 1979a, p.4).

At the July 25, 1979 Commission meeting, Ward reminded his fellow commissioners that their organization was: titled the LACTC. It is not titled the Wilshire Subway Transportation Commission. It is the Los Angeles County and I am a Los Angeles County Supervisor. And I have regretted additionally that in all of the considerations for transit we have never viewed this county-wide.

But the LACTC Executive Director, Jerome Premo, pointed out that there were other (albeit not rail) projects which benefited other parts of the county, while Mayor Bradley urged the "doing of the possible," reminding Ward that he had supported Ward's "Sunset Coast Line" ballot proposition, which had failed (Shaw et. al., 1979, p. 69).

On August 6, 1979, the LACTC Finance Review Committee recommended against placing Baxter Ward's proposal on the November ballot for a variety of reasons, including the perceived regressive nature of Ward's financing method and the fact that "a Countywide consensus on the desirability of the proposed rapid transit system is not evident" (LACTC 1979c, p. 3). Two days later the Commission approved the committee's negative

recommendation 9 to 1.

On August 8 the Mayor of Long Beach, Thomas Clark, writing in response to a letter from Supervisor Yvonne Burke, also expressed the view of the City Council — reached unanimously the previous day — that Ward's measure not be endorsed. Among reasons given were that:

Long Beach has higher priority transportation programs that would require far less funding than our "share" of the Sunset Coast Line. These programs include the downtown transit mall, improved and expanded local bus service, the completion of Route 47, increased bus service to Los Angeles International Airport, and improvements to the "Iron Triangle" intersection.

The Board of Supervisors subsequently voted 3-2 against putting Ward's proposition on the ballot.

The Wilshire proposal — in contrast to Ward's — could proceed with state and federal funds without the risk of another ballot failure. The Commission accordingly adopted the Wilshire proposal as part of its four-part plan, and lobbied for it in Sacramento and Washington (Shaw et. al., 1979, p. 70). LACTC Executive Director Jerome Premo said that while rail was preferable to bus there, in all other corridors bus-on-freeway transit was superior to Baxter Ward's proposed rail services and that such busways could, in any case, be later converted to rail should demand justify it (Shaw et. al., 1979, p. 110).

1980 was to be a dramatic year. An LACTC staff report (LACTC, 1980a) once more emphasized the role of buses:

It is staff's view that the transit system alternative which best suits the needs of Los Angeles County is one which allows for significant short term improvements in our bus system, our supportive ride-sharing efforts and the efficiency with which our entire transportation system (including our streets and highways) moves people, *and* long term investment in rapid transit in our high volume transit corridors [p. 53-54].

An 82-mile rail transit system was cited as “one option [emphasis in original] among many for a rapid transit system objective.” The report found that:

The 1/2¢ increase in the sales tax is the most desirable financing alternative of those presented, based on the amount of funding it would likely provide and the flexibility we would have in the use of those funds (i.e. short term vs. long term improvements, bus vs. rail, operating vs. capital).

On March 26, a motion was carried “that the Commission request the Legislature to increase by a 1/2¢ our sales tax with a 50% vote of the electorate in November” (LACTC, 1980b).

Ward continued to push for his image of a railborne Los Angeles:

Ward has a strategy for the Sunset Coast Line. Every Tuesday when the supervisors meet, the chairman asks his colleagues to put his Sunset Coast Line financing proposal on the county ballot in June. And every Tuesday they do no such thing. With the exception of a single supervisor, Kenneth Hahn, Ward is convinced his colleagues don't want to see the Sunset Coast Line back on the ballot because they know it will win the voters' approval the next time around [Reader, March 14, 1980].

That “single supervisor,” Kenneth Hahn, was to now emerge as the primary pusher of a ballot measure. A proposal on the scale of Baxter Ward's, but quite different in emphasis from the one LACTC staff had proposed, was to be put to the voters by the LACTC, as Proposition A of 1980.

The Commission ran public hearings in July 1980, and paid for full-page advertisements in both the *Los Angeles Times* and *Herald Examiner* of July 20. Readers were told that 50 percent of funds raised from the increase in sales tax would be for mass transit guideways (no specific mode mentioned), 40 percent for immediate bus service improvements, and 10 percent for other transit improvements. Mail-in coupons were included for readers to express their opinions. 93 percent of the eight

hundred respondents said that Los Angeles County needed to improve its public transportation; given a choice, 20 percent called for a rail-based system, 16 percent for a bus-based system, 60 percent for a mixed rail/bus system and 4 percent gave no answer. The rail/bus mix clearly seemed to be the best recipe for a proposition's success.

On August 6, the Commission passed a motion calling on County Counsel to draw up language for the sales tax measure. Russ Rubley put forward a motion for 50 percent of sales tax funding to be allocated to guideways and major transit centers, 25 percent to regional bus improvements including regional TSM, ridesharing and fare relief; and 25 percent returned to local government on a population basis for local public transportation purposes including paratransit (LACTC, 1980c). There had been strong support at the public hearings for returning a share of sales tax proceeds to local governments (Adler, 1986, p. 58). The motion was carried 7 to 3, Ms. Killeen, Baxter Ward's alternate, voting against a measure which would not guarantee rail in particular.

Following the motion staff recommended:

that the exclusive guideway element of the program include both rail and bus modes as well as other technologies should they prove feasible and desirable, but that specific modes for specific corridors not be identified [LACTC, 1980c].

Barna Szabo made a motion that this recommendation be approved; it was seconded by Pat Russell, and carried.

Consensus is Forged

A tense meeting (reported in LACTC, 1980d) on August 20, 1980 elicited the final decision to go for the ballot, and radically changed the language to be used. Supervisor Hahn quickly took the lead role, reminding the Commission of:

great men who have built a great municipal water and power department. . . We all know that there have been studies

made for mass transit since 1946 and even before that time. Probably, \$25 million have been used in public funds for studies. We have had studies in depth for years, and what we have to do is have action, and this Commission has the obligation under the law to submit to the voters a plan to raise revenue [p. 4].

Hahn now proposed a plan modeled after one in Atlanta, where voters had been given a package to vote on which included a stipulation that the transit fare be held at 15¢ for seven years, in addition to building a rail system with sales tax revenues:

I propose that today the Commission go ahead and give to every rider a guarantee in writing that for five years from this day forward the rate on the RTD bus will be 50¢ anywhere in the County with a 10¢ transfer, for senior citizens \$4.00 per month, and for students \$4.00 per month. The 1/2% sales tax will raise approximately \$225 and this subsidy will take about \$75 million. The other two-thirds will be used for operations, buses, and rail rapid transit. I predict that there will be a favorable vote in November and the federal government will provide matching funds to Los Angeles County. With this proposal, I am willing to make a motion on this subject [p. 4-5].

Supervisor Hahn's motion (which included a provision for 25 percent local return of funds) was seconded by Supervisor Ward, and discussion followed.

Ronald Schneider, Principal Deputy County Counsel, had a question about the word "rail," included before "rapid transit" in Hahn's motion (on the copy of the motion it is actually penned in to the typescript). "That would change the definition of rapid transit in the proposed Ordinance," Schneider said. Because right now, rapid transit is not limited to rail" (p. 9).

Ed Russ, representing the League of California Cities, which had voted 17-15 against a ballot measure said he was now in a "tough spot," though he recognized that the 25 percent for the locals would be "good for the League" (p. 10).

After some further questioning, but before a decision on the exact provisions or wording of the proposal had been made, a motion was put by Ed Russ "Shall the 1/2% sales tax proposal ballot be placed on the ballot in the November election?" (p. 17).

It was a close call. The League of Cities had instructed their representatives Ed Russ and John Zimmerman to vote against. As Christine Reed (then the alternate to Ed Russ) explained in an interview:

they regarded [this] as a nebulous rail project that would not benefit them: I mean, this was like 80 cities talking to each other. And most of them were not going to derive any direct benefit out of this. And that's why they voted to oppose it.

The two votes from the City of Los Angeles were against. Pat Russell explained in an interview that "I had great concern about our ability to pass it. And I thought if we put it on the ballot and it failed it would be really disastrous for the future of public transportation." Supervisor Hahn's deputy Burke Roche explained it differently: the "major motivation," he said was that "they're all scared to death of an increase in taxes." Ward, on the other hand, claimed that the Los Angeles votes were against because "a rail line would be built some place where it would drain off funds from Wilshire."

In the event, John Zimmerman voted for the motion. According to a non-attributable source, "under pressure from Baxter Ward and Kenny Hahn [he] went against his instructions from the League of Cities."

When the roll was taken, five were for, six against. Ray Remy — one of two City of Los Angeles votes against allowing the measure to be placed on the ballot — dramatically reversed his position. The *Los Angeles Times* (Sep. 9, 1980) reported that Remy, who was representing Mayor Bradley, said that "although Bradley had deep reservations about the half-cent sales tax

proposal, "the mayor did not want our vote to be the one that would have kept it off the ballot." Accordingly, as the meeting transcript reported, "Mr. Remy then stated that he wished to change his vote and voted in favor of placing an issue on the ballot in November" (p. 17). The motion thereby passed.

Supervisor Ward now called for a minimum of 50 percent of sales tax revenues to be used for rail transit (p. 18).

There was some opposition to Hahn's proposal, and questioning of the amount of money to go to bus subsidies, but Barna Szabo, representing Supervisor Burke said that:

Given the lack of time to educate the public, perhaps more thoroughly on the more sophisticated proposal, I think we ought to go with this one. This one offers certain benefits to the bus riders, it offers a program for those who want to have rapid transit, it offers a protection for the cities who want to retain some revenues for their own purposes for transit improvement. I think that is the genius of the proposal that it provides for the expansion of the possible constituency of those who will go out and vote for the measure and, hopefully, give us the two-thirds vote [p. 21].

In a later interview, Szabo said of Hahn's packaging of bus with rail: "I wouldn't say it's very pure and honest. . . . What Kenny Hahn's thinking was if [we] provide a perceived public benefit, which is the lower bus fare, the public then will be willing to accept a public obligation for something else, which hopefully will work out." Hahn recognized the importance of the subsidy in a *Los Angeles Times* interview (Aug. 21, 1980): "If we do not give the rider a subsidy you can kiss it (the sales tax hike) goodbye. I wouldn't support it myself."

In addition to providing the attraction of bus fare subsidies, Supervisor Hahn added a component to try to draw the League of Cities representatives to the LACTC to vote to put his proposition on the ballot:

I might as well tell everybody that this proposal would give and take to try and bring a community of 81 cities together with all of their various interests and that is why we put the 25% for the cities that don't use RTD [p. 22].

Commissioner Wendell Cox suggested an amendment to the motion language to refer to "regional transit," (p. 23) eliciting the response from Supervisor Ward: "Let me second that motion please. *Under the assumption that it implies and states "rail"*" [my emphasis] (p. 24). Ward continued to stress the importance of rail: "It is my belief that anything less than 50% offered the people for rail transit will cause the issue to fail, not even get a 50% vote" (p. 26).

In an interview Ward said of the proposition:

I thought it was badly flawed because it chose to split up the money. In 1976, if I could have gotten a one-cent sales tax, I wasn't going to give any money for buses. . . . In 1980, Kenny — Kenny Hahn — was fearful that there was going to be a reduction or loss of most of the subsidies for the buses in the County, and the bulk of the riders of the buses in the County are people from his Supervisorial District and he likes to protect them in as many ways as possible. And one protection was to see if he could derive extra funds for the bus system. He had to compromise. He drew up a plan that let the buses drain off funds from a half cent sales tax for a limited period of time.

Then he had a political problem. How the hell do you get the rest of the members of the County Transportation Commission, of the RTD, to vote to put this proposition on the ballot unless you give them something? And in effect he bribed them politically by saying: and a major portion of the proceeds will go to the cities. And they'll use it for their local transportation purposes. They don't have any transportation purposes. They have taken that money and wasted it. Not one foot of track has been built.

At the August 20 meeting Heinz Heckerth, ex-officio representative from Caltrans, questioned the exclusion of non-

rail guideways from the ballot language:

My understanding, when we first discussed the ballot measure, was that we were looking for a measure that (1) was not modal specific, and (2) that we wanted to implement it on the basis of addressing the needs in each corridor at the time that the funding would become available for implementation on a corridor-by-corridor basis. In my best judgment, rail is an option; light rail is an option; high-occupancy vehicle, exclusive lanes are options; all serving the regional requirement for public transit in terms of line haul supplemented by our definition of regional transit which in effect is an enhancement of line haul systems on arterials as well as freeways. I would like to see us go back to that original concept. It seems that we have lost it [p. 27].

Commissioner Ed Russ supported Ward:

I think we have to guarantee the voting public, as Supervisor Ward says, that there is going to be so much for fixed rail; they are tired of seeing it going down the tubes of RTD [p. 28].

Supervisor Hahn continued to emphasize the importance of the fare reduction: "Unless there is a reduction to 50¢, they will say, 'Why should I vote for it' . . . You cannot take out the subsidy that will get the big vote" (p. 28-29). He nonetheless agreed to reduce the five years of fare reduction to three.

Bob Geoghegan, alternate to Supervisor Edelman, objected that the siphoning off of funds to keep fares low would be at the cost of improving bus services:

Practically, this amendment would limit any further expansion of the RTD even though we are going to have increased ridership because we will have the low fares. So for that reason, I am opposed to it [p. 31].

Supervisor Hahn countered that "We don't have a penny now unless the people vote for it" (p. 31).

Other commissioners tried to get their concerns addressed, but the consensus drifted towards accepting the restriction on rail, along with the fare reduction and

the local return. "I am going to bow out because it is rail," said Baxter Ward. "I have believed in that since I have come to Los Angeles. I think the people are entitled to it" (p. 36).

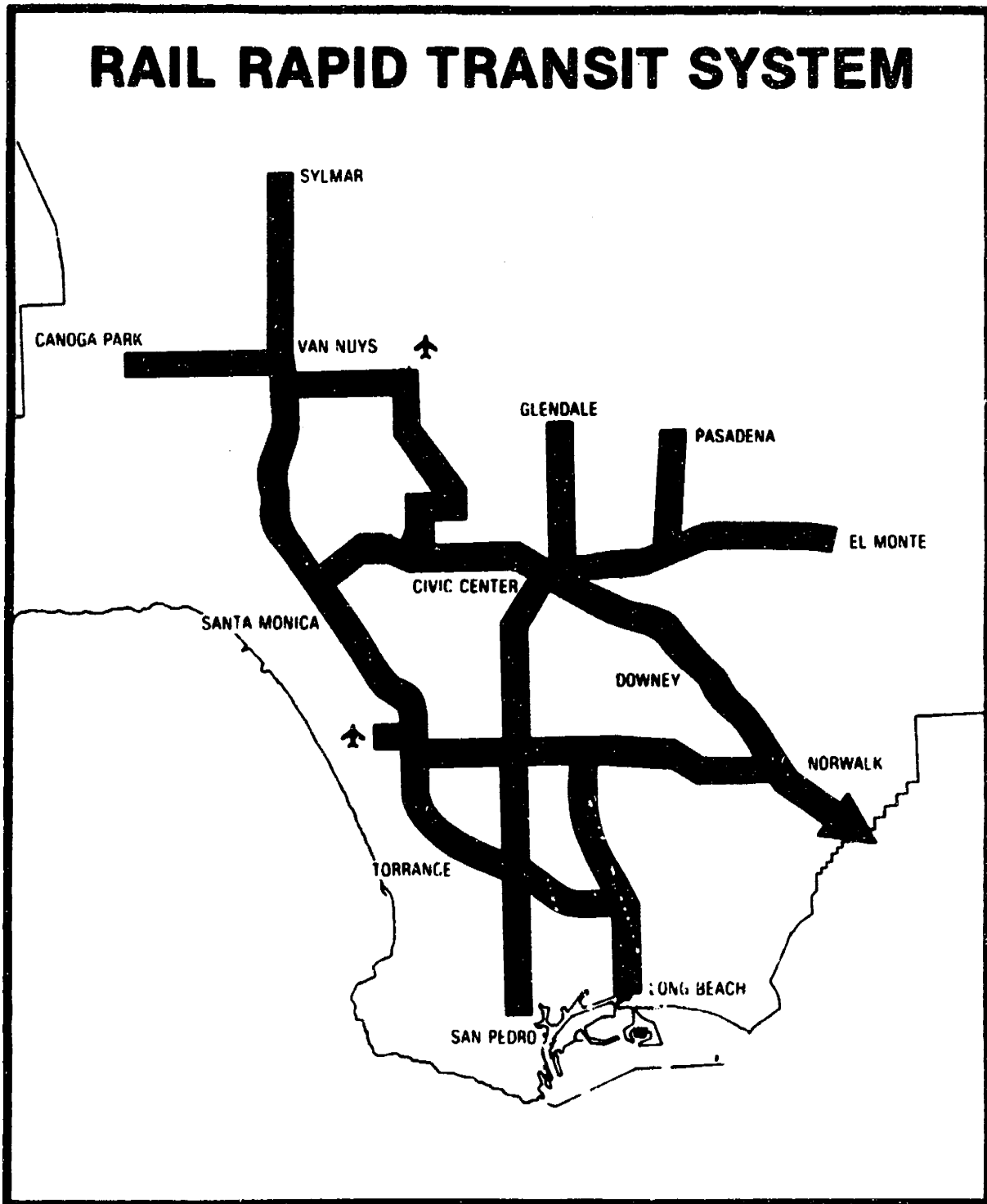
A roll call was taken for Supervisor Hahn's motion, which passed 7 to 4 (p. 40). A discussion of whether a map was to be included with the ballot, and which lines would be included now ensued. Various commissioners asked for particular routes to be included. "Yes, just generally go along the San Diego Freeway route," urged Commissioner Russ. "Go along the San Diego Freeway from the Airport down to the Harbor route or if you like to Long Beach."

An objection was raised by Ray Remy, alternate to Mayor Bradley, that some of the proposed lines might not be built for 25 years:

What we are going to wind up is coloring the County gray and black with lines. . . You might as well extend the line to every community and say that is the ultimate outcome.

Corridors were nonetheless placed on the map, broad-brush fashion, irrespective of when they might be built. The more places which appeared to be getting service, the better the prospects for the proposition passing. As one member of LACTC staff put it "basically you just take a small map of LA and a big felt tip" (See Map 6-3).

A motion was made by Supervisor Hahn to accept the Ordinance with all the changes, and it passed 7-4. The ballot language was then approved unanimously. The resolution was then read, and passed 10-1 (Resolution attached as Appendix C). In the final version, 25 percent of revenues were to at all times go to local jurisdictions; "such sums as are necessary" for specified bus fare subsidies were mandated for three years only, with the remainder of revenues during that time going for construction of the rail system. After the three years, 35 percent was ear-



Map 6-3 *The Proposition A rail system, as indicated to voters in official election pamphlet*

marked for rail system construction alone, with the remainder — after deduction of the local return — to be allocated for “public transit purposes” in general, including the rail system. The resolution was approved by a 3-2 vote of the Board of

Supervisors on September 2, with Supervisors Hahn, Ward and Edelman in support, Schabarum and Burke against.

Walter King, Hahn’s Alternate Commissioner on the LACTC and a close and

long-time friend described the struggle to advance the proposition:

Proposition A: we couldn't get one politician in the City of Los Angeles, not one Chamber of Commerce, to even endorse it. I didn't see how it could possibly pass, but Kenny has a knack of knowing, and he knew he was right, and only Kenny and the people wanted it, so they voted.

Now, the reason they voted was that Kenny was very much bus-oriented and. . . he insisted that we have a subsidy for the bus, so I think he made it very attractive, we would have the 25%, and the 40% would be used for three years just for subsidy of the buses, and that all the time we would have 35% going to [rail] transit.

The business community played a low-key role, and the campaign for Proposition A had an extraordinarily low budget of only \$21,000. According to the October 27 *Los Angeles Times*:

Of 100 major Los Angeles companies asked to financially back the proposed half-cent transit sales tax on the Nov. 4 county ballot, only Arco and Mattei, Inc., have made contributions.

Supervisor Kenneth Hahn. . . said he is "ashamed" of the business community for failing to support the measure.

The League of Women Voters, AFL-CIO and the Los Angeles Taxpayers Association (an organization of nearly 250 of the county's major business and civic leaders (*Century City News*, Sep. 24, 1980)) provided endorsements, as did the *Los Angeles Times*, and the *Los Angeles Herald-Examiner*. An election pamphlet put out in support of Proposition A by Citizens For Effective Public Transit (co-chaired by Supervisor Hahn, LATAX (the business-supported Los Angeles Taxpayers Association) Executive Vice-President Burke Roche (currently deputy to Hahn), Bill Robertson, head of the County Federation of Labor, and Rita Barschak, President of the League of Women Voters of Los Angeles County, and RTD Board President Thomas Neusom) had an American flag on the cover and the following words

alone:



**Reduce
Bus Fares Now!**

**Vote YES On
Proposition A**



Inside, readers were told that:

Prop. A will cost you only about a dime a day, or the price of a couple of tanks of gasoline a year. But here's what you get back in return. . .

50¢ countywide fares on RTD buses, a flat 10¢ transfer charge, and a monthly transit pass that costs only \$20. That's a 15¢ reduction in the fare alone!

For senior citizens, students and the handicapped — a 20¢ countywide fare and a monthly pass for only \$4.00.

Lower express fares for commuters!

Money for local transit improvements countywide, including more buses and better security!

The start of a *real* countywide rail rapid transit system. . . not some boondoggle, fancy experiment or pipe dream!

The clout we need to get out income tax dollars back from Washington to help build an effective public transit system right here at home!

Later, the flyer said that:

Prop. A will help unclog the freeways and help in the fight against smog by building a real rapid transit system that

by law will have to serve at least

- The San Fernando Valley
- The San Gabriel Valley
- West Los Angeles
- Long Beach
- South Central Los Angeles
- The South Bay-Harbor Area
- The Santa Ana and Century freeway corridors.

Transportation Action Committee, supplied arguments against the proposition, warning that Proposition A:

will raise your taxes every time you make a purchase. In return, if you live in the suburbs, it offers you nothing. . . This new tax money for transit won't necessarily put more bus service on the street and it won't put an end to transit

**LOS ANGELES COUNTY TRANSPORTATION COMMISSION
SPECIAL ELECTION**

<p>A LOS ANGELES COUNTY TRANSPORTATION COMMISSION - PUBLIC TRANSIT. To improve and expand existing public transit Countywide, reduce fares, construct and operate a rail rapid transit system serving at least:</p> <ul style="list-style-type: none"> San Fernando Valley West Los Angeles South Central Los Angeles/Long Beach South Bay/Harbor Century Freeway Corridor Santa Ana Freeway Corridor San Gabriel Valley <p>and more effectively use State and Federal funds, benefit assessments, and fares for those purposes, shall the Commission approve an ordinance authorizing a Countywide 1/2 percent sales tax? Revenues will be allocated: 25 percent to local jurisdictions for local transit; a specified reduced fare structure for SCRTD for 3 years; and specified allocations for rail rapid transit and to the Commission for public transit purposes.</p>	<p>149 YES → ○</p> <p>151 NO → ○</p>
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The Proposition A ballot

Although Mayor Tom Bradley had told the *Valley News* (Sep. 29, 1980) that "he would vote for the proposition, he indicated he would not campaign for it." He was quoted in the flyer, nonetheless: "Prop. A is an innovative approach to our public transportation problems. I support it," he said.

Arguments for Proposition A contained in the California election pamphlet, distributed to all voters (see Appendix D) and signed by Hahn, Roche, Robertson and the League of Women Voters, contained similar arguments. Conservative Supervisor Pete Schabarum, RTD Board member Mike Lewis (later RTD Chairman and now deputy to Schabarum), and Edward Martin, described as President of the Southern California

strikes. . . By the Transportation Commission's own admission, it will take 75 years to construct the system envisioned on their map. That's a long time to wait for an alternative to our next energy crisis.

Interestingly, while the time needed to construct the rail system was criticized, the *system itself was not attacked.*

At the November 4 election, 54 percent voted for Proposition A. "It was a lengthy fight. Tuesday November 4 was a historical day for better transportation," Hahn declared afterwards (*Culver City News*, Nov. 13, 1980). The largest percentage positive vote was in Supervisor Hahn's district — with 67.9 percent of voters in favor. The *Los Angeles Times* carried an analysis of the vote on November 16, 1980, stating that:

voters living along the proposed rail rapid transit corridors in Los Angeles County tended to favor Proposition A, the transit tax measure in the Nov. 4 election, while those who would not immediately benefit opposed it.

The largest positive vote by a city was in Compton, 80 percent of whose votes were in favor.

The City of Los Angeles supported the measure by 61% but its central area, where unemployment and use of Southern California Rapid Transit District buses is high, gave it 68.5%.

Out of the five Supervisorial districts, Baxter Ward's put in only the fourth highest vote for the Proposition: 50.2 percent. And Baxter Ward, himself, failed to be re-elected. He lost to former state Assemblyman Mike Antonovich, who had used the purchase of the \$2 million train by Ward as a campaign issue against him (*Los Angeles Herald-Examiner*, Nov. 21, 1980).

As Ward's swansong, he persuaded Supervisors Hahn, Edelman and Burke to lease this train to Caltrans for three years so that the state could use it to operate service between downtown Los Angeles and Oxnard (in Ventura County). Opponents, Supervisors Antonovich and Schabarum were absent from the meeting. On December 23, however, with neither Ward nor Burke remaining on the Board of Supervisors, the *Los Angeles Herald-Examiner* (Dec. 24) reported:

Antonovich introduced the motion. . . to derail the contract. Joining Antonovich in putting the train out to pasture were Supervisors Pete Schabarum and Deane Dana.

Supervisor Ed Edelman was absent, and the lone dissenting vote came from Supervisor Kenneth Hahn.

Los Angeles "Comes of Age"

Because of the question that Proposition 13 might apply, requiring a two-thirds rather than 50 percent vote for Proposition A to become law, the matter went to the California Supreme Court, which took until April 30, 1982 to reach

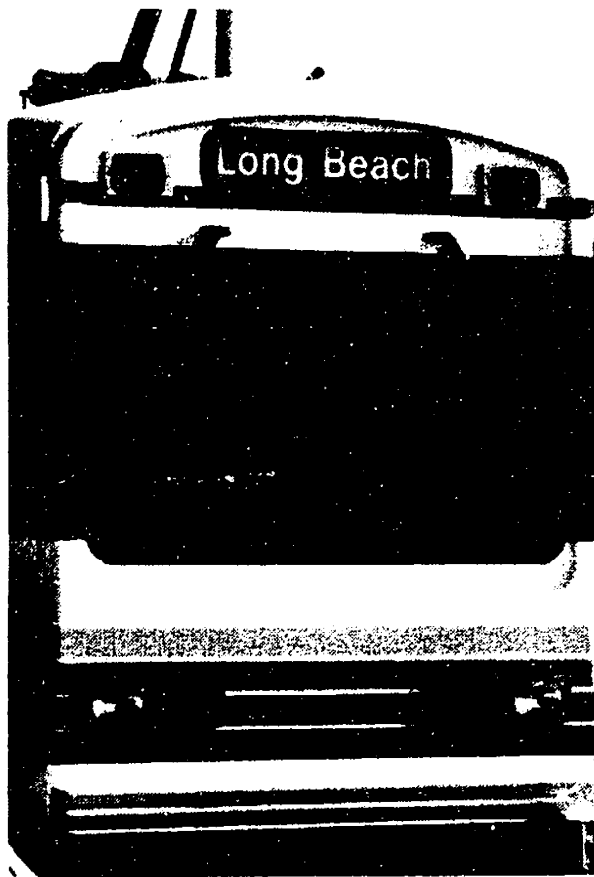
the 5-1 decision that the proposition had legitimately been approved by the electorate. Reacting to the court's ruling, Supervisor Ed Edelman declared that:



Ed Edelman

Los Angeles has come of age. We are entering a new era of support for rapid transit. We are closer to getting something done on rapid transit than at any time in our history [quoted in Hebert, 1982, p. 38].

At this point any discussion of whether rail or some other alternative should go ahead vanished — since rail was mandated — and argument shifted to the question of the order in which the rail lines should be constructed. By this point the Long Beach line had already been chosen as the most appropriate route with which to begin. It had already been the subject of study, much of the right-of-way needed was already in place and it appeared to be doable at low capital cost.



The Decision to go to Long Beach

The Long Beach possibility really came into focus with a public hearing before the California Assembly Committee on Transportation (see California Legislature, 1981a) entitled "Light Rail Transit in Southern California — Return of the Red Cars," and held in Long Beach. It was held before the Supreme Court had ruled on the legitimacy of the Proposition A vote, and at a time when state financial support for light rail in Los Angeles was under consideration.

The committee chairman, Bruce Young, whose district included part of the Long Beach rail route, made an opening statement, saying that the demise of the Pacific Electric had been the result of:

an absolute bankruptcy of public policy. . . Like lemmings we all followed the popular belief that the era of local rail passenger service was gone. Unfortunately, gasoline no longer costs 25¢ a gallon and modern technology has pro-

vided solutions to many of the operating limitations which plagued the Pacific Electric [p. 4].

Young pointed out that the San Diego light rail had just opened at a low capital cost, and:

in my mind San Diego has pointed the way to the potentially enormous possibilities available in many other communities throughout California. . . The Starter Line of the San Diego system is almost identical to the last surviving line of the last surviving line of the P.E. — the L.A. to Long Beach route [p. 5].

Assemblyman Elder — representing Long Beach — spoke next:

I'd like to thank you for holding the hearing here in Long Beach because as you pointed out on April 9, 1961, the last trip the Pacific Electric Red Cars, as they were known at that time, occurred between Los Angeles and Long Beach. It's appropriate, therefore that we begin with what was then, and frankly is now the most viable corridor for transportation. I would also ask that in light of the fact that I fly, Bruce, routinely out of Los Angeles International Airport, that you might think about a spur which goes from Long Beach to LAX because getting up at 5 in the morning to go and catch an airplane is an inconvenience that not only I share but a number of my constituents have complained about [p. 6].

Assemblyman Elder now offered to co-author AB 1460, which "funds a portion of [the Long Beach route]," with Assemblyman Young. He complimented Long Beach city officials for their interest in doing:

something about the right-of-way on the P.E. line between Ocean Boulevard and Willow Street on Long Beach Boulevard. I think that that is a very positive indication that there is much support for this kind of alternative. I think we have, as has been pointed out, the opportunity to right a wrong decision made over 20 years ago that brought about the demise of the world's most extensive rapid transit system. The eventual rebuilding of the old Red Car line would be a giant step in not only alleviating our area's mass transportation problems, but in helping to accelerate the already fast

moving redevelopment of downtown Long Beach [p. 7].

Long Beach Councilman Marc Wilder now reaffirmed one of Supervisor Hahn's basic points, the need to act:

The 60s and the 70s were times when we evaluated the perfect systems and what society needed in relation to those perfect systems. The 80s presents us with a very different picture. It presents us with the necessity to get on with the possible, to take those plans and use them as a road map for what really needs to be done and bring them about quickly because if we don't, the impact is going to happen in spite of us. If we don't get on, three and a half million more people will come to Long Beach, Los Angeles, Orange County, the entire region as a result of immigration and natural birth [p. 10].

The ensuing discussion — which focused on the characteristics of various rail technologies and the feasibility of implementing light rail — proceeded on the assumption that passenger rail would be beneficial in Southern California. Light rail was seen to be low in cost while attractive to passengers, a politically potent recipe for success. Assemblyman Frizelle, added the sole critical element. But, while he was concerned that there be local — not just state — financial support for light rail, he supported the principal of building light rail, *per se*, contingent on that local support.

An industrial historian, evoked Snell's (1974) conspiracy theory, talking of the "untimely death" of the Red Car system, claiming that "the automobile was accepted by the public to a large degree because the alternatives were even less desirable," (p. 49). While buses were "dirty, smelly, and definitely not rapid," he said, the rail system was deliberately made unattractive "by eliminating trains from the schedule, slowing their running times, and performing little maintenance on increasingly dilapidated cars or tracks." No mention was made of the changing form of the city, or the reasons the automobile had become the preferred mode of the dispersed me-

tropolis, compared to fixed public transportation. No members of the academic community of transportation specialists (almost all of them vehemently opposed to rail) were present to testify.

The Chair of the LACTC, Long Beach Councilman Russ Rubley spoke, pointing out that although:

I am of course, very much intrigued with the idea of a rail line between Long Beach and downtown Los Angeles. . . that is just one proposal and as Chairman of the County Transportation Commission I want to take a look at the competing proposals before saying this is where we should begin [p. 62].

Assemblyman Young responded by urging that:

and certainly as a City Councilman from Long Beach I would hope that you and I could put our shoulders together and try to push the Long Beach line only because it seems to be the first one available [p. 62].

Long Beach Assemblyman Elder echoed that the Long Beach line:

can be done the quickest and if it is done the quickest, there will be literally, in my opinion, an explosion of interest that overlaps not only Los Angeles County, but Orange County. And the people when they see something as viable as this could be in operation, the support, the political support, the financial support will follow. And I think that's one of the reasons we have to go because it will be a physical demonstration for people in this county to see what can be done when all levels of government cooperate [p. 65-66].

Board of Supervisors and LACTC member Deane Dana — another politician representing Long Beach — also supported light rail. A representative from the office of Congressman Glenn Anderson of Long Beach, was acknowledged, but did not speak.

Assemblyman Young returned with comments at many points, stressing the low cost of light rail, and its ability to be built quickly, and criticizing the high cost of the Wilshire Metro Rail. He concluded

the meeting by declaring that “today has marked a new beginning” and calling for “our collective decision to move now on some form of light rail transit” (p 157).

With the Chair of the Assembly Transportation Committee showing his strong support, attention was now focused on the Long Beach line. It had certain other undeniable political advantages: it served the district of Congressman Glenn Anderson, campaigner for federal rapid transit funds for Los Angeles, and it passed through two county supervisorial districts — those of both Supervisors Hahn and Dana.



Glenn Anderson

Assemblyman Young’s Long Beach hearings were referred to in an LACTC staff report shortly afterwards (LACTC, 1981a):

That hearing focused on a potential Los Angeles - Long Beach line. While that line may have the best potential for early

implementation, that choice should not be made in Sacramento [p. 3].

By then, however, Caltrans was already conducting light rail engineering feasibility studies for the Long Beach line (and also one to follow Santa Monica Boulevard).

On September 23, 1981, the LACTC unanimously passed a motion to “perform a detailed evaluation of the Long Beach to Los Angeles light rail corridor. . . to determine whether it could be the initial line for construction of a low-cost rapid transit system complementary to the Wilshire Starter Line,” and to “evaluate other available rapid transit rights-of-way and transit technologies countywide” (LACTC, 1981b). While other corridors were certainly to be considered, it was clear that the Long Beach line was to be the focus of attention.

As if this was not enough, Assemblyman Young appeared at the October 14 Commission meeting, to present his proposal (California Legislature, 1981b) under which “The Los Angeles to Long Beach line, covering a distance of 21 miles and costing approximately \$168 million, would be the first line constructed.” After Chairman Russ Rubley had presented Assemblyman Young a “Red Cars” t-shirt from the Commission, he made a motion to authorize the LA - Long Beach light rail line. The motion was seconded by Supervisor Hahn, replacing a resolution Hahn had himself prepared calling for the same thing. Both motions were, however, referred to the *Ad Hoc* Rapid Transit Committee, rather than receiving a direct Commission vote. “Mr. Remy asked the Commission to reflect on Assemblyman Young’s proposal” (LACTC, 1981c, p. 3).

At the October 28 meeting (LACTC, 1981d), Chairman Rubley’s motion was brought back to the Commission, with wording amended by the *ad hoc* committee. It now moved to:

authorize evaluation of the LA - Long

Beach light rail line; such evaluation shall be carried out in a timely and expeditious fashion which will enable the LACTC to program the project' if it so chooses, in the next State Transportation Improvement Program (STIP) cycle.

The motion was adopted without objection.

Analytic work was performed by consultants Parsons-Brinckerhoff, but as one then LACTC staff member speaking not for attribution said:

You can do those reports and find any conclusion you want to find and we knew before we started, at least I knew in my own mind, that the conclusion was going to be light rail Los Angeles to Long Beach. No two ways about it. . . Here's a line. And maybe it's not the best line, but it's the one that the technical people are saying can be done relatively cheaply because you've got all this wonderful right-of-way. We don't know whether anybody'll ever ride it, but that's another story. It goes through a minority part of town, which is good. It goes downtown, which is good. It goes to Long Beach, which is good. Politically it worked. . .

I've always believed that if you could have had a secret vote as opposed to a public vote, the project never would have been approved. I don't think there were more than three votes on that Commission for that thing.

Long Beach Mayor Kell's explanation for the choice of the Long Beach corridor to go first was quite consistent with this: "It probably was the first corridor," he said:

because initially they thought it would be the cheapest one, one they could get in place easiest initially, probably with the least amount of political problems, cover the longest distance, and the cheapest. So they could show accomplishment, also.

A senior member of LACTC staff conceded that he thought the "Long Beach line was chosen not because it is the most cost-effective line. I think there are many other lines that are more cost-effective. Perhaps it was the most politically necessary line."

Commissioner Christine Reed also took up this point:

The reason that the Long Beach line got picked is because it ran through the district of the Chair of the Assembly Transportation Committee, and Supervisor Kenneth Hahn — who is the father of Proposition A — wanted it there. . . and the City of Long Beach wanted it there. And the Commission — or the transportation community of Los Angeles — does not feel brave enough to stand up to the Chair of the Transportation Committee of the Assembly. Or was not at that time. I personally don't think it still is today brave enough. So that what it was; was a small example of pork-barrel politics. . .

And so the decision was a basically straightforward — in my opinion — pragmatic political decision, which was never discussed in public, but you know that is the clear reason that this line was picked, because of the political forces, the elected officials that were lobbying for it, and also the city reps.

Were people not willing to question this, I asked long-time RTD Board member Marv Holen? "They don't have the moral strength to stand up and say no," he replied. "Everybody's got their agenda. And you begin to look at the things on the RTD agenda, which become endangered because you may get into a squabble with the LA - Long Beach line."

On March 17, 1982, Executive Director Rick Richmond transmitted a staff report to the Commission (LACTC, 1982a), saying in his cover letter that:

Staff believes that our intensive four-month evaluation has shown that the Los Angeles - Long Beach line can serve as a start toward a more comprehensive system, that other potential lines also show promise for relatively low cost rail transit implementation and that it would not be prudent for us to pursue alternative transit technologies [to light rail] at this time.

With the legality of Proposition A yet to be confirmed, the staff report concerned itself with funding availability. The Long Beach line, assuming a light rail

technology, had been estimated by Parsons-Brinckerhoff to require total capital costs in the range \$254-280 million, although two other corridors were seen to be less expensive. A series of criteria were ranked for each project under consideration:

Each has its own strengths and weaknesses, making it difficult to single out only one as being "best" in some absolute sense.

We would argue, however, that it is neither necessary nor desirable to choose the "best" at this time, although we feel that Corridor No. 1 [Los Angeles - Long Beach] probably ranks highest *by virtue of the strength of expressed support* (my emphasis) and its potential for serving as the "spine" of a larger system which could serve all of Southern Los Angeles County [LACTC 1982a].

On March 17, the *Ad Hoc* Rapid Transit Committee reviewed the staff recommendation, concurring with staff, and issuing joint recommendations that:

The Commission should proceed with engineering, environmental assessment, and right-of-way negotiation on the Los Angeles/Long Beach light rail line and declare its intent to construct this line presuming cost, patronage, construction schedule and environmental impact presently known is confirmed on completion of the above activities [LACTC, 1982b, p. 1].

Engineering, environmental assessment and right-of-way negotiations were also called for on three other lines.

On March 24, the full Commission met to reach a decision. Supervisors Dana and Hahn — into whose districts the Long Beach corridor falls — were particularly vociferous. "I feel very strongly about the light rail," said Supervisor Dana:

I think it is absolutely mandatory to begin some transportation development in metropolitan Los Angeles County. The Long Beach to Los Angeles proposal is a good starting point because it connects two major population centers. . .

The Long Beach to LA rail line will provide a key transportation link to re-

creation and employment centers along the way. This does not mean we do not want an underground rail system. The Wilshire Subway is highly expensive, offers no connections to other areas and both are very important given the consideration the need to make maximum use of limited dollars. Light rail, in contrast, can be more readily extended to other areas of the county, thereby serving far larger population segments. We need to look no further than our clogged freeway system any working day to see the need for transportation alternatives. A commitment to a light rail system puts us on the road to providing fast, safe, and modern transportation in a system that can be tied with existing bus transit programs and thereby relieve the heavy load that exists on our freeways today [LACTC, 1982c, p. 7-8].

Supervisor Hahn spoke next, sounding a catalytic rallying cry:

I think today can, I hope, be a historic day. . .

We can do something or we can have another study. We as public officials cop out having a consultant tell us what we already know what to do. We spend millions of dollars on plans to say let's have mass transit again. We have the great harbor of Long Beach/San Pedro, it's a part of our defense, our economy. We have Union Station in the center part of Los Angeles. In 22 miles distance, we could have a mass, fast, even a bullet-type train for transportation in light rail. It can go in 22 minutes with proper grade separation. We could really break through the barrier of transportation in Los Angeles if we had the will to do it. But, there has been so much jealousy and bickering as to what route should go first. Then nothing moves. . .

The Long Beach/Downtown through the Long Beach Avenue, the right-of-way is there, enough for four tracks, two in each way, you could have an express, fast bullet-type train and a local one to serve all the local communities. We've got the money sitting in the bank. If we don't spend it, it will go back to the State. The people, by 54 percent, voted for better transportation. It was the only measure voted for a tax measure that has passed. The freeways are jammed every night. I don't know how any of you feel when

you go home on the freeway. It is bumper to bumper still. . . I would like to see this program go ahead with dispatch.

I know this is a compromise. . . I've been in politics long enough to know that sometimes you have to give a little to get a lot. If we can bring in these other engineering studies as a symbolic sign that we are concerned with these areas next time, in the future, then this is a good program. This means in effect that I hope the policies, Mr. Chairman, because you will be the chairman in history when you say so, ordered for the first time the correct authority to get ahead and get going on it. At the same time, you protect your area, *every other route receives a piece of the action as they say. You can go back to their constituents and say we have a route planned for your area some day. But we must give first priority to the route that people can actually start riding on trains* [my emphasis]. I hope that we can unite on this and I'm glad that Deane Dana came down to speak also on this. He represents both Long Beach and San Pedro Harbors. You know what the Navy is doing down there. You know the potential tourist trade that will be there. You know the downtown interests. This is a real shot in our economy, and I think a signal to the United States that Los Angeles will not talk anymore, but doing something for mass transit. Thank you very much, Mr. Chairman [LACTC 1982b, p. 8-9].

Alternate Commissioner Pierce, a member of the ad-hoc committee said that "as a resident of the San Fernando Valley, [he was] happy to see that the committee of the Commission is looking at the possibilities of light rail in the San Fernando Valley as well as in the other areas" (p. 12). Chairman Edelman responded by saying that:

We do have, I believe, a recommendation of the Ad Hoc Rapid Transit Committee that will answer the needs of not just the Long Beach/Los Angeles area, but these other areas shown to be at least preliminarily feasible. . .

Certainly, today is a historic day, as previously indicated by Supervisor Hahn and my colleague Deane Dana, and we are indeed fortunate that the Commission has been able to hammer out a con-

sensus. That has not happened in the past. We've had people in high office fighting over one route or another route, sometimes sidestepping this Commission, going around this Commission, but because of this Commission, we have brought different interests together and we have hammered out a consensus position that we can all agree to and that we can get public support for [p. 12-13].

Commissioner Rubley said he saw the day as "Red Car Day" and also as the Commission's "graduation day, in graduating in the fact that we are now stop talking and we are going to act" (p. 15).

Supervisor Hahn now returned:

Just to conclude, I've just been handed a petition that I would like to file. The list is about 500 names supporting this action for the Long Beach/Downtown rail line priority. The signatures are from cities including Whittier, Downey, Glendale, Manhattan Beach, Monrovia, La Habra, Arcadia, Montebello, Reseda, Glendora, Woodland Hills. I think there is a community-wide interest in this project [p. 15].

Chairman Edelman followed by calling for a vote: the motion to proceed with the Long Beach line, while doing preliminary work on others, passed unanimously. The decision to bring light rail back to Long Beach had been made.

Bus Fares Down; Rail A Priority

As preparations for the Proposition A bus fare reduction to take effect on July 1, 1982 were underway, LACTC staff expressed concern over publicity being given to the fare decrease:

They assume ridership will go up 10-15% without such promotion. If the promotion results in a 25-30% increase, the cost of providing the increased bus service will subtract substantially from the funds available to the Los Angeles/Long Beach rail line and other transit projects during the next few years [Memo from Burke Roche to Kenneth Hahn, June 12, 1982].

It was clear where priorities lay — with rail — and made clearer from the choice of music references in the *Los Ange-*

les Times report of June 28:

To the background strains of "Chattanooga Choo-Choo," political friends and former foes of Proposition A stood together last week in Arco Plaza, taking and sharing credit for what banners and straw hats called "the new era in public transit."

But, as KTLA-TV (Los Angeles) reported, "to commemorate this giant step in local transportation, Hahn, Edelman and Bradley hopped onboard a bus to try out the new fare. Hahn had to borrow his 50¢ from an aide."

Documentation shows that, while his own proposition formula had directed funds towards bus fare reductions in preference to bus service expansion, Supervisor Hahn did make constant efforts to have bus service added to serve his constituents. In a letter to then RTD General Manager John Dyer, dated July 19, 1982, for example, he stated:

I noticed on both Saturday and Sunday that the bus line on Vermont Avenue from 120th to Los Angeles is heavily loaded and this reminded me to ask you if you have added any additional buses on any heavy line where the passengers have to stand.

On October 13, he wrote again:

I am concerned that you have not added enough buses for the public. There seems to be a reluctance on the part of RTD's staff to encourage the people to use the buses.

Dyer responded on November 11, citing "restrictions associated with Proposition A funding." These "restrictions" were cited in a letter from UTU General Chairman, Earl Clark, to Supervisor Hahn, dated March 14, 1984:

The current level of RTD service is appalling. Schedules are impossible to meet. . . thousands of riders are being passed up daily. . . and buses are overcrowded to the point where the possibility of a major catastrophic accident is very real.

It is our understanding that the Commission's refusal to permit the RTD to schedule the service needed to accom-

modate the increasing ridership is based upon a Memorandum of Understanding which limits the number of service hours the District is permitted to operate. This was apparently done to permit the Commission to squirrel away as much as possible of the Proposition A funds for the Metro Rail Project.

Environmental Impact Assessment work for the Long Beach line was carried out; then, on March 27, 1985, the LACTC "basking in the glare of television lights and amid self-congratulations" (*Los Angeles Times*, March 28, 1985) un-animously approved the Long Beach project for final design and construction. On October 31, 1985 ground was broken on the project. On July 14, 1990, to great fanfare (see Epilogue), the line was declared open.

THE LONG BEACH LINE: A POLITICAL PRODUCT

LIGHT RAIL IN LOS ANGELES IN general, and the Long Beach line in particular, emerged when sufficient political forces came together to create a consensus after decades of disagreement which had prevented any decisions from being reached.

Passenger rail — and in particular the subsidization of passenger rail — had not historically been in a strong position politically. Rail had not been attractive to the majority of the Los Angeles population who had migrated to Southern California looking for a low-density lifestyle.

Downtown Los Angeles interests were advocates of rail dating back to their support of the Kelker de Leuw proposal in 1925, and ploughed substantial resources into promoting the construction of rail. Time and again they failed to draw adequate political support to have their plans turned into reality. Communities away from the central area often saw rail as a threat to their economy and lifestyle, and opposed it. There was much more clear-cut support for highway developments,

which were of universal appeal to a society where movement was not focused on fixed corridors, and where freedom of movement by individuals was put at a premium. Freeway construction therefore went ahead, while rail development did not.

With BART-fever in full swing in Northern California, the Southern California Rapid Transit District was formed with a mandate to build rail rapid transit; its board only provided two seats to the City of Los Angeles, however, limiting the scope for rail advocacy. This notwithstanding, RTD did back attempts to develop rail, which failed despite financial support from the central city business community.

With concerns over energy, pollution, congestion and mobility for the poor emerging and growing, transit was being increasingly nationally advanced as a strategy for combating these urban problems, and the emphasis in Los Angeles shifted from highways vs. transit to what type of transit should be provided and which communities in Los Angeles County should be served. But, when federal funding became available for the capital costs of rail or other transit projects, Los Angeles was unable to develop a consensus on what approach to take to transit development. A rail program which focused great resources on downtown and the Wilshire corridor was pitted against one serving a far wider area. Baxter Ward, claiming to represent all communities in Los Angeles County, emerged as the principal force behind this latter approach. The "four-part" program eventually adopted by the RTD Board, and which formed a large part of the LACTC's agenda during its early years, however, included little rail, but favored bus-on-freeway development.

The LACTC was formed with a view to achieving consensus on transportation policy, where none seemed previously possible. That consensus was ultimately

forged by Supervisor Kenneth Hahn in a display of political gamesmanship which built on the rail advocacy of Baxter Ward, while creating a package which would both secure sufficient votes from fellow Commissioners to put the measure on the ballot and votes from the public-at-large to make it law.

If one person was responsible for restricting the capital program to rail development, it was Baxter Ward, who had no time for buses. The wording of the staff proposal, which right up until the August 20, 1980 meeting, had left open the mode to be developed in specific corridors was changed by Supervisor Hahn to provide for railbuilding alone to secure Ward's support. The bus element of Hahn's proposal — three years of bus fare reductions — was aimed at benefiting Hahn's low-income constituents and drawing popular support to the measure as a whole. Money for rail would continue on tap for decades after the short vote-buying fare reductions had ended.

The provision of 25 percent return of revenues to local communities was intended purely to garner support from commissioners to put the proposal on the ballot, given opposition to the proposition by the League of Cities. The lack of central city support for the proposal (which did not favor the Wilshire line central city interests primarily wanted) is indicated by the failure to initially secure votes from City of Los Angeles representatives for the ballot measure, although one of them — Mayor Bradley's alternate, Ray Remy — in a dramatic about-turn changed his vote at the last minute, enabling Proposition A to proceed to a vote.

Selection of the Long Beach line was quite clearly a political act, beginning with vigorous advocacy by the Chair of the California Assembly Transportation Committee (whose constituency would be traversed by the Long Beach line) in hearings held in Long Beach, and fuelled by pressure from the two county supervisors

— Hahn and Dana — through whose districts the line would pass, and the fact that the principal pusher for rail transit in Congress, Glenn Anderson, represented Long Beach. The pressure to “show accomplishment,” availability of right-of-way, and the purported low-cost of the proposal enabled Hahn and Dana to win the support of the Commission as a whole, whether or not the line appeared to provide the most benefits for the cost.

While there were many actors involved, the Los Angeles rail program is ultimately the legacy of two people: Baxter Ward, who tirelessly demanded rail development; and Kenneth Hahn, who knew how to knit disparate political interests into a consensus to proceed. But, if we have seen here how rail advocates failed time and again before eventually succeeding to marshal support for rail, we

are left with the question of *why* rail was seen as so desirable in the first place. What understanding of rail put it into proposal after proposal since 1925? Why did Baxter Ward want trains, not buses, and wish to limit the scope of future generations on how capital funds might best be spent? What attractions did rail have that allowed the Commission to rally around this mode of transportation as its principal program when, as we have seen from the analysis in earlier chapters, that for the dispersed Southern California community, it makes little or no sense.

To probe the lure of rail, we need to examine the mythology which tells us why it seems attractive. We will then see how myth and political power can powerfully combine to obtain support for programs of little public benefit.

We are often not aware of the ideological blinders that we wear because of our presence in a particular culture at a particular time and the particular training and experiences we have had.

— Kramer (1975, p. 510)

7 A Theory of Myth

MOST OF US LIKE TO BELIEVE we do things for reasons. We study problems, come up with different ways of dealing with them, and choose the solution which seems best. Economists calculate which project has the best payoff — in economic terms. Politicians work out which one offers the most — in political terms. The economic and the political interact, and policy is supposedly made. As Graham Allison (1971) puts it, the central theme of such a “rational actor” view of policy is the applicability of aims and calculations to explain how decisions get made (p. 10).

We have seen, however, that from an economic standpoint the decisions made in Los Angeles don't add up. The Proposition A light rail system offers few benefits and at massive cost. The money could have been much better spent in other ways.

Powerful political processes have been at play, however, and the actions of a few key actors did clearly make the Proposition A system a reality, whether or not it was economically justifiable. What has not been explained is why politicians found rail to be in the best interests of ei-

ther their constituents or themselves, and such explanation makes up the task ahead.

In this chapter (based partly on work in Richmond 1987 and 1989) a theory of understanding will be developed which sees comprehension — and subsequent action — not in terms of the “facts” of economics textbooks and civics classes but of a potent mythology which explains the way things are and how they can be made better. The major myth to be investigated in the subsequent five chapters will be that rail transit can alleviate the transportation — and also certain other — problems of Los Angeles.

Understanding is seen here as a function of one's position and experience in a particular culture. Understandings are realized through cognitive processes which cut intelligible patterns out of what would otherwise be an unbearably complex and unstructured fog of perceptual phenomena. Symbolic processes — driven by symbols, images and metaphors — play a central role in steering the cognitive knife it will be argued, providing a basis for concept formation, for the understandings which those concepts entail, and for the formation of powerful myths which appear

to represent reality.

The processes operating under these theories, it will be shown, are not necessarily “illogical,” except relative to the expectations of analytical reason, but conform to a different type of logic — a logic which builds on symbols, images and metaphors to create myth. We must understand the nature and mechanism of this logic if we are to make sense of decisions made by humans, not analytical logic machines.

This account will begin the task of identifying and defining the characteristics of cognition under complexity by arguing that our natural response is to reject complexity and ambiguity: we organize information instead so as to provide simple and coherent understandings. These provide for a “common sense” basis of action which eschews analytical processes but allows us to function fluently, efficiently, and untroubled by uncertainty.

A theory of symbolic processes is next presented. It details the structure and functioning of symbols and images. The role of symbolic processes in forming and channeling thought is discussed, as is the power of symbols and images to create and shape values.

A further symbolic form — metaphor — is then introduced; and its role in shaping understanding is demonstrated. It will be shown that all these symbolic processes come together coherently to lead to the formation of myths, in which belief is not only widespread but stable.

COGNITION UNDER COMPLEXITY

Experience

EVERYDAY LIFE WOULD BE IMPOSSIBLE if every action or sensation were to be intensely examined or closely considered. “Like the centipede, confused by self-consciousness, everyone would be incapacitated by complexity,” writes de Bono (1967, p. 13).

“The function of thought is to eliminate itself and allow action to follow directly on recognition of a situation.”

“Routine physical chores, reading and writing, the complex web of relationships with family, friends, even pupils in the classroom,” writes Philip Morrison (1985), “all those depend upon many skills of hand and eye and of habits of mind and speech, skills that are predictive, effective, and widely shared” (p. 81) “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 as filled with air [p. 82].

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 [p. 82-83].

While common-sense interpretations and prescriptions guide us well 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. It was common-sense, for example, to Melachthan, that the Copernican argument that the earth rotates daily on its own axis and moves annually around a

stationary sun was wrong, since “the eyes are witnesses that the heavens revolve in the space of twenty-four hours” (Kuhn, 1957).

While such decisiveness under conditions of limited knowledge is puzzling from an analytical perspective, it can be more readily understood through cognitive theories, which focus on the workings of the mind. As Christopher Alexander (1965) suggests:

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 [part 2, p.60].

In a color blindness test, a person with normal vision will pick out the structure of number or letter symbols hidden in a mass of multi-colored dots; the surrounding dots are ignored as noise. To make sense of reality, the mind imposes structure and, as Steinbruner (1974) suggests, much of such work is done “apparently prior to and certainly independently of conscious direction” (p.92). Such structures may seem to produce obvious solutions to complex problems, while the more intangible but crucial issues are never summoned before the mind’s eye.

Simplicity

As Nietzsche (1969) has said, we continually need a “narrower, abbreviated, simplified world” (p. 14-15). The imposition of organizing and simplifying structure is basic to understanding. The interrelationships and overlap of complex problems presents a confusing spectacle unless it is broken down in some way. Steinbruner (1974, p. 95-96) gives the example of memorizing a series of digits, where a structure or rhythm is established and used as an aid to memorizing the whole. In this example, the imposition of structure performs a useful heuristic function because it allows us to replay the original without incompleteness or bias.

With more complex problems, and when there is simply too much informa-

tion for the mind to absorb in its entirety, the structuring can be less helpful. Parts, de Bono (1967) explains, are:

extracted from the whole situation and then fitted together by means of fixed relationships to re-create the whole. . . The choice of parts into which the whole is dissolved is dictated by familiarity, convenience and the availability of simple relationships with which to recombine them [p. 71].

There is no conscious decision-making, in other words, as to which are the most important parts and as to how they are to be ordered: there is, instead, a tacit perceptual process which organizes information in ways which are easy to understand as well as seeming to make a lot of sense.

According to the “simplicity” or “Minimum” principle associated particularly with the Gestalt School, “we organize our percepts so as to minimize their complexity” (Pomerantz & Kubovy, 1981, p. 438):

Just as a soap bubble achieves the simplest possible configuration (eg., the most symmetrical) without the need for goals or purposes, so does perception work automatically toward the good figure [Pomerantz, 1981, p. 160].

Figure 7-1, from Hochberg (1978,

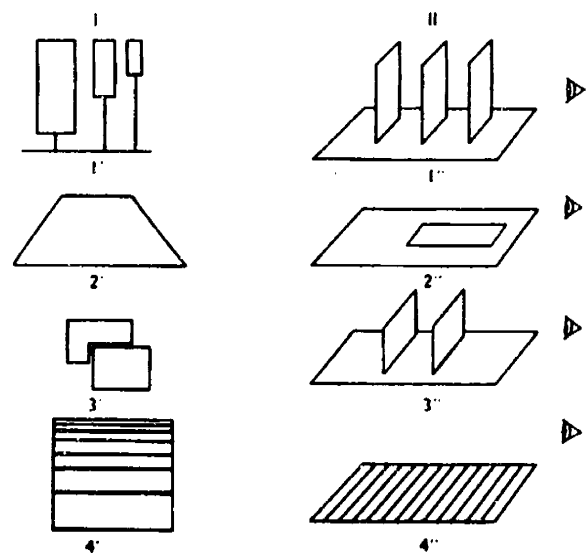


Figure 7-1
Depth Cues

p. 140) shows a series of "depth cues." Each can be interpreted as rather complex forms in two dimensions or as simple forms in three dimensions. We invariably perceive the simpler alternative.

In 14 out of the 17 patterns tested in an experiment in which subjects connected dots of a pattern so as to reflect its perceived organization, "the most popular organization was also one with the shortest path length" (Pomerantz, 1981, p. 162). And, as Shepard (1981) concludes:

Subjects uniformly use quite definite, though unconscious, rules to select (from the infinite variety of three-dimensional worlds consistent with a given retinal projection) the one that is most regular in some way — the one in which, for example, as many as possible of the lines are straight and parallel, the corners are right-angled, and the overall structures are symmetrical [p. 285-286].

As Pomerantz and Kubovy (1981, p. 437) suggest, perception will fill in "missing" information so as to simplify representation. It may also ignore or distort stimulus information toward the same end. Selecting the most parsimonious guess about the environment "may often be a useful heuristic. But sometimes the less parsimonious guess is correct." The concept that the heavens "rotate" around the Earth is a simple and intuitively-attractive one; it is verifiable, furthermore, by the direct experience of the eyes. The correct explanation is far less mentally accessible and requires a higher degree of abstraction in order to be appreciated.

The desire for simplicity has the added effect of focusing attention on the concrete, rather than the abstract, as outlined by Wachs and Schofer (1969) in their discussion of transportation planning:

The evaluation of transportation plans has seldom, if ever, been based upon a rational inquiry into appropriate goals, meaningful objectives, and logical criteria which result from the chain of dependence relating these to the societal values. Objectives and criteria, rather, have

been narrow in scope and have reflected the intuition and biases of planners who usually did not have explicit statements of goals and objectives toward which to work. This is not surprising, since 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 on transportation systems [p. 138].

Common Sense in Transportation

The principles elucidated above are also central to the theories of symbolic forms to be developed below, and they are best illustrated later in the light of the full theory. Here, nonetheless, are some of the common sense arguments frequently given in favor of building rail transit, rather than taking other actions.

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 lagging behind the rest of the world: all successful cities have rail transit. Bringing rail to Los Angeles will make Los Angeles successful too. The monorail at Disneyland unfailingly works well and it's a lot of fun; rail systems in other cities provide comfortable, frequent and fast service, and something like that could put Los Angeles on track, too. People absolutely hate having to drive on the congested freeways, and will jump at the opportunity to ride on something clean, modern and fast.

It's common knowledge that buses are dirty, smelly and slow and attract crime.

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

Cities with rail systems have more orderly patterns of development too. Rail transit can help contain L.A.'s urban form.

All these observations come from daily life, and they seem to make a lot of sense. They come together coherently, furthermore, making a powerful case for the construction of rail transit.

"All I have to go on is my gut-level ordinary you know citizen, policy-maker housewife reaction," said then Mayor of Santa Monica and LACTC Commissioner, Christine Reed, referring to an idea by Southern California Association of Governments Executive Director Mark Pisano to electrify and automate freeways. "It is too Star Wars," she said. Most people who make decisions are ordinary people, not technical specialists. They generally have many issues to deal with, and are liable to be heavily influenced by the experiences of everyday life.

To the traditional academic mind arguments from such experiences may sound preposterous. Perhaps because of that, the reasons for the formation of such views have not been studied; but, if those views are to be changed, such an understanding must be reached. The traditional academic response is to simply tell decision makers with such views that they are wrong; as a result the traditional academic has often been ignored. We need to understand both the basis of the decision-maker's thinking as well as that of our own in order to give good advice.

The psychological theories outlined so far have made an important contribution to our understanding of how we understand. Yet, they stop short of examining the conceptual building blocks with which we simplify the complex world we face and come to be "at home" with it. To this end, the next sections will outline a theory of understanding rooted in the idea of a "symbolic system." At the root of the symbolic system are symbols which lead us to conceive meanings. Symbols represent meanings in terms of images which,

it will be argued, are themselves symbolic. Images act as symbols to create simplified world-views. As such they also behave metaphorically. Metaphor, it will be suggested, forms the basis of human conceptualization of knowledge, and metaphor, it will be shown, leads to the myths which provide the shared understandings which allow us to function as a society.

SYMBOLS

WHAT ARE SYMBOLS? HOW DO they work? And by what criteria may they be identified in action? These questions must be addressed before using the concept of the symbol to interpret understandings at work in the formation of transportation policy in Southern California.

The Symbol Gives Rise to Thought

The symbol is the special preserve of the human. As Paul Ricoeur (in ed. Reagan & Stewart, 1978, p. 37) says, "the symbol gives rise to thought." It does not, however, necessarily make humans more thoughtful. Indeed, Von Bertalanffy (1965) claims that:

Man is a symbol-creating, symbol-using and symbol-dominated animal throughout — but the use he makes of this remarkable achievement is only a minute part rational. Symbols — mink coats, flags, anthems, television advertisements, political catchwords, deterrence and what not — determine individual and social behavior only too often to the detriment of the individual, of society, and of humanity [p. 27].

As Edelman (1964) observes: It is characteristic of large numbers of people in our society that they see and think in terms of stereotypes, personalization and oversimplifications, that they cannot recognize or tolerate ambiguous and complex situations, and that they accordingly respond chiefly to symbols that oversimplify and distort [p. 31].

Signs and Symbols

Although some commentators (Von Bertalanffy, for example) view symbols as a special class of sign, a helpful way to understand the symbol is to contrast it with the sign, as does Susanne Langer (1957). A sign, she says, is merely indicative. It announces the presence of something. Wet streets, for example, are a sign that it has rained. A smell of smoke signifies the presence of fire. "The interpretation of signs," writes Langer, "is the basis of animal intelligence," but humans do:

the same thing all day long. We answer bells, watch the clock, obey warning signals, follow arrows, take off the kettle when it whistles, come at a baby's cry, close the windows when we hear thunder [p. 59].

A sign is associated with its object to form a pair. To each sign there is a corresponding object of greater interest than the sign itself. The fact that there is fire, for example, is more interesting than that we smell smoke.

A sign acts as an announcer to a subject. But symbols lead the subject to *conceive* their objects:

Symbols are not proxy for their subjects, but are *vehicles for the conception of objects*. To conceive a thing or a situation is not the same thing as to "react toward it" overtly, or to be aware of its presence. In talking about things we have conceptions of them, not the things themselves; and it is the conceptions, not the things, that symbols directly "mean". . . . The sign is something to act upon, or a means to command action; the symbol is an instrument of thought [Langer, 1957, p. 60-63].

Our understandings of flags help show the difference. A white flag raised is a sign of surrender. A black flag is the ensign of a pirate ship. A dropped flag signifies the start of a race. A "flag-stop" is a station where trains only stop upon being signalled. A flag sign in a railway timetable is an indication that one must signal to stop the train. These are all uses of "flag" as a sign in Langer's terms.

Yet there is also the symbolic in most of these flags. It is no accident that a flag of surrender is white: white symbolizes purity, innocence, non-aggression. Looking at a white flag, one gets more than the simple information that "the enemy is giving up." One gets a *conception* of that surrender. Similarly, the black flag does more than announce "pirates:" it conceptualizes — it *symbolizes* — evil. What about the flag sign in the timetable? It may be no more than a conventional sign, but it can also have the power to be symbolic. It can trigger the conception of a sleepy wayside settlement, where most of the trains don't stop.

Only the flag which starts the race is non-symbolic: It produces an almost reflex reaction. The flag drops and people start running. It has a transparent quality: one sees straight through the event of the flag dropping to the information it points to.

National flags are perhaps the most powerful symbols of all: they conceive a nation's identity, and are seen as something sacred and to be defended.

Symbols act as Gateways

Although a symbol — unlike a sign — does not point to a specific object in a one-to-one relationship, symbols:

may be part of a larger pattern or they may be connected to it. *They act as gateways to the larger pattern*. [de Bono, 1969, p. 112].

Going through one gateway rather than another introduces one set of choices, rather than another. Although going through a gateway doesn't compel one to follow a particular path on the other side — Hacker (1985) notes that "symbolization has a compelling rather than a compulsory quality" (p. 82) — the likelihood is that once a particular threshold is crossed, the traveler will continue in the direction in which it leads. The gate to the rose garden may lead to paths to several different varieties of rose. Once inside

that garden, it is easy to become absorbed enough to spend the whole afternoon wandering around its offerings, perhaps trying several paths within its boundaries, oblivious to the yet more wonderful gardens which might lie through other gateways.

The Larger Patterns are Culturally Established

As Cassirer suggested, symbols are *creative functions* of the individual mind and culture concerned. For Cassirer, Von Bertalanffy (1965) writes, symbolic forms encompassed all activities characteristic of the human mind and culture:

They are not simply "given" and committed for every human mind or mind in general, but develop in close interaction with the several fields of cultural activity [p. 42].

Symbols are interpreted individually; their meaning depends on the individual's membership in and experience of a particular culture:

The tensive symbol cannot be entirely stipulative, inasmuch as its essential tension draws life from a multiplicity of associations, subtly and for the most part subconsciously interrelated, with which the symbol, or something like it and suggested by it, has been joined in the past, so that there is a stored up potential of semantic energy which the symbol, when adroitly used, can tap [Wheelwright 1962, p. 94].

Despite the latitude for individual interpretation, symbols have the characteristic of demarcating the boundaries in which the "semantic energy" they hold can be released, thereby containing the scope of the conceptions they engender. Those boundaries are established historically and transmitted through tradition. Symbols thereby:

permit contemplation of and action on objects that do not necessarily belong to the immediately accessible present. Thus symbolization is essentially connected with and constitutes the capacity to remember and to recall [Hacker, 1965, p. 81].

Symbols Act as Blueprints

Symbols may come to be associated with particular conceptions through direct experience, but the blueprint for those conceptions may be determined historically by a series of events with which the present generation has no direct connection. In this regard, symbols can be said to act genetically. Just as an individual may carry traits of an ancestor he never knew, so symbols may carry forward a conceptual apparatus which arose in contexts quite unlike those in which they now operate, but which retains the power to direct meaning today. "The characteristically recurring feature," says Hacker:

is always the distance of the symbol from the symbolized, reflecting the autonomy of the symbol, namely its temporary or permanent emancipation and divorce from the original context.

The Homestead Act, for example, provided 160 acres of land free to anyone who settled and improved land, and 160 acres became and long-remained a symbol of self-sufficiency, "even though it is obvious that the amount varies according to the quality of the land and the type of crops" (de Neufville, 1981, p. 7).

Bartel's (1983) account of the symbol of the "Jordan River" in Negro spiritual also provides a compelling illustration of this principle. For the Israelites, the crossing of the Jordan:

was the culmination of a long and arduous pilgrimage from bondage in Egypt to freedom in Canaan, an experience that would suggest obvious parallels to the lives of the slaves. In the process of adaptation in the spirituals, the river and the crossing itself became the basic symbols, and the other details of the story vanished. . . Stripped of all localizing restrictions, the symbol acquired the flexibility and independence needed to fulfill a variety of functions.

Most frequently the Jordan River symbolized the dividing line between this world and the next, between servitude and freedom. It was the final step on the long way to salvation, and crossing it represented the final victory. . .

Sometimes the Jordan River became a symbol of difficulty in the struggle for a better life, as in "Stan' Still, Jordan," in "O, Wasn't Dat a Wide River?" and in "Oh the Winter, Oh the Winter." In other songs the river symbolized not the difficulty of reaching the promised land but rather the promised land itself, as in "Roll, Jordan, Roll" [p. 71-72]

As Hacker (1965, p. 80) notes, "In symbols, the idiosyncratic and personal is always intermingled with the general and universal." The "Jordan River" symbol has an emotional impact on the individuals attracted to it. Through the sum of relationships of individual to symbol, however, the "Jordan River" becomes a general symbol of emancipation.

Symbols Convey Values

According to Von Bertalanffy (1965), symbols can *convey values* and leave their imprint on emotions and motivations. "They enter into intimate connection with higher emotions or even animal drives" (p. 34) The "Jordan River," for example, is tied to the value of freedom, provides a focus for the invocation of that value, emotionally revs up the congregation singing the spiritual, and motivates them to seek out that value. There are many examples of symbols arousing animal drives. Pin-ups of "sex symbols" and the Nazi swastika are cases in point.

Symbols often derive power from their simplicity of form, from their manifestation of abstract concepts in easily identifiable, concrete forms. As Bartel (1983, p. 72) points out, the phrases in spirituals that symbolize the difficulty of attaining the objects of one's dreams "possess a simple eloquence." "Jordan River is chilly an' cold," and "Jacob's ladder is deep an' long," are examples.

Symbols, then, contain evocations of values and emotions, and make them available to us through forms of simplicity and eloquent persuasion capable of transcending the barriers of time and context.

Symbols Act in Specific Contexts

A discussion of the physical attributes of the Jordan River by two engineers would not likely arouse a yearning for freedom in them. Placing the Jordan River in the religious setting of a spiritual, however, unlocks its emancipatory semantic content.

Metonymy

As Lakoff (1987) says:

Metonymy is one of the basic characteristics of cognition. It is extremely common for people to take one well-understood or easy-to-perceive aspect of something and use it to stand either for the thing as a whole or for some other aspect of it [p. 77].

Lakoff and Johnson (1980) point out a crucial difference between metonymy and metaphor (metaphor will be discussed below). While metaphor is "principally a way of conceiving of one thing in terms of another," metonymy "allows us to use one entity to *stand for* another" (p. 36). In a metonymic relationship between two elements A and B, B stands for A (Lakoff, 1987, p. 78). Lakoff gives as example:

One waitress says to another. "The ham sandwich just spilled beer all over himself."

Here *the ham sandwich* is standing for the person eating the sandwich.

Pars Pro Toto

Foss (1949) claims that "*symbolism is founded on the relation of part to whole.*" (p. 13) [my emphasis]. Abstraction, "the treatment of a part as if it were the whole, omitting the infinite differences which make up the real whole," is a basic function of symbolism, he says (p. 16). It is also an example of a metonymic function. Lakoff and Johnson (1980) demonstrate the focusing referential (or metonymic) function of the symbol in a *pars pro toto* relationship:

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. When we say that we need some good heads on the project, we are using "good heads" to refer to "intelligent people." The point is not just to use a part (head) to stand for a whole (person) but rather to pick out a particular characteristic of the person, namely intelligence, which is associated with the head [p. 36].

"The Face for the Person" is another example:

If you ask me to show you a picture of my son, and I show you a picture of his face, you will be satisfied. You will consider yourself to have seen a picture of him. But if I show you a picture of his body without his face, you will consider it strange and will not be satisfied. You might even ask, "But what does he look like?" Thus the metonymy THE FACE FOR THE PERSON is not merely a matter of language. In our culture we look at a person's face — rather than his posture or his movements — to get our basic information about what the person is like. We function in terms of a metonymy when we perceive the person in terms of his face and act on those perceptions [p. 37].

Lakoff (1987) cites Rhodes (1977), a linguist who does fieldwork on Ojibwa, a Native American language of central Canada:

As part of his fieldwork, he asked speakers of Ojibwa who had come to a party how they had got there. He got answers like the following (translated into English):

- I started to come.
- I stepped into a canoe.
- I got into a car. . .

What Rhodes found was that in Ojibwa it is conventional to use the embarkation point of an ICM [idealized cognitive model] of this sort to evoke the whole ICM. That is, in answering questions, part of an ICM is used to stand for the whole. In Ojibwa, that part is the embarkation point.

Ojibwa does not look particularly strange when one considers English from

the same point of view. What are possible normal answers to a question such as "How did you get to the party?"

- I drove (Center stands for the whole ICM.)
- I have a car. (Precondition stands for the whole ICM.)
- I borrowed my brother's car. (This entails the precondition, which in turn stands for the ICM.)

English even has special cases that look something like Ojibwa.

- I hopped on a bus. (Embarcation stands for the whole ICM.)
- I just stuck out my thumb. (Embarcation stands for the whole ICM) [p. 78-79].

By Symbols Are We Made

"The human being uses and creates symbols," writes Hacker (1965). "The individual is also made and created by symbolism" (p. 80). Symbols direct our conceptions of people, things, or events. They illuminate and thereby make more inviting certain paths, leaving other avenues dark and out of view:

The reduction which is the characteristic for all symbolization and therefore for all rituals, leaves the greater part of the world, not closed into the symbol, outside of its emphasis. And so this greater part, left out, becomes unimportant and meaningless.

Or, as Carlisle (cited in Wheelwright, 1962, p. 95) rather nicely put it, in a symbol is to be found "silence and speech acting together."

Thus, in de Neufville's example, the 160 acre symbol of self-sufficiency led to the limitation of many federal water projects aiding the arid West to farms not over 160 acres, despite the economies of scale demanded by modern technology. The symbol relayed the significance of 160 acres from a previous century, and kept silent on the more practical matters of the modern age.

Colonel North as Example

Is it an accident that while, during his years at the National Security Council, Lt. Col. Oliver North wore civilian clothes, for testimony at Congressional Hearings on illegal diversion of funds to the *Contras* he turned up in full-dress Marine uniform? "There is little doubt that North cuts an impressive figure in his uniform," wrote Boston Globe reporter Ethan Bronner on July 9, 1987. Bronner also quoted Navy Times editor Thomas Philpott. "The uniform carries a message," Philpott said. "It says 'I am someone who serves my country so show me the respect I deserve.'" As Edelman (1964) has observed "emotional commitment to a symbol is associated with contentment and quiescence regarding problems which would otherwise arouse concern" (p. 32), and North's uniform was clearly worn to silence criticism.

North and his uniform will be used to demonstrate the attributes of symbolism identified above.

The uniform is a symbol, not just a sign. The uniform doesn't simply tell us that North is in the military. It is a vehicle for our conception of what North is. It serves as a *gateway* to a complex of associations of what it is to serve your country, to be courageous, selfless, risk your life, and brings into sharp focus these highly positive *values*. These associations have developed in human *culture* from far back in *history*, and have been transmitted from generation to generation by *tradition* as well as by *direct experience*. Throughout history the uniform has symbolized patriotism, selflessness, heroism. The uniform acts to recall to memory examples of military heroism.

The effect of the symbol will vary from person to person, since everyone has a unique set of lifetime experiences, but the uniform symbolically defines the boundaries in which its *semantic energy* is to be released. Whether or not the heroic associations of the uniform are relevant to the context of North's actions, they are

brought forward and used to give a "reading" of his performance. By wearing the uniform (replete with medals from Vietnam, themselves imbued with symbolic significance), it makes it hard to see North in a negative light.



'Colonel North couldn't make it to the hearings today, but he sent along his uniform for questioning'

Figure 7-2 His Uniform Symbolically Defines North as a Whole

The uniform is a simple but dramatic symbol, and speaks eloquently for itself. It reflects only a part of North's identity, but it symbolically defines North as a whole: A man with a breastful of medals is a hero, and that is that (see Figure 2, from *Newsweek*, July 27, 1987, p. 11). To use the terms of Polanyi and Prosch, we "surrender" to the symbol, we let it "carry us away" (p. 72-73).

It is important to note the "compelling" rather than "compulsory" quality of the symbolic uniform. The symbol successfully directs the understanding of North by the mainstream of the population, but those who do not adhere to the values the uniform represents will not be manipulated. Critics of the military, pacifists, those who have experienced the destructive effects of war may even be strengthened in their opposition by the presence of the uniform. To be effective the symbol's targets must be receptive to the values it conveys.

It is interesting to note how Senate Committee Chairman Daniel Inouye attempted to deflect the impact of North's symbolic display: For the first time, the Senator wore on his left lapel a Distinguished Service Cross received during World War II. Symbolically it said: "You're not special, Col. North, and you're not above answering for your actions to me."

Interpreting Symbols

It is important to establish what shared meanings a symbol has come to evoke to a particular culture and how it came to have those meanings. In the case of symbols far removed from their initial context — "Jordan River," for example — it implies establishing a bridge across contexts. In the case of the Jordan River this is provided by a text of great significance to its audience, the Bible.

Understanding a symbol's roots and meaning permits examination of how it might function in the specific modern-day context we wish to study. Knowing that the Jordan River is associated with the liberation of the Israelites explains why it might be such a compelling symbol for slaves yearning to be free. Understanding that the military uniform has been traditionally worn by men willing to sacrifice their lives for their country shows why it might be such a potent symbol of valor at the emotionally-charged Congressional hearings of Colonel North.

To interpret the symbols we suspect of being active in the formulation of transportation policy in Southern California, then, we need to establish their roots, and the meanings they have thereby acquired. We then need to test if those meanings structure understanding in the texts under study. Do the symbols' associations translate coherently into the present context? Do they provide compelling summaries of complex situations? Are alternative explanations to the one suggested by the symbol absent when the symbol is

present and active?

As will be established shortly, the most important role of the symbol is in the creation of metaphor, to give us a particular way of "seeing" a situation. Although not all symbols are metaphors, it is intrinsic to the function of symbols that they generate images and that those images act metaphorically. It is to the concept of the image, and to its function in metaphor, then, that we now turn.

IMAGES

IMAGES ARE THE AMMUNITION OF symbols. They also act as symbols in themselves. Few images are as potent as those of life and death, and Col. Oliver North came to his Congressional hearings well-armed with these. North's uniform is a symbol, but the symbol only has meaning in terms of what it leads us to conceive; what it leads us to conceive is an image. North, resplendent in a Marine uniform laden-down with medals, evokes a heroic and compelling image; it thereby leads us to conceive of North as a hero. The symbol produces the image, and the image sells.

The Nature and Functioning of Imagery

Images are a form of subjective knowledge, capable of governing behavior (Boulding, 1956, p. 6). They perform a "mediating" function (Schaldenbrand, 1979, p. 60) to provide an escape from the confounding complexity of the real world. We have an "intense hatred, for instance, of multidimensional value orderings" (p. 111), Boulding says, and the image serves to render the many shades of complexity in black-and-white.

Complexity is foreign to us, but images come naturally. Images, writes Langer (1957) are:

our readiest instruments for abstracting concepts from the tumbling stream of ac-

tual impressions. They make our primitive abstractions for us, they are our spontaneous embodiments of general ideas.

Image-making is, then, the mode of our untutored thinking, and stories are its earliest product. We think of things happening, remembered or imaginary or prospective; we see with the mind's eye the shoes we should like to buy, and the transaction of buying them; we visualize the drowning that almost happened by the river-bank [p. 145-146].

What is it to "see" with the "mind's eye?" To imagine is "always to make something absent appear in the present, to give a magical quasi-presence to an object that is not there" (Merleau-Ponty, 1964, p. 60). The image Oliver North has left us with causes him to reappear before us after he has faded from the TV tube. We identify with that image and it influences our actions.

The image is effective largely because those under its influence are unaware that it is an illusion: the magic of the "quasi-presence" is that it is taken for the real thing. "The imaginative consciousness of Peter is not a consciousness of the image of Peter," writes Sartre (1972, p. 8). "Peter is directly reached, my attention is not directed at an image but at what appears to be] an object."

The way in which we "reach" Peter will depend on our personal associations with him and with phenomena related to him, and on the context of our life's experience in which those associations are placed. Someone who has had different dealings with Peter will have a different image of him. A third person who has never met Peter, but who has only seen a portrait of him in which he is smiling, will form an image of a smiling Peter, and that "Peter" might be quite a different person from the Peter revealed to someone who has known him in person. But, as Sartre says, "what we recover in an image is not this or that aspect of a person but the person himself as a synthesis of all objects" (p. 133). That synthesis serves to

generalize: to the person who has only seen the portrait of the smiling Peter, Peter always smiles. To the person who has only seen the heroic-looking televised Oliver North, Oliver North is always a hero.

Images are Symbolic

The ability of images to present the partial as if it were the whole gives them a powerfully symbolic function. "An image is only an aspect of the actual thing it represents," writes Langer (1949):

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* [p. 386].

Though the heroic image engendered by North's uniform reflects but an aspect — and possibly a distorted aspect — of the Colonel, it gives a picture of the man as a whole. The image "serves as a proxy for a set of unstated assumptions" (de Neufville, 1981, p. 1), obscuring alternatives which "do not usually have the courtesy to parade themselves in rank order on the drill ground of the imagination" (Boulding, 1956, p. 84).

Miller (1979) provides a helpful discussion of the mechanics of imagery. He quotes first a passage from Thoreau's *Walden*. This, he says, creates an image of Walden Pond: "You construct an image as part of the process of understanding the passage," and:

The image helps you to remember what you have read. It helps you to remember in the following sense. If, after putting down the book, you were asked to repeat what you have read, you would probably not be able to repeat it verbatim. Nevertheless, you could reactivate your memory image and describe it, thus generating a different prose passage but one that (if your memory is good) would be roughly equivalent to the original passage that inspired the memory image [p. 204].

Lakoff and Johnson (1980) press the point that "We typically conceptualize the nonphysical in terms of the physical — that is, we conceptualize the less clearly

delineated in terms of the more clearly delineated" (p. 59). In Walden the image we create of the pond is easier to commit to memory than the stream of words that make up the text. Where there is a lack of compelling imagery associated with a text, we have to resort to more abstract forms of memory, such as memory of the text itself. But, as Miller suggests, when vivid imagery does exist, it displaces abstract memory.

Miller adds:

One point that is sometimes overlooked when memory images are discussed: The vagueness of the image is critical to its utility. If memory images had to be completely detailed, like photographs, they could not preserve the incomplete information given by written descriptions. Thoreau did not describe every detail of the hills above Walden Pond; a reader who wants to remember accurately what Thoreau did describe had better not clutter the memory image with details that were not provided. It may be impossible to construct an image that does not contain some extraneous information that is merely suggested, not entailed by the text; a reader lacking any knowledge of the New England countryside, for example, would not construct the same image as a reader who knew it well. My point is simply that such additions from general knowledge are potential sources of error, even where they appear highly probable in the given context [p. 205].

Miller does not, perhaps, quite adequately press home the significance of this error. While he does stress the subjective nature of imagery and its dependence on the context in which it is formed, it is the *pars pro toto* symbolic nature of imagery that is of greatest importance here. We do not "see" only a part of the pond; we imagine the hillside, and how the pond is set in this landscape, and where the ice "not yet dissolved" remains on the surface. And although our experience will color our images with error, *of that error we will be unaware*; to us, however we see it, Walden Pond will seem very real and complete.

Images Reflect Emotions and Needs

An important function of imagery is to delve into "the vast storehouse of forgotten memories and experiences" that constitute the human mind (Boulding, 1956, p. 53), providing a channel for the subconscious to influence action, if not revealing it to us directly.

The act of imagination "is an incarnation destined to produce the object of one's thought, the thing one desires, in a manner that one can take possession of it," writes Sartre (1972, p. 177). "In that act there is always something of the imperious and the infantile, a refusal to take distance or difficulties into account." Those craving water will see mirages; those in love will conjure up idealistic evocations of their loved-ones.

Langer (1949) points out that while such behavior may not be logical "after the manner of discursive reason," 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 [p. 386].

The image thereby serves to select and to focus certain feelings. "In organizing itself into an imaginative form, desire becomes precise and concentrated," Sartre says.

Feeling then behaves in the face of the unreal as in that of the real. It seeks to blend with it, to adapt itself to its contours, to feed on it. Only this unreal, so well specified and so well defined, pertains to the void; or, if one prefers, it is the simple reflection of the feeling. This feeling therefore feeds on its own reflection [p. 200].

Images Anchor Inferential Logic

The image formed from the sum total of our experience serves to anchor "inferential logic" (Steinbruner, 1974, p. 115). It forms a compelling inferential mecha-

nism because it is rooted in feelings, because it appears to reveal the whole picture, and because its in-built system of logic circumvents the need to employ “discursive logic.”

Images Perpetuate Themselves

Images not only provide direct inferential mechanisms, but also feed the very subconscious on which they draw. The image, born of the subconscious, does not allow just any phenomena to be admitted back into the subconscious, but selects forms with which it is consonant. The image of Oliver North focuses feelings of patriotism and respect for people who serve their country, and in doing so reinforces the role those feelings have in our subconscious. The image behaves as an “inward teacher imposing its own form and “will” on the less formed matter around it” (Boulding, 1956, p. 18). Images thereby fortify themselves and become resistant to change.

Imagery is Intuitive, not Reflective

The image, the very “incarnation of non-reflective thought” (Sartre, 1972, p. 160) comes freely and helps endow “natural thinking” (de Bono, 1969, p. 224) with its deceptive fluency.

Imagery selectively emphasizes certain aspects, omits others, and intuitively fills in for gaps in knowledge. By pretending that its partial impression is a rendering of the whole, it seduces us into accepting its intuitively-attractive depiction as truth. By delivering its object as a whole, it also prevents any awareness of “image” on the part of its victims. By concealing itself from our consciousness, the image evades detection. Yet, working underground, it shapes our very understanding.

Although, as Sartre says, it is only through reflection that the image may be foiled, the image, by so convincingly disguising itself in the clothes of truth, leads its prey to uncritical acceptance of its content and away from the path to reflection.

METAPHOR

From Symbol to Metaphor

ARISTOTLE DEFINED METAPHOR IN the *Poetics* as “giving the thing a name that belongs to something else.” In terms of its Greek roots, a meaning is “carried over” from one thing to which it already belongs to another somehow like it (Schaldenbrand, 1979, p. 66). Metaphor is an instrument of understanding, specifically “*understanding one kind of thing in terms of another*” (Lakoff and Johnson, 1980, p. 5).

According to Langer (1957), “In a genuine metaphor, an image of the literal meaning is our symbol for the figurative meaning, the thing that has no name of its own” (p. 139). She illustrates the mechanics of metaphor with the example “The King’s anger flares up:”

We know from the context that “flaring up” cannot refer to the sudden appearance of a physical flame; it must connote the idea of “flaring up” as a *symbol* for what the king’s anger is doing. We conceive the literal meaning of the term that is usually used in connection with a fire, but this concept serves us here as proxy for another which is nameless. The expression “to flare up” has acquired a wider meaning than its original use, to describe the behavior of a flame; it can be used metaphorically to describe whatever its *meaning* can symbolize [p. 139].

Schön (1963, p. 58-64) characterizes this symbolic meaning as a “program.” 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. An example of such a symbol, given by Polanyi and Prosch (1975, p. 78), is a national flag. A flag can

act as a powerful symbol of national identity, but it does not act as a program, and cannot do so, since the flag qua piece of cloth has no meaning of its own with which to do the programing.

But what of the cloth of Oliver North's uniform? It is clearly meaningful, for it is cut to contain a man, and designed to outfit him for combat. This is what, in fact, makes the uniform such a powerful symbol of heroism. Is Oliver North's uniform, then, a metaphor?

The uniform is not a metaphor because what it symbolizes is not conceived in the manner of a uniform: the uniform does not program the conception.

This does not mean that the uniform cannot *give rise* to metaphor, but it does so indirectly through the image it creates, rather than through itself. Oliver North is not seen "as a uniform," but he is seen in terms of the heroic image the uniform conceives. The image of heroism the uniform creates thus acts not only as a symbol but as a metaphor, because the hero concept is used to program our understanding of North: North is seen *as a* hero. Symbols that are not directly metaphors, then, can evoke images which can act as symbols which *are* metaphors.

Metaphor is Genetic

Metaphor is invasive. It invades the concept it is to program and molds it to its own form. It is in this sense that metaphor can be said to be genetic. 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 programing the concept. The metaphor hooks onto and transports to B admissible A-like phenomena, and leaves the rest behind.

Coherence in Metaphor

In Black's (1962, p. 40) language, the

"system of associated commonplaces" of A is used to conceptualize B, and its components translate from A to B coherently. So, when we say that the king's anger "flared up," related aspects of "flaring" help explain what the king's anger did. Flaring implies a sudden, uncontrolled, eruption. It is a flame that does the flaring. Flames are hot and — when out-of-control — dangerous. When the king's anger "flares up," we fear the consequences of his *hot* temper; if we get in the way of it, we are likely to be *burned*.

Lakoff and Johnson (1980) note that the pictures formed by metaphors fit together coherently, in the sense of making a good general fit, rather than sticking to rigid rules of *consistency* in image formation. Thus, the "Love is a Journey" metaphor may involve a mix of modes by which love travels. The lovers might declare: "We're at a *crossroads*," or "It's been a *long, bumpy road*" (implying road travel). If love has been travelling by road, then you might expect a failing relationship to end up a dead-end *street*. But it may equally well *founder on the rocks* (sea voyage), or come *off the rails* (train trip). These concepts combine to create a coherent picture of what love is doing, if one that is not consistent in the sense of formal logic.

Metaphor Clarifies

In its work, the metaphor performs a clarifying function, naming, fixing and structuring "what might otherwise be vaguely troubling situations" (Schön, 1963, p. 60):

The movement is usually from a more concrete and readily graspable image "over onto" what is perhaps more vague, more problematic, or more strange. What is familiar is used to explain what is strange [Peters, 1978, p. 356].

A flame is a tangible way to appreciate the abstract concept of a temper. The strange vagaries of love are brought down to earth when explicated in terms of travel by road, rail or sea.

Many *abstract* human emotions are understood in terms of *physical* orientational metaphors (Lakoff and Johnson, 1980, p. 14-21). Happy is *up*, for example, as in "I'm feeling *up*." or "My spirits *rose*." Sad is *down*, as in "I'm *depressed*" or "He is really *low* these days" High status is also *up* — "She'll *rise* to the top," for example, as are good things in general — "Things are looking *up*," for instance. Virtue is *up*, as in "She is an *upstanding* citizen." Depravity is *down* — "That was a *low* trick," for example.

The basis for metaphor is experiential and cultural. That flames are hot and can cause damage is part of everyone's experience. Explaining the basis of "Happy is up," Lakoff and Johnson point out that a drooping posture typically goes along with sadness, an erect posture with a positive emotional state.

Understanding the experiential basis is important when things don't seem to fit. Being "*up* in the air" is certainly less desirable than having your feet on the ground," a seeming reversal of the up/good, down/bad relationship. But, Lakoff and Johnson show, we are dealing with a different metaphor with a different experiential basis:

With physical objects, if you can grasp something and hold it in your hands, you can look it over carefully and get a reasonably good understanding of it. It's easier to grasp something and look at it carefully if it's on the ground than if it's floating through the air (like a leaf or a piece of paper).

Metaphor Structures Understanding

In using the concrete to pin down the abstract, metaphor creates what Ricoeur (1977, p. 252) calls a "heuristic fiction:" there is no actual physical flame present in the king's body, derailed train at the site of a failed romance, or things — presumably with eyes — that are "looking up." But, Ricoeur says, "heuristic fiction is not an innocent pretense. It tends to lose sight of its nature as fiction and take on the dimensions of perceptual belief."

While "comparison" theories (such as one might learn in literature class) suggest that metaphor expands the scope of comprehension, since "two lines of interpretation are opened at the same time and put into tension" (Ricoeur, in ed. Reagan & Stewart, 1978, p. 132), metaphor as experienced is generally tacit. One is not aware of a likeness — of a comparison — being made, or of the symbolic projection which is making it:

In this respect metaphor is as literal as any normal statement of fact. The "as" is not the "as" of comparison, but the "as" of appearance. . . a likeness to be seen under a given aspect [Yoos, 1977, p.84].

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, certain metaphors of our culture, as they go underground, intensify and become more generalized" (Schön, 1963, p. 104).

Lakoff and Johnson (1980) demonstrate the power of such a metaphorical concept to structure "what we do and how we understand what we are doing when we argue." The metaphor is "Argument is War," and is illustrated by several examples:

Your claims are *indefensible*.

He *attacked every weak point* in my argument.

His criticisms were *right on target*.

He *shot down* all of my arguments [p. 4].

We don't simply talk of arguments in terms of war, they maintain, but actually win or lose arguments. But:

It is not that arguments are a subspecies of war. Arguments and wars are different kinds of things — verbal discourse and armed conflict — and the actions performed are different kinds of actions. But "Argument" is partially structured, understood, performed, and talked

about in terms of "War." The concept is metaphorically structured, and, consequently, the language is metaphorically structured.

Moreover, this is the *ordinary* way of having an argument and talking about one. The normal way for us to talk about attacking a position is to use the words "attack a position." Our conventional ways of talking about arguments presuppose a metaphor we are hardly ever conscious of [p. 5].

Reddy (1979) has elaborated another fascinating example of the covert power of metaphor. The "conduit metaphor," he says, silently structures our very understanding of thought. When we talk of trying to *get our thoughts across* better we are seeing a thought as an object to be moved across space, as if through a conduit, he says. Communicating is sending, and sentences are containers in which ideas are sent. You might, therefore have to *put each concept into words* very carefully or *pack more thoughts into fewer words*. Your words may, nonetheless, still seem *hollow* and *carry* little meaning.

According to Reddy:

This model of communication objectifies meaning in a misleading and dehumanizing fashion. It influences me to talk about thoughts as if they had the same kind of external, intersubjective reality as lamps and tables [p. 308].

The implication is that a thought may be sent across space independently of the person conceiving that thought. Just as a given model of lamp is the same whether produced in one plant or another, it doesn't matter who sends a particular thought, or what the context of that thought is: a "given" thought is the same, wherever it comes from. The identity of the receiver will have no impact on the reception of a thought, just as a ball caught by one person is the same ball when caught by someone else. "You'll *find better ideas in the library*" implies that ideas are in the library for the taking, rather than attainable only through the thought and interpretation of the seeker of ideas. If we have a lack of good ideas, the metaphor

therefore tells us to build more libraries with larger collections of books — for that is where ideas reside — rather than to educate people better in the conception of ideas.

The conduit metaphor is rooted in the traditions of rationalism, which maintain that there is such a thing as absolute truth and that metaphor can and should be avoided to allow that truth to speak plainly. As Schön (1963) points out, believing that a clear non-metaphorical way of speaking existed:

suiting the rationalist temper of the eighteenth century, committed as it was to the view that things are inherently intelligible and that theories, if they are based on reason, can convey that intelligibility by the use of clear language made up of "the ordinary words" [p. 42].

This belief is fundamental to our culture, in which the received paradigm of science stresses the search for objective knowledge and the avoidance of bias through the exclusion of self. There is one truth, the paradigm suggests, and it is to be found if one looks hard enough. The truth is assumed to remain constant however and by whomever it is appreciated; that assumption is a convenient protective device that allows science to proceed unselfconsciously. The conception of truth of those under the influence of the conduit metaphor is structured by that metaphor. And the metaphor causes those under its influence to deny that metaphor structures truth!

Generative Metaphor in Social Policy

Schön (1979, p. 255) characterizes the dominant paradigm of social policy as one of "problem solving." There are social problems, this paradigm says, just as there are mathematical problems, and — just as there is a solution to a given math. problem — there is a solution to be found to a given social problem.

"In opposition to this view," he says: I have been persuaded that the essential

difficulties in social policy have more to do with *problem setting* than with problem solving, more to do with ways in which we frame the purposes to be achieved than with the selection of optimal means for achieving them.

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 complementary 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 [p.264-265].

As Turbayne (1970, p. 15) points out, metaphor is not merely “pretend,” but “intend,” and, through the process of “naming and framing,” the stories make the ““normative leap” from data to recommendations, from “is” to “ought”” (Schön, 1979, p. 265). These stories typically:

execute the normative leap in such a way as to make it seem graceful, compelling, even obvious. . . . This sense of the obviousness of what is wrong and what needs fixing is the hallmark of generative metaphor in the field of social policy [p. 266].

In illustration, Schön quotes from Justice Douglas’s opinion on the constitutionality of the Federal Urban Renewal Program in the District of Columbia:

The experts concluded that if the community were to be healthy, if it were not

to revert again to a blighted or slum area, as though possessed of a congenital disease, the area must be planned as a whole. It was not enough, they believed, to remove existing buildings that were unsanitary or unsightly. It was important to redesign the whole area so as to eliminate the conditions that cause slums — the overcrowding of dwellings, the lack of parks, the lack of adequate streets and alleys, the absence of recreational areas, the lack of light and air, the presence of outmoded street plans [p. 262-263].

The underlying generative metaphor here is of an irreversibly diseased organ. If an organ is diseased beyond repair, it must be surgically removed and replaced to enable the body to become healthy again. In similar vein, the metaphor tells us, a blighted area has to be torn down and rebuilt from scratch to allow the community to recover.

Just as it is obvious that if a patient is wheeled into the operating room with the symptoms of an inflamed appendix, the surgeon had better not waste time withholding the scalpel, so with a sick city the prescription is to excise that which is malignant.

Schön demonstrates that the same conditions can be transplanted to a radically different story, and thereby result in different prescriptive outcomes. The other generative metaphor is of the “natural community.” This metaphor focuses on the people in the community, rather than on its physical structure. It sees that the inner-city is often a place of comfort and belonging for low-income residents. “The critical significance of belonging on or to an area has been one of the most consistent findings in working-class communities both in the US and in England,” Schön quotes Gleicher and Fried (1967, p. 126 - 133) as saying. The task, then, Schön (1979) declares:

is not to redesign and rebuild these communities, much less to destroy buildings and dislocate residents, but to reinforce and rehabilitate them, drawing on the forces for “unslumming” that are already inherent in them [p. 263]. . . .

What is wrong is that the natural community, with its homelike stability and its informal networks of mutual support, is threatened with destruction — indeed, by the very prophylaxis undertaken in the name of “urban renewal.” We should think twice about “dislocating people from the local areas;” “natural communities” should be preserved [p. 265].

“In our ideas about disease and about natural community,” Schön says, there is already an evaluation — a sense of the good which is to be sought and the evil which is to be avoided. “When we see A as B, we carry over to A the evaluation implicit in B.”

Schön emphasizes that the basis from which the different metaphors is drawn is not merely experiential, but experiential in the setting of a given culture:

Each of these generative metaphors derives its normative force from certain purposes and values, certain normative images, which have long been powerful in our culture. We abhor disease and strive for health. Indeed, popular culture seems often to identify the good life with the healthy life and to make progress synonymous with the eradication of disease. . . . We also have a strong affinity for the “natural” and a deep distrust for the “artificial.” The idea of Nature, with its Romantic origins in the writings of Rousseau and its deeper sources in pantheism, still works its magical appeal [p. 265-266].

The existence of different metaphors “makes it dramatically apparent that we are dealing not with “reality,” but with various senses of a reality” (Schön, 1979, p. 267). As Hinman (1982) comments in his essay on “Nietzsche, Metaphor and Truth:”

What counts as truth depends on the game we are playing. . . . Truth is only revealed within the context of particular games, and no specific game has a claim to ontological priority [p. 198-199].

The sense of obviousness of a generative metaphor’s prescription, Schön (1979, p. 266 - 267) says, depends on the metaphor remaining tacit. “Often we are

unaware of the metaphors that shape our perception and understanding of social situations,” he says. When we are unaware of metaphor, we are likely to fall “victim” (Turbayne’s (1970, p. 27) language) to it, to be “used” by it. Surfacing the tacitly-understood metaphor lays open to critical review the assumptions underlying policy decisions. “That which seems obvious to the unreflecting mind may upon reflection seem utterly mistaken” (Schön, 1979, p. 266). It is only when the metaphor is surfaced that the “tensions” central to comparison theories become apparent, that we can see how we have been seeing, and that the metaphor through whose filter we have been seeing lays itself open to criticism. Doing this requires that we construct it “through a kind of policy-analytic literary criticism, from the givens of the problem-setting stories we tell” (Schön, 1979, p. 267).

Schön distinguishes between “surface” and “deep” metaphors. The surface language in which a story is told may offer clues to the generative metaphors which set the problem of the story. Thus (to use another example from Lakoff and Johnson), faced with an energy crisis, President Carter declared “the moral equivalent of war.” The deep metaphor is “energy crisis as war” and it generated concepts of an “enemy,” a “threat to national security,” which required “setting targets,” “reorganizing priorities,” “establishing a new chain of command,” “plotting new strategy,” “gathering intelligence,” “marshalling forces,” “imposing sanctions,” and “calling for sacrifices.”

The surface language need not, however, offer such direct evidence, even though a particular metaphor may be in force at a deeper level:

The deep metaphor, in this sense, is the metaphor which accounts for centrally important features of the story — which makes it understandable that certain elements of the situation are included in the story while others are omitted; that

certain assumptions are taken as true although there is evidence that would appear to disconfirm them; and, especially, that the normative conclusions are found to follow so obviously from the facts. Given a problem-setting story, we must construct the deep metaphor which is generative of it. In making such a construction, we interpret the story. We give it a "reading" in a sense very much like the one employed in literary criticism. And our interpretation is, to a very considerable extent, testable against the givens of the story [p. 267].

Criteria for Interpreting Metaphors

The most basic function of a metaphor is its programming function. To establish the operation of a metaphor, A, we need to prove that it is acting as a model of our understanding of B.

It is often helpful to look for clues in the surface language, although these are circumstantial in nature and do not prove that the metaphor is operating at a "deep" level. They may, nonetheless, point us towards an understanding of the mechanism operating at the deeper level.

How is B A-like, we should ask? What is the "heuristic fiction" that is wedding B to A? How is it performing 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, expectations and "associated commonplaces" 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?

Just as in a trial where the defendant pleads not-guilty, we can never be absolutely sure of his guilt — only sure "beyond a reasonable doubt" — we can never be absolutely sure that a metaphor is

covertly structuring thought. But we can be sure "beyond a reasonable doubt." Sure enough to convict the metaphor. And, if there is a lack of coherence when the assumptions of the projective model A are tested against the allegedly projected story, B, we can, equally well, acquit the metaphor.

MYTH

WE FEAR WHAT WE DON'T know. Myth provides a convenient way of explaining away the mysterious and of providing intuitively attractive answers to complex problems when the only apparent alternative is to be faced with a troubling void. "The reason that men accept myths can be found in their beliefs that myths do describe *the actual state of the world*. This is the explanatory function of a myth" (MacCormac, 1976, p. 103).

Cassirer (1944) comments that "The real substratum of myth is not a substratum of thought but of feeling. . . Its view of life is a synthetic not an analytic one" (p. 81). There are no shades of gray in a mythical conception, according to Cassirer. All objects are polarized into "benignant or malignant, friendly or inimical, familiar or uncanny, alluring and fascinating or repellent and threatening" (p. 77). And, in a mythical conception, there is no distinction between "image and object" (Cassirer, 1955, p. 36; translation here by Langer, 1949, p. 397).

The mythical synthesis is derived from the world as experienced in a particular culture, mediated by the symbolic forms discussed above. The mass of symbols which direct us to particular conceptions of their objects, myriad of images which form lasting impressions on our consciousness, and metaphors which unconsciously structure our understanding, come together synthetically to create myth. As in individual generative meta-

phors, the structuring of phenomena is coherent, so in myth the arrangement of constituent metaphors is such as to fit together and create a coherent and therefore compelling synthesis.

MacCormac (1976) likens the larger pattern formed to a:

visual picture in which there may be geometrical or proportional relationships among the parts, but these relationships are not primary, for what gives order and harmony to the picture is the sense of coherence that we have whenever we view it. Our familiarity with various patterns of explanation and our confidence that they do cohere enables us to accept such accounts as legitimate modes of understanding [p. XVII].

Once a myth is established, de Bono (1969) says, it becomes a self-reinforcing way of looking at the world. Thus, those who believe the myth of extrasensory perception reject the findings of:

suspicious people who set out to check the results [and] never seem to be able to reproduce the results of those who are in favor of the idea [p. 191].

The myth incorporates the grounds for rejection:

The explanation suggested is that suspicious people are not in the right frame of mind to get results, that one must be confident and relaxed for extrasensory perception to go through. This makes the phenomenon unsusceptible of critical investigation.

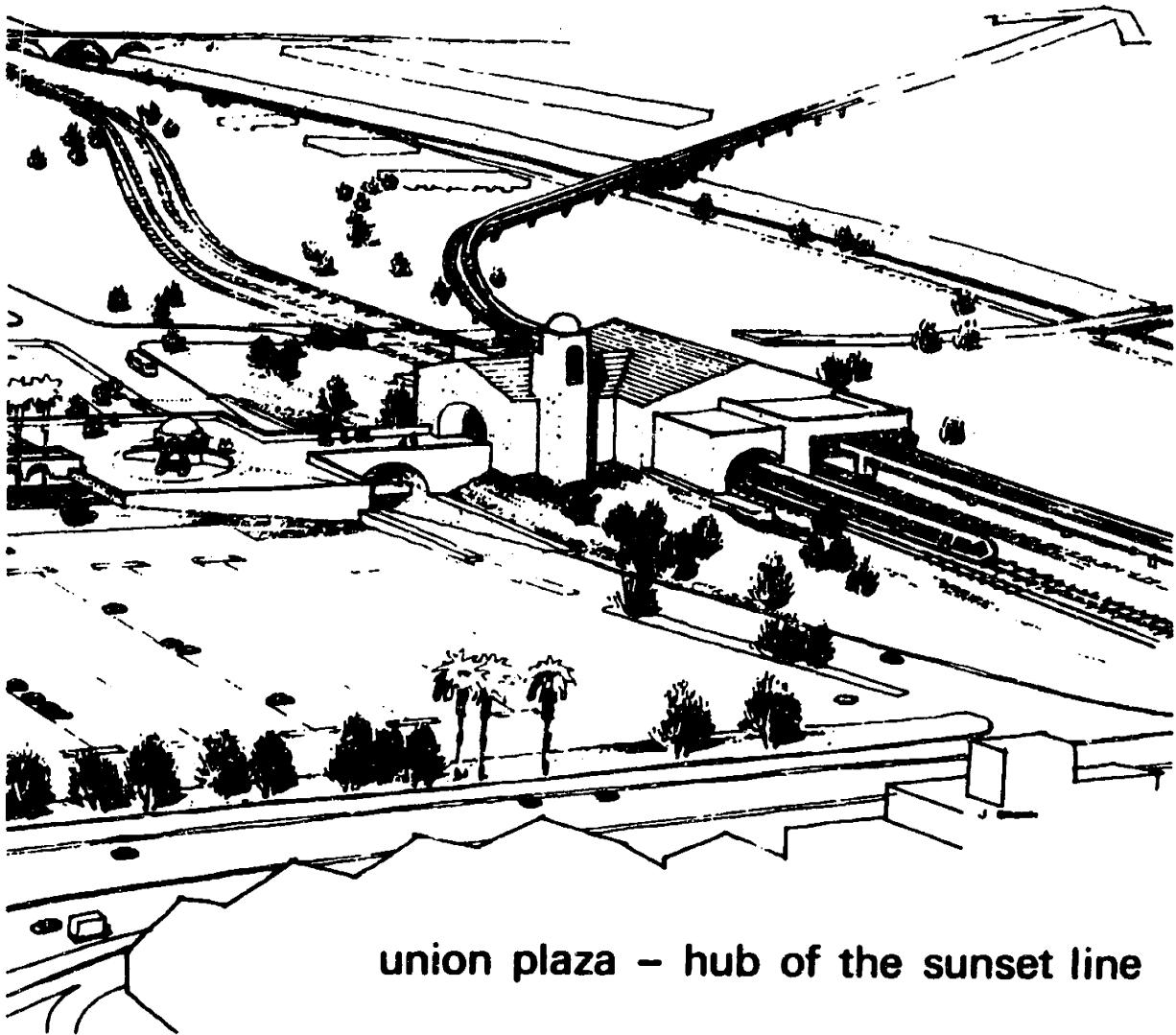
The beliefs of people subject to the myth are thereby strengthened, their critics frustrated. As de Bono suggests, myth is like a language. "Once one accepts and understands the language it makes sense. From outside it may not" (p. 192). Orthodox Christians will accept the virgin birth of Jesus as historically true and dismiss the Buddhist tale of the descent of the Buddha's spirit into the maternal womb in the form of a baby elephant as false and fanciful, Wheelwright (1962) says. "Positivists will dismiss both narratives alike" (p. 131). Positivists would, further, claim that they are not subject to such myths —

or to any myths, for that matter. The myth of Positivism would have it that myths can be avoided, and that only by avoiding them can "objective knowledge" be reached. The myth, though they would deny it, creates a firm platform on which Positivists can operate. The unquestioning belief in it by Positivists provides a shared understanding, which allows their work to progress unhindered by thoughts as to its tenuous assumptions. As Turbayne (1970, p. 59) points out, for those who conceive and transmit myth, "there is no make-belief, only belief."

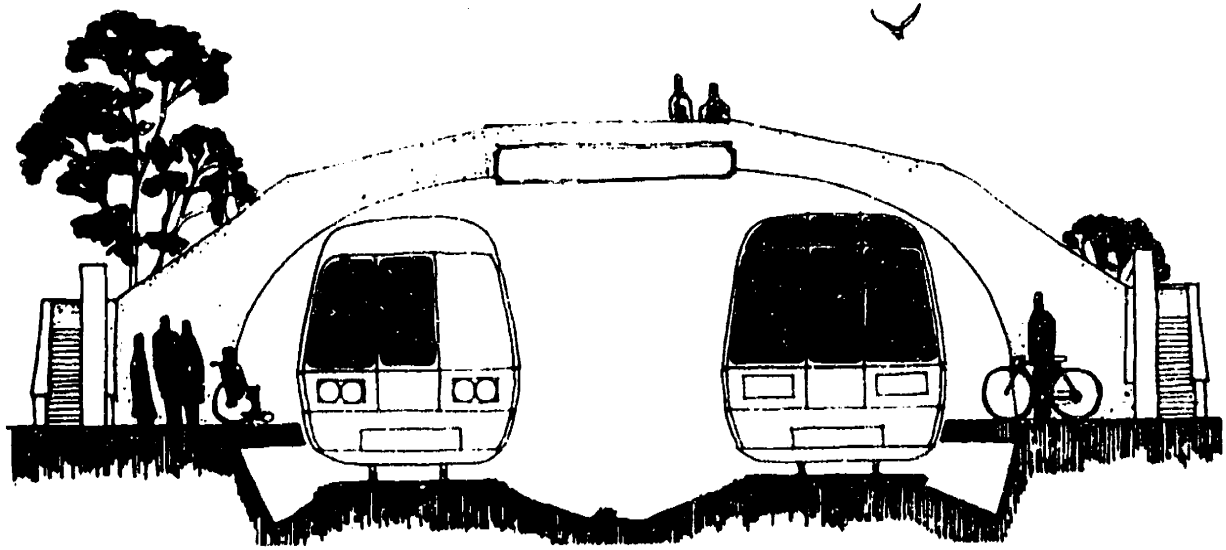
"Myths cannot be eliminated from public policy nor from any area of social life," writes de Neufville (1981).

One myth can only be replaced by another, as myths are essential to guiding social action. For interaction or collective decisions to be possible, events and actions must have some common significance within a social group. This meaning cannot be deduced from the "facts" of a situation, which in themselves say nothing. But neither can meanings and logic be explained every time an issue arises, or getting anything done would be impossible. So a smile or nod of the head is accepted as a friendly greeting. Cutting an agency's budget is a sign of public disapproval. Though the significance of the action is seldom verbalized, the shared meanings permit cooperative action and policy agreement. These meanings are what motivated people, because they connect to deeply held values [p. 2-3].

The major myth to be investigated in what follows will be that rail transit can alleviate the transportation — and certain other — problems of Los Angeles. But, as will be seen, a myth is a "complex of stories" (Watts, 1954, p. 7), and these stories each create mini-myths to feed the major one. Hypotheses as to the mechanisms by which the various myths function will be formulated on the basis of the symbolic forms — symbol, image, metaphor — studied above, and the viability of these hypotheses will be tested against the content of the stories the myths tell.



union plaza – hub of the sunset line



Utopian images from Baxter Ward's Sunset Coast Line proposal

Imagine. Being able to zip from downtown LA to anywhere in the southland and doing it without ever getting on a freeway or in a car.

— Marcia Brandwynne, Newscaster, KTTV-TV, Los Angeles, Oct. 31, 1985

8 The Reality of Imagery

INTRODUCTION

IF WE HAVE SEEN HOW SUPERVISOR Hahn established a political consensus to place a petition mandating the building of a rail passenger system in Los Angeles County on the November, 1980 election ballot, we have not yet pinned down what made rail an intrinsically attractive option then and what — with three additional ballot measures passed in 1990 — makes rail an even more alluring prospect now.

As will become clear, not only Baxter Ward and Kenneth Hahn, but a majority of decision-makers interviewed for this study did see rail projects as advantageous to their constituents. How did they reach such a conclusion when all the evidence presented in Chapter 3 indicates that rail makes little sense in Los Angeles?

The reason — to be unfolded from a tangle of disparate threads below — emerges that decision-makers, along with the public as a whole — all of us who are not specialists — operate naturally on a quite separate conceptual basis from that of analytical or reflective rationality, one which is governed by myth.

Myths come to life in storytelling, in

which accounts are given of the respondents' experience in the everyday world, and of how the perspectives governing these accounts are applied to envisage the ideal world of tomorrow. Common sense plays an essential role, and the evidence of the eyes dominates that of the inquiring mind. Myth, as we shall see, is like a language, making sense to those who are versed in that tongue, but not to those for whom it is foreign. A complex of symbolic understandings — rooted in symbolism, imagery, and metaphor — come together to create mythical beliefs. While myths may seem "illogical" to those outside their influence, for those under their control, the understandings build together in logical ways (the "logic" operating within the assumptions of the mythical world), which lend coherence and credibility to the myth. As will be demonstrated, this form of understanding can be quite compelling and create powerful, stable beliefs.

The symbolic and metaphorical understandings of which myths are made can often be complex, and therefore difficult to unravel. As Lakoff and Johnson (1980, p.97) show, there are often many metaphors that partially structure a single concept. In addition, when employing

one metaphorical concept, we often use other concepts which are themselves understood in metaphorical terms. The task of unraveling meaning thereby becomes one of a literary criticism operating at several levels: it requires the isolation and interpretation of the different symbolic concepts at play; and it demands an explanation of how they come together coherently to structure the understandings they create. These joint tasks are the subject of the next 5 chapters.

This chapter will continue by first briefly pointing to clues to the mythology in force which may be gained from the historical and political accounts already given. It will then, also briefly, illustrate the changing imagery of the freeway in Los Angeles. Finally, it will examine the implications of our metonymical representation of journeys and isolate the imagery which characterizes the benefits to be derived from rail services, and which dictates that bus alternatives cannot provide an answer. In this and subsequent chapters, evidence from other west coast cities pursuing rail projects will be included as appropriate, to show that the understandings of rail evident in Los Angeles are not unique to that city.

In Chapter 9, the metaphors which both feed on and organize such imagery are explored. This account focuses on organic metaphors for transportation, metaphors which show transportation systems as tubes for blood circulation which bring nutrition to the different parts of the city. Such systems can become diseased and out-of-balance, requiring a surgical response: either to restore balance, or to provide a new free-flowing alternative to the diseased system. Other metaphors will be examined, including one which sees *us* going out of balance due to the lack of rail, and metaphorical understandings revolving around ideas of "evolution" and "natural order."

In Chapter 10, symbolic meanings ranging wider than merely transportation

benefits will be discussed. Concepts of technological virtuosity, of sex, romance and pride will be seen to structure understanding as powerfully as impressions of a transportation technology's ability to reduce congestion or pollution.

Chapter 11 provides a brief case study of capital project planning for transit in Seattle, and the role imagery has had to play there.

Chapter 12 examines issues of poverty, deprivation and regeneration in the depressed communities of Watts and Compton, and how rail is seen in these contexts.

Chapter 13 provides a summary of all of the above, and integrates it with the political and institutional accounts provided above to show how myth both comes to be formed and to rule both the understandings we form and the actions we take.

CLUES TO MYTHOLOGY

IT IS IMPOSSIBLE TO READ THROUGH the accounts in Chapters 2 and 6 without getting impressions of the existence of deep meanings and powerful emotions associated with particular transportation technologies, and of the degree to which protagonists — either for or against a particular cause — reach their conclusions on the desirability of a particular technology through forms of interpretation which are permeated by such meanings and emotions.

We start with Henry Huntington. Not one to reach for the slide-rule or cost-benefit analysis, he was a "romantic and imaginative soul," who "found an outlet for his feelings in organizing and directing railroads."

That Huntington's railroads did spur the large-scale and widespread development of Los Angeles is certainly true. But they did more than that: They developed a series of associations of growth and renewal in Angelenos' minds, to linger on well beyond the Red Cars' heyday. If both

Long Beach and Watts came to life through rail developments, and the "original nucleus" of several new communities "was the Pacific Electric station itself," the Red Cars will hold meaningful memories of these places.

The great sense of celebration at the "christening" of the new subway terminal in 1925, preceded by "the greatest luncheon in the history of the Los Angeles Chamber of Commerce and by an impressive parade" shows how much meaning was by then invested in the idea of the train, and what it stood for in terms of development of the community.

Snell's conspiracy theory is heavily influenced by imagery of the "good old days" of the Red Cars, and his depiction of large "gas-guzzling" cars makes for a broad-brush portrait of symbol of evil that for him transcends the fact that people obtained cars out of choice because they liked the accessibility automobiles could provide.

In our political account, we have seen the contrasting urban ideals associated with highway and rapid transit development: neither was advocated through the operation of some calculated criteria, but because the highway and the automobile, directed at the whim of the driver, suggested freedom, while the railroad symbolized concentration. Whether, in fact, the railroad could provide for concentration — and the contrasting massive scale of highway development against which it would be competing meant that it couldn't effectively do so — is less important than the *perception* that it could. And so, central city interests lobbied for rail, while those in dispersed communities worried that with rail transit "local shoppers would travel to Los Angeles to buy a spool of thread," taking away from the economic vigor of their commercial base.

Rapid transit plans dating from that of Kelker de Leuw in 1925 show the power of metaphor to render the abstract in concrete terms: abstract ideas of particular

forms of social and economic development become symbolized by bold lines drawn on a map, whether or not the solidity of those lines can translate the city into the reality they represent. Alan Altshuler (1979) was to remark similarly decades later on the nascent positive perceptions of transit in the 1970s that "this is not to say that transit was an effective way of serving all these objectives, simply that it was widely believed to be so" (p. 36).

As we see Proposition A and the Long Beach line come to reality, we see Baxter Ward's countywide proposal and Kenneth Hahn's far-reaching Proposition A map coming to suggest that rail would serve the dispersed lifestyle with which it could not formerly be associated; we hear talk of the "untimely death" of the Red Cars, see politicians looking enviously towards the new light rail system in San Diego. We hear buses referred to as "dirty, smelly and definitely not rapid," and that "we need look no further than our clogged freeway system to see the need for transportation alternatives." All these elements have had a necessary place in giving a historical and political account of the return of light rail to Long Beach. We now need to look systematically and microscopically at how beliefs central to the transportation policy process come into place, and at how they can come together to form a myth that to those under its influence constitutes reality. We briefly look at the changing perceptions of the freeway, before turning to a detailed account of the conceptualization of road and rail transportation development options.

IMAGES OF THE FREEWAY

"DRIVING THE FREEWAY," writes David Brodsky (1981):

is absolutely central to the experience of living in Los Angeles, and any anthropologist studying our city would head for the nearest onramp, for nowhere else would he or she observe

such large-scale public activity [p. 2].

The freeway is a symbol of Los Angeles, and it symbolizes much of what Los Angeles is about. Writes Brodsky:

The Los Angeles freeway is a silent monument not only to the history of the region's spatial organization, but to the history of its values as well. . . . Los Angeles' appeal lay in its being the first major city that was not quite a city, that is, not a crowded industrial metropolis. It was a garden city of backyards and quiet streets, a sprawling small town magnified a thousandfold and set among palms and orange trees and under a sunny sky. When the city began drowning in the sheer popularity of this vision, the freeway was offered as a lifeline. The L.A. freeway makes manifest in concrete the city's determination to keep its dream alive [p. 4].

Brodsky quotes Joan Didion, who calls the freeway experience "the only secular communion Los Angeles has" (Didion, 1970).

The more I think about the parallel, the more I realize how correct she is. Every time we merge with traffic we join our community in a wordless creed: belief in individual freedom, in a technological liberation from place and circumstance, in a democracy of personal mobility. When we are stuck in rush-hour traffic the freeway's greatest frustration is that it belies its promise [p. 5].

Brodsky talks of the positives of the free-way of life, compared to riding the New York subway. "One never "misses his car," waits to transfer, or walks more than a short distance."

If you can avoid those four rush hours when everybody is on the road, driving the freeway can be a true pleasure, with its numerous lanes, graceful curves, banked interchange ramps that require no braking, and the sense of speed without danger. Driving the freeway can create a rare, and distinctly urban, moment of joy when the car drives well, the freeway is uncrowded, and there is a good song on the radio. The freeway lifts you over the city or through a pass, and the view from the side windows is framed by the greenery of the embankment landscaping.

While it may appear farfetched to compare a peak-hour commute with a stroll down a country road, the freeway has a certain quality that makes driving it the nearest equivalent to such an experience the average Angeleno is likely to have during a typical day. For here, rather than in Griffith Park or along the beach, one receives a daily guarantee of privacy. Safe from all direct communication with other individuals, on the freeway one is alone in the world. You can smoke, manipulate the radio dial at will, sing off key, belch, fart, or pick your nose. A car on a freeway is more private than one's home [p. 43].

Yet, despite these positives, freeways, Brodsky says:

may be associated with all the ills of a modern, and particularly automotive, metropolis: air and noise pollution, congestion, the destruction of neighborhoods, the specter of a concrete blanket over the landscape. When country singer Jerry Jeff Walker sings of getting off the L.A. freeway, he longs to leave every perceived evil of city life behind [p. 51-53].

There are almost uniformly negative associations with freeways to be found in the interview transcripts. Freeways are associated with disease and even with death. They are places where people are forced to spend a large portion of their lives simply for daily functioning.

Experience is a principal source of these impressions and of impressions about possible alternatives. LACTC commissioner and, at the time, Chair, Jacki Bacharach listed one of her main sources of information as her "experience in travelling in Los Angeles and in other cities." Burke Roche, deputy to Supervisor Hahn, talked about his experiences with the freeways: "I don't understand how people can day after day come in bumper-to-bumper on the freeways," he said. One of the reasons he moved home, he said, "was so that I wouldn't have to travel the Santa Monica Freeway." Howard Mull, staff to Supervisor Deane Dana, referred to the Ventura Freeway as an "impossible



"When country singer Jeff Walker sings of getting off the L.A. freeway, he longs to leave every perceived evil of city life behind."

freeway both ways," and talked of the "grief and hassle of driving into town." Alternate Commissioner Ted Pierce was talking of the hemmed-in, claustrophobic feeling when people are "driving down the freeway and they're seeing all the cars, and they're going on: "there must be another way to get in here." Just as in a court of law there is little statement more compelling than "I saw it with my own eyes," the evidence from experience is compelling.

The experience is a painful one. Mayor Kell of Long Beach talked of the drive into downtown Los Angeles as "getting myself all stirred up emotionally for an hour and tired by the time I get to work and, at the end of a long day, I got to think of fighting that traffic bumper-to-bumper and getting my nerves all unraveled coming home." Bumper-to-bumper suggests an invasion of private space, a feeling of confinement and stress, quite the antithesis of Brodsky's world where the driver is free to happily fart and pick his nose.

Alternate Commissioner Bob White painted a similar picture, referring to the stress factor involved and the irritability of driving. Oh Jesus, you get into a traffic jam where somebody has a little problem — have you ever thought about when you're in a situation where you can't get out of it, that sometimes you panic a little bit, your car gets hot, you lose a fan belt and you're out in the middle, you gotta telephone and yer goina be two hours late. I tell'ya.

"Anyone who has to drive any length of time on those bloody freeways knows that they will drive you crazy," confirmed Long Beach Councilman Wallace Edgerton. It is hardly surprising that, as we shall see, those who wish to return to the dream call for a move towards "balance," while those for whom the dream is smashed demand a viable "alternative" to the hellish daily freeway commute. As Alternate Commissioner King said: "We're starting from a given of three million people trying to kill one another on the freeways, and we're trying to relieve that." Let us now examine in depth why

it is thought that the train rather than the bus can bring such relief.

THE IMAGINED BENEFITS OF BUSES AND TRAINS

Metonymic Representation and Imagery

“THE BALLOT SAID ‘RAPID.’ It didn’t say mass, it said ‘rapid,’” said Long Beach Councilman

Wallace Edgerton, a detractor from the light-rail system. His problem with the planned service was that it would be too slow. To him, speed was all-important.

Edgerton was focusing on one part of a total journey — the time spent on a train. As will be seen below, many of those interviewed for this project focused on the rail component of a trip. Other necessary elements of any journey — getting to and from the train stations — were given little or no attention. This is an example of the operation of metonymy, a referential symbolic function in which one entity (in this case the trip on the principal vehicle) is used to refer to another which is related to it (the trip as a whole). In doing so, the former structures the understanding of the latter. In this case, the metonymy we are considering is an example of synecdoche: taking the part for the whole.

We will here examine the theory that transportation systems are perceived in partial terms, and that those partial terms structure our understanding of transportation systems in general. As we shall see, this operates on two levels: the metonymic understanding of a trip first unduly focuses attention on that part of the trip spent on the principal vehicle. Secondly, we will pursue the possibility that images of certain physical aspects of transportation systems provide vivid — and misleading — impressions of the functioning of the whole. Lakoff and Johnson (1980) claim

that we tend to perceive the non-physical in terms of the physical, the less clearly delineated in terms of the more clearly delineated, and we will examine the extent to which perception of vehicular performance can dominate more abstract — and cogent — conceptions of trip quality, such as the ability to provide direct service between dispersed origins and destinations.

There are two perspectives from which perceptions of technical performance need to be examined, although they are not wholly separable, since the one feeds the other. The first concerns how the image of the technology causes information on performance to be structured. This will be detailed here. The second concerns the ways in which the image of a technology symbolizes technological virtuosity — or sexiness — and discussion of this will be deferred until Chapter 10.

The speed of transit has long been a focus of attention. It is stressed throughout the 1925 Kelker de Leuw proposal, which calls for rapid transit lines to “furnish facilities for high speed train service and make possible the transportation of large numbers of people over great distances in short periods of time” (p. 4). The 1948 report on *Rail Rapid Transit — Now!* (Rapid Transit Action Group, 1948) likewise demanded speed, since “speed is a requisite for a successful rapid transit system” (p. 4). In both documents, the need for speed is emphasized at the expense of considering what ends that speed is to serve. Neither document considered the possibility that a technology with lower vehicular speed, but better ability to distribute people to where they actually wanted to go, might serve passengers better by providing a faster and more convenient total trip.

The majority of those interviewed for this project understood the total trip in terms of the time spent on the principal vehicle, and underlined the importance of the speed of that vehicle. When Supervi-

sor Kenneth Hahn stressed the need for the “mass movement of the people quickly and efficiently, without any stopping at any signal,” he was talking about the time they would be on the train.

Dan Caufield, then Long Beach light rail project manager for the LACTC, confidently declared that “this will beat the freeway on opening day.” The comparison is strictly between time spent on the train and time spent on the freeway — not between the total journey by car as against the total trip time, including getting to and from stations, when using the train.

Ted Pierce was particularly taken with the speed of the train. Rail will make for a quick way of getting out of the congested downtown, he said:

They can just go over and get on a light rail car. I mean, they're — *whoosh* — gone. . . With a rail, you know, unless there's a wreck or a stall, it's straight on through.

Let us see what is represented in these statements. Firstly — and most importantly — the description of the journey is couched entirely in terms of the time to be spent on the light rail service. This is a quite common way to talk about a trip. Someone going from Boston to Los Angeles will say “I'm flying from Boston to LA,” not, “I'm driving to the airport, parking my car, getting a shuttle to the terminal, waiting in line at the ticket counter, going to the gate, waiting around there, flying to Los Angeles, getting a rental car and driving to my final destination.” If asked how long the trip takes, most people will answer “five hours” — the actual flight time — rather than by giving the total time taken to get from their home to their final destination. The journey is understood as a five-hour trip, even though it takes longer. We note that this form of trip representation is typical of our culture but, as the example of the Ojibwa representation given in Chapter 7 shows, it is not the only one. While Ojibwa typically refer to the embarkation point to refer to a whole journey, we tend

to refer to the principal means of transportation.

In this way, Ted Pierce is structuring his understanding of an urban trip in Los Angeles solely in terms on the principal technology in use, rather than on the actual journey. All you have to do is “just go over and get on a light rail car,” and “whoosh,” you'll be taken where you want to go. In the TV quotation with which we began, the fiction is even more dramatic: the train will apparently “zip” you just where you want, and problems of actually getting where you are going from the rail station vanish.

Baxter Ward was also taken with the “whoosh” image. He was asked about problems of getting to and from rail stations. Studies had found that people preferred to travel directly where they were going in one vehicle to using means of transportation requiring transfers, he was told. “I think if you had something that just went whoosh, you would recognize that getting out and changing vehicles was no consequence at all,” Ward replied. The speed of the train shines foremost in Ward's picture: if the train is rapid, all problems will be solved, he is saying.

“If I were on the Ventura Freeway — or you — driving, and you saw a train go by at 65 mph, filled with smiling air-cooled faces, tomorrow you're going to take the train,” Ward said.

Ward here makes use of a metonymy-within-a-metonymy. His logic runs along the following lines: If you're stuck in traffic, and you see a bunch of happy people streaking past, you — wishing to be happy, too — will learn from their example and take the train. The “smiling air-cooled faces” metonymically represent the people on the train as a whole and — within the overall metonymy introduced above — represent the people's experience of the trip as a whole. Never mind that they may not be smiling quite so much as they park their cars or wait for their shuttle bus getting to and from the

train. The image of the high-speed smiling faces represents the travel experience as a whole, and it makes the train seem like a desirable form of transportation.

Those interviewed generally acknowledged the need for “feeder buses” — particularly within the understanding of the “natural order” metaphor to be discussed in Chapter 9 — although relatively little attention was given to problems of getting to and from stations. The possibility that rail might be convenient for the line-haul but inconvenient in terms of a total journey thus failed to be given consideration.

on the roads. Freedom to move at speed is thus seen as an important advantage to rail. Interestingly, Long Beach Councilwoman Eunice Sato — an opponent of the Long Beach project — criticized light rail in terms of its *lower* speed compared to other rail operations:

If it's going to be a slow train to China, I say who's going to ride it? It has to be speedier for people to get out of their cars to take that transportation system.

Sato, then, was also focused on the time spent on the principal vehicle alone,



View from Blue Line Cab. Rail has its own right-of-way and is seen as being exempt from the congestion on the roads.

Rail has its own right-of-way and is seen as being exempt from the congestion

rather than on the problem of the *total* journeys people actually have to make.

Alternate Commissioner Roy Donley was of like opinion. He would have preferred a system faster than light rail to be installed:

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 reason I favor trains over buses is high speed. If you can get downtown in 15 minutes instead of 45 minutes, that's a big attraction.

The 15 minutes may, in fact, be part of a total trip of an hour or longer — if transfers to and from buses are needed, for example — but only the 15 minutes on the train itself is seen by Donley as being relevant to the computation of actual travel time. The 15 minutes to him represents the total journey. The 15 minutes to a traveler of the future would, however, only represent a part of a whole. The rest of that whole might not be revealed by the imagination, but it would be quite evident in reality. And, as shown by numerous studies cited in Chapter 3, it would be the whole travel time that the traveler on the actual rather than imaginary trip would take into account in deciding whether to travel by rail.

While the speed of the train was lauded, the bus was typically written off as necessarily being “slow.” “I think people are looking for modern *rapid* transportation,” said Craig Lawson of Mayor Bradley’s office. “The bus does not save you time. . . . I think the light rail system is going to be faster than travelling by bus or by car.” “Buses are much slower, they don’t have nearly as great a speed of the train,” said Baxter Ward. Walter King said he would not be attracted to transit until “I get something fast and more modern.” Los Angeles Councilwoman Flores complained that:

If you go the hours people normally go to work, you’re going to run into traffic and buses get stuck in traffic. Light rail will not have those problems.

The high speed of rail transit is touted

in both the 1925 Kelker de Leuw proposal and in the 1948 *Rail Rapid Transit — Now!*. Baxter Ward’s 1976 proposal promised the “fastest” transit system in the world. And just before the LACTC took the vote on whether to proceed with the Long Beach light rail, Supervisor Hahn talked of the “express, fast bullet-type train” which could be provided. The very term “rapid” in “rail rapid transit” is suggestive of the high speed of the mode and, in our metonymic understanding, gets erroneously projected to the speed of the entire trip.

Because a trip is metonymically represented by the line-haul part of the journey alone, undue significance is given to the speed of the principal vehicle, while problems of getting to that vehicle — which are greater with a rail system than with buses — are overlooked. As a result, the performance of the train is over-rated, while that of the bus is under-rated.

Peter Hall (1982) remarks in his chapter on BART (San Francisco Bay Area Rapid Transit) in *Great Planning Disasters*, that:

The original mistake. . . was in perceiving the problem to be solved: the 1956 consultants’ report makes it clear that they thought the line-haul speed was far more important to the commuter than the feeder time; but they had no evidence of this, and they were clearly wrong. Subsequent studies, the world over, have proved conclusively that people place a far higher value on waiting and transfer time than on time in motion — even the slow motion of congested traffic [p. 122-123].

Given this evidence — and other findings detailed in Chapter 3 — one might well be surprised that the same “mistake” is being made for a project of the 1980s. But, once the nature of our metonymic understanding of a journey is revealed, it is not surprising at all. We tend in our culture to naturally represent the whole journey by the time spent on the principal vehicle alone. Perhaps the job of education, then, is not so much to tell people

that they are “wrong,” but to make them aware of the symbolic reductions which lead to that error. Perhaps, only then, will they be equipped to change their minds.

I believe most people enjoy riding trains, that’s certainly been the experience we’ve seen in the last few years with our Amtrak trains. Trains are attractive and



Inside the first train to Long Beach. . .

Trains Are Said to be More Comfortable than Buses

Bob Robenheimer of San Diego’s MTDB was one of many to expound the view that — quite apart from characteristics such as trip time and frequency — “there’s the inherent attractiveness of rail. That has an edge over the bus system.” “The light rail will be a step above the bus in the sense that it will be more comfortable,” said Long Beach state Rep. Dave Elder.

During Assemblyman Bruce Young’s influential hearings in Long Beach (California Legislature, 1981a), then Caltrans Director, Adriana Gianturco, drew attention to the “comfort and convenience” of trains:

they can be quite comfortable, allowing people to move about freely while the vehicle is in motion [p. 16].

Long Beach Mayor Ernie Kell sees the train as something that is altogether pleasant and relaxing:

I could sit and enjoy a newspaper or read a technical manual or even a book as opposed to getting myself all stirred up emotionally for an hour and tired by the time I get to work. . . That would be reason enough for me to change my mind and take it, sit back and relax and have a nice cup of coffee out of the thermos or something, enjoy the trip and just watch the scenery go by.

“I think it is true,” said Steve Dotterer of the City of Portland staff, “that trains are more comfortable to ride on.” While he acknowledges that rail critics

don't accept this claim, he said that rail's greater comfort is "real for most people, it's only unreal to people who are sitting in offices and analyzing things."

While the train's imagery is utopian — symbolizing all that is good in transportation — the imagery of the bus appears to symbolize all that is bad in the world. Buses, said LACTC Commissioner Marcia Mednick are seen as being "noisy and dirty and slow." Baxter Ward put it more strongly:

People don't like buses. People just hate buses. They have to sit in the damned sun and they got to sit and take all the fumes from the cars and the diesel Mercedes, and the diesel buses that aren't theirs, and wait until their bus comes along, get in, crowd, lurch, be abused by the operator, and just drag red light to red light or whatever the situation is, until they finally get to their destination.

Alternate Commissioner Pierce emphasized the comfort of the train: "I think people will ride it. If for nothing else, it's for the comfort." Jackie Bacharach — Chair of LACTC at the time of interview — was convinced that a train was:

much more comfortable than a bus; I just think it's going to be more attractive to ride in them than in a bus, and I think studies have shown that too, that people accept rail more than they will accept bus.

Bacharach is wrong: as seen in Chapter 3, studies have shown that people rate the comfort of an urban trip as something unimportant as compared to trip time and cost. There is no reason, furthermore, why buses should not be made more comfortable. Golden Gate Transit in the Bay Area, for example, uses luxury coaches to serve a largely high-income professional clientele commuting from Marin County to San Francisco. We noted, furthermore, in Chapter 3 that in the 1930s buses were often introduced into suburban markets because it was thought that their "luxury" would attract a clientele that would not travel by streetcar.

The evidence on buses, nonetheless

comes from conditions today. And today's buses do not appear to most observers to be comfortable. They infer that buses are necessarily uncomfortable. Trains therefore clearly seem preferable.

Trains Are Said to be More Secure than Buses

Part of a transportation mode's "comfort level is an understanding of where it goes," said Lee Hultgren, Director of Transportation at San Diego Association of Governments.

A basic human need is for simplicity, certainty and security. Los Angeles Councilwoman Joan Flores sees an important advantage of rail to be its lack of "complication." In contrast:

The bus makes a circuitous ride. It obviously has to go someplace else to pick up other passengers so that you get a full load.

A concern about the insecurity of a bus, due to its potential to go off into the unknown, made a frequent appearance during interviews. The train is seen as being more psychologically reassuring because it is on a fixed track. As San Diego County Supervisor Brian Bilbray put it:

The psychological impact of having rail is massive. People know that if I stand by this rail, something's going to come by. I'm reassured by the existence of that rail. That rail is shiny. That means something travels over it periodically. I'm assured that I'm at the right place and something will come pick me up if I'm here. You don't have that with a bus. You have cars going by, you feel left out, you're not assured; you don't have the security of being assured that something's coming out.

Not only is there the assurance that something will come by. There's also the knowledge of where you're going. As Jackie Bacharach explained:

Distances here are so far apart; you get on the wrong bus and you're really scared that you're going to be 50 miles from your home before you figure it out. I think a rail system, where people know it's going to go from here to there, and

it's not going to go any different because I know it, is going to be a little bit easier to get used to and accept. They're very easy to use. Obviously, you don't even need to speak the same language to get on these things and use them. If you get on the wrong bus, you don't know if you're going to end up in somebody's neighborhood instead of downtown Los Angeles.

"The rail has a physical presence and understandability," stressed G. B. Arrington of Tri-Met, Portland. "You know you get it at station A anytime you want, and you know where it's going and you know how frequently it's coming by," said Mark Wiley, of RT, Sacramento. "They certainly wouldn't take a bus to go there [downtown Portland] because it's uncomfortable and kind of an unknown quantity, foreign for them to take the bus," according to METRO, Portland's Andy Katugno.

LACTC Commissioner Christine Reed complained that bus systems were especially difficult for tourists:

It's difficult to understand, and then there's a multiplicity of systems and you have to transfer between them sometimes. . . and the general public doesn't even know anything about it because the general public by and large doesn't ride it, so you can't just ask people on the street how to use the system.

As Alternate Commissioner Bob White concluded:

It's so much *simpler* [my emphasis] to park your car and get on the light rail and stay off the highway.

There is no evidence that regular users of buses find the task daunting: they get to know which bus to take, where it stops, and what time it leaves. But the image of the fixed track — and a knowledge of where it goes and where it ends — lends rail systems an aura of simplicity and certainty.

For non-regular users, the answer might be to improve bus information systems, which are generally poor. Most of Los Angeles' bus stops do not have schedule information, or even maps of bus des-

tinations. An appropriate response might be to improve on these facilities. But to decision-makers, the more obvious solution seems to be to install the more intuitively-reassuring rail service.

There is Said to be Less Crime on Trains than on Buses

Not only is there the uncertainty of where you're going on the bus, but the fear of crime, as well. "There is a reluctance by a large segment of the population to ride the bus because of the safety aspect," said Alternate Commissioner Barna Szabo. "One of the emphases on the light rail is it's going to be a safe ride."

Bob White has experience from the bus system in his own City of Norwalk: "Buses are notorious for breaking down and cutting seats, and teenagers on the buses," he said:

You have to be a cop, you have to be a chauffeur, you have to be a bus driver, the problems of discipline would be much greater on a bus. We've experienced that right here in our City of Norwalk. We are continually thinking of ideas now to teach our drivers how to run their bus and keep them from getting torn up.

Alternate Commissioner Walter King had similar concerns:

The crime on the buses is fantastic. The decorum of the people on the buses. . . The people themselves have lost their morals, the home is broken down, the church is broken down and the schools are broken down. We don't have discipline any more. You tell the guy to sit down and he won't do it, and that's your problem. . . The security. And the robberies, and out our way I wouldn't be seen on a bus.

Wouldn't the same problems exist on trains, King was asked?

No, you're isolated with a bus. When we build this system, we're going to have coverage you don't have on a bus. We're building in millions of dollars worth of things, it's going to make it safe. . . You

may have to pay a price. We've got a bunch of animals out there that we can't design and build around. We've got to build for the masses and hope the masses will work and will use it, and I think that's where we're coming from.

It is Claimed that the Bus is for Criminals, but the Train is Middle-Class

The very image of the train — as something “modern” and clean — feeds the image of the train as something safe and crime free. Said Baxter Ward, “I don't know that undesirables get on trains any more than they do on buses. I doubt they would on a brand new transit line.” Roy Donley would agree:

There's a lot of crime on the buses. There may be on the trains, too. But I think criminals are more likely to savage buses than they are trains.

The implication is that the allegedly disgusting environment of the bus invites crime, while the sanitary swift train restrains it.

Craig Lawson of Mayor Bradley's office takes this a step further: in his eyes the train is a means for social improvement:

I have a theory that if you treat people well, then they act accordingly. If you take them and you put them on a nice-looking car with a conductor, that is clean and that's comfortable and air-conditioned, then they're going to act well. . . . So I think the way the system is being designed as a high-quality system; it's a system that's going to be efficient and comfortable, and the people will ride it, and that no matter who gets on there is going to be there as a commuter, not as someone who is going to vandalize the place.

The metaphor is similar to the 1960s view of urban renewal: tear down the physical blight and replace it. If the buses are blighted with crime, remove the buses, replace them with something bright and modern and the problem will apparently go away. Not only that, but the peo-

ple will be reformed and crime will vanish. There is no hard evidence for this, of course. But it is images, not evidence, which counts in maintaining such beliefs.

Because of All of the Above, it is Argued that Middle-Class People Will use Trains

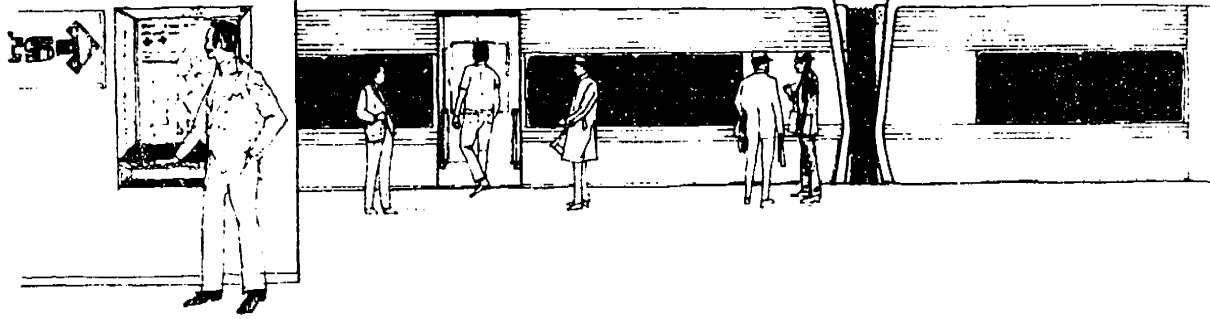
Commissioner Marcia Mednick was one of several interviewees to point out that:

The rail will attract a certain type of ridership that will not necessarily get on the bus. Because this is a newer type of technology, it can come in with a whole new type of image. . . . I think you'll get a whole range of ridership on the lines. You'll get — I hate to call it quote “your low-income type of person,” your transit-dependent because of economics or the people that are traditionally transit-dependent — but you'll also get riders who have not been transit-dependent in the past, who elect to use the service if it's clean, if it's fast, if it gets them where they want to go.

Mednick then showed a rare degree of awareness of the role of imagery:

Part of it is an image. And people have certain images in their mind as far as buses being noisy and dirty and slow and things like that. *Which of course is not always the case.* I'm not saying that's the case, but that's the image to many people. The trains, because it's a new technology, it's a whole new system, can come in and be sold differently.

Mednick, therefore, shows awareness that the image of the bus may not necessarily reflect the type of service which *might* be provided. On the other hand, she is nonetheless convinced that the bus image would act as *deterrent* to certain groups of potential rail riders, even though the evidence provided by the current substantial white-collar ridership on the El Monte Busway shows this to be untrue. Despite her rare awareness of the potentially misleading nature of imagery, she advocates rail because of the effect on ridership she wrongly attributes to the image of the train as against that of the bus.

to downtown trains ↓

Middle-class clean-cut image of rail transit from Sunset Coast Line proposal

The bus is something only for untouchables said Craig Lawson of Mayor Bradley's office:

For those people who are wedded to their cars and never ride the bus, they perceive it as being something that they don't use, so they don't like to talk about it.

Added Long Beach Councilwoman Hall:

Well, I'm told that studies show . . . that the transit dependent will use whatever's available, but that those who have an alternative and have an ability to choose will, if they have a choice, would more likely ride in a rail system than on a bus.

As we saw in Chapter 3, studies actually show quite the reverse: that people decide how to travel on the basis of the total trip time and cost, and that little else matters.

A whole series of images, however, creates the view that the train is more attractive to middle-class people than the bus: not only is the train faster, it is supposedly cleaner, more comfortable and easier to understand. And, because the vehicles are nice, either untouchables won't get on them or, if they do, they'll immediately be reformed.

Not only is our understanding of the time taken for a trip as a whole structured by its representation as the time spent on the principal vehicle alone, but the total picture of other characteristics of a trip by a particular mode of transportation is

made up by popular images which are either totally misleading or reflect, in grossly simplified form, only partial truth. The images depend on perceptions and experiences of conditions now, furthermore, not — for example — how buses might be optimally operated in the future.

Relieving and Causing Congestion

"I personally hate buses," said Howard Mull of LA County Supervisor Michael Antonovich's office:

not for the sake of hating buses, but whenever there is a gridlock in downtown Los Angeles, for instance, you can attribute 90% of that gridlock to the buses, because they're taking up space at intersections at signal changes, what have you. They're sitting there blocking traffic two and three deep. . . They have unlimited turns, they can make a left turn anywhere they want to, and so consequently they're the major cause of gridlocks.

During the Assembly Committee hearings in Long Beach (California Legislature, 1981a), Assemblyman Nolan Fizzle also characterized the bus as the enemy: "I am personally dead set against the business of the big humungus bus on our local city streets," he said (p. 20).

The bus is seen as more of a contributor to problems of congestion than as part of the answer to them. "We can't just depend on buses," said Supervisor Hahn's deputy, Burke Roche:

because one of the great problems, and



you see it every rush hour in the evening, the street is congested with buses, causing most of the congestion.

“Buses, buses, buses. It sounds terrific. It just doesn’t work that way. There’s not the space on the concrete to run the buses in volumes sufficient enough to accommodate them,” said Dan Roberts, of the office of Congressman Mineta (San Jose). Long Beach Councilwoman and RTD Board Member Jan Hall put it more graphically: “we run 900 buses a day on Wilshire Boulevard,” she said:

We can’t run any more. The traffic is such that it would do us no good. We would be parking and basically the most efficient system would become entering by the back door of the bus, getting off on the front door and entering the next bus on the back door and walking your way on buses the length of Wilshire.

Debbie George of Supervisor Deane Dana’s office amplified on the lack of ability to expand bus services further:

I think the buses are having a hard time getting through. We’ve double-decked our buses now, should we triple-deck them? Should we make them even wider? Should we widen the road to have four lanes of buses going up and

down? . . . We have buses that are not only double-decked, but they are two buses long, you need roughly ninety feet of parking when one of those buses stops; is what they want just a sea of buses, which in essence would be a train?

Buses, from this perspective, are something desirable to remove: “If you take a bus off the freeway system, you’re removing a vehicle, a good sized vehicle at that,” said Long Beach Mayor Ernie Kell.

By transferring people to trains, Alternate Commissioner Bob White thought, as much as 10 percent of traffic could be taken off the freeways. Baxter Ward went so far as to claim that:

Most businessmen would abandon the freeways and use the trains because it would be so remarkably fast. . . . If you take only 15 percent off the Ventura Freeway, it’s that last 15 percent that are keeping you down to 12 mph, instead of 20. So you’ll speed up everything.

Debbie George was equally optimistic claiming that “it [the light rail] would ease traffic off the Harbor [Freeway], it’ll ease traffic off the 7, and it’ll ultimately

ease traffic off the 5.”

Then LACTC Executive Director Rick Richmond, however said that “I don’t think we’ve ever contended that” the light rail would immediately reduce traffic on the freeways. There was a lack of consensus on the Commission, furthermore that rail would necessarily help sort out congestion. Said Alternate Commissioner Blake Sanborn, for example:

To some folks the ability to transfer the congestion from the freeways to the trolley line was important in making their initial decision. In terms of benefit, I think that’s a secondary item.

Buses are Polluters, Trains are not

As KABC-TV (Los Angeles, July 20, 1980) newscaster Paul Moyer declared:

Los Angeles Metropolitan area has severe air pollution-transportation problems. Don’t have to tell you that; you know. Yet we don’t have any real rapid transit.

The buses currently in Los Angeles do not count as “real rapid transit.” What Moyer is calling for is rail. As Long Beach State Assemblyman Dave Elder said, “I believe that the light rail is clean: the reason that I’m for light rail deals with the environmental consequences in the southwest air basin.”

“Trains are quiet and they do not pollute the air,” said Adriana Gianturco at the state Assembly hearings in Long Beach (California Legislature, 1981a, p. 16). Assemblyman Frizelle echoed her feelings, recalling that “One of the great beauties of the Red Car system was that it did not put diesel smoke in the air.”

The sight of a bus exuding exhaust leads to an image of the bus as something unclean, an untouchable. According to Ted Pierce:

Those people that wanted rail, and they’re driving down the freeway and they’re seeing all the cars and they’re going oh, there must be another way to get in here, but I hate those buses, because they stink up everything.

Alternate Commissioner Roy Donley concurred: “They spew out a bunch of smoke every time they accelerate, they’re called stink pots by the people,” he said. “They’re terrible,” said Baxter Ward. “They’re smoggy and fume-ridden.”

Alternate Commissioner White provided a particularly vivid account of his image of the bus, tying it directly to his experience driving behind a bus on the highway.

Did you know they planned on having a bus diamond lane and a deal for buses to go on this one lane? But I think that’s kinda impractical, those buses are smog buggies, they produce a lot of smog, they use diesel, they’re not as comfortable. . . I personally think the buses stir up so much — they’re most of them burning diesel. And have you ever followed the bus, I mean that stink of that diesel? I tellya, I think that’s polluting our city right now. A lotta people think it’s the automobile — and that’s gotta be part of it — but those big buses sure don’t help. . . Not the buses. I’m against the buses all the way.

The image of “the bus as enemy” is common to the accounts of both White and Ward. To both of them, the bus is a part of the automotive illness, not a cure for it. To Baxter Ward, the bus is also a source of actual human illness: “The smog content of the basin is enormous,” Ward said:

and the most damaging type of smog is that created by diesel vehicles. It is the intention of those now designing the transit services that we add more of these vehicles, with Park-and-Rides out to Pomona, Disneyland and every place else, we’ll have more smog and more illness created just to accommodate the view that people don’t want to ride trains. To Hell with it!

Alternate Commissioner Roy Donley, asked why not have busways, rather than railways, said: “because I think that you’re not doing a thing towards solving pollution problems.” Walter Tucker, Mayor of Compton thought likewise, lumping buses in with cars as part of the disease: “Considering the pollution of

California, it would be counter-productive, it would be foolish to talk about having more buses which is going to create the pollution," he said.

Long Beach Councilman — and light rail critic — Edgerton was not, however, similarly swayed by the image of the dirty bus. "A bus is more polluting than an automobile, but the numbers of people that a bus can take out of automobiles will be a net loss of pollution," he said. We here have an example of symbolic understandings being mediated by prior beliefs. Critics are less likely to be swayed by images which influence supporters.

Capacity: Trains come Bigger than Buses

Because trains come in larger sizes than buses, it is thought that they can carry more passengers. It seems obvious that not only *can* they do this, but that they *will* do this.

The Rapid Transit Action Group (1948) *Rail Rapid Transit — Now!* proposal confidently declared that:

Automobiles on 3 lanes of a freeway will move 7,000 persons per hour in one direction figuring 1.7 persons per car. Buses operating at 20-second intervals will move about 10,000 persons per hour. A rail line in the center of that freeway inserted at a fractional additional cost, will move 30,000 people per hour. . . (from foreword).

Rails separated from all other traffic are a *must* when a city becomes as large as Los Angeles and its sister communities [p. 1].

The image of trains whisking the masses quickly and efficiently through tunnels is especially potent. Said Jackie Bacharach:

How do you get a bridge across where BART goes under? How many more buses would you stick on that to carry what BART is carrying today?

To Compton's Mayor Tucker, the high capacity of rail was a given fact:

You can haul many more people, everybody knows that all over the world, with

trolleys, with light rail, than you can with buses.

As a former Red Car driver, R. L. Bacchus, wrote in a letter to Supervisor Kenneth Hahn:

Due to the changing times, in my opinion, it would be hard to build rail cars fast enough to service the people on a Los Angeles, Long Beach route. Even with the old Red Cars, when I was a motorman, I pulled a four car train, with 480 passengers, from Los Angeles to Long Beach in 36 minutes. Can you imagine what could be done with modern equipment? [March 11, 1982].

In all these cases, there is a focusing on the ability of the equipment to physically transport more people on a rail than on a bus system, and an ignoring of the question of where these people are to be taken. The assumption that rails are a "*must*" when a city "becomes as large as Los Angeles" is misleading because it ignores the nature of travel within that city, which can make rail inappropriate to even the largest of cities. In Los Angeles County, complete trips are not concentrated in high-density corridors, in which people can easily walk to and from rail stations. Whatever the physical capacity of a rail system, a bus system — able to branch out and serve a far larger number of desired origins and destinations — therefore might have the capacity to serve considerably more people than rail. But we tend not only to focus on the perceived performance characteristics of vehicles in evaluating the modes of transportation of which they are a part, but to focus on the principal vehicle used alone: in our metonymic way of understanding a trip, access and distribution problems remain invisible.

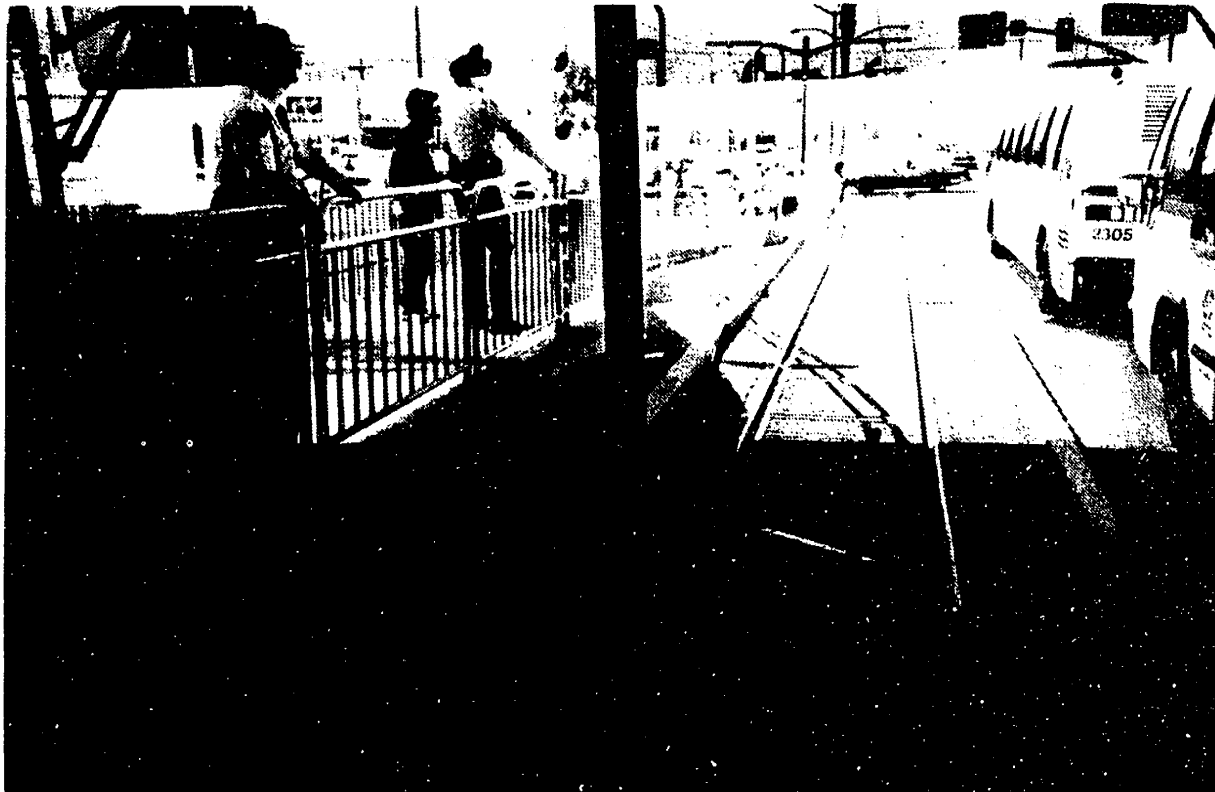
Efficiency — The Driver Image

As the *Los Angeles Times* reported (Oct. 20, 1985), "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."

As Ted Pierce said, “you can put 300, 400 people in at one shot and just move them out of town.” Baxter Ward went even higher:

One motorman can carry 700 people on his train and it would take 10 bus drivers to do the same. So, in terms of labor, you’re much better off with the rail lines [Shaffer, 1980].

The Jul. 6, 1980 *Los Angeles Times*



Driver's view from Blue Line cab: "You can put 300, 400 people in at one shot and just move them out of town."

topped even this estimate: “A bus can carry only about 70 passengers per driver, while streetcars can be strung together with one operator for 1,100 passengers.”

The picture of a train driver propelling far more people along than his colleague on the bus was one of the most widespread — and to those under its spell — compelling images among those interviewed, in media reports and in other documentation.

Other examples of the imagery in operation are given in Table 8-1.

Not only are less personnel apparently

required, but Commissioner Zimmerman went so far as to suggest at the March 24, 1982 LACTC meeting that the job was less skilled than bus driving, and so would attract lower salaries:

Neither LRT or CST [Cable Suspended Transit] will require the quality of operator that is required to drive a bus. There is no traffic to dodge, no fares to collect, no information to be given, no steering

wheel to turn, no signal to be given, no route to remember. One only has to be able to push a lever to make it go and another lever to make it stop. Senior citizens and college students can be perfectly qualified and should be employable at minimum wage with minimum wage fringe benefits [LACTC, 1982c, p. 6].

LACTC Deputy Director Paul Taylor suspected, however, that:

The introduction [of the Long Beach line] will probably increase [the RTD's] operating budget by 2%. . . . Probably the operating cost per marginal passenger is greater than if you did it by bus up to a point, and I don't know where that point is.

He said, nonetheless, that he was expecting to get beyond that point.

Other arguments in favor of rail operation included the lower costs of maintaining an electric versus a diesel fuel-based operation (because electric power is seen as being “cleaner” than diesel, electric equipment appears cheaper to maintain), and the longer life of rail vehicles than bus vehicles.

The imagery of the efficiency of rail demonstrated here is very powerful — and very misleading. Trains are seen to operate in high-capacity units and need only one driver to transport a load which would need many buses — and many bus drivers. The cost of drivers (requiring salaries at least as high as those of bus drivers) is only one of many costs and, as discussed in Chapter 3, capital-intensive rail systems are burdened with many costs which bus systems do not face. This has already shown up in the first-year operating budget of the Long Beach line. Not only are items like right-of-way, station and fare equipment maintenance costly, but feeder buses to bring passengers to and from rail stations have to be paid for, and the cost of these buses must be included when comparing rail operations to the cost of providing direct one-bus bus service. This cost is generally overlooked.

There is a trade-off, furthermore, between the quality of service of a large (rail) vehicle on a small number of fixed routes and the flexibility of a smaller (bus) vehicle serving a larger number of neighborhoods directly and more frequently.

These — invisible and rather abstract — complexities are not readily perceived, as compared to the commanding image of the speeding train efficiently transporting hordes of commuters to work.

Shaping the City

The association of rail with forces for centralization, and of highways with the culture of dispersion has played a central part in the political account given in

Chapter 6. Yet, ultimately, rail became more acceptable to dispersed communities when the Proposition A map produced suggested it could serve them as well. In the process immediately leading to Proposition A and the choice for implementation of the Long Beach light rail line, issues of city form did emerge from time to time — Assemblyman Elder referred during Assemblyman Young’s 1981 Long Beach Assembly Transportation Committee Hearings to the value of light rail “in helping to accelerate the already fast moving redevelopment of downtown Long Beach” — but did not come into the foreground. Attention focused on the transportation crisis afflicting LA’s freeways, more than on issues of urban development. This emphasis is reflected in interviews, too, although the potential of rail to bring revitalization to Watts and Compton (to be discussed in Chapter 12) was important, as was the ability of rail to generate pride in a city and give identity to its core (see Chapter 10).

Rail was seen by some of those interviewed as a tool for guiding growth and, in particular, for bringing order to the chaos of a dispersed megalopolis. As Jerome Premo, former LACTC Executive Director said:

Now, if we have a bunch of Adam Smiths whose view is that people should do anything they want whenever they want and let’s not worry about it, then fine, but I happen to think that there’s some logic to planned and coordinated growth.

The rail system is symbolic both of concentrated development and of a form of order: it provides service to a limited number of foci and, it can therefore be argued, will tend to encourage development at those points. As we saw in Chapter 2, this was certainly the effect of Henry Huntington’s Red Car system. Some of those interviewed thought the new light rail could also have an impact, if a less significant one. Commissioner Barna Szabo saw light rail as a way of bringing the urban core to life:

Table 8-1 Comments on Driver Efficiency

A bus — one driver can't handle over so many men. . . You've going to put more people in an elongated car and you're not going to have as many operators. One man can handle 300 people.

— Walter King, Alternate LACTC Commissioner

One driver: three cars. You can carry 5, 10 times the number of people with one driver. . . You have the bus driver, so to speak, carrying one bus with 40 to 70 people, and you have an operator with three trains connected together, so effectively if you did a straight across the board analysis of one bus driver per people as opposed to one train operator per people, you get a significant reduction in that personnel cost, which is a significant cost of running a system.

— Manuel Perez, LACTC, Rail Construction Committee

You can sit twice as much on the light rail vehicle. So you have two light rail vehicles. With the motorman and a cop on the other, you're still doubling your productivity on the bus, which would require four drivers for 200 people.

— Richard Stanger, LACTC staff

By the mid 1970s [San Diego] community leaders realized that buses simply couldn't haul as many people as efficiently as the rail car.

— Anna Chavez, KABC-TV, Los Angeles, Jul. 30, 1980

Within the transit mode, rail is cheaper to operate than the other major alternative, bus, and this is because rail systems do not require a lot of labor.

It has been estimated that the operating costs of a rail transit system are only one-third of that required by a bus system transporting a comparable number of riders. As a result, 80% to 90% of a rail system's operating cost can easily be recovered from the farebox as opposed to the 20% to 40% of farebox recovery on a typical bus system.

— Adriana Gianturco, Director, Caltrans
Hearings, California Assembly Transportation
Committee, Long Beach, Aug. 14, 1981

The state Transportation Department recently completed a feasibility study of the Long Beach route, the only one that it has surveyed. According to Adriana Gianturco, state transportation director, the line could handle 15,000 commuters daily, with rush-hour schedules of 15-minute intervals, for about one-third of what it costs to move the same number of people by bus.

— “Hip, Hip, Hurray,” *Editorial*
[in support of rail], *Los Angeles Times*, Oct. 15, 1981

Preliminary estimates put the cost of building light rail to Long Beach at less than two hundred million dollars.

Trollies are also inexpensive to operate. In San Diego, for example, as many as four hundred fifty people can be carried on one three car train. Each train requires only one operator. The trains make the sixteen-mile journey from downtown to the border in forty two minutes. Before the trolley, it would have taken at least four buses, with four operators, one hour and ten minutes to carry the same load.

— Gene Gleason, KABC-TV, Los Angeles, Dec. 31, 1981

We made the decision from a transit perspective based solely on operating cost, and we thought and continue to believe that light rail is more efficient than buses because you have one operator in a two-car train and you can carry more people.

— G. B. Arrington, Tri-Met, Portland

Characteristically from a pure, real gut level feeling about it, certainly it should be more cost-effective on the operating cost side because of the fact that you only have a single operator for however many people you're pulling.

— Jim Pierson, Santa Clara County Transit District, San Jose

As do most transit operators, RT [Sacramento] expects their rail service to have lower operating costs per passenger than bus, mostly because of its lower ratio of drivers to carrying capacity, and therefore to have a higher farebox-return ratio.

— Johnston and Sperling (1986, p. 22)

We will be carrying more people with the same level of expenditures.

— Mike Wiley, Asst. to General Manager, RT, Sacramento

It relates very well to certain land use patterns, and can also enhance certain land-use developments. . .

Let's suppose you have about a 10 block to 20 block major street, on which there are offices, restaurants, a hotel and other related service facilities. Given the cost of parking these days in urban areas, and the inconvenience of getting into a parking space, getting out of a parking space, getting into a new parking space, a person who wants to leave for lunch, for example, can get out of his office, get on the light rail, go six blocks, and go to a restaurant or go to a store, pick up what he wants and come back and so forth without a major expense. . .

And that type of concentration is what then helps you create and enhance and make functional an urban core which is a retail service core. And then you can link it to nearby residences. And I think in this Long Beach line, for example, you can create sub-areas, like going through Long Beach, Long Beach Boulevard could become the new North - South commercial center for the city, the back onto the city that light rail can serve very well. Cars cannot, because cars would allow you to go all over the place.

In Szabo's vision, the restricted mobility provided by rail is actually an advantage, because he sees it as having the potential to concentrate certain development, which he says cannot be done with cars. Despite a lack of evidence that rail could have such an impact in an autopolis of the 1990s, or that people would actually wish to be bound by the restrictions Szabo sees as advantageous, Szabo's understanding of light rail's functioning — which was formed from experience of rail in Canada and in Europe — leads him to believe it can bring order to the metropolitan area of Los Angeles.

Gerald Leonard — former aide to Baxter Ward — thought likewise, this time citing the flexibility of buses — rather than cars — as problematic, not advantageous:

There is a belief and I think empiric evidence to prove it, that rail has an attrac-

tive quality that the flexibility of the bus doesn't possess. If you build a rail line and it attracts increased property values at least along the station areas, if not the whole line, so it's an inducement to the community which ultimately is a self-fulfilling prophesy that it attracts density and it feeds on itself. The rail line needs density, and it attracts density.

Ted Pierce also had a vision of the concentrated city:

To me it's less expensive to go ahead and build one area and have everybody within walking distance of that area, because then it costs — the transportation nightmare of getting people back and forth between those areas is just compounded.

All these quotations focus on the creation of order out of chaos and link that vision to the construction of rail facilities, believing that rail can have that impact. The very restrictions to mobility imposed by rail — rigidly fixed links of steel — symbolize control and order, and do so to an extent that the competition of an existing sophisticated road system is ignored along with evidence that recent rail systems have shown little power to shape development. With rail having the ability to transport only a tiny proportion of total demand, how could it be expected to compete with the freeways in organizing development?

Los Angeles Councilman Ernani Bernardi sits away from the mainstream view of the desired city form. The reason for congestion, he said:

is too many people to concentrate in too few areas, instead of dispersing the population as well as the workforce. . . I support the concept of dispersing the activities and limiting the activities in one area and making the activities more available in more areas of the city and more areas of the state. . . My improvements would be to limit the growth on congested areas.

Bernardi sees focusing on downtown as making people:

prisoners, they have no choice: their choice is you come downtown, or else. . . I don't know why people want

to be herded like sheep, and that's what we're talking about doing here. This was so nice in 1940 when I first came out here.

To those who want concentrated urban forms, rail appears to have much to commend itself as an aide to desirable development, despite the lack of proof that the introduction of rail will indeed induce such development. Bernardi, on the other hand, comes at the problem from a different frame of assumptions — he favors dispersed development — and he is against introducing the train to Los Angeles. These arguments reflect those heard time and again during the political development recounted in Chapter 6; while they were not central to the arguments for and against rail, it is clearly still understood that the train can have a role in shaping urban form, despite the auto-dominance in Los Angeles.

SUMMARY

WE HAVE HERE SEEN THE EFFECTS of everyday imagery and understandings on creating impressions of what constitutes good policy, and what does not. We began at looking at our normal metonymic understanding of what constitutes a journey. We tend to think of it in terms of the time spent on the principal vehicle making the trip. Access and distribution problems appear to sink into the background, and the main issue becomes one of the speed of the bus or the train.

Trains appear to not only be faster but more comfortable than buses. They seem to be more secure, and less prone to crime. They have a middle-class image. Buses do not. Underlying many of the statements is a subtle racism suggesting that “undesirable” people to be found on buses will not contaminate trains. As Walter King said, bus users were a “bunch of animals.”

Buses are seen as a cause of congestion and of pollution too: a symptom of

LA's urban woes, not a solution to them. Trains were not universally seen as the answer to congestion, but they were seen as clean and pollution-free, and able to travel on a congestion-free right-of-way. Perhaps the most widespread impression was that trains cost less to operate than buses because they only required one driver to carry the equivalent load of two or more buses. This misconception, resulting as it does from an obvious “common sense” logic, is intuitively appealing, if wrong. It ignores the complexities of actual operations — questions such as the cost of capital equipment maintenance as well as of the nature and quality of service — that make rail more expensive than it might otherwise appear.

Most disturbingly, false conclusions about the alleged advantages of rail over bus service found their way into the conclusions of decision-makers not only in Los Angeles but in other west coast cities adopting rail systems, too. They appeared, furthermore, in TV and newspaper stories and editorials on transportation, providing conduits for a most compelling — and unknowing — misinformation of the public as a whole.

Seattle provides an interesting counter-example. The one city on the West Coast to have adopted a bus-based approach to capital investment in transit, it already had a bus system with positive images not in existence elsewhere. The curious reader may care to skip to Chapter 11, where a more detailed view of this case is presented.

We see in the next chapter how these images do not exist by themselves, but fit into a structure of metaphorical understandings.

The images of buses are bad, we've seen, while those of trains are good. But one response to bad bus service might be to ask how it might be made better. The metaphors underlying thinking about transportation, as we shall see, tell us why this is not on the cards.



In Greek the word “transport” is metaphora which also means “metaphor.” The train constitutes one extended metaphor conveying an inexhaustible supply of lesser ones. It is a metaphor-transporter or a metaphor of metaphors. A three-dimensional mobile metaphor for metaphor itself.

— Tiresias (1984, p.18)

9 Integrating Metaphors

IMAGES ASSOCIATED WITH BUSES AND trains suggest that rail systems will function better than buses at solving transportation problems. These images do not, however, simply exist by themselves, but are integrated by a series of metaphorical understandings, which together set the definition of the problem to be solved and create a coherent picture of why one possible solution might work and the other might not.

The metaphors provide a basis for evaluation. The images — while performing an evaluative function themselves — define the characteristics of the modes of transportation to be evaluated by the metaphors. The output of the images becomes the input to the metaphors.

The metaphors we shall be exploring are often rooted in organic understandings: of organisms alive and vital; and diseased and unwell. Underlying these metaphors are further understandings of physical systems which are used to structure solutions to complex social problems.

ORGANIC METAPHORS FOR TRANSPORTATION

If you have ever fumed in a blue haze on a clogged freeway at rush hour, watched with dismay as the gas pump meter clicked towards a figure resembling the national debt, or stood at the bus stop and seen overloaded buses lumber by without taking you aboard. . . If, like “Network’s” Howard Beale, you are mad as hell and don’t want to take it anymore, we have good news for you: You don’t have to.

Proposition A on the Nov. 4 ballot offers the seven million traffic-cramped, transit-starved citizens of Los Angeles County an opportunity to regain their dwindling mobility while winning a measure of independence from the automobile.

— Editorial, *Los Angeles Herald-Examiner*, Oct. 21, 1980

THE HUMAN BODY IS OUR MOST ready source of everyday experience, and we project our experience and understanding of it into many domains. Hart (1976) describes, for example, how urban planners came to conceive of London as an organic whole: there was perceived to be some “natural order,” he writes, under which the city could function healthily. The planner’s task was seen as to identify how the city had deviated from that natural order; then to take corrective action through which that order could be restored. He quotes Abercrombie (1933), author of the influential “County of London Plan,” who in 1933 wrote that:

Town and Country Planning seeks to proffer a guiding hand to the trend of *natural evolution* [my emphasis] as a result of careful study of the place itself and its external relationships. The result is to be more than a piece of skillful engineering or satisfactory hygiene or successful economics; it should be a *social organism* and a work of art [p. 27].

A basic source of metaphorical understanding in transportation appears to be organic and — specifically — projected from our understanding of the human body. But there are other concepts at work, too. Some derive from the body concepts; others are determined by how the body is itself metaphorically understood (and we shall see that the “body-as-machine” metaphor is powerful, here); others still come from quite separate metaphorical sources of structuring, but mesh together to create coherence in meaning.

Fundamental metaphors at work here conceive of a broken-down transportation system as a body afflicted with disease. There appear to be two separate metaphors — but with a fuzzy, gray boundary between them. Most striking is the metaphor of a body in balance — or fallen out of balance. When all of the body functions according to the natural ordering of its parts and the relationships and flows between them, it is balanced. When it de-

parts from the equilibrium nature has designed for it, the body — or transportation system — becomes sick.

An alternative account emerging from interviews sees the need for an “escape valve.” While the balance metaphor suggests that a cure is possible — enabling a return to balance — the “escape valve” metaphor sees organs as incurably diseased, and advocates by-pass surgery to allow circulation to continue through an alternative set of arteries.

THE CIRCULATION METAPHOR

BOTH THESE METAPHORS COME TO life through a conception of circulation, a metaphor which is at once organic — the circulation of traffic is metaphorically akin to the circulation of blood through the human body — and mechanical: both blood and traffic flows are seen as substances being pumped through a system of interconnecting tubes. When the transportation system breaks down, it is as if afflicted with a disease which impedes the natural flow of traffic.

Restoring Circulation in London

Historical evidence from transportation planning in London exposes the metaphor in action in another context, and helps illustrate its principles.

As far back as 1945 one author (Purdum, 1945) wrote that:

Transport in all its forms is a system of arteries and veins through which the blood stream of the city carries oxygen to the brain and nourishment to every part of the organism [p. 122].

In our everyday language we talk of “arterial” and “circulator” roads and it follows from the metaphor that if these vital channels become blocked, and flow thereby constricted — or even brought to a halt — the affected organs suffer malnutrition, weaken, decay, and even possibly die. There are a number of logical re-

sponses under the circulation metaphor, but they all focus on the restoration of free flow.

The most obvious response under the circulation metaphor is to construct a new system in which free flow can once more prevail and decaying organs can thereby be revitalized. Thus, Patrick Abercrombie (1937), maintained that “the essence of good planning is to *canalize* [my emphasis] main streams of traffic” (p. 43). His response to the congestion which threatened to constrict London’s life was the creation of a new hierarchical “circulatory system.” “Corrective surgery was required,” writes Hart (1976, p. 69), “and would necessitate the insertion of artificial channels, or canals, to drain away traffic from areas where it was both unnecessary and unwanted.”

The minor vessels serving the extremities of the body cannot carry major flows of blood: they would quickly become clogged, and fail under the undue pressure applied by an attempt to force too much blood through them. Larger arteries — from the aorta down — serve instead as the higher-level channels of a hierarchical system which distributes blood to all parts of the body. The hierarchy serves to keep major flows from congesting parts of the body where they are not needed, allowing flows appropriate to each part of the metabolism to reach the organs which are to be nourished.

The problem in London was seen as one of lack of structure: with major channels in a state of disrepair, the city’s lifeblood was being forced through minor arteries, congesting fingers and toes.

We note that Abercrombie’s thinking mirrors that of the *Major Traffic Street Plan for Los Angeles* (Los Angeles Traffic Commission, 1924), which saw congestion as a function of “unscientific” street width and design, and “improper” use of existing street spaces. That plan had 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. The London example is used in more detail here, primarily since the links to the circulation metaphor are more explicitly spelled out, and also to show that the metaphor is far from localized in its influence.

A three-tier hierarchy was devised to provide a solution for London’s problems: *Arterial* roads for fast, through traffic; *sub-Arterial* roads for local traffic; and local roads for access to particular destinations — the fingers and the toes. Through traffic — streaking by on segregated arterials — would avoid lower-order roads which could then perform local functions without getting congested: with each type of road carrying a free-flowing level of traffic within the limits of its design capacity, the parts of the system would come together to form a whole road system in harmonious balance.

The circulation metaphor generated a new solution to transcend the inadequacies of the old arrangement. In every sense it had obvious appeal: more capacity was clearly needed because the existing system was clogged up; but, while this added capacity was needed to enable the city to continue its vital functions, it was needed in such a way as to improve environmental conditions for individual localities. By ordering the flows of traffic, the road hierarchy appeared to serve both aims.

Public protests in London in fact led to the cancellation of most of the planned road building. The circulation solution offered to contain traffic within neighborhoods, but ignored the walls of noise, pollution and visual obstruction which would be built by placing major arterials at the borders of those neighborhoods. The emphasis on canalization of traffic also gave priority to the free flow of *vehicles*: it ignored the possibility that the movement of

people might be eased by controlling the circulation of vehicles, perhaps by emphasizing public rather than private transportation. It also by-passed equity issues: it promoted circulation by vehicles without asking *who* would be circulating in those vehicles or who would pay for that circulation in both monetary and environmental terms.

The Body As Machine

Our everyday understanding of the human blood circulation system is in fact a mechanical one: the body is seen as a machine. In the above account, there is a clear mechanical understanding of concepts of circulation: circulation is seen as the pumping of fluids through tubes, whether to maintain flows of traffic or of blood. This comes from what Johnson (1987) identifies as the "Body is a Machine" metaphor. Entailments of this metaphor include that:

The body consists of distinct, though interconnected parts.

It is a functional unity of assembly serving various purposes.

It requires an energy source of force to get it operating.

Breakdown consists in the malfunctioning of parts.

Repair (treatment) may involve replacement, mending, alteration of parts, and so forth.

The parts of the functioning unity are not themselves self-adapting.

[partial listing, from p. 130.]

To this may be added the implication that there *is* an equilibrium state in which the machine functions efficiently: the job of repair is to restore that equilibrium. Sometimes, however, the machine breaks down beyond repair.

Illustrated here is the concept of chaining of metaphors: it is not simply that one concept is seen in terms of another, but that the latter concept is itself metaphorically understood. So, the metaphorical understanding put forward here

is one of a road system understood in terms of a blood circulation system which is itself understood in terms of a machine.

Expectations of the Circulation Metaphor

Before examining evidence from Southern California, let us see what we would expect from a circulation metaphor in operation there. Firstly, we would expect the transportation system talked of as an interconnected series of tubes through which a flow of traffic is pumped. Just as the human circulation system connects all organs of the body, the transportation system would be expected to connect all points of the city. Just as in a blood circulation system the principal organs are connected by the largest-volume arteries — with the greatest flows through the heart — so we would expect a need to be seen for the greatest capacity between major nodes, and with a "heart" to the system at the principal urban core.

Just as the human blood circulation system is seen as a system of tubes with a pumphouse at the center, and just as its job is seen as to keep the flow of blood moving, so we would expect a transportation system understood under the metaphor to be seen as a system around which traffic is to be pumped. Note that the blood of a human circulation system is a homogeneous substance which is known to have nutritional value to whatever part of the body it is delivered. Under the circulation metaphor, we would therefore expect traffic to be seen as a homogeneous substance: furthermore, under the "body is a machine" metaphor, the emphasis would be on keeping traffic flowing, rather than on analyzing the composition of the traffic or on studying the needs of the *people* who make up the traffic. Due to the homogeneity of the flow, what particular units of the flow do upon arrival would not be of interest.

Just as blood provides nutrition wherever it goes, the circulation metaphor

Correction

The following was omitted from the end of p. 212.

Just as blood provides nutrition wherever it goes, the circulation metaphor would be expected to suggest that any communities through which a flow travels would be expected to derive economic benefits therefrom. Since the source of nutrition is homogeneous — and since its nutritive value is established — to merely supply that flow would be to supply benefits. By implication, just as a bodily organ deprived of blood becomes diseased and dysfunctional, deprivation of traffic flow would be expected to have a depressing effect on a community. Conversely, restoring flow to a depressed community would be expected to be conducive to that community's revitalization.

To keep the circulation system healthy requires the maintenance of free flow through its tubes. If any arteries become constricted or blocked, the prescription under the circulation metaphor would be to take whatever action is necessary to restore free flow.

An introduction to evidence that the circulation metaphor is operating is presented below. The "balance" and "escape valve" metaphors are then introduced. The operation of these metaphors in Los Angeles is then tested, using the evidence examined so far. A return to the circulation metaphor will be made at several later points in this account.

The Circulation Metaphor in Southern California

As in the human circulatory system, this traffic, deprived of its main artery, has to find relief in the veins of city streets. The major vein between Alhambra and Pasadena is Fremont Avenue. A four-lane street in Alhambra, it narrows to a two-lane winding road in South Pasadena.

— *op-ed* by J. Albert Curran (on the consequences of the missing link in the Long Beach Freeway),
Pasadena Star News, Feb. 24, 1980

Organic metaphors are alive and well in the transportation planning world of Southern California, and evidence suggests that taken together as a coherent metaphorical system they not only program understandings of what the problems are, but help shape the policies which are developed to respond to them.

If an organic system fails, it is diseased. We are here examining the hypothesis that transportation systems are seen as organic entities fallen out of shape. We have three questions to address if we are to identify the metaphorical entailments under examination: Firstly, what is the disease afflicting the transportation system? Secondly, what is causing the disease? And, thirdly, what is the cure to the disease? The disease, we shall see, is one of a constricted circulation system. The system is overloaded and blocked; free flow cannot take place any more. The disease, we shall see, is due to a lack of *balance* in the transportation system. And the cure involves either restoring that balance, thereby enabling a state of free flow to return or — if that is not possible — providing an “escape valve” through which the excess pressure on the system can be released.

The Los Angeles metropolitan area is seen as a series of points connected by tubes through which movement occurs.

People are conveyed through these tubes as blood through arteries and — by extension through the “body is a machine” metaphor — as crude oil through a pipeline. The overriding impression is of a body paralyzed by disease. The flow of the circulation system is being restricted but, as we shall see, it is assumed a surgical — in other words a *mechanical* approach — can provide a cure. A complex social problem is thereby metaphorically reduced to one of engineering. Decision makers are akin to the doctor who always wants to dive in and “cut it out,” rather than the physician who calls for attending to the whole body and its relations.

Jacki Bacharach, then Chair of the Los Angeles County Transportation Commission, talked of a system under stress: “We are at capacity or over just now,” she said:

The traffic. We just saw yesterday at the Commission a presentation on the highway system; and, by the year 2000 we’re going to be choked. . . I think we need a basic arterial system of high speed transit, and then infill that with other modes.

Bacharach’s language, in common with that of many others, suggests a metaphor of disease afflicting a system of circulation; it suggests, furthermore, a disease which may not only be diagnosed, but which has a cure; and she goes on to prescribe it: provide an arterial system where free-flow can be maintained, then balance it with other modes of transportation.

How do people think about the freeway system in Southern California, and of its attendant problems? Everywhere there are parallels with human conditions. What is to congest but “to cause an excessive fullness of the blood vessels?” And how is that congestion seen? It is commonly seen as a “clogging.” Long Beach Councilman Edgerton talks of “our clogged-up environment,” while, according to Long Beach Councilwoman Eunice Sato, “the freeways are clogged now. . . private automobiles are clogging the free-

Table 9-1 Strangulation by Freeway

An officer of a major petroleum company may seem an unlikely advocate for mass transit. But if we don't build a subway in Los Angeles, our city is going to strangle on automobiles and buses.

— Rodney Rood, Vice-President, Atlantic Richfield Company, Testimony to Senate Appropriations Committee on Transportation, April 27, 1983.

A recent energy shortfall strangled the country.

— Presenter, KJOI-FM, Conversation

Unless we get a rapid rail system started, we're going to reach a point where we'll start to strangle on our own problems and the ability to pick up people. We're passing up people right now and things can only get worse.

— Thomas Newsom, General Manager, RTD, KABC-TV, Los Angeles, Aug. 11, 1981

The car gave us freedom. We could take the freeway anytime. So we ripped up hundreds of miles of streetcar and inner-urban train tracks.

This is the result: freeways that can no longer be expanded. Congestion, pollution, frustration. LA has a fine bus system, but it too is over-worked and stuck in the same traffic jams. The city which rejected rapid transit three times on the ballot since 1968 now finds itself threatened with strangulation if we don't build it.

— Gene Gleason, presenter, KABC-TV, Los Angeles, Aug. 12, 1981

ways in commuting to and from work." As we saw in the previous chapter, buses ("clogging streets" according to RTD Board Member Marvin Holin) are widely seen not only as a part of congested traffic but as a cause of congestion for other traffic, too. Buses are seen as a part of the disease, not as a potential cure. The circulation metaphor leads us to believe that we need to unclog streets, and the image

of the bus, as further interpreted through the circulation metaphor, tells us why the bus cannot do that.

Congestion is seen as a disease which makes one suffer: "People who try to move suffer severe congestion," said Dan Caufield, at the time Long Beach light rail Project Manager.

Some see the effects of congestion as

not just clogging or choking, but more violently in terms of strangulation.

“They’re strangling the County,” said Baxter Ward of cars on freeways:

When I first came out here 20 years ago or 30 years ago, you could just speed along the Ventura Freeway; now you can’t even move. It’s getting worse every day.

His former aide, Gerald Leonard, commented similarly that “as planning technicians for years we have all been saying that we’re strangling ourselves in the freeways.” Some other examples are given in Table 9-1. The Gene Gleason TV presentation is particularly dramatic, suggesting as it does the disease resulting from loss of the Red Cars, and death if trains are not brought back.



Choking or strangulation are not, of course, *consistent* with afflictions which might affect a blood circulation system. As noted in Chapter 7, however, metaphorical systems do not invariably involve complete mappings from one set of understandings to another, but rather collect a series of entailments that come together to form a *coherent* picture. Choking and strangling involve restricting a flow through a tube — which is exactly what happens when an artery becomes clogged. So, although they affect different bodily organs, these metaphorical understandings are consistent with the circulation

metaphor, if not with the blood circulation system itself.

Associated with the idea of “congestion” or “clogging,” “choking” or “strangulation,” is the conception of a system with a finite capacity. It is as if an abnormally large quantity of blood is being forced through someone’s arteries; or of a constricted windpipe being unable to accommodate a flow of oxygen sufficient for life. As Alternate Commissioner Walter King put it:

I think there’s no question, our congestion, if you drive the freeways around here and we hear all the experts for many years we’ve been told that we’re at capacity.

Furthermore, said Alternate Commissioner Ted Pierce, “we’re almost out to capacity as far as the amount of buses the downtown can handle.”

There remain more entailments of the circulation metaphor to be tested against the evidence of the interviews conducted in Southern California. This is best done, however, after introducing a further central metaphor. To understand and further develop the idea of disease and cure as applied to transportation in Southern California, we need to expose and appreciate the potency of one of the most powerful metaphors to emerge from the interviews and documents examined: that of balance.

THE BALANCE METAPHOR

Proposition A will mean a more balanced transportation system for all citizens of Los Angeles County.

— Release from Supervisor Kenneth Hahn, following California Supreme Court approval of Proposition A

“THE STRUCTURE OF BALANCE is one of the key threads that holds our physical existence together

as a relatively coherent and meaningful whole,” writes Mark Johnson (1987). “Balance, metaphorically interpreted also holds together several aspects of our understanding of our world” (p. 74).

The meaning of balance, Johnson says, comes from the experience of bodily equilibrium, or the loss thereof. In our daily lives we have the expectation that there *is* such a thing as an equilibrium, although when we have attained it we are unaware of a state of either “equilibrium” or “balance.” The stomach quietly gets on with its business without drawing our attention until we get hungry or it gets too acidic. We only know that the bladder exists when it is full. The environmental temperature generally only attracts our attention when it is too hot or too cold. The act of physical balance when walking is really quite intricate, but we are unaware of it until we stumble and fall.

It is only when these things happen that we see ourselves as being “out of balance.” As Johnson says, being “out of balance” means there being “too much” or “not enough,” so that “the normal, healthy organization of forces, processes, and elements is upset” (p. 75). Our response to the loss of balance is to move to rapidly restore it. We eat to dispel hunger; we take an antacid to quiet our stomach’s rumbling complaints. We relieve ourselves when the bladder is full, turn the thermostat up or down or add or subtract clothes when it is too hot or too cold. And if we stumble, we quickly act to right ourselves and restore a state of physical equilibrium:

As you stumble, and fall, balance becomes conspicuous by its absence. You right yourself by rising back to your typical upright posture. That is, you reestablish a prior distribution of forces and weight relative to an imaginary vertical axis. You are balancing out, once more, the relevant physical forces [p. 75-76].

As Johnson explains, “In every case, balance involves a symmetrical (or pro-

portional) arrangement of forces around a point or axis.” By definition, then, we can respond to losing balance by physically readjusting these forces to bring about its restoration. We know that there *is* such a thing as a state of equilibrium; that it is attainable; and that it is healthy for us to reach it.

Balance as experienced physically, then, is fundamental to our existence; it is a basic assumption of everyday life. As such the concept readily extends itself metaphorically into other areas of our lives. Johnson cites Lakoff and Kovecses (1983) to show the concept of physical balance as metaphorically translated to psychological balance. Emotions like anger, these authors claim, are experienced on a model of hot fluid within a container (usually closed):

Emotions can *simmer, well up, overflow, boil over, erupt, and explode* when the pressure builds up. In such cases an equilibrium must be reestablished. One can *express, release, or let out* the emotions (*blow off steam*) to lessen the strain. One can try to *repress, suppress, hold in, or put a lid on* one’s emotions, but they will not thereby disappear — the forces are still present within the system. In short, we tend to seek a temporary homeostasis where we are emotionally *balanced, stable, and on an even keel*. . .

On the other side of the scale of emotional balance, there can be too little emotional pressure. One can be *drained, emotionally bankrupt, or exhausted*. The result is lethargy, dullness, lack of energy, and absence of motivation. In such cases we try to *pump up* our emotions, to stir them up, to recharge them, to generate some emotional energy [p. 88-89].

In our lives, Johnson says, we seek to balance intellectual, physical, social, religious and moral activity:

If too much *weight* is put on one activity or enterprise, to the exclusion of others, the individual is unbalanced. Furthermore, financial, marital, political, or sexual problems can *weigh on our minds*, throwing us out of balance [p. 89].

As Johnson points out, this reflects not merely how we talk about the effect of our

problems, but how we *experience* them, and so how we think of how to bring about a cure.

As Jaime Carbonell has pointed out, the notion of *weight* is intimately related to the structure of the BALANCE metaphor. We experience power and force in terms of weight and mass (which is equated with weight in common understanding) [p. 89].

As a further example, and one particularly useful to the transportation case to be studied below, Johnson talks of "*The balance of rational argument.*" We *pile up evidence, amass facts*, and build up a *weighty argument*. People judging what we have to say will *weigh* our argument's merits. If two arguments *carry equal weight*, we try to *tip the scale* in our favor by *adding* further evidence.

The particular type of metaphorical balancing at work here is well-represented by a mechanical balance scale with two pans — as in the popular image of "The scales of justice." In this case, Johnson says, the axis of balance is:

reduced to a mere point, which serves as a fulcrum. The many symmetrical force vectors are reduced to two symmetrical vectors, since the equal weights do constitute balancing force vectors meeting at a point.

Schön (1963) discusses this particular metaphorical representation, raising points which will be useful in exploring the metaphor in Southern California transportation circles. Schön notes in particular that objects come to the weighing process ready to be weighed:

Objects are brought to the scales. They do not have to be invented in order to be weighed. In a sense, they are given for the weighing process; from the point of view of the weighing they are assumed. The issue is not how they came to be, but how much they weigh in comparison to one another [p. 119-120].

In a process where the balance metaphor were operating, we would expect actions "to be treated as given for evaluation. Problems of invention or formulation would be ignored" (p. 120).

We should therefore see if people were more concerned with deciding whether to take a certain pre-defined action, than with thinking about what actions they might possibly take.

In the course of weighing on a balance scale, objects do not change. So "we would expect a theory of deciding based on a displaced theory of weighing to treat objects of decisions as unchanging" (p. 121). The advantages and disadvantages of different given objects might therefore be discussed, but not the possibility of reformulating the objects themselves.

Finally, "because of the very structure of a balance scale, weighing is always a comparison of two things or sets of things" (p. 122). We would expect to see an evaluation process operating under this metaphor to perform trade-offs between two opposing options or sets of options.

Balancing Roads and Rails

As Supervisor Deane Dana said at Assemblyman Young's Long Beach Hearings (California Legislature, 1981a):

Until the late 1940s, it [the Pacific Electric] provided our citizens along with our expanding highway network with a good balanced transportation system. . . .

We now have to keep pace with the future and we require a more balanced system. Streets and highways alone cannot provide a reasonable level of service to keep pace with even the most conservative population and development projections in this area [p. 96-97].

Steve Siegel of Portland Development Corporation felt that going for light rail prevented that city's transportation system from falling into imbalance. If it wasn't for the Banfield light rail, he said, "we would have had a freeway, which probably would have caused a major imbalance in our transportation system."

There are two ideas of balance here: Firstly, if a given transportation system operates under conditions of free-flow, it is



Deane Dana

in balance. If it becomes overloaded it falls out of balance. Secondly, if components of that transportation system — road and rail elements, for example — are supplied or used in the wrong proportions, they are out of balance with each other and also cause an imbalance in the transportation system as a whole. It is this understanding of balance — that road and rail must be available in balanced quantities — that appears central to the understanding of the balance metaphor in Southern California.

The idea of balance is not a new one: the idea is inherent in the following statement in the 1948 report on *Rail Rapid Transit — Now!*:

There are three ways to move people daily in a community — by auto, by bus, and by rail. The group is convinced that a combination of all three is necessary. Autos are too expensive for most people. Both autos and buses congest the streets. Rails separated from all other

traffic are a *must* when a city becomes as large as Los Angeles and its sister communities [from Foreword, Rapid Transit Action Group, 1948].

By implication, if one part of a “necessary. . . combination” is removed, a system falls from balance.

In 1966, California state Senator Randolph Collier, known as the “father of the freeways,” came out with a similar sentiment, declaring that:

I want you to know that I support rapid transit as part of an integrated, balanced transportation system — a balance that seems to be lacking at the present time. . . . A natural partnership between rail and rubber waits to be put to work to help solve the enormous problem of moving people in metropolitan areas [cited in Kagan et. al., 1972].

“Rail” and “rubber” are seen to be different things, that together work as a “partnership.”

The term balance crops up very frequently in the interviews and elsewhere, giving surface evidence of the metaphor operating at a deeper level below. We see politicians of quite opposing viewpoints in agreement on the need for “balance.” In a letter to the editor of the *Los Angeles Times* (Nov. 5, 1981), the liberal Supervisor Kenneth Hahn said he had recently visited San Diego, whose example he wished to emulate:

By employing San Diego’s can-do attitude we can undo the wrong that was done by narrow industrial interests and bring a balanced transportation system back to Los Angeles.

Mike Lewis, former RTD Board Chair and deputy to conservative Supervisor Pete Schabarum, meanwhile declared that “Pete’s been an advocate of what he calls “balanced transportation.”” Alternate Commissioner Walter King wants Los Angeles to have the “balanced transportation” of Paris. Richard Stanger of LACTC staff, talks of light rail helping to “balance transportation sub-regions.” And, reported the *Los Angeles Times* (Jul. 1, 1984), John C. Cushman III, developer

of ARCO Plaza, Crocker Center and other major projects “argues for a “balanced transportation system,” including road improvements, better bus service in some areas, as well as Metro Rail.”

Let us go deeper into what is meant by “balance.” We note first that the current problem is mainly characterized in terms of the *overloading* of the existing road system. It is often referred to in terms of weight. “The traffic right now is *unbearable*,” said Debbie George, aide to Supervisor Deane Dana. “We need something that gets people *off* the roadways,” declared Jackie Bacharach, while Long Beach Mayor Ernie Kell praised light rail because “it’s going to take some of the *load* off of the freeway system.”

If there is an overload on the freeways, at the other end of the balance scale there is too little weight being put on “mass transit” or “rapid transit.” As Jerome Premo, former Executive Director of the County Transportation Commission, saw it:

I think in a historical sense, the tragedy of transportation development in Los Angeles isn’t necessarily the freeways, but how it was an issue of using those old transit right of ways for freeways to the exclusion of transit. So there was a tradition of exclusion in the decision-making process — it was an either/or. I think the expectation in California in the mid-70s was that there could be some thinking about balance.

In Premo’s statement, we see the idea that there are two distinct entities — freeways and transit — to be balanced. Because, as he sees it, inadequate attention was given to transit, the transportation system went out of balance.

But, as we shall see, it is not simply that roads are to be balanced with transit in general, but with *rail* transit in particular. As deputy to Supervisor Kenneth Hahn, Burke Roche, said “buses cause congestion on the streets, and the light rail system we would hope would not.” Buses must therefore be put on the roads

side of the balance scale for weighing — they are a part of the problem, an extra burden which it is up to rail to relieve. Kenneth Hahn is a supporter of the area bus system, but he likewise sees a need to establish a balance with rail: “You have to have *two* forms,” he said:

The rail is not the substitute for the bus, Jonathan. You have to have buses. I’m a strong believer. And you have to have mass transit, too: rail.

Alternate Commissioner Barna Szabo would agree on the need for bus *and* train: “I’m very European — need both of them.” Alternate Commissioner Walter King, while defending rail for Southern California, conceded that new articulated buses were being tried out in San Francisco:

But they also have a balance. They have the heavy rail, they have the light rail, and then the buses, and then the electrified.

King evokes a “natural order” (see Hart, 1976 p. 59 for the origin of this term) metaphor, which is both consistent with the balance metaphor and provides additional implications. In King’s mind the bus and the train each have their places in the *natural order* of things — in other words, there is a desirable equilibrium balance at which the transportation system as a whole works harmoniously — but that if this order is disturbed, the system will be knocked out of balance:

I don’t want to be limited by cars, I don’t want to be limited by bus, I don’t want to be limited by rail; I want them all in their place.

As Dan Roberts, of the office of Congressman Mineta (San Jose) said:

The trick is to balance them [different modes] off, a desire to plan that puts each mode where it needs to be.

“It’s like an orchestra,” said Congressman Jim Bates (San Diego). “You’ve got the violins, and the trumpets and the horns, the cellos, you know.” San Diego Councilman Ed Struiksma also used the musical metaphor, calling for light rail to work “in harmony in an overall system.”

Just like the heart and liver and lungs all have their place in the human body or different instruments their pre-defined and fixed place in the orchestra, road, bus and rail have necessary function in the natural order, and the city qua organic whole will break down if there is too little or too much of any one of them.

Asked about alternative strategies to light rail, Struiksma replied:

But what other alternatives? We've got freeways, you've got buses, taxis and LRT.

In other words, if you've already got freeways, buses and taxis, the way to fill the gap is to get light rail, not to replicate what you already have.

There was a widespread view that rail was something quite "different," and that buses were not a serious choice at all. Gene Gleason introduced his KABC-TV (Los Angeles, April 5, 1982) news spot on the mass transit conference opening in Los Angeles by declaring that:

It seems, somehow, out of place to hold a conference on mass transit here in Los Angeles. After all, New York has its subway, San Francisco has BART, and even San Diego has its new trolley system. Here in Los Angeles, we have cars and we have buses and we have cars and we have more cars.

The implication is that buses are not somehow transit: they're on the overloaded side of the balance scale, together with cars. As Supervisor Kenneth Hahn said in a release of March 24, 1982:

Every other major metropolitan area in the nation and the world has a balanced mix of rubber and rail transit. Only in Los Angeles have we tried to get by with only automobile and bus transportation and for this we have to pay a steep price in pollution, in hour-plus commuting times, and in the necessity for every family to own two cars.

Just as with a balance scale, we bring items ready to be weighed — and they undergo no change in the process — the discussions above center on balancing off pre-defined technologies, not on changing

ways in which those technologies might be used or in considering changes beyond the scope of transportation technology choice or beyond the realm of transportation itself. Interviewees talk of buses and trains as givens, as things which come standardized out of a box to be put into operation. If a symphony orchestra is short of horns, it's no use to bring in more cellos to substitute. The sound just won't balance. In the same way that you can't usually make a cello make a horn-like sound, it is thought that you can't give buses the supposed advantages of rail-like characteristics. In calling for a return to balance, there is little talk of innovation which might, for example, have improved the operation of buses, freeways, or both.

Just as all human bodies — or orchestras — need to be balanced in a certain way, there seems, furthermore, to be a generic view of how transportation should be balanced in a city, a view which leaves no room for the possibility that certain modes of transportation might not be desirable in some cities. It is understood which modes belong on which side of the balance scale, and the job is seen as simply to bring that scale into balance.

The statements of Mike Lewis, deputy to conservative Supervisor Pete Schabarum, might at first glance appear to indicate a difference in emphasis: He stresses that Pete Schabarum has suggested that we should not be "constrained by what we know today in terms of available alternatives." But if we examine his perspective a bit more closely, it becomes clear that Lewis accepts the same notion of "balancing" technologies that we have seen above. "You've got certain kinds of technology, and you've got certain kinds of problem that match up," he says. "I don't believe that we can continue to just rely on one kind of means to achieve any mobility in Southern California, be it light rail, heavy rail, or whatever."

Lewis handed over a copy of the booklet he had put together for Supervisor

Schabarum on "Moving People" (Schabarum, undated) and it did include a variety of flavors of road and rail technologies. Even so, it began from the starting point that there was a role for each of the given technologies in Southern California, and that by putting each technology in its given natural place, a balance could be achieved.

The point is that Lewis, like all the others, tacitly assumes that there is some technical fix — some given solution — which is there to be found, and that by mechanically altering the ratios of given technologies in the transportation system, that "balance" may be restored.

There is another important implication to the balance metaphor: If a system is out of balance because there's too much loaded on the road side relative to the rapid transit side of the scale, then there are of course two options: one is to add weight to the transit side; but the other is to take weight off the roads side. Adding to the rail side is seen as desirable because it brings the total transportation system into balance without having to *force* anyone off the road side, something Angelenos wish to avoid. As Assemblyman Richard Katz said in a *Los Angeles Times* interview (Nov. 1, 1985):

The rail line could siphon off 5% of the daily commuter traffic from the nearby Ventura Freeway. . . Even if the light rail doesn't go directly through your community and you don't ride it, you'd benefit. . . If you were among the remaining 95% on the Ventura Freeway, you'd be doing 45 m.p.h. where it used to be 3 1/2 m.p.h.

This provides a wonderful example of the circulation metaphor at work, besides that of balance. Katz talks of "siphoning" as if relieving pressure in one tube by installing another one to share the flow: it is as if an oil pipe under excess pressure is brought back to normal flow when an additional pipe is installed. Behind the concept is the idea that people are like a homogeneous liquid; that they will flow

equally through one pipe as through another. This is not true, as road and rail are not similar "pipes," and people will continue to prefer road travel for the particular benefits it provides. More fundamentally, the concept falsely assumes that transportation systems are like closed systems of liquid. In fact, if the rail *did* attract travelers from the roads, the reduced travel time on the roads would attract *more* cars onto the system, just as a reduction in cost draws more people to purchase a product in a store. As Mel Webber says in his version of Parkinson's Law "Traffic expands to fill the space available." So the freeways — if no change were made in their manner of operation — would quickly return to an equilibrium level of *congestion*, and "balance" would not be restored.

The idea of balance is central to our existence; without it, we could not even stand or walk. If "balance" is associated with good health, it is quite natural to think that for a sick system to be made well again, it must be brought back into balance. The balance of the system is seen as dependent on the balancing of its component parts. The evidence above shows that the imbalance in Los Angeles is seen as being a function of there being too much "weight" on the road side of the balance, the cure is seen as to add "weight" to the rail side.

The images of buses and trains establish these modes as technologies which are seen as fundamentally different and to be balanced with each other. The imagery — which provides understandings of the quality of service buses and trains can provide — serves as input to the metaphor, which then determines how the transportation modes represented by the imagery are to be balanced.

The balance metaphor serves a basic function of channeling thought: far from inviting reflective thought, it makes it seem unnecessary by providing a solution of obvious appeal. It enables decision

Table 9-2 Rail as Backbone

It's the backbone of the system; it's not the replacement for the whole system. And you can't expect it to operate in isolation.

Just like you'd never expect to have thousands and thousands of miles of freeway in a metropolitan area. . .

If you were to try to do urban highway travel with just an arterial system, you wouldn't be able to serve it; you need some freeways to serve as the backbone of the system.

— Andy Katugno, METRO, Portland

Well, I think the trolley system can be the backbone of the public transportation system, just as the freeways are in the street and highway sense.

— Tom Larwin, General Manager, MTDB, San Diego
KABC-TV, Los Angeles, August 2, 1982

Their [Sacramento's] concept is to use the light rail system to handle the heavy mainline traffic in the future, and then to reroute the buses so that they feed into it. And they think the total cost of that will be much cheaper than if they were to go to an all-bus system expanded in the future. And I think the same would apply here.

— Adriana Gianturco, Caltrans Director,
Assembly Transportation Committee Hearings,
Long Beach, August 14, 1981

makers to see the remedy to the transportation malaise in Los Angeles merely in terms of adding or subtracting certain given technologies. Although they are at best only reacting to symptoms of the perceived transportation disease, it feels as if they are on to a real cure.

Feeders — Part of a Naturally-Ordered and Balanced System

“Mass transit, either heavy line or light rail can never serve every section. So you have to have buses to feed into it,” said Supervisor Kenneth Hahn. “Buses should be feeders, they shouldn't be the *backbone* [my emphasis] of any system,” said Baxter Ward. The idea of a “back-

bone” supporting a network — though not the same as the concept of a major artery at the core of a circulation system — has similar implications: in both cases there are smaller structures with which the backbone — or principal artery — are symbiotically linked. The understanding came up many times. Some further examples are given in Table 9-2.

There was a general acknowledgement in interviews of the need to have buses “feeding” the rail system, a view underpinned by the circulation, balance and natural order metaphors. Firstly, and according to the circulation metaphor, the total transportation system consists of a hierarchy of tubes through which traffic is

pumped. Higher order arterials provide for the major flows, while smaller vessels distribute the traffic to and from its final destination. In this instance, the rail lines are seen as providing the "arterial" connections, while bus lines serve for collection and distribution. The images of high speed and high capacity associated with rail suggest that rail should carry large volumes over major distances, while buses should provide for local distribution.

This formulation is a function of the "natural order" metaphor as well as of the "balance" metaphor. Not only are rail and bus seen as operating in the appropriate relative quantities when they are in balance, but each according to their assigned roles in the "natural order:" rail to carry large volumes at high speeds; and buses to reach out into neighborhoods from train stations. As Richard Stanger of LACTC staff saw it:

It's not really a question between bus and rail. It's a question of trying to combine the benefits of each mode well. . . So you use the area service of the bus and the line haul capabilities of the rail, and the task is to provide a good, convenient transferring and try and figure out where to put the rail.

If that's done, "I think it's very flexible if we tap in with the buses," said Debbie George of Supervisor Dana's office.

Commissioner Marcia Mednick also stressed putting each type of technology in its place. She was asked why people would be willing to ride on feeder buses, given the assertion that they didn't like to ride on buses in general:

Because the bus is merely a means of getting to the system; it's not their means of getting to where they're going. The buses, you're just talking about just taking people a relatively short distance here from wherever they live to the station. I think it'll fly.

Associated with the concept of feeding is re-arranging bus systems to link up with the rail. Said Ted Pierce:

Our other transportation systems will have to be adjusted so that if the rail is

going east - west, then the other will have to go north - south to develop the artery, as feeder systems.

As Jim Sims of LACTC staff explained:

We want to focus the local bus systems onto the rail systems, wherever possible. It means, where there are parallel routes which can be moved from a parallel surface street or parallel freeway onto the rail system, what we will do is eliminate the parallel bus route. Second approach is that we would focus local transit to the station locations to the extent that that's possible.

In other words, direct bus services to downtown would be replaced with shorter lines feeding the rail stations, removing competition and supplying the trains with passengers at the same time. Richard Stanger of LACTC staff has a quite revealing metaphor for this concept. He calls it "force feeding," which he says has worked in Atlanta, and which he says should have been implemented in the Bay Area, where AC Transit bus service continues to duplicate BART, providing direct service to San Francisco from a large number of neighborhoods somewhat distant from BART services, rather than only taking passengers to the BART station:

Any rational distribution of transit in the Bay Area would have used AC Transit to feed the BART stations and you would have used BART to *pump* [my emphasis] people across the Bay.

But would that be better for the passenger than a direct bus service, Stanger was asked? "Well, if we do it right he won't have a choice. Is it right to give him a choice?"

There is an element of violence to the "force feed" metaphor, and the suggestion that people would do otherwise if given the choice. There are two ways the metaphor can be considered. In one sense, it can be seen as "transit as food," something needed for survival: if people won't feed themselves, we'll force them to eat.

From another angle it is the train — a terrifying anthropomorgous monster — itself which is being fed, commuters being directed forcibly — though its doors — into its jaws, waiting to swallow them up and clamp shut.

Compton Councilman Maxcy Filer, a minority community activist and one of the most fervent of light rail critics, laughed when he heard of the idea of force feeding:

That is the solution. That's the solution. That's a good thought, I never thought of it that way, but I shall remember that from now on. I shall remember that. They must ride the train [laughter]. That's alright, I'm telling yer [laughter].

THE ADDICTION METAPHOR: TRAINS AS ANTIDOTE TO GAS ADDICTION

“**D**EPENDENCY ON FOREIGN oil must be broken — immediately,” declared an editorial in Coast Media

Newspapers of Oct. 23, 1980. “One sure way is to finance and construct a rail rapid transit system,” the editorial continued.

We see here the “addiction” metaphor in operation. While the understandings of metaphor we have just studied suggest that the problem is that the transportation system — or its component parts — are out of balance, the “addiction” metaphor is more personal, suggesting that just as when we become addicted to a narcotic drug our body chemistry goes out of balance, an “addiction” to gasoline is causing us to be diseased. Nowhere does this understanding come through more clearly than in TV news reporting for KNXT-TV, Los Angeles. On April 21, 1980, with talk of another transit proposition in the air, presenter Marcia Brandwynne detailed the problem as follows:

What gas has made us is addicts. We depend on gasoline much like a heroin ad-

dict depends on a fix. Now that gas is harder to get and costing more, we are starting withdrawal symptoms.

The camera focuses on an “addict” to prove the point:

I gotta have it, I use this in my business.

We quickly home in on another “junkie:”

My gas bill has just gone up tremendously high, you know, seems as though I'm working just for gas.

And just in case viewers have yet to get the point, we move to a third:

I guess I am hooked on gasoline, because it's a necessity, I just have to have it.

In line with treating the problem as one of substance abuse, the TV station calls on a psychiatrist, Dr. Sidney Cohen, to make an analysis:

What will happen when it's taken away? It'll be a shaker-upper. They will be in a sort of transportation shock. I suspect that some people will succumb, they won't be able to overcome the idea that their movements are constricted.

Dr. Cohen talks of the “withdrawal symptoms” as of a human body in shock. Brandwynne now returns to confirm to viewers that:

In Southern California our dependence is staggering.

The series continued on April 28, when anchor Connie Chung opened by telling viewers that:

Tonight Marcia Brandwynne is here to tell us how we might have avoided getting hooked.

The answer, Brandwynne says, lay in the Red Car system (shown in operation for viewers) “a system that flourished in a Los Angeles of yesterday.”

Baxter Ward now appears on screen to declare that:

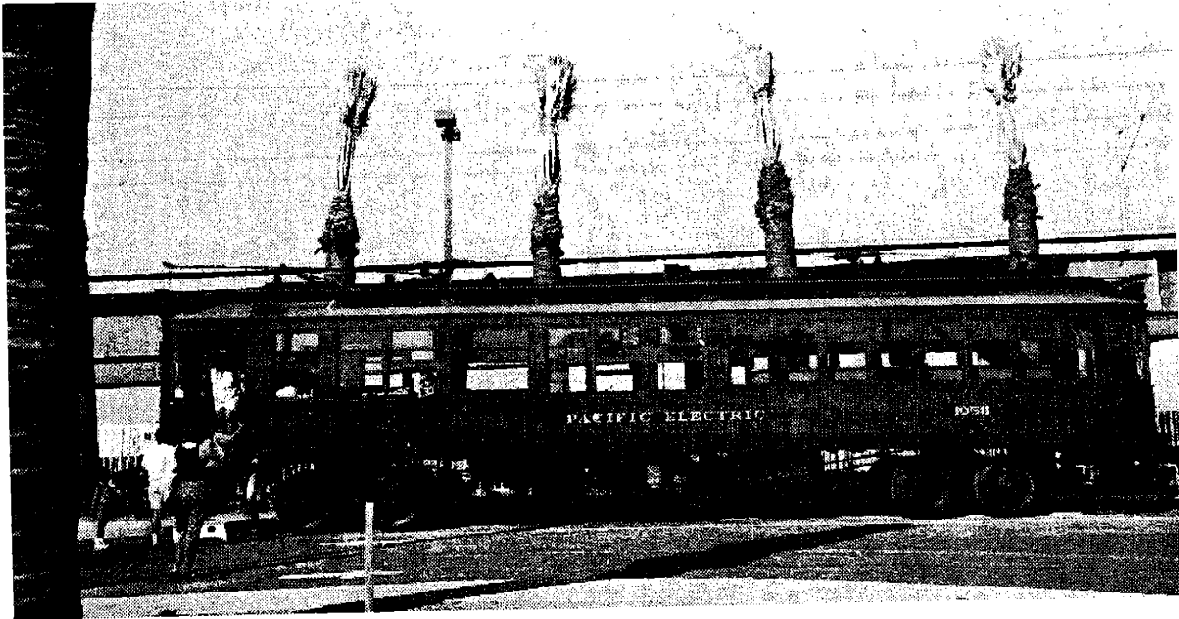
Life in this County will come to a standstill, economically, socially, recreationally, you know, in all forms, if we don't have transportation.

Brandwynne returns to tell us that: It didn't have to be this way and here's

the reason: it was the greatest mass transit system in the world, and we had it right here. . . It was called the Pacific Electric.

We now pan to Bill Meyers, a rail historian who is seen in the Red Car he owns:

The Pacific Electric was a very efficient system. Even a big car like the one we're sitting in this afternoon was far more fuel-efficient than any passenger motor vehicle, even a bus, today, but with only 50 people in the car, it's 26 times more efficient than a modern passenger automobile.



Memories preserved: Red Car on display in Carson during Blue Line opening celebration at Del Amo station

Brandwynne then resurrects the false conspiracy theory of the Red Cars decline, asking "who killed Big Red? There's no easy answer, but it was a slow and painful murder, with many accomplices."

In 1949, General Motors was convicted of criminally conspiring to replace electric transportation with diesel buses in 40 American cities, Los Angeles was one of them.

But although GM made hundreds of millions of dollars by this scheme, it was fined the sum of \$5,000, and that didn't stop them. By 1955, 88% of the nation's electric streetcar network had been elim-

inated, and in Los Angeles, all that was left was the red car run to Long Beach, and that died in 1961.

And so the seeds of our addiction to the automobile and to gasoline were born.

And the antidote to the addiction is to bring back rail. As Kenneth Hahn declared in a release dated January 10, 1985:

We should set this project [Long Beach light rail] as the number one priority so we can begin to reduce our dependence on the freeways and smog-producing

automobiles.

Although the drug-addict metaphor may be attractive and provide an easy way to find an understanding of a complex problem, it is a way of thinking that tacitly leads those under its influence to reach faulty conclusions.

We have already seen in our discussion of the circulation metaphor references to "choking" and "strangulation," suggesting the work of some evil external force, acting to wring the life out of Los Angeles. In the addiction metaphor, that

force for evil is seen as gasoline, together with highway travel in general. An addiction is seen as something bad, something that normal, healthy individuals don't succumb to. Few who are not addicted to heroin would see anything favorable about it. The metaphorical understanding puts gasoline consumption and automobile usage into the same category.

Just as someone may be seen as being driven to heroin by the removal of normal life opportunities, so the public is seen as being driven to the road by the elimination of Red Car rail service. As we saw in Chapter 2, nothing could be further from the truth. The automobile was not something people were forced to use; people stopped using trains because they found road travel offered more convenience and freedom. Once again, the metaphor is fed by images of road and rail: pictures of high-performance Red Cars paint a picture of well-being, while snarled-up roads seem like an evil to which we have involuntarily fallen prey.

The addiction metaphor paints a misleading picture both of why road travel grew and rail travel declined, and in casting the automobile as the villain and the train as the savior, points to a simple — rail — solution that will not work precisely because the automotive life is for most people the way of choice, not of desperate compulsion.

THE ESCAPE VALVE METAPHOR

Los Angeles needs to develop that alternative transportation system.

— Los Angeles Mayor Tom Bradley, *On The Move*, Vol. II, No. 4, LACTC, July, 1980

As the freeways become more clogged and more clogged, this system [light rail] may look rapid in the very near future.

— Long Beach Mayor Ernie Kell, *Los Angeles Times*, March 21, 1985

AN ALTERNATIVE TO THE BALANCE metaphor in good currency was that of the "escape valve." Out of 30 Los Angeles area interviews examined in detail for the presence of either metaphor, the statements of 14 respondents displayed characteristics consistent with the "escape valve" metaphor, while the answers of 12 were consistent with the "balance" metaphor. In only 4 cases were the comments of respondents in line with both metaphors, suggesting some fundamental difference between them.

The "escape valve" metaphor sees the need for an alternative to an irreparably diseased road system. The idea of an "alternative" need not be inconsistent with the concept of "balance." Burke Roche, Deputy to Supervisor Kenneth Hahn, uses the term "alternative" consistently with the "balance" metaphor, for example, when he complains of the lack of an alternative to the:

freeways bumper-to-bumper. . . And I do think if you provide a decent system, that they're not going to be coming in the same bumper-to-bumper.

In other words, the new "alternative" system will allow the old one to return to balance.

Yet, if "balance" implies a state of equilibrium on both sides of the balance, the concept of "escape valve" does not necessarily imply balance. Instead, it can suggest the need for some new and supplemental form of transportation because the primary system is incurably diseased and — if not already defunct — on the way to death. It is as if a tube of the heart is clogged-up beyond repair, and the only action — if free-flow is to be restored — is to provide a by-pass. A system in balance implies the desirability of having different entities in balancing proportions. The need for an alternative, on the other hand, need only arise when the existing system shows signs of failure. In this context, an alternative is a second-best, a ne-

cessity born out of crisis rather than a favored choice.

When Jacki Bacharach talks of being "choked" by traffic, she expresses a common feeling that the existing transportation system was overburdened beyond repair, necessitating some new system to provide relief. "We have to have another alternative," she said.

The bus is not seen by her to be an alternative because buses travel on roads, and roads are incurably diseased:

I think we need something besides bus — we need something that gets people off the roadways. I think we need another system. We need a new right-of-way. I'm stuck on that. We can't use existing rights-of-way, we have to find new alternatives.

Commissioner Marcia Mednick aired the same concern: "We need alternatives to the freeways and the bus system, which is what the light rail is." Kenneth Hahn called for supplementing "our freeways [which are] filled to capacity. . . with a rail transit system or risk choking our local economy in an eternal traffic snarl" (Release, March 24, 1982). Manuel Perez, a citizen member, of the LACTC Rail Construction Committee, also demanded alternatives to the freeways which were "incapable of moving the people currently." He made no claims, however, that the light rail would relieve congestion, bringing the road system back into balance. Light rail would not be improving on the existing situation, "just coping with the detriment. It will be less bad, rather than being more good," he said. Rail in his eyes, then, is an overflow device, preventing an already established disease from leading to complete paralysis, rather than eliminating it altogether. Or, as a *Los Angeles Times* editorial (October 26, 1980) — "Yes on A" — put it:

The long and short of Proposition A on next Tuesday's ballot for Los Angeles County is that it is an economic health-insurance program with very low premiums.

As Bob Robenheimer of MTDB, San Diego said:

I guess it's the philosophical question of waiting until there is a dire situation, or trying to short-circuit that and provide an alternative before the things get real bad.

Rail, in this light, does not even have to perform well compared to today's conditions: it just needs to appear good compared to an expected dire automotive future. This was clear in the statement of Long Beach councilwoman and RTD

Board member Jan Hall that light rail: won't beat the car there today, but I predict there will be a time when in fact that 40 minute trip will beat that car. That's when they'll start to use it. And when they do that, they relieve congestion on that San Diego freeway. . . [For] the first five years it will not be competitive, and therefore there will be no reason to get on it if you have an alternative.

But, once congestion crosses a certain threshold, light rail will act as an escape valve, and provide relief:

And I think that because they are seeing this overcrowding that the realization that we have to have a system that is an alternative is coming to the people.

The image of free-flowing light rail is compelling. The concept of rail being separate and so inherently immune from the diseases of the road system is so powerful, that rail becomes defensible even when there is no claim to its higher speed than buses, as in this example from a KABC-TV, (Los Angeles, March 24, 1982) news broadcast by Bill Press:

Light rail may not be the perfect system. It may not even run as fast as express buses. But at least, at last, it provides a real alternative to the dead-end streets we call freeways. Just think, tomorrow morning, choked in traffic, Los Angelenos will know, for the first time, there's relief on the way. Now there's a reason to celebrate.

But perhaps the most astonishing justification for light rail as escape valve came from Executive Assistant to the General Manager of RT, Sacramento,

Mike Wiley. Some people had suggested that light rail could lose Sacramento's transit system riders because the need to make transfers would make trips longer than on existing direct express bus services. "One of the problems that we have here is that we've designed too effective of an express [bus] service," he replied:

We have express bus service that is in some cases faster from certain points that you can do in your automobile. Especially when you consider the time it takes you to park your car and walk from where you're parked to get to your destination.

And in fact that is true. Given today's travel times on express buses, if we started the rail operation today, some trips would take longer, in the neighborhood of 10 minutes. But, the difference is there are no expansions to the freeway system planned, that our buses are travelling. We're experiencing more and more congestion on those freeways. The buses are in the same congestion as the automobiles. There are no plans to put any kind of express bus lane, carpool lanes or anything of that nature that would allow those buses to travel at a higher rate of speed than the automobiles. Over time and in a very short period of time, those buses are going to be trapped in congestion and approaching stop and go for a lot of their time on the freeways.

The rail line doesn't experience that type of problem. The rail line is an exclusive row. It is not trapped in congestion like the bus is.

Interestingly, Long Beach Councilman Edgerton opposed the light rail precisely because he did not see it as an alternative.

A rapid transit system, he said: demonstrates the capability in our clogged-up environment to offer the driver of an automobile an alternative. And in suggesting that a World War II streetcar is an alternative to the automobile is I think ludicrous on the face of it, because it will not get the person there any faster.

In Edgerton's view, then, light rail will not function as an escape valve, because it will not provide a freer flow than is already available on the freeway.

THE EVOLUTION METAPHOR

A FURTHER METAPHOR LEADING to a belief in the need for rail transportation in Los Angeles is constructed in terms of "evolution." Transportation can be seen as evolving through a series of set stages as the city-species advances through history, coming to life, facing death and either — through adaptation — arising like a phoenix reborn, or facing extinction.

Alternate Commissioner Ted Pierce explained it like this:

The city streets became congested. Then back in the 50s — you know 40s and 50s — they developed a freeway system that gave people the freedom of their automobile. They were mobile, and if they wanted to leave at 4 o'clock or 3 o'clock or 2 o'clock or whatever time, 7 o'clock, they had the ability to just get in their car and go, not home, but some other place.

Then you got to the point where the freeways started getting — you know — really congested, so they brought in the buses and they did the park-and-ride lots and they did various bus operations, and developed the bus transit system for downtown Los Angeles — you know — for the commuter situation. And then the next progression is that because the congestion in the downtown area is just going to get worse, then you have to then go to the next step, and that would be light rail or — depending on the corridor and the amount of density in that corridor — then going to a heavy rail system that will stay on, that will last for years.

"It was a *natural* that the bus came on the scene for a while. . . but we've now saturated that and you can't handle any more buses on Wilshire," said Alternate Commissioner Walter King.

You could put more buses out there, we've tried it. You'll have to check with the bus people on that, but you'll find that the volume is such that we have to have a high-capacity mover, and that's how you got to the rail. It's just an evolution, and not the evolution that they teach in the schools.

It was a theme common to many interviews. RTD Board Member Carmen Estrada was another to define a series of set stages in development: "Well, I think that the bus system can carry only a certain number of people, can't it, per hour and per day?" she said.

We have, I think, the El Monte Busway, and it carries I guess 25 to 40,000 people a day, and then at that point it sort of maxes out. It can't carry any more is my understanding. So then it's necessary to *move one up*, [my emphasis] and I imagine that would be perhaps light rail, but light rail carries about that many, doesn't it?

Peter Ireland, staff to Supervisor Deane Dana, talked of having "out-grown" the bus system, while Craig Lawson of Mayor Bradley's office advocated rail since "we're so far behind where we should be in developing transit in Los Angeles." Bob White felt likewise:

We're about 50 years behind the rest of the world, and if we don't catch up we're going to be the laughing stock of the world. Japan, England, Sweden, look at the countries right now: they have their transportation 10 to 1 better than our country, and we've gotta get going.

To White's mind, "The buses are *obsolete*."

What is the pattern here? Common to all these views is an understanding of development — of progress in fact — through technology. As congestion worsens, the capacity of the transportation system must be increased it is said, and that means a move to rail.

What the metaphor does is concentrate attention on one small aspect of the transportation problem — the capacity of the transportation system — and in doing so it ignores the question of where the people that are to make up that capacity actually wish to travel. In this sense it is co-existent with the circulation metaphor — which sees transportation as the propulsion of a homogeneous liquid through a series of tubes. The needs of growth have to be addressed, the metaphor says,

by evolving towards larger-capacity tubes. The question of the Los Angeles urban form; the matter of peoples' actual day-to-day interaction patterns — and the preferences which these suggest; all these are ignored in the belief that technological evolution alone can be a successful vehicle of progress.

A CONNECTED SYSTEM

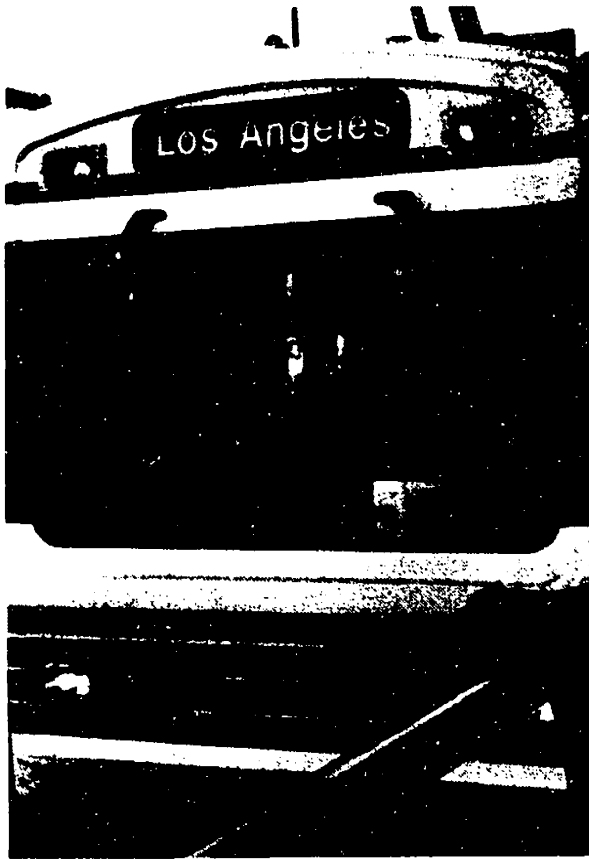
AT THE OCTOBER 31, 1985 GROUND-breaking, Los Angeles Mayor Tom Bradley declared that the Long Beach light rail would be: a part of the great connection when Metro-Rail is built, when the lines along the freeways are built, when the rest of this light rail system connects the entire county of Los Angeles [KNBC-TV, Los Angeles, Oct. 31, 1985].

The circulation metaphor implies the existence of a closed system of tubes, through which liquids (blood or — metaphorically — people) circulate to provide sustenance to all parts of the body (city). Clearly, by implication, all parts of the body must be connected — or linked — if they are to be nourished and sustain the body as a whole. The end result of such connections is a whole transportation system of far greater significance than the sum of its parts.

The concept of "connection" was seen as being of central importance. According to Peter Ireland, for example, "one of the objectives of the light rail system is to link the various centers or nodes together." Implicit (and sometimes explicit) in the statements of many of those interviewed was the linking of major centers with major arteries. Several of those interviewed, for example, pointed to the importance of linking the "two largest cities in the county" (Marcia Mednick); "it links the two largest cities in the county" (Ted Pierce); it "will link the two major population and job centers, namely Long Beach and Los Angeles. . . of overriding importance is to link those two job centers" (Los Angeles

Councilwoman Pat Russell.) "The Long Beach to Los Angeles proposal is a good starting point because it connects two major population centers" (Deane Dana, LACTC meeting, March 24, 1982).

Perhaps particularly pregnant about the above statements is their definition of Los Angeles as a point: the terminal site in Los Angeles is seen as Los Angeles. As further evidence of the prevalence of this understanding, destination boards on Blue Line light rail trains headed for downtown LA read "Los Angeles" as if



one were arriving at the heartthrob of the metropolis instead of at one point — albeit a significant one — in the vast mass of centers, sub-centers and all the sprawling infill that occupies the spaces in-between to create the real Los Angeles.

There is in fact relatively little demand for travel between downtown Los Angeles and downtown Long Beach. One comment on the Long Beach line Draft

Environmental Impact Report criticized the assumption:

that a substantial number of trips made by residents in the corridor can be captured by a fixed rail system and that a major focus of these trips (at least the home-to-work trip) is the Long Beach and Los Angeles downtowns. We question this assumption [Cal Hamilton, Director of Planning, City of Los Angeles, July 13, 1984, quoted in LACTC, 1985, p. III-157].

The lack of demand between the two end points was acknowledged in some interviews. Particularly revealing, was Alternate Commissioner Ted Pierce's comment later in his interview that most of the expected light rail use would be on the middle sections of the route. Yet, the significance of the "link" between the two major hubs was stressed, despite the knowledge of data suggesting that only a small proportion of travellers would go from one end of the line to the other. Such an otherwise strange understanding would be expected with the circulation metaphor operating: the concept of "connecting" the two principal cities with major arteries is as powerful and necessary under the circulation metaphor as providing major connections from the heart to the principal organs of the human body.

At the same time that the metaphor stresses the importance of connecting the two downtowns, it allows for the statement that this particular link need not be successful *of itself* to justify its construction as part of an *inter-connected* larger system. Many of those interviewed *did* find the Los Angeles - Long Beach line justifiable as an entity unto itself, including LACTC Executive Director Rick Richmond: "Building a system without that line is going to be pretty difficult because you're not going to get the connections that you need to make," he said. "Nonetheless, I think the line unto itself is also a valid investment."

Many of those who supported the Long Beach line of itself, nonetheless at-

tested to its greater significance as part of a complete *system*. And some, who had doubts about the Long Beach line alone, found it necessary and beneficial in terms of the overall light rail network. Jackie Bacharach was one who supported the Long Beach line alone. Yet, she stressed the importance of:

connectability to the rest of the county. It's going to be a *system* just like the freeways, so it will get you — you know — where you want to go all over the county.

Others also latched on to the freeway parallel, particularly two members of the LACTC staff, Richard Stanger and Jim Sims. Stanger pointed out that:

In 1937 they built the Pasadena Freeway and it went downtown about 8 miles to South Pasadena where all the rich people lived and you say, is this really going to serve the regional interest? Well, then you add a little bit here, a little bit there. Then there was a big surge of about 20 years of construction, and now you cannot picture LA without a freeway system.

And, said Sims:

We're talking about that being the first line in a system, an overall system. So I think it's unfair to focus too closely on a single line. What if you had done a detailed cost analysis in 1941, when we opened the Pasadena Freeway? What would it show compared to an analysis of the system?

These are, of course, unreasonable arguments, given that the nascent freeway represented a technological revolution, providing previously unheard of mobility to the mass of the population; the light rail system cannot ever be expected to carry more than a tiny fraction of demand, and can be expected to improve mobility for only a small number of people.

These arguments in favor of the system recurred again and again. "You have to start someplace," said Los Angeles Councilwoman Joan Flores. "You can't get the system without the components." "If you said let's make Hollywood bus and Santa Ana rail and then something else bus, then you'd have no connectabi-

lity," said Jackie Bacharach. "I think the strength of what we're going to have is going to be a system that's going to connect." "If you were to call out a segment of rail, whether it's subway or light rail or overhead or underground, whatever," said Peter Ireland:

calling out only a single segment of any system in the world and ask the question: how would you assess the benefits of that one small segment, it would be more difficult to say because it means people are going to go from Point A to Point B. If you overlay it with the complete system, certainly it's a little easier.

At some point you have to start, said RTD Board member Carmen Estrada, "and at this point that Long Beach to Los Angeles light rail is part of this overall system." "There were a lot of people disagreed that it should be the first line," said Craig Lawson of Mayor Bradley's office. "However, you have to start somewhere. . . you have to look at LA - Long Beach as part of the regional system."

Christine Reed was among those who questioned the strength of the Long Beach line by itself who nonetheless supported it as part of a system:

Yuh, I do support it. It is the first line in a much larger system, and so, we can't build the whole system at once, we have to do it incrementally, and this is the first line that we — the Commission — decided to do.

Walter King put it more strongly: I don't like you talking about the Long Beach. When you're looking at a report — and I want to get it into your recorder — you cannot, you cannot look at just the Long Beach line. Because Proposition A is 150 miles, and you must keep that perspective. I would be the first to say if all we're going to do is Los Angeles - Long Beach, let's go home. Let's don't take another dime for that, because that's only a little piece of the chain.

Commissioner Barna Szabo — who defended light rail largely on grounds of the development and improvements to the urban environment he said it would

bring, rather than for its transportation benefits — however, questioned that light rail would function on a regional basis:

I don't view light rail as a connection between Long Beach and LA. I would not take the train to go from Long Beach to LA. But I will take the train to go from Ocean Boulevard to 20th St. [in Long Beach]. Or from the Court House in Compton two streets down to the shopping center. It's cheaper, more efficient, more convenient for local service.

As a commuter rail, it's a bloody failure. It's slow and it's not efficient — you take a bus or you'd take your car. It just happens to run between LA and Long Beach. I don't anticipate people driving their car, parking their car, getting on the light rail to go as slowly as their car would have to go up to LA. You take your car. But if you're already in Long Beach, you take the light rail. Why hassle with your car? If you look at light rail as your answer to interurban commuting, you've got the wrong stuff.

Compton Councilman Maxcy Filer, who is against light rail altogether, does not go for the system argument at all:

Can Los Angeles be subwayed, if there is such a word? I'm not sure. I'm not sure that Los Angeles could. We've had this grid system as far as the buses are concerned, and we get that going and everything. I'm not sure we will ever have a so-called rapid transit system in Los Angeles. It's just too spread out. . . . How can I say I'm going from Watts to the Valley and it's going to take me two or three hours to get there, and work every day — some do it.

Those who support the Long Beach light rail because of the “system” concept are sold by the idea of interconnectivity — the logic that a completed system will allow the passenger to get from anywhere to everywhere. It seems obvious under the influence of the circulation metaphor that a closed system of tubes, touching every major center, is needed to circulate life-blood throughout the region.

In this context, the Long Beach light rail is playing a pioneering role, like the first freeway. Unfortunately, however, the Long Beach light rail is quite unlike the first freeway. The freeway constituted a

technological revolution which provided a degree of accessibility the previous “Red Car” network — a previous revolution — could not, and *did* provide for one-vehicle travel from any point to any point. The light rail will not, however, provide improved accessibility to most points — and the length of time needed to complete cross-regional trips makes it unlikely that people will transfer to do so. The inability to serve actual origins and destinations directly will also prove to be a deterrent to travel, although this is not perceived by those who visualize the region as a series of points, rather than as spread out areas.

SUMMARY

A SERIES OF METAPHORS HAS BEEN seen to coherently come together to suggest a rail solution to what is seen as an automotive problem. The circulation metaphor, with its entailments of a system of interconnected arteries focused on the heart of the city, explains the desirability of linking major cities with major arteries, even though there is little travel between them, and even though “downtown” — though a significant business district — is not at the “heart” of the city. With freeways seen as “choked” or the city “strangled,” the metaphor prescribes a new system — isolated from contamination — through which free-flow can prevail.

Like blood, traffic is seen as a homogeneous substance to be “pumped” around the system: the actual origins or destinations of particular units of traffic — or, more importantly, of the people that constitute that traffic — are not seen as being of great importance. While the metaphor is guiding thought, no consideration is given to the possibility that transportation might be improved by *regulating* flow — charging tolls, encouraging the use of high-occupancy vehicles, or implementing other forms of road management — because the goal is simple “free flow.” It is this picture — which highlights cer-

tain features compatible with the metaphor, excludes others, and makes solutions consistent with the metaphor appear obvious — which suggests that the metaphor is operating at a deep level.

Common to both the “balance” and “escape valve” metaphors — both of which nest into the circulation metaphor — is the notion of providing a separate system in which free flow can be maintained. The balance metaphor operates on the basis of equilibrating certain predefined technologies, the desirability of which — or lack thereof — is determined by the symbolism and imagery associated with each technology, as studied in Chapter 8 and to be extended in Chapter 10. The metaphor tells us how the predefined technologies need to be assembled to create a state of equilibrium. The “natural order” metaphor tells us how technologies are to be functionally allocated so that each serves in the “correct” place in the natural order. The apparent oddity of interviewees who malign buses but approve of their use as feeders to rail transit is explained when it can be seen that the feeder function puts buses in their correct place in the envisaged “natural order:” it is not that no buses are required, but that they are seen to cause imbalance when they try to perform the line-haul function of rail. Just like a cello performs a different function from a horn in an orchestra and the one cannot readily be substituted for the other, the train and bus are needed together in a certain balanced combination: too many buses, like too many horns, may lead to a lack of harmony.

This impression is quite false; buses can perform the line-haul function quite efficiently, and more so than rail services when a dispersed population is to be served. Yet when roads are seen as “diseased” and “out-of-balance,” buses — which use roads — do not seem to be a viable option. The “addiction” metaphor generates further false impressions by leading those under its influence to believe

that the craving for the road is part of an addiction resulting from the destruction of Red Car services. This is untrue, since the market showed public preference for road travel well before the Red Cars went out of service; rail travel, furthermore, cannot act as an “antidote,” since it cannot reach many of the destinations of the roads or do so nearly as efficiently.

While the “balance” metaphor assumes an equilibrium is attainable, the “escape valve” metaphor does no such thing. Under the “balance” metaphor, rail is part of a natural ordering of transportation systems, and is desired as part of an ideal balance. Under the “escape valve” metaphor, however, rail is an alternative needed only because of the inadequacies of the road system: it is not natural, but an artificial device to cope with the excess pressure the “natural” road system cannot withstand.

While the metaphors are different, of greater importance is the same conclusion to which both metaphors point: that a rail system is required, whether to return free flow to the entire system or to provide it only on the new rail part of it. Both metaphors fit coherently with the circulation metaphor; both use as inputs and fit coherently with the symbolism and imagery of freeways, buses and trains.

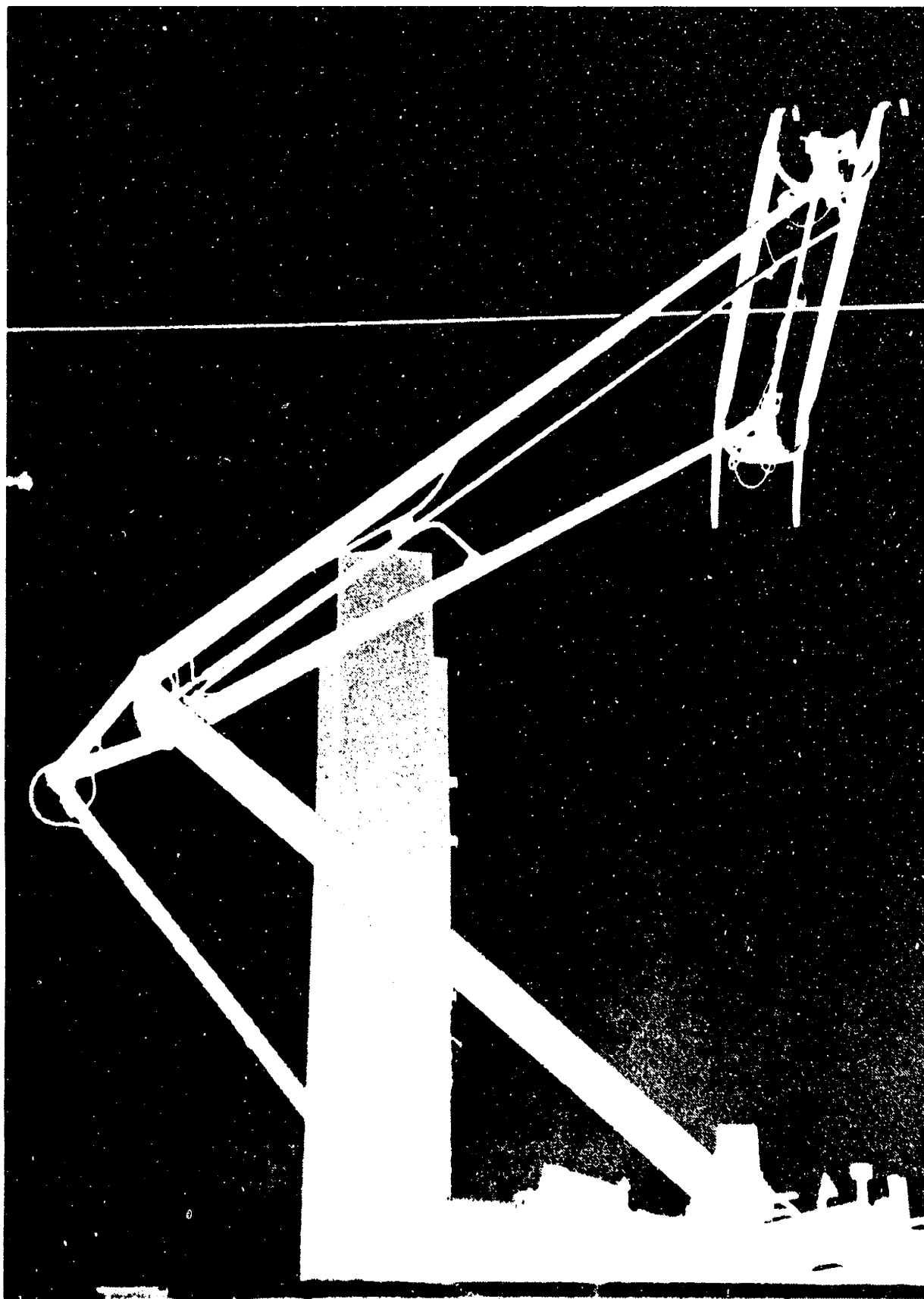
A further metaphor — of evolution — which charts the development of transportation technology on a fixed path of progress, also fits with the above: if the evolutionary step up to rail has not occurred in Los Angeles, then of course the system is out of balance; of course there’s no surprise that the freeways are “clogged.” If there are no speeding trains in a city which has evolved beyond the capabilities of the roads, the metaphor says, it is no surprise that LA grinds to a halt.

Above all, there is a “logic” shown in the understandings promoted by these metaphors: if circulation is blocked, relief must be provided; if the system is “out of balance” the weights assigned the differ-

ent technologies must be changed to bring it into balance. If the city is behind in the evolutionary chain, it must grow with the times.

If we have seen that the images suggesting the benefits and disadvantages of each technology are powerful, there are other symbolic processes, connected with

human themes such as sex, romance, pride, and a fascination with power which have little to do with the transportation characteristics of trains or buses, but which also play a vital role in structuring thought, and which mesh coherently with the processes studied so far to show rail as the ideal outcome. These are the subject of the next chapter.



God, who Made the Man

*I hear the whistle sounding,
The moving air I feel;
The train goes by me, bounding
O'er throbbing threads of steel.*

*My mind it doth bewilder
These wondrous things to scan;
Awed, not by man, the builder,
But God, who made the man.*

Trains: *All that is vigorous and go-ahead in the dreamer*

— Tom Chetwynd, *Dictionary for Dreamers*, 1972

Trains are sexy, buses are not

— Christine Reed, LACTC

10 Technological Sex Symbols on steel rails

THE LARGER MEANINGS ENSHRINED IN TECHNOLOGY

WE MAY THINK, BUT WE TRANSCEND thought in dream. We have memories of what life was like in the past; concerns about how it is today; and hopes for what it might be in the future. With needs for experiencing the spiritual, we do not restrict religion to the church or temple: we seek out the Godlike wherever we can, and find far more than merely functional meanings in the artifacts we encounter in

our everyday lives. Technology can come to symbolize good or evil; a particular style of life; power; or impotence. It can take on anthropomorphic qualities, and become the subject of love or hatred. Just as it may seem to come to life, it can die and — just as a loved-one in death — be mourned.

In Chapter 8 we assembled a series of images which show why rail seems to provide more transportation benefits than buses can. In Chapter 9 we explored metaphorical understandings which use those images as inputs and demonstrate that ac-

tion should lie in developing rail rather than improving bus services. Here we investigate symbolic understandings which may have little or nothing to do with transportation benefits but which can powerfully give the impression that one mode of transportation is more attractive than another.

We look at how the train may be seen as a toy, as an object of nostalgic, futuristic, sexual and romantic desire, and of religious worship. The following section provides examples of how experience — in particular visits to the monorail of Disneyland and the rail systems of other cities — acts to carry the image of a transport of delight. The train is next studied as a symbol of community pride and hope, and the city's need for such a symbol is seen to match similar feelings Calcutta has about its subway and, indeed, a universal human search for meaning and identity. We see that the particular type of train-worship in Los Angeles is a cargo cult such as is found in New Guinea: a symbolic way of doing something about a situation otherwise thought to be unendurable. The train is a hero who is all good, its cult seen as the way to a better life.

THE TRAIN AS A TOY

CHILDHOOD MEMORIES ARE REplete with trains. Trains are the heroes which today's adults want plucked from the storybooks to have as the playthings of real life. "This impossible dream is steadily coming closer to reality," wrote Noel T. Braymer in an op-ed for Long Beach publication *Uncle Jam International* (July, 1985). "I'm talking about the little Trolley that might well make it."

Jim Pierson of the San Jose system pointed out that:

There are a lot of neat little gadgets and things with light rail or rail in general. It is like a toy.

"And I always say," said Richard Stanger of LACTC staff:

When was the last time you heard a kid ask for a bus for Christmas? Kids don't ask for buses for Christmas, they ask for trains for Christmas. And we're just older children.

We like to play war games. And when we grow up we fight wars. We like to ride our bicycles. When we grow up we buy motorcycles. We like to do all these kinds of things and then we grow up and do it, so what's wrong with liking to play with trains and then *wanting to ride trains?* [my emphasis].

The little trolley, fighting against the wicked trucks and cars, has a personality. In Portland the system is referred to as "Max," and talked about as of a brave little engine or even a precocious child. According to Ted Spence of Oregon DOT:

The pride in Max is incredible. . . . People won't get on a bus and go downtown. But they'll get on Max and *play on the darn thing all day long* [my emphasis]. . . . There was a lot of enthusiasm for something new and it's shiny and like a toy. People like trains. And I can get enthused about the thing.

Stanger legitimizes bringing toy trains to full-scale by claiming that people will *ride* trains not simply desire them for non-transportation reasons. Spence appears to provide evidence that this is happening. But while Portland's Max service has maintained a high weekend ridership, it has done little for transit ridership on weekdays, the days on which potential congestion will occur. There is no evidence, furthermore, that the toy-like qualities of trains attract a long-term commuter ridership more concerned with the speed and cost of getting to work than with the cuteness of the technology. Perhaps Brock Adams, then US Secretary of Transportation captured the reality best when in testimony before the House Transportation sub-committee in April, 1979 (US Congress, 1979), he said:

They are talking about riding the trains, but a great many of the people in the community would like to have it there; they do not ride it.

We need to look at why it is that we like having toy trains, and why we want to turn them into real trains: a close look

shows us that trains have associations of excitement, sex, love and even religious significance, which buses clearly do not possess.

The first light on the roof outside; very early morning. The leaves on all the trees tremble with a soft awakening to any breeze the dawn may offer, And then, far off, around a curve of silver track, comes the trolley, balanced on four small steel-blue wheels, and it is painted the color of tangerines. Epaulets of shimmery brass cover it, and pipings of gold; and its chrome bell bings if the ancient motorman taps it with a wrinkled shoe. The numerals on the trolley's front and sides are bright as lemons. Within, its seats prickle with cool green moss. Something like a buggy whip flings up from its roof to brush the spider thread high in the passing trees from which it takes its juice. From every window blows an incense, the all-pervasive blue and secret smell of summer storms and lightning. . .

"Last ride," said Mr. Tridden, eyes on the high electric wire ahead. "No more trolley. Bus starts to run tomorrow. . ."

"Last day?" asked Douglas, stunned. "They can't do that. .!" "Why," said Douglas, "no matter how you look at it, a bus ain't a trolley. Don't make the same kind of noise. don't have tracks or wires, don't throw sparks, don't pour sand on the tracks, don't have the same colors, don't have a bell, don't let down a step like an accordion. . ."

Bing! went the soft bell under Mr. Tridden's foot and they soared back over sun-abandoned, withered flower meadows, through the woods, towards a town that seemed to crush the sides of the trolley with bricks and asphalt and wood when Mr. Tridden stopped to let the children out in shady streets. . .

"School busses!" Charlie walked to the curb. "Won't even give us a chance to be late to school. Come get you at your front door. Never be late again in all our lives. Think of that nightmare, Doug, just think it all over."

— Dandelion Wine by Ray Bradbury (1957)

NOSTALGIC ASSOCIATIONS

“YOU HAVE TO UNDERSTAND the history of the P. E.” [Pacific Electric] said Daniel Caufield, project

manager of the Long Beach line:

What it meant to people. They started dating, met their wife. They went to movies. It was part of the fabric, it was part of their life. . .

The point is that the public is fixated

with rail as a mode. People don't know [Peter] Gordon [the rail critic]. They know rail. They go to another city: they see trains. They remember the P. E. and they could pay a dime. I refuse to get into that sort of an argument [is rail good or bad?] because that's the wrong point.

While the academics are arguing, the people are voting. Point is, why would people vote on it? The sense of *loss* that people feel, that the P. E. has gone. They say rail: that's mass transit. I'm not going to say right or wrong. That's the world we live in.

Nostalgic associations with trains came through loud and clear. Take the news spot of KNBC-TV, Los Angeles on July 5, 1985, when presented Nick Clooney announced that:

Light Rail is coming, and Channel Four's Saul Halpert says it might just equal the *glory days* [my emphasis] of the Red Cars when some said we had the best rapid transit system in the world.

A clip is at this point shown of the Red Cars in action. Then Supervisor Hahn comes on screen and says:

I remember those Red Car lines. I rode 'em. And it was the best rail transportation in America, and the fastest.

Baxter Ward also has boyhood memories, in his case from Seattle:

I don't want to keep saying how good everything was when I was a kid, but there was a trolley every minute. [Reader, March 14, 1980].

And Orange County Supervisor Ralph Clark testified before the Assembly Transportation Committee Hearings in Long Beach that:

I think Mr. Chairman that we are all in agreement that it was a shame that we *lost* [my emphasis] the valuable Red Car system. As a boy growing up in Hollywood I can attest to that. I can speak personally about that important part of my life, because we had no automobile, and we depended on the big Red Cars to take us everywhere in the region. . . [California Legislature, 1981a, p. 74-75].

And I'm really happy to see the red trolley back in Southern California [in San Diego]. As I indicated it was some-

thing that I had a lot of respect for when I was young and I am glad to see the color [p. 79].

Just like the "Jordan River" symbol examined in Chapter 7, the color has attained an independent identity as a symbol. Here the "color" comes to represent all that was good about the trolley in Clark's formative years. The color today will command for Clark the same respect it did in years past, whatever the real benefits — or lack thereof — of the vehicle it is painted on.

Long Beach Rep. Elder remembered riding the Red Cars. "Oh, they were wonderful," he recalled. To Alternate Commissioner Walter King, the Red Cars were one of the "finest systems." To LACTC Rail Construction Committee citizen member and Long Beach architect, Manuel Perez, the Long Beach light rail is the "reestablishment of the Red Car."

Let us examine now the excitement of trains as embodied technologically; and the sexual, romantic and religious pull of the rails. To the lure of the old, we shall see, is added the alluring prospect of the apparently new.

TECHNOLOGICAL VIRTUOSITY — THE TROLLEY AS SPACESHIP

ARNOLD PACEY (1983) 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. The teenage enthusiasm for motorcycles reflects this. Many farmers, it is said, buy larger tractors than they really need, to the detriment of soil structures, because of the pleasure they get from using such powerful machines. Some automobiles are designed to appeal to this impulse; others, of more modest power and pretension, seem designed mainly to enlarge personal capability. . . The dominance of the automobile in the western way of life is not due to blind imperatives, but to the

fact that its usefulness is complemented by these two very considerable satisfactions; and as Florman [1976, p. 60] says, "Technologists, knowing of this desire, were, in a sense "commissioned" to invent the automobile. Today it is clear that people enjoy the freedom of movement of which they had previously dreamed." In most invention, basic human impulses like these precede the technological development. Dennis Gabor [1970, p. 8] talks about "archetypal human desires" which include the wish to communicate at a distance, to travel fast, to fly [p. 84-85].

Pacey talks about "the impulse to fly," citing the Icarus legend, the urge to travel to the moon, the development of hot-air balloons and fixed-wing gliders.

Economic aims and the profit motive seem quite irrelevant to all this; the imperative here is clearly rooted in non-economic "virtuosity values" [p. 85].

There is more to the "whoosh" image of Chapter 8 than a belief that rail would make for the most effective means of transportation. Certainly the metonymic relationship seems to hold true: the line-haul part of the trip is taken to represent the whole journey, while problems getting to and from stations are ignored; the speed of the train is erroneously taken to mean that any given journey can be quickly completed. But there are more than mere transportation characteristics at play here, and it is the meanings related to power and virtuosity which the train appears to symbolize which most convincingly seems to focus attention on the technology.

Talking of trains going "whoosh" is saying more than just that they go fast: it carries the image of powerful technology, dazzling the senses as it passes by in a blur. As LACTC staff member Richard Stanger said:

I think that trains evoke an appreciation and an image and a sense of fascination and power in our history and in our lives to this day.

Trains — seen as "powerful," "advanced" and "modern" were often con-

ceived of as spaceships. As former state senator Jim Mills explained the attraction of the San Francisco Bay Area's BART:

They made it a twenty-first century system, they said, because they wanted to appeal to the public. They wanted to say that this is not something like anybody else has. It's something new and wonderful. It's totally automated. It's space age.

And, as San Diego Congressman Jim Bates saw it:

A bus has a stigma that a bright red trolley does not have. There's something modern, exciting about a red trolley moving along at a nice clip, a little more of the space age.

The same image is popularly disseminated on TV. Take this report (on KCOP-TV, Los Angeles, Oct. 21, 1985), suggesting the arrival of a magic airborne transport: "A plan to shuttle *earthbound* [my emphasis] travelers between two Southern California cities is getting underway now," the announcer said. San Diego County Supervisor Brian Bilbray sees the positive in this kind of imagery: "you need to have that shtik or that marketing element that beats General Motors and Ford's commercials," he said. The bus could not, in contrast be made attractive, because:

You're not going to match a Toyota commercial, you're not going to match the hype that goes into it. You're not going to hype something as new and different and exciting.

Bilbray overlooks the fact that bus systems — such as are operated by the San Francisco Bay Area's Golden Gate Transit or on the El Monte Busway in Los Angeles — have been made attractive by providing a high-quality level of service which, in the real world, is of more interest to the commuter than advertising "hype."

While Supervisor Hahn strongly supports the development of rail services as part of a "balanced" system and shared in the excitement about rail of so many other politicians, he was immune from his

colleagues' negative view of buses. "I think the bus is the workhorse of public transportation," he said.

It's not glamorous; it's not sexy; it's not exciting. It's more easy for the transportation experts to talk about mass transit and the fancy subway and monorail or mass transpo. . . or double-decking the freeway with transit and subways, than it is to say get a bus on time, that's clean, it's comfortable, it's safe, it'll pick up that person who needs to get to work on time in the morning and get them back

and home that evening.

Hahn's daily dealings with a constituency which depends on bus service, and his reputation for dealing with the nitty-gritty mechanics of getting things done in government appear to have attuned him to the needs for bus service, showing the compelling but not compulsory nature of symbolism. But, being subject to the "balance" metaphor, Hahn does not need to deride the bus to support the train.

Every time he touches the throttle the swift steed shoots forward as a smart roadster responds to the touch of a whip. When the lever is forward and the stroke is long, the steam flows in at one end of the cylinder, and pushes the piston head to the other end. When this exhausts, another flow of steam enters the other end of the cylinder to push the piston back. . .

Absence, we are told, makes the heart grow fonder. The pain of parting is all forgotten in the joy of meeting; and now, as we begin to swing round the smooth curves, all the old-time love for the locomotive comes back to me. . .

It was nearly midnight now, and the frost on the rail caused the swift steed to slip. When we had reached the speed of a mile a minute, and gone from that to sixty-five miles an hour, I thought she would surely be satisfied; but every few minutes her feet flew from under her, and the wheels revolved at a rate that would carry her through the air a hundred miles an hour. . .

It seemed the harder he hit her, the better she steamed.

— *Tales of an Engineer* by Cy Warman, 1895

TECHNOLOGICAL VIRTUOSITY AS SEX APPEAL

THE TECHNOLOGICAL POWER OF the train was often equated to sexual potency by those interviewed. "I think that aesthetic sex appeal is important in everything we do in this world," said Alternate Commissioner Roy Donley, an architect by training. Talk of sex permeates conversations about trains. Brian Bilbray talks of the

need for "sex appeal." "Light rail is sexier than bus," said Bob Robenheimer of MTDB, San Diego. "It's sexier than buses," according to Jim Pierson of San Jose.

Freud (1938) referred explicitly to the sexual connections of rail travel:

Shaking sensations experienced in wagons and railroad trains exert such a fascinating influence on older children that all boys, at least one time in their lives, wish to become conductors and drivers. They are wont to ascribe to railroad ac-

tivities an extraordinary and mysterious interest, and during the age of phantastic activity (shortly before puberty) they utilize these as a nucleus for exquisite sexual symbolisms. The desire to connect railroad travelling with sexuality apparently originates from the pleasurable character of the sensation of motion [p. 600].

The train is perhaps the only technology to have both sexes — it is both a woman and a penis. Rail historian Bill Meyers, who owns a Red Car, appeared on KNXT-TV, Los Angeles, on April 28, 1980, and described the “exciting experience” of going as a boy to “see the gleaming rails in the middle of the street and *this gigantic steel thing, huge, panting and whining and puffing away like it was alive.*” Another rail fan (interviewed at a rail historical society meeting) told of how “as a kid I’d watch the PCC cars *pull in and out in the middle of the night,*” while his “fondest memories was when an old conductor said to me one time, come along with me son, *I’ll show you what that train of mine is all about.*”

Nowhere does the appeal of technological virtuosity have a greater influence than in the thinking of Baxter Ward, and the sexual imagery comes through loud and clear, too. Ward has explained that his fascination with trollies as a boy first got him interested in public transportation (Shaffer, 1980). The fascination was clearly with the technology, not the economics. And, as in the Warman engineer’s tale above, the train is for Ward a seductive woman. Here’s Ward in interview for this study:

I’m sorry you never saw them. They were stunning. I’ve got pictures of them. They were knock-outs.

Ward was not consciously referring to bronzing bodies on Venice Beach, but to rail cars. But the unconscious association with female sensuality is unmistakable.

Talking of the commuter rail service briefly instituted through his influence, he said:

Ours was *lush*. We had lovely cafe cars, and smooth not heavyweight — there were fluted sides.

Buses are “terrible,” Ward said.

But it’s *thrilling* [my emphasis] to be on a train car in a Pullman at night, or a bedroom, and look outside, you know at America passing by. . . The opportunity for riding from Chatsworth to Disneyland on a train far exceeds in excitement and popularity the dismalness of getting on an RTD bus.

Ward was at this point told about a friend in San Francisco who prefers the bus over the train because of the more direct service it provides: “If he wants to ride the bus, let him ride the bus. There are some people who buy brown cars,” Ward replied. “Try to sell checker cabs,” Brian Bilbray said:

They do the job. They’re great engineering. But try to sell a checker cab in Southern California: they don’t sell. And that’s what you’re trying to sell with a bus.

Ted Spence of Oregon DOT attested to the difficulty of:

getting support for buses. And, you know, it’s not very pzazzy, frankly. . . A guy buys a BMW not because it drives any better than a Dodge Colt. It does drive better, but it doesn’t get in there a heck of a lot faster at 55 mph.

The success of the El Monte Busway in Los Angeles was pointed out to Arthur Bauer, previously adviser to Senator Jim Mills:

Yes. It’s so mundane, noone gives a damn. That’s been my point all along. It is the most successful bus system.

The train is seen as something that will attract passengers because it is exciting, while people who take the bus are being almost perverse, like people who go for unattractive cars. But Ward’s concern for displaying technological virtuosity, rather than with allocating resources to provide *transportation* services, really came through when he talked about the Hollywood Bowl:

That’s an *elegant* function, it should be made comfortable. And you should have

a train right there. The present interests supporting the current Wilshire subway proposal say don't stop at the Bowl, it's too expensive.

Ward was told that the stop would only be used for a few hours a day. "So what? So what? What a *thrill* to get there is 20 minutes and not clog the freeway and cause wrecks and kill people." The economics has no priority over the "thrill;" little thought is given, either, to what the elegant people — presumably in evening dress — are supposed to do when they get out of the subway station at the other end.

The "thrill" and "elegance" factors of trains come through in documents supporting rail construction. The 1948 report on *Rail Rapid Transit - Now!* (Rapid Transit Action Group, 1948) is obsessed with the technological marvels of vehicle design and performance, highlighting not only the train's acceleration, but reveling sensuously in all aspects of its virtuous construction:

The wheels on these modern cars will be built with rubber inserts. They will be relatively noiseless. Throughout the car there will be a lavish use of rubber mountings. The resilient wheels take up road shock. Coil springs and stabilizers will tend to eliminate excessive and sharp swaying. The cars will have improved ventilation systems, and high intensity lighting for ease in reading. The cars will be wider than most of those now in use and the seats will be larger and more comfortable. . .

The cars will be streamlined and may be articulated. They can be connected to operate in trains. The cars will be of the low-floor type. Results in the latest experiments in the use of colors to ease rider fatigue will be incorporated in car interiors [p. 4].

The picture on the report's cover (see Fig. 10-1) sums up the portrait of a technically conceived transport of delight that in its wonder will attract all manner of riders, whatever its destination.

A similar picture emerges in the reports prepared for Baxter Ward's "Sunset Coast Line" and "Sunset Ltd." proposals.

The report for the "Sunset Coast Line" (Ward, 1976) contains a great deal of technical information, giving the impression of presenting the results of a thorough engineering analysis.

We are told that the system will have:

230 miles of welded-rail, heavy duty track, totally grade-separated, built to carry full trains at 85 mph [p. 7].

Exciting-appearing Monorail service is suggested to provide feeders, creating: A totally-balanced system, built for Main Line speed, plus the convenience of Light Rail extensions and Monorail feeders [p. 7].

Unheard of in transit history, and unconnected with any notion of economics, Ward proposes that:

A small number of domed bilevel cars would be provided on the local service of the Sunset Line to add an attractive quality to the car fleet [p. 55].

Ward calls for special "Airporter" cars:

The Airporter would utilize a lower seating density with swivel rocker seats similar to those utilized on the Metro Club cars in the New York - Washington service [p. 57].

To top it all, special facilities would be provided for:

excursion service. . . Tourists, weekend travelers, beach visitors, and weekday shoppers will all find the excursion cars to be a happy way to travel [p. 59].

While the "Sunset Coast Line" proposal calls for "automated refreshment service and restrooms," (p. 9), the "Sunset Ltd." (Ward, 1978) provides for trains with a "Beverage Bar" and lounge. Fig. 10-2 shows the "Local," and "Interur-

The cover features a central illustration of a train engine with 'EXPRESS' written on its front. The train is moving towards the viewer on tracks. Above the train, the words 'RAIL RAPID' are written in a bold, outlined font, and 'TRANSIT' is written in a much larger, similar font. A large, white, cursive word 'now!' is written across the bottom right of the train. To the left of the train, there are three text boxes with white backgrounds and black text. The top box discusses the need for rail transit in Los Angeles. The middle box discusses the timing of construction relative to freeways. The bottom box discusses the cost and financing of the system. In the bottom left corner, there is a small box with the letters 'HE', '310', 'L7', and 'R2B' stacked vertically.

RAIL RAPID TRANSIT

IT'S NEEDED—Autos and buses can't move Los Angeles' four million people now. Crawling traffic will come to a shuddering, chaotic halt when we have six million people, *plus*.

NOW OR NEVER—The modern way to build a rail rapid transit system is between the roadways of a freeway. The freeways are being built now. The rail system must be built at the same time.

IT COSTS LESS—Rail rapid transit will cost a fraction as much built in a freeway. It can be financed. It can be self-supporting. And 4 times as many people can ride for $\frac{1}{2}$ the cost, per person.

HE
310
L7
R2B

now!

IVE where you like...WORK where you please

An Immediate Program by The Rapid Transit Action Group, Los Angeles Chamber of Commerce—Coordinator
February, 1948

Figure 10-1 Cover of RTAG Report

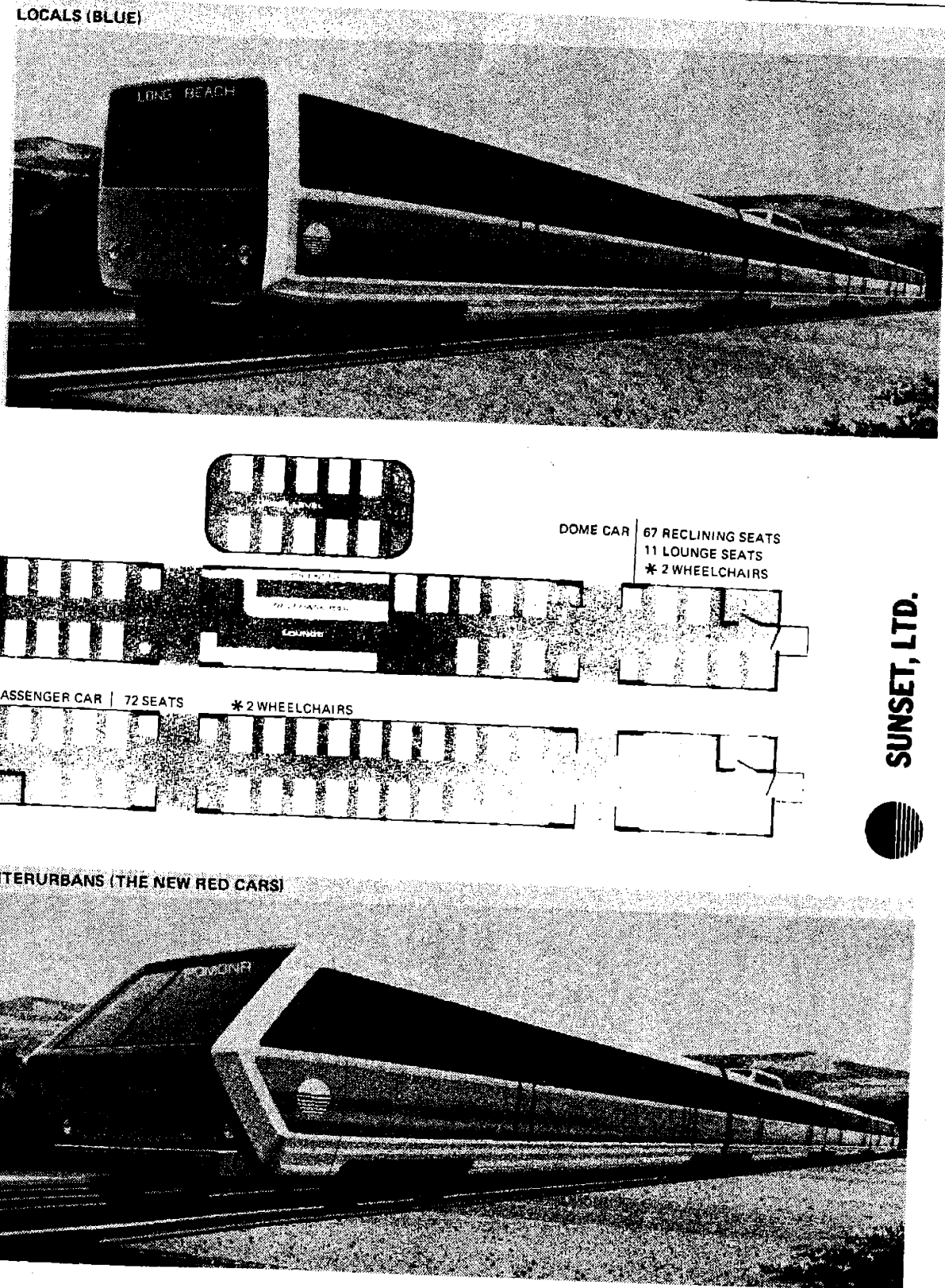
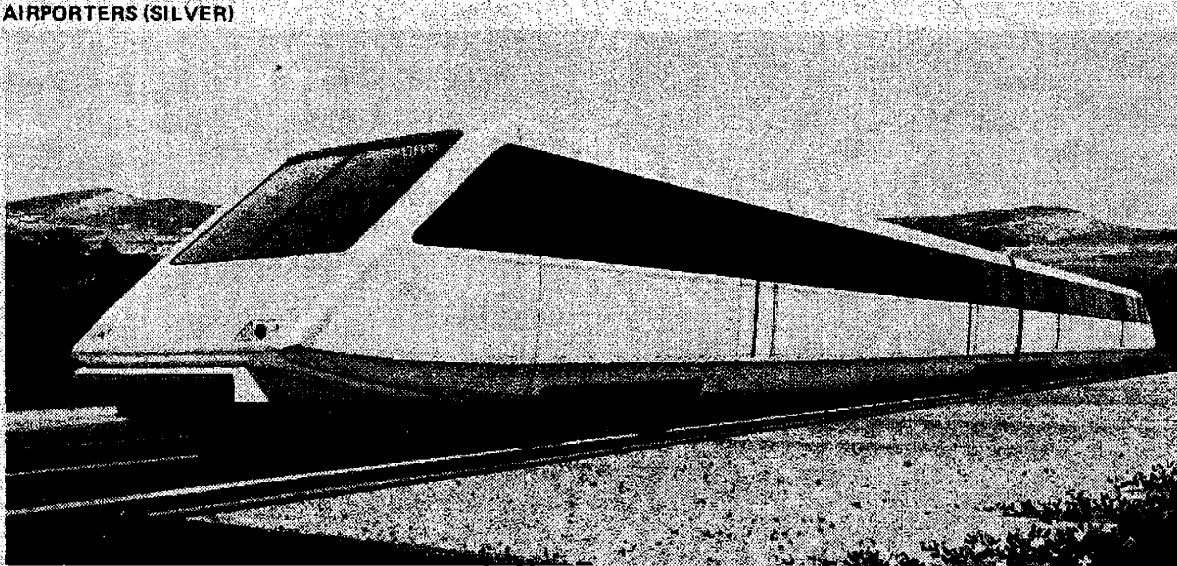


Figure 10-2 Proposed "Local" and "Interurban" trains for the Sunset Ltd., and the seating plan to be shared by both.

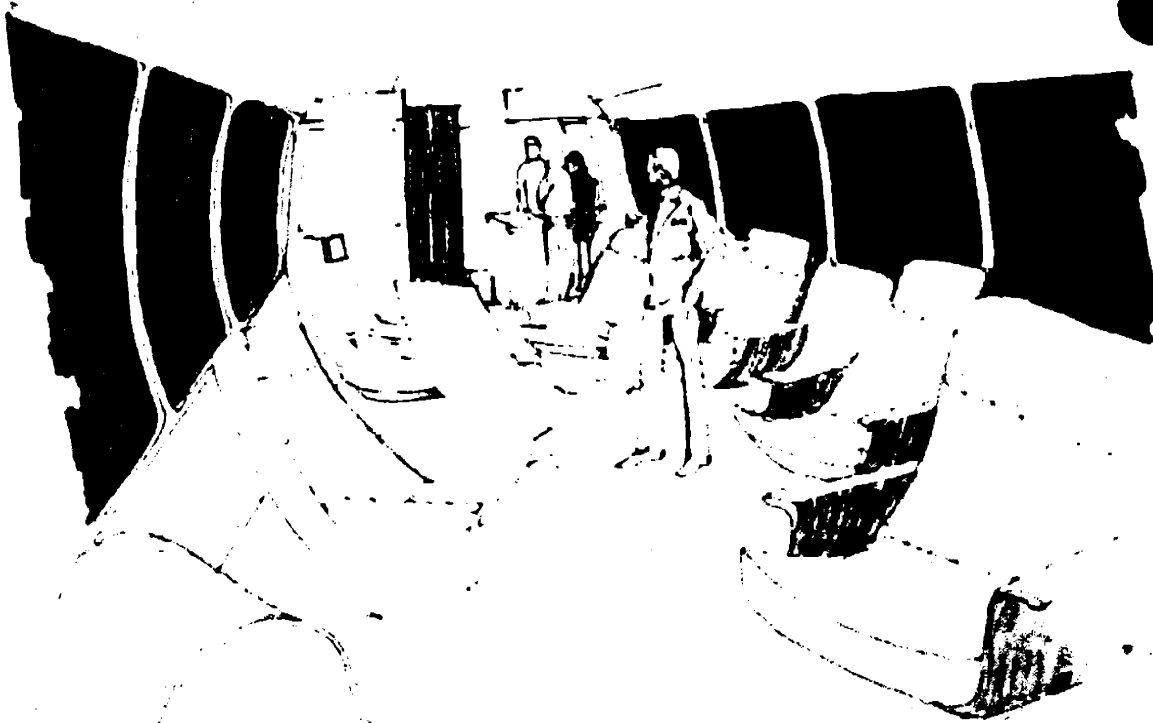
AIRPORTERS (SILVER)



PASSENGER CAR 34 SWIVEL SEATS
* 2 WHEELCHAIRS



SUNSET, LTD.



Interior of Airporter Car

Figure 10-3 "Airporter" train and seating plan for the Sunset Ltd., and Airporter interior for the Sunset Coast Line.

ban” trains for the “Sunset Ltd.,” together with the seating plan which would be common to both types of service (Ward, 1978, p. 162-165). Fig. 10-3 illustrates the “Airporter” trains and seating plan from the “Sunset Ltd.” (Ward, 1978, p. 166-167), and shows the interior of an “Airporter” for the “Sunset Coast Line” (Ward, 1976, p. 58).

While both reports give details of train performance and appear to offer the key to a technically-engineered paradise, an account of the system’s attractiveness for travel, given the realities of the Southern California spatial economy, is lacking.

That this did not seem of concern to Ward perhaps comes through most pointedly in a comment not on trains but on automobiles. “Things aren’t as nice as they were” he lamented:

Cars are not the *big things*. Who the hell cares if you can drive a Honda Civic to the Civic Center? What the hell thrill is that? Nothing. But you can drive an Olds 98 to Civic Center or a Town Car, or a Ferrari or something: **GREAT!!!**

While in discussion Ward frequently complains about the pollution caused by traffic, he admits a preference for large, exciting cars. While he does not advocate getting people to drive larger cars — a demand which would be inconsistent with his image of “car as polluter” — he can promote “exciting” trains without seeing any inconsistency with his professed transportation and environmental priorities. But the way Ward sees the train suggests that its attraction to him is similar to the attraction of a large, stylish car or, perhaps, the desire to have both a large penis and an attractive wife. While on the surface trains might be advocated for transportation purposes, it does not take probing far below the surface to see that sex appeal and technological virtuosity dominates economic considerations in driving advocates’ desires.

THE ROMANCE OF THE RAILS

To celebrate the San Diego Trolley’s third birthday Thursday, gifts will be handed out to morning commuters and evening commuters will be serenaded.

— *Los Angeles Times*, July 24, 1984

TRAINS ARE FREQUENTLY REFERRED to as “she.” They are seen as women; perhaps if the obsession with mechanical performance is phallic, the romantic-nostalgic is feminine.

“People have to become enamored with systems,” said Alternate Commissioner Roy Donley, implying a connection between the love of a system and the likelihood that people will use it. Rail, said Manuel Perez, is something “you can *relate* to. I don’t know how many people get terribly excited about a bus that’s running on a freeway.” The San Diego light rail, said San Diego Councilman Ed Struiksma, “is something that people can *relate* to, and they relate to it in a favorable light.”

In one metaphorical understanding, the current problem is seen as breaking a “love affair” with cars, and the objective to bring a technology that will be at least as lovable, and preferably more so. Marcia Brandwynne on KNXT-TV (Los Angeles, April 28, 1980), showed viewers:

a major mass transit system we once had, a system we *loved* almost as much as we *loved* our automobiles, a system that flourished in the Los Angeles of yesterday.

The Oct. 7, 1985 edition of *Passenger Transport* meanwhile reported that:

Infatuation with Auto is Cooling. L.A. Turns to Rail to Alleviate Congestion.

As San Diego Congressman Jim Bates put it:

There’s a *love affair* with the trolley, which overrides the love affair with the auto.

While the train is seen as lovable, the bus is clearly not. "A bus is a bus is a bus. Who cares?," said METRO Seattle Chairman Bob Neer:

It's just a hunk of equipment that runs back and forth. You've got to really be a nut to have a *love affair* with a bus.

"There's nothing romantic about a bus," according to Long Beach Mayor Ernie Kell. As Kupferberg (1980) writes:

The bus has never attained its place in romance, legend and folklore. The chariot has Ben-Hur, the ship has the Flying Dutchman, the railroad train has Casey Jones. But literature has done little for the bus. . . . The mundane commuter bus, of course, is the most neglected of all the species. Like the commuter himself, it leads a harried life full of jolts, false starts and unexpected detours. About the best that can be said for the average commuter bus is that it beats walking — just barely.

And as Baxter Ward's proposal for the "Sunset Coast Line" puts it:

Los Angeles might be having a *love affair* [my emphasis] with the auto, but after 30 years, there is not a flicker of feeling for the bus. And their fumes add to our problems with the air.

Even the gasoline shortage and the 25 cent bus fare failed to *affect us emotionally*. There was to be no *shotgun wedding* with buses.

Because *the heart still returns* to the rails, 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 [Ward, 1976, p.7]. . . .

So we settled on Sunset Coast Line [for the name]. It is the kind of name that pretty much says all there is to say, keeps some nostalgia, while still looking forward to the future. Someday its

tracks might be converted to air cushion, with speeds up to 150 miles per hour on certain longer stretches of the Main Line — and the name still will be good.

Of course, by then people might want to shorten the name somewhat, to suggest *feelings of warmth and familiarity*. A name with three or two words could be just too long.

So we suspect it will become known as the Sunset. In fact, it possibly will be called that while it is still going only 85 [p.24].

When Ward did get a chance to begin his experimental commuter rail service, he settled on February 14 as opening day. "Let's start on Valentine's Day," he had told the Santa Fe railroad: "it's a nice romantic touch, I think. And we began Valentine's Day." Valentine's Day, 1991, was also chosen for the opening of the Blue Line tunnel into downtown Los Angeles. The front page of the LACTC (1991) publication *Metro Moves* headlined "A tunnel just waiting for a train" — the Freudian reading of this is obvious — and a picture of the tunnel was contained in the outline of a heart (see Fig. 10-4).

When on October 6, 1980, the *San Diego Union* reported on the public presentation of the first new trolleys the previous day, it referred to the event as the "San Diego Train Unveiling." Here was the first look at the delectable bride, a woman to truly fall in love with:

Ed Herold, 60, and Eric Sanders, 66, watched the red and white balloons lift a striped parachute canopy to *unveil* the San Diego Trolley's first double-car train on 12th Avenue yesterday and remembered a Monday morning more than 31 years ago when they both rode the San Diego Transit System's last trolley car to the Adams Avenue barn. . . .

Most of the crowd was *transfixed* by the trolley.

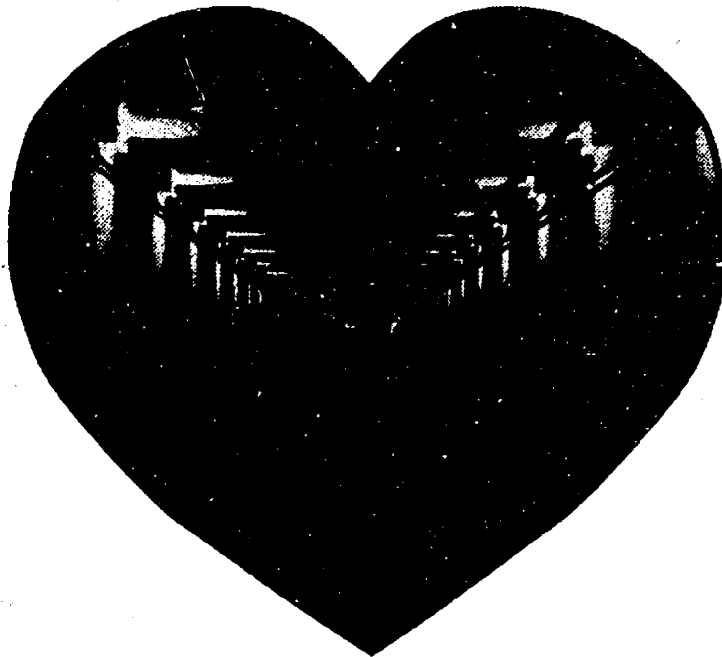
The "love affair" metaphor misleads because it assumes that people choose transportation for the joys of the relationship, rather than because they want to travel somewhere. It sees people as traveling by car because of an infatuation. It



Los Angeles
County
Transportation
Commission

METRO MOVES

**“A tunnel just waiting
for a train”**



L.A.'s first underground METRO tunnel officially opens on Valentine's Day. Shown here in an earlier construction stage, the completed tunnel will bring the METRO Blue Line to its new underground rail station in downtown Los Angeles.

**Transportation
Milestone — The
Blue Line Moves
Underground**

On February 14, 1991, the Los Angeles County Transportation

Commission (LACTC), and its subsidiary, the Rail Construction Corporation (RCC), unveils another milestone in Los Angeles County rail transportation history when it opens its first underground Metro rail station — four months ahead of schedule! The tunnel brings the

Metro Blue Line into downtown Los Angeles via a six-block underground tunnel — marking the completion of Los Angeles' first rail transit segment a short seven months after its spectacular grand opening last July.

Beginning on February 16th, the day after the official tunnel opening ceremony, Metro Blue Line cars will suddenly dip down and disappear from sight at 12th and Pico Streets in Los Angeles, and passengers will ride — many coming all the way into town from Long Beach — the rest of the way to the intersection of 7th and Flower Streets through an underground tunnel. There, the Metro Blue Line will connect, at a shared station, with the forthcoming Metro Red Line.

The Metro Red Line, meanwhile, is currently under construction. An 18-mile underground heavy rail system that will serve the densely populated regional core of Los Angeles County, starts at Union Station where it links up to commuter rail lines, moves south into downtown Los Angeles (to the 7th Street Metro Station), then west into Hollywood, and finally out to the San Fernando Valley. Phase I of this system — a 4.4 mile portion connecting Union Station to the Wilshire/Alvarado intersection — is scheduled to open in September of 1993. ■

Figure 10-4

sees the possibility that, just as in many human affairs, the infatuation is illogical and can be broken by supplying a more ardent lover.

While people with spare cash might buy a more dashing car than those with less, the principal reason for buying a car is for the transportation services it can supply. As empirical evidence cited in Chapter 3 indicates, another mode of transportation will only be competitive with the automobile if it provides a trip as convenient as by car. Rail can't do that. By making transportation choice appear to be something as subjective as a romantic relationship, however, the false impression is given that a lovable trolley will pry people out of their cars.

In many ways, the "love affair" metaphor is similar to the "drug addiction" metaphor. Both ignore the core reasons people choose particular modes of transportation. And while one admits that the car is lovable — making it seem understandable why it should be loved — and the other sees it as a dangerous drug, both see a new and healthier relationship as the prescription for change.

THE RELIGION OF THE RAILS

BAXTER WARD HAS BEEN CALLED: the "Rail Messiah," and he certainly clings to his convictions with an intense quasi-religious fervor [Shaffer, 1980].

Religious belief implies taking something on faith as an object worthy of worship: neither fact nor reason is necessary to justify devotion. To California Assembly Transportation Committee Chairman Bruce Young, speaking at Hearings in Long Beach (California Legislature, 1981a), it was praiseworthy enough that:

The people in Long Beach *kept faith longest* as far as the P. E. They were the last to give up and fought to the bitter end to this city's credit [p. 67].

Manuel Perez is one of the faithful.

He admitted to a:

great love of trains. . . Politically, technically, emotionally and spiritually I'm very committed to the light rail.

Perez was asked why it was important that he was emotionally or spiritually committed. "Because I *believe* in the system very much," he replied.

While Perez admitted to both a love and a belief in trains, Alternate Commissioner Roy Donley claimed that unlike most other Commissioners, he did not "*worship* at the *alter* of light rail." He called instead for a higher-tech system. His description of the system he *did* desire, however, suggested that he was also a member of the rail religion, if of a different denomination.

"These would be high-speed trains, 100, 120 mph, and they would have about a five mile run to gain speed," he said. He called for "*high-powered locomotion*" to "get up to the speed pretty fast." The trains would stop at "megastations," at freeway interchanges where they would interface with:

surface transportation. Now, this will include surface buses, taxicabs, private automobiles with park'n ride facilities and also I see this interchange being developed in cooperation with private enterprise with commercial development, possibly even residential, that is hotel-type things and that sort of thing. And a heliport. People can fly in to these things from LAX and other airports.

Perhaps most fascinating is that Donley uses economic arguments when criticizing the light rail program, pointing out that the old streetcar systems — local "Yellow Cars" as well as interurban "Red Cars" — used to cover the city with a dense grid, and that their service would not be replicated by the light rail:

People say: well, we had a beautiful system 35 or 40 years ago, and we dismantled this system and what a crying shame that was. If the truth were known, it was obsolete at that time.

Yet, when overcome with visions of powerful speeding trains and "megasta-

tions," these economic arguments are absent. Donley's vision is founded in technological fascination and power: he imagines a train with "high-powered locomotion" and a "five mile run to gain speed;" the "megastations" he calls for symbolize might; and the heliport is a further element of Donley's dream of a temple to transportation. If Donley does not worship the trolley car, he is nonetheless a member of the rail religion, if of a different denomination.

Converting to the True Faith — The need for Religious Education

If rail is a religion, then the job is to get the idolatrous automobile-worshippers converted to the true faith. Commissioner Christine Reed talks of "getting converts to the idea that rail transportation is in fact a good alternative." And if, as Roy Donley says, "the majority of our Commission right now are light rail *believers*," — members of the cult — why should the public — of whom the lay members of the Commission are in many ways a subset — not become "initiates" of the faith with a minimal amount of "religious" education?

In the eyes of then LACTC Chair, Jackie Bacharach, there might be a period of getting used to the rail, but once the user has received the rites of initiation, the necessary rituals will have become second nature. This is how she replied to the question of whether people would transfer between vehicles to use light rail:

I also don't think transfers. . . once people become transit users — are not as onerous as they are to the *uninitiated*, and on a system where you understand the system and get used to riding, you transfer, and it's not a big deal. It's interesting that Southern California has this feeling about itself, because what are we except transplanted Easterners? There's how many people came from New York where they wouldn't have thought to drive their car? So, we say it's an attitude problem, but I think it's because we have a system right now that's so

complicated and so unclear that it's really hard for people to understand. We have former rail users, so I don't think there'll be a problem in getting them reinitiated.

Bacharach talks of potential riders as if they were members of some fraternal or religious organization who have wandered from the faith. Perhaps the change in beliefs might require some training. Bob White, also asked about the problem of consumer preference for one-vehicle trips, replied:

We're going to have to train the people. Any time that you change and you're innovative and you change transportation or you change your method of coaching, like I was a coach and if I took over a ball club and ran it differently from the guy before, second guessing. We can educate the people to ride.

To White's mind, the problem of getting people to use light rail is akin to teaching a new sporting technique: there is a teacher and a student; the student has come to learn, and is willing to conform to the instructions of the teacher.

Alternate Commissioner Ted Pierce gives an example of such education in practice:

For instance, you take Toronto, has the Blue Line, and whatever they do whenever they're building a system, what they'll do is parallel that system with a bus route. And it would be called the Blue Line, so people get used to riding it, taking feeders to the Blue Line. And then, once they get on the feeder, they get off and then they transfer onto the bus; takes them into downtown and wherever they're going. Soon as they get the rail completed, they pull the bus: people just go right onto the train.

All these notions share the assumption that people will conform to a desired form of behavior if shown the way, that once initiated into the cult, they will behave according to its tenets. All ignore the realities of consumer choice which dictate that people will continue to travel by other means if the rail system does not prove to be more convenient, and will not simply

accept the new rail "dogma" like uncritical sheep. Users of the Long Island Railroad commute to work that way because it provides the best service in the context in which it operates. There is no evidence that they would use a rail service in another situation simply because they have been brought up to know trains and had their latent desire for rail-worship re-awakened.

So long as choice remains, it is unlikely that they would respond to "training:" if the public is neither being paid to play a particular game nor derives particular satisfaction from doing so, they will turn to a different sport. The "students" are looking for the most convenient way to complete their journeys, and there is no reason why they should accept instruction which goes against their best interest.

Another troubling aspect of seeing rail in religious terms — and the implied need for the acceptance of religious dogma — is the authoritarian stance it shares with the idea of "force-feeding." Its assumptions clash with social notions of freedom of choice.

A RAILWAY FUNERAL

The railroad station at Billings is old, clean, wooden, and deathly quiet, except when the long coal trains roll past along Montana Avenue. We had a passenger train that used to come through Billings on the run between Chicago and Seattle. They called it the North Coast Hiawatha. It's dead now, been dead since October — the victim of a head-on collision with a thundering herd of numbers, statistics cooked up at Amtrak headquarters in Washington to justify killing off some trains [my emphasis].

— Phil Primack,
"Death of the Hiawatha,"
The Washington Monthly,
December, 1979

LOVE AND RELIGION ARE COMBINED in the rituals of death. A "Streetcar Called Desire" has a personality, and to "kill" it is murder. Associations of death hang heavily over tales of the ending of the Red Car system. Baxter Ward's (1976) study for the "Sunset Coast Line" talked of the Red Cars' removal as of the death of a great author or artist whose works were lost:

The Pacific Electric system did not simply *die* — it was *killed*. . . The *tragedy* in its *passing* is that its fine network was not preserved [p. 1].

And as KNXT-TV's Marcia Brandwynne asked on April 28, 1980:

So if it was such a great system, the question is who *killed* big red? There's no easy answer, but it was a slow and *painful murder* with many accomplices.

There are many examples of the loss of rail service being seen in terms of death. As the *Los Angeles Times* (May 1, 1986) reported on the departure of one last train:

"Railroad stations used to be filled with action. Now they are like *tombs*," said Joseph Stoddard, who was among 30 railroad buffs who gathered in Pasadena last Saturday to say goodby to the Desert Wind on its last stop. . .

Some Amtrak employees and many of the rail fans who spent the afternoon photographing and *mourning* the *passing* [my emphasis] of the Desert Wind believe that its rerouting signals the same *destiny* for the Southwest Chief, and perhaps oblivion for the two depots.

If, as Craig Lawson of Mayor Bradley's office confided, "People still have a fond spot in their heart for the old Red Car system," it is no wonder they were "forlorn" or felt "upset" at the passing of the Red Cars as at the death of a person, as other interviewees commented. Or that, with the loved-one gone, there should be a desire to face death and propagate continued life in that most human of ways: with a new birth, a new romance, a new transport of delight.

THE NATURE OF EVIDENCE — THE ROLE OF EXPERIENCE

DAN CAUFIELD, LONG BEACH PROJECT manager, described how he impresses visitors. He would “spen[d] 8 hours with them. And by the time they get to milepost 21 — they go wow!” A tour of the physical works — though it says nothing about the economics — excites an admiring response. In a *Los Angeles Times* interview (Nov. 11, 1984), Caufield described the Long Beach projects as a “real class facility. It’s the biggest light rail project in North America, and it’s real rapid transit.”

People trust evidence they can see; they are skeptical about the abstract and the unknown. Playing on the primacy of direct experience, Baxter Ward came up with an experiment in which he legitimizes the employment of sense impressions for the making of major decisions. To test whether people would prefer buses or trains he would see how they felt about riding them:

Well, for one thing I would put a person in a bus. I would take an expert from Harvard or MIT or UCLA, USC, make him ride through Watts on a bus, or to East Los Angeles, or to Pomona or whatever the hell, put him on the bus.

Then I would let him rest up a bit.

Then I’d budget \$500 and give him a first-class train ticket on an AMTRAK Coast Starlight, put him up in a bedroom in the Coast Starlight, and let him ride to Seattle on a train, in just the loveliest comfort possible, and then have — find some means of reminding him, frequently either on that trip or immediately thereafter — the way the bus was.

And then say to him, your job is not to do a cost analysis or anything else, but which ride did you like the better, A or B? What can you design for public transportation that comes as close to that lovely trip to Seattle as you possibly can make it? What’s the best route available? You can start with a set of tracks, and have electric power, and then you’re going to have to design seats that are

comfortable, passageways that are pleasant, talk areas, service for refreshments if that’s appropriate, and all kinds of nice things to make it just a lovely, lovely experience. Colors are important, upholstery, fabrics, softness, cushioning, is it leather? What do you want to make it right? . . .

Let them have both experiences.

One is the gut reaction, which your gut’s going to tell you that the train ride was sensational, comfortable, smooth, fast, whatever. . . Then the second sensation, the reality part, is alright, how do you compromise on the ultimate experience, the Pullman that you can’t have, you can’t have individual rooms on board a commuter train, but how close to it?

I asked Ward if luxury express buses should be considered. “But they’ve ridden the bus, and they’ve canceled it out,” he replied. “The first question on the quiz would be which ride did you like better?” To a hard-nosed transportation economist, Ward’s test might seem ridiculous and designed to select a fantasy-experience rather than an efficient public conveyance. But Ward’s system of evaluation is, in fact, quite in line with our normal, everyday, common-sense way of reaching conclusions about phenomena we experience. We look at some examples, now, of how experiential evidence is used to make inferences.

THE DISNEYLAND EFFECT

IF MANY NEGATIVE VIEWS OF BUSES come from observation of local buses, concepts about what the train might have the potential to do for Los Angeles are reinforced by brief visits to places which already have such systems, along with images of those systems in operation transmitted by the media. This is most graphically illustrated by the effect Disneyland — with its monorail system — has had on monorail advocacy.

Although monorail is nowhere near a viable option for the operation of commuter services, Craig Lawson of Mayor

Bradley's office said his office receives letters calling for monorail:

all the time. People go to Disneyland and they think that because the monorail works there it can work anywhere in Southern California. If you took a poll right now of people in Los Angeles, they would probably support a monorail over light rail or subway because they're familiar with the monorail and they've seen it in Disneyland. They've ridden on it, it's lots of fun, and it seems to go very fast.

Letters to the editor have called for monorail, too. "I believe the only answer to the Los Angeles Basin transportation problem is a monorail system, similar to Disneyland's German-built monorail, installed on the sides of the freeways," wrote Wallace Fusby in the *Long Beach Press-Telegram*, for example.

Former RTD President and Deputy to Supervisor Pete Schabarum, Mike Lewis, has had similar experiences: "I can't tell you how many people call every day and say why don't they just build monorails down the middle of the freeway," he said, agreeing that the Disneyland imagery was powerful: "If a person hasn't travelled, it's the only form of transit they've seen," he added, stating that he himself favored some monorail application. Long Beach Councilwoman — and light rail critic — Eunice Sato wanted a system "more like monorail" than the light rail system proposed.

Conservative Supervisor Michael Antonovich also favored monorail:

I went down to Disneyland to see their's. . . And it seemed something that was economical and non-polluting. No noise. And it fits above the freeway.

"People were seeing in other cities such as in San Diego that light rail can be very successful and very popular," said Craig Lawson of Mayor Bradley's office, citing this as part of the reason for the rail orientation of people in Los Angeles. Interviews brought a multitude of references to experiences of rail in other cities, and they were used to justify bringing rail

transport to Los Angeles. A visitor to a subway system experiences its physical exterior, but not the social and economic realities attendant to it. A visitor to BART, for example, will note the artfully-designed stations and the slick trains, but will not be made aware of the communities *not* served by the system, or of the regressiveness of the way the system is financed. Perhaps this is why far more has been written on the mechanical problems of BART's early years than on its more abstract, hard to pin down, social failings.

Many of those interviewed put high store on the evidence of the eyes. "I see how well it works in Europe," said Debbie George of Supervisor Dana's office. Jackie Bacharach said a primary source of information for her was:

experience in travelling in Los Angeles and in other cities. . . Why are people putting in rail all over the United States? Why isn't bus the answer everywhere else?

"Why," Bacharach was asked? "Because people are riding it. It's being used." The fact that trains are seen being used elsewhere suggests that the train *qua* train is "popular" — irrespective of the context in which it is operating — and that, whether in Washington, DC or Los Angeles, it will be equally popular.

Jacki Bacharach and other commissioners decided on an automated system for the Century light rail line, despite concerns by staff:

"What turned me around was other successful systems," said Commissioner Jacki Bacharach, referring to driverless trolleys used in Vancouver, Canada, London and Lille, France. Bacharach, an influential commissioner who chairs the rail construction committee, and other commission officials have traveled at public expense across Europe, Canada and the Far East in recent years to inspect various rail systems. . . [*Los Angeles Times*, May 25, 1988].

There had been criticism of the cost of the Washington, DC system, said Burke Roche of Supervisor Hahn's office. But,

"I don't see how anybody can criticize it, who's used that transportation."

Peter Ireland of Supervisor Dana's office thought it justified for commissioners to travel to other cities to observe their rail systems in use: "It is probably a more beneficial way to present the information to the commissioners is for them to see it firsthand," he said. Once more, a high value is put on direct experience, even if it does not convey the complex economic or contextual information needed to properly evaluate whether a rail system could translate successfully to Los Angeles.

Bob White is one of the commissioners to travel abroad to look at trains: "I went to Canada, I went to Edmonton, Montreal, Toronto and visited the plants where they make the light rails," he said.

White was convinced above all by his firsthand experience of a technology which appeared to work:

I've seen the people in Canada *love* the darn thing and those cars fill up, and guess what, Jonathan, when that light rail comes up and stops would you believe, in 30 seconds I think it is, maybe not even that long, they open the doors and you can get on any car and in 30 seconds they're *ready to take off* [my emphasis]. And they don't mess around and take all day to move their train.

White feels that Los Angeles residents would be equally impressed by the service to be operated in Southern California:

And once they ride it, they will see how *smooth* that it operates, like they did in Canada and I think that it would go.

White makes the inference that if the same technology installed in Canada were to be put in place in Los Angeles, the same smooth ride would attract Angelenos to using it as much as Canadians. One aspect of the rail system in Canada — its smoothness — is seen to be a major draw, and questions of whether the system would in fact be convenient to use in Southern California — given the origins and destinations of trips residents actually make — are ignored.

The sole criterion for evaluation is the physical experience of the system. Asked whether getting to and from the light rail would be a problem in Los Angeles, White replied:

I'll tellya exactly: We'd do the same thing that they do in Canada. When I was in Montreal and Toronto, the train would pull into the depot, the buses are in the parking lot to take these people to where they live. . . . They do it very well in Canada. I've observed it, and ride on the light rail and taken the buses out like that, and it just works; in fact I think they give them as much as five minutes to get off the train and get on their buses.

The mechanical functioning of the technology is what impresses White: the opening and closing of doors, the buses waiting to meet the trains. On a common sense level the Canadian systems seem quite beguiling, and it's quite understandable why they would appear attractive in Los Angeles. White's travels abroad create the most vivid and enticing images, which combine impressions of speed — which make rail seem an effective form of transportation — and of technological virtuosity and sexiness — which make it alluring. They only tell part of the tale, but their partial structuring is taken as the whole story, and they have little trouble in making a sale.

Roy Donley was similarly impressed by the rail technologies of other cities: "I see subways in Paris and London and New York and other cities where the damn train is almost up to full speed before it exits the station," he said. Burke Roche was equally impressed by the Calgary system: "The way they get through, down and out of downtown, it seems to be very convenient," he said, given another view rooted in physical experience. Roche also gave the example of how rail worked in Toronto. "Toronto and Los Angeles aren't that different to me, or Montreal," he said.

No city's system has proved more convincing for the light rail case in Los Ange-

les than San Diego's. At Assemblyman Bruce Young's Long Beach Hearings (California Legislature, 1981a), rail historian William Meyers had testified that "the same light rail technology that's working so well in San Diego is definitely feasible here," (p. 57), while Assemblyman Young stated that: "And again I think that San Diego has shown us the way." As Commissioner Ed Russ said at the LACTC meeting on March 24, 1982:

In closing, of course, I would like to say, of course, that we took the trip to San Diego, we saw what they did. San Diego is one of the greatest examples in the United States.

TV reports have focused heavily on the shiny technology of San Diego, showing Los Angeles viewers time and again enthralling images of what could be theirs. One Los Angeles station (KABC-TV, July 30, 1985) explained that:

By the mid 1970s, [San Diego] community leaders realized that buses simply couldn't haul as many people as efficiently as the rail car. . . They decided to build a light-rail system. It was a sleek reincarnation of the old street cars.

The shots of trolley cars look impressive.

Comparisons to Los Angeles are readily made. On one slot (KABC-TV, Los Angeles, July 30, 1980), the presenter opened:

Mr. Taylor [Deputy Executive Director, LACTC], as you and I speak we can show our friends at home some video tape that is in fact a mass transit system now existing in San Diego and apparently we are looking to — I shouldn't use the word copy but it *works* [my emphasis], I guess — copy that.

On Feb. 26, 1982, KABC once more reported that:

Light rail is already *working* very well elsewhere. . . Lovingly called the Tijuana Trolley, it's a favorite model of transit cities can build without counting on dwindling federal dollars.

Now, finally, Los Angeles may be ready to catch the train of thought.

On another report (KTTV-TV, Los

Angeles, Oct. 31, 1985), an on-location reporter reports that:

The LA-to-Long Beach Light Rail system will be similar to this one in San Diego.

The comparison being made is in terms of hardware: the trolley cars will be similar. A flashy looking trolley car is shown working in San Diego ("work" being understood in the simplest technical sense of their motors working), and the image translates into one of a car "working" to move passengers around in Los Angeles, too. Social or economic considerations do not come into play. The image tells a very small part of the story; but, it is taken as the whole.

Christine Reed remarked that: "You can't help but go other places and marvel at the wonderfulness and efficiency of it." I asked whether that was an appropriate experience to apply to Southern California. Her reply displayed a rare self-awareness, absent in most of the others interviewed. "It probably isn't, but it still makes an impression that you never lose," she said.

If in fact you worked in Boston, you might not want to ride that transportation day-in and day-out, you know, you might not want to be jostled and standing and all the rest of it all the time, but it is truly wonderful to go and be a visitor in those places, and to have those wonderful transportation systems available to you to use, and I have personally taken advantage of them in Boston, in Washington, DC, in Japan, in France and in London, and in Holland and in Switzerland, and it's great, you know.

Walter King finds the drawing of inferences from such experiences to be quite legitimate. Rebutting the assertions of USC Professor Peter Gordon that light rail would not work in Los Angeles, he said:

All I'd want this man, whoever says that, to go to Europe. I just got back from Europe and you would have a desert [without rail systems.]

He claims that "All I'm saying is good

sound logic. You show me one city in the world that's an important city without a major transportation, without some type of rail service." King claims he is being logical, and it is clear that the others cited above believe that they are being logical, too. They have amassed evidence — albeit evidence of the senses — and used it to deduce conclusions about the desirability of rail in general. The fact that analytical processes are not engaged does not mean that the imagery lacks logic: it provides evidence, and anchors inferential mechanisms in a quite definable and powerful way.

Light rail critic and then Long Beach Councilwoman, Eunice Sato, was one interviewee not sold by the experience of other cities. "Just because other big cities do it and make a mistake doesn't mean we have to follow suit," she said. Los Angeles Councilman, Ernani Bernardi, was similarly unimpressed by subways elsewhere:

I don't know of any city that's more in gridlock than London; I don't know of any city that's in more gridlock than Paris, and they have very elaborate subway systems. You can't even drive in Manhattan and that has an elaborate subway system.

Bernardi feels that it is the concentrated nature of these cities that causes congestion. His different framing of the transportation problem makes him immune to images of technological performance alone. He has images too — of a congested London, Paris, or Manhattan — but the images are different because his framing is different.

Experience is more powerful than argument

Some TV reports have given time to opponents of rail, but not enough time to allow viewers to form reasonable opinions of the reliability of what they have to say. On one slot, for example (KHJ-TV, Los Angeles, October 31, 1985), Peter Gordon says "Well, the evidence is pretty clear

these systems don't work," after which the newscaster announces that "The Los Angeles County Transportation Commission is looking into a very different crystal ball," and hands over to Jackie Bacharach, who says:

When people realize that the freeways are gonna be down to twenty miles an hour max in the peak hour. . . when people realize they can read their newspapers and do a tremendous amount of work on the rail line I think they're gonna take it very happily.

Bacharach has all the televised images of speeding trains and viewers' experience of congested freeways in her favor. And while fleeting images of only a few seconds can be extremely powerful, Gordon lacks the chance to show that his reasons are stronger than Bacharach's. Both are said, by the reporter, to be looking into crystal balls, with no one view having higher validity.

THE TRAIN AS SYMBOL OF COMMUNITY PRIDE — PENIS ENVY IN LOS ANGELES

"I'm proud that Long Beach will be the first to be served by the new network," said Long Beach Mayor Ernie Kell. As Commissioner Marcia Mednick put it, in more global terms, she thinks it "gives a community a feeling of pride to have a new type of service going through it."

The view that rail service provided a form of identity for and enhanced the status of cities was quite prevalent. As Lee Hultgren, Director of Transportation for San Diego Association of Governments commented:

I think a community is known by a rail system more than it is known by a bus system. The London Underground. Even The Loop in Chicago. It becomes part of the Chamber of Commerce image of the community. You don't see buses representing a community, but you do see the Vienna Underground or Lon-

"The Calcutta metro-rail is very nice," Ajit remarked over dinner. "The stations are clean, the trains run on time, and while one is waiting for the train one can listen to the pleasant tunes of Tagore's music played through the public broadcasting system. There are flower pots in the platform and inscriptions from Tagore's poetries on the wall," he added, to lure me into the exciting experience of the Calcutta metro. As I listened to the different comments around the dining table that evening, I was struck by the pride that was felt about this new improvement in the city. "Calcutta may be deficient in many ways compared to Bombay or Delhi," Ajit concluded, "but we are leading in at least one aspect: we are the only Indian city with a metro-rail". . .

As we walked down the stairs, I was really surprised. The walls were clean and white washed, with no posters, no graffiti, not even hand marks. The floors had been swept clean and washed, it seemed only a few hours back. Not a single hawker or beggar was inside the station — not even the type one finds in the affluent countries' metros. . . Calcutta's subway was truly clean: even cleaner, it seemed, than some of the city's hospitals I was familiar with. . .

. . . it occurred to me that beneath Ajit's reaction was a search for meaning — the meaning that sustains Calcutta's middle class, whose emotions fluctuate regularly between despair and hope. . . To retain one's sense of meaning amidst these despairing trends, hope is essential. And that hope expresses itself in many forms: the pride in a clean and efficient metro-rail, a large stadium which is believed to be Asia's biggest, a multi-storied, air-conditioned supermarket, a new fly-over near the Sealdah Station. These visible "improvements" of the city all add up to an image of modernization: the end product of the middle classes hope, the "India in the 21st century" that Rajiv Gandhi expounds to motivate people.

In questioning the relevance of Calcutta's metro-rail, I had unknowingly undermined this very basis of hope that makes living in Calcutta endurable for Ajit. . . For this group, [the middle class], the make-believe world of the metro-rail is a symbol of hope, much more meaningful than what would appear to a visitor to the city.

— Bish Sanyal (1987)



Ernie Kell

don, San Francisco — BART and cable car — are much more prominent symbols of a community.

As Jim Pierson of San Jose put it, rail has an “uptown image,” an understanding that shows up in other communities too. Johnston and Sperling (1986) quote Anne Rudin, long-time light rail transit study committee member and Mayor of Sacramento, who saw light rail as “representing good urban life in Sacramento” (p. 27), while the image of Portland was widely seen to be enhanced by the arrival of the train. According to Steve Dotterer of the City of Portland staff: light rail had “captured the imagination of people throughout the state. People come up here to ride the thing.” Ted Spence of Oregon

DOT felt that the trolley was far more than something more to ride on:

It’s progress — there’s something exciting, something to focus on — what else are you going to focus on? And it’s something that’s new. There’s a lot of monuments in Washington, DC. And if you were a pragmatic economist, you probably wouldn’t have built those things.

Bill Robenheimer of MTDB San Diego pointed out that although the “technical analysis didn’t come out overwhelmingly in favor of light rail,” light rail “could do more for the image of San Diego” than buses. Alternate Commissioner Barna Szabo contended that the light rail had “improved the prestige” of San Diego. San Diego Supervisor Brian Bilbray agreed: “We’re a very cosmopolitan city now,” he said. “We’re the best of Los Angeles and the best of San Francisco without the bad parts.” “The trolley right now is motherhood and apple pie in San Diego,” said San Diego Councilman Ed Struiksma. “If you want to do something good, stand next to the trolley and have your picture taken.”

The trolley, then, is something seen as good for city image, an identifying characteristic such as a Washington monument or a St. Louis Arch. The trolley is symbolic of progress, of a vibrant city, and the symbolism can operate independently of the transportation characteristics of the service provided. As Kenneth Hahn put it: “If you’re going to have a *great city* [my emphasis], you have to have rapid rail transit,” (*Los Angeles Times*, Oct. 20, 1985).

Conversely, there “seems to be a feeling,” said Aubry Davis, regional UMTA Administrator in Seattle, “it’s sort of a macho thing. If you don’t have a railroad, you’re not a city.”

According to Commissioner Christine Reed, the fact that San Diego got their bright red light rail cars in working order before Los Angeles even got off the mark has left Los Angeles feeling like son Don

Juan beaten to the fair bride by some scrawny wimp. The metaphorical sexual imagery — of penis envy — is unmistakable.

“Here is my personal, unprofessional appraisal as a viewer of the process, and not really a participant,” she said.

There was an intense amount of institutional ego over the fact that San Diego had *whipped out* a trolley system out, kabloom, like that. They just did it. And I mean everybody else was like, oh my God, you know, what an affront that that little city could do that, and here we are — a big county — powerful, two-thirds of the population of the state, blah, blah, blah, and we can't do this.

The “envy” showed up in many places. As *Los Angeles Times* reader Dorinda Humphrey wrote in a letter to the editor (April 13, 1982):

I have ridden the model for our trolley [sic], the San Diego Trolley, and I find it to be clean, quick and efficient. It is really embarrassing that a small city has showed us up like this.

Speaking of Angelenos as backward naughty children, KABC-TV, Los Angeles, reported on Aug. 2, 1982 — the first anniversary of the San Diego system — that “While Los Angeles fights, San Diego celebrates.” Alternate Commissioner Roy Donley joined in the self-flagellation:

Los Angeles is really a screwed-up mess, in my opinion, with respect to solving its transportation needs. We're the only major city in the world that doesn't have a subway system. . . . We've been screwing around with this transportation problem ever since World War II. We're the last major city without any kind of decent transportation system in my opinion.

Alternate Commissioner Bob White really told it from the heart. “Let me tell ya,” he said:

I feel strongly that we are as a nation or as a state as well as a country; we're 50 years behind the rest of the world, and if we don't catch up now, we're going to be the laughing stock of the world. . . . Everybody's doing it all over the world, and I think it's like keeping up with the

world, and doing what the rest of the world is doing.

And, as Walter King added, “I'm jealous of what they do with their trains over there, and I hope some day we can get it here. Buses can't do that.”

“There's a lot of civic ego in it,” said Christine Reed:

There is, there really is. . . that we are a great city and every other great city has a subway, therefore we must have a subway now. . . I mean, you go to New York and you ride it and you don't feel that way about it, but there's this notion, and it comes back to the civic ego stuff, it's like all great cities that people talk about: Paris and London. Which are great for other reasons, not their metro rail systems.

But a dented civic ego hurts. There is a sense of pride in having a rail system; there is a feeling of inadequacy, of impotence in being without. Without a train Los Angeles can never be a real man city, but must remain a place where plastic people eat quiche and drink Perrier. To have rail as to have a sports stadium, an opera house or a monumental arch is to be successful. The inference gets made that “if only we had rail, we could be successful too.” In this respect Los Angeles is little different from the Calcutta described by Bish Sanyal: in the “screwed-up mess” of Los Angeles, light rail is a symbol of hope, something to be proud of, something to at least momentarily make the larger problems — which remain unsolved — seem to go away.

LIGHT RAIL AS CARGO CULT

IN A NEW GUINEA CARGO CULT, DOCKS or runways may be constructed to receive the cargo thought to arrive when such facilities are in place, despite the lack of evidence that any cargo-carrying ships or aircraft would actually bring the goods (Firth, 1973, p. 427, Conforti, 1989, p. 4). Cargo cults are symbolic ways of doing something about situations otherwise thought to be unendurable

(Firth, p.200), and have as their central tenet a sudden and complete transformation, a complete change in circumstances and material wealth that would come about “if just the right actions were taken, just the right incantations invoked” (Conforti, p. 4).

As Firth points out, “there tends to arise a gap between the results of symbolic action and those of pragmatic or empirical action. It is not a matter of which is real; it is a matter of sorting out the different implications of each.” The New Guinea islanders’:

activity may be classed as no less real to them than is our technological construction to us. But the results are of a different order. To expect a material aeroplane to land on a symbolic airstrip, or material rice or calico to come out of a symbolic aeroplane, is a confusion of implications. But such confusion of implications of symbolic action can occur, and out of it can come much dissatisfaction and disturbance of social relations [p. 427].

Conforti suggests that such behavior is not limited to traditional societies:

At least a nascent cargo cult orientation exists within American society (and probably within similar societies as well). It constitutes *an ideology that contains its own logic* [my emphasis] and fosters a set of beliefs about how things are accomplished, how things are acquired, which actions are likely to have desirable consequences, and which are not.

Just as the Pacific Islanders focus on some singular and decisive factor or pattern of action rather than the complex relationship between causal factors and their effects, so too do many Americans [p. 4]. . .

The ideology presented is perhaps most obvious in the kinds of programs commonly watched by young children: cartoons and adventure series. These programs present very dramatic, oversimplified depictions of life, stressing contention and sudden resolution. The hero, who is all good, is also inherently endowed with all the qualities necessary to success. As the child grows older, these programs give way to a broader ar-

ray, incorporating sports, popular music, soap opera, situation comedies etc. They also all continually reinforce the idea that things come into existence fully formed; there is little or no process depicted, no growth, no development, no accumulation; there is also neither ambivalence nor compromise, something either is or it is not, one does something or one does not [p. 6].

As a symbol of hope, the train in Los Angeles is a cargo cult, an answer to an otherwise unendurable situation. Just as the New Guinea islanders entertain the unfounded belief that airstrips to which goods are delivered elsewhere will bring them cargo, Angelenos believe that the rapid transit systems of “successful” cities will make Los Angeles successful, too. As in the case of the islanders, Angelenos focus on a technology of hope, rather than on “the complex relationship between causal factors and their effects.” Theirs is a oversimplified world in which the train is the hero and is all good, the road and the bus the bad guy — and all bad: The train is a transport of delight, which is seen as the key to not only solving Los Angeles’ transportation woes, but providing a pleasant experience and giving the community a new pride in its identity.

The Unconverted: Maxcy Filer

Compton Councilman Maxcy Filer, a grass-roots community activist, closely connected with — and deeply aware of — the problems of his constituents, was not party to the myth of rail. “I think what has happened: Nostalgia is setting in,” he said.

I think many of us look at it from the standpoint, we’ve tried buses, we’ve tried cars, we’re tired of the freeway, well now let’s go back to the train. I’m not surprised. I think they might bring the horse and buggy back from a nostalgia standpoint.

Was this appropriate he was asked? I think that we know what the Red Car did before. And now all at once we all say, well we want to get back on the Red Car, that’s where we’re really going.

Again, the only thing we're doing is painting it silver. And of course we might it go a little faster, I'm not sure that we will, because the Red Car used to get up to I think 65 or 70 mph, so it's one of those things you aren't talking about really getting it there that much faster. And the Red Car had the right-of-way, too, most of the time, especially when it was express, it had the right of way. So I think's a nostalgia aspect that we're going through.

"Was that valid?" I asked.

No, that isn't a valid way. It is not a valid way. Those that want to ride the Red Car, let them do it on Sunday afternoon, have their pleasure of going to Long Beach, to Los Angeles, from Los Angeles to Long Beach, and say fine, now I've gotten over it, I've enjoyed it, so forget about it. Those that want to ride the old paddle boats, they should go to the Mississippi, ride on one, and don't bring it here and say get rid of the Queen Mary or whatever the steamships are. You just go ride the paddle boat. . .

I'm not looking at the pretty issue, the glamorous issues or anything of that nature. Will it do the job? If it won't do the job, then why have it? Just doesn't make sense.

SUMMARY

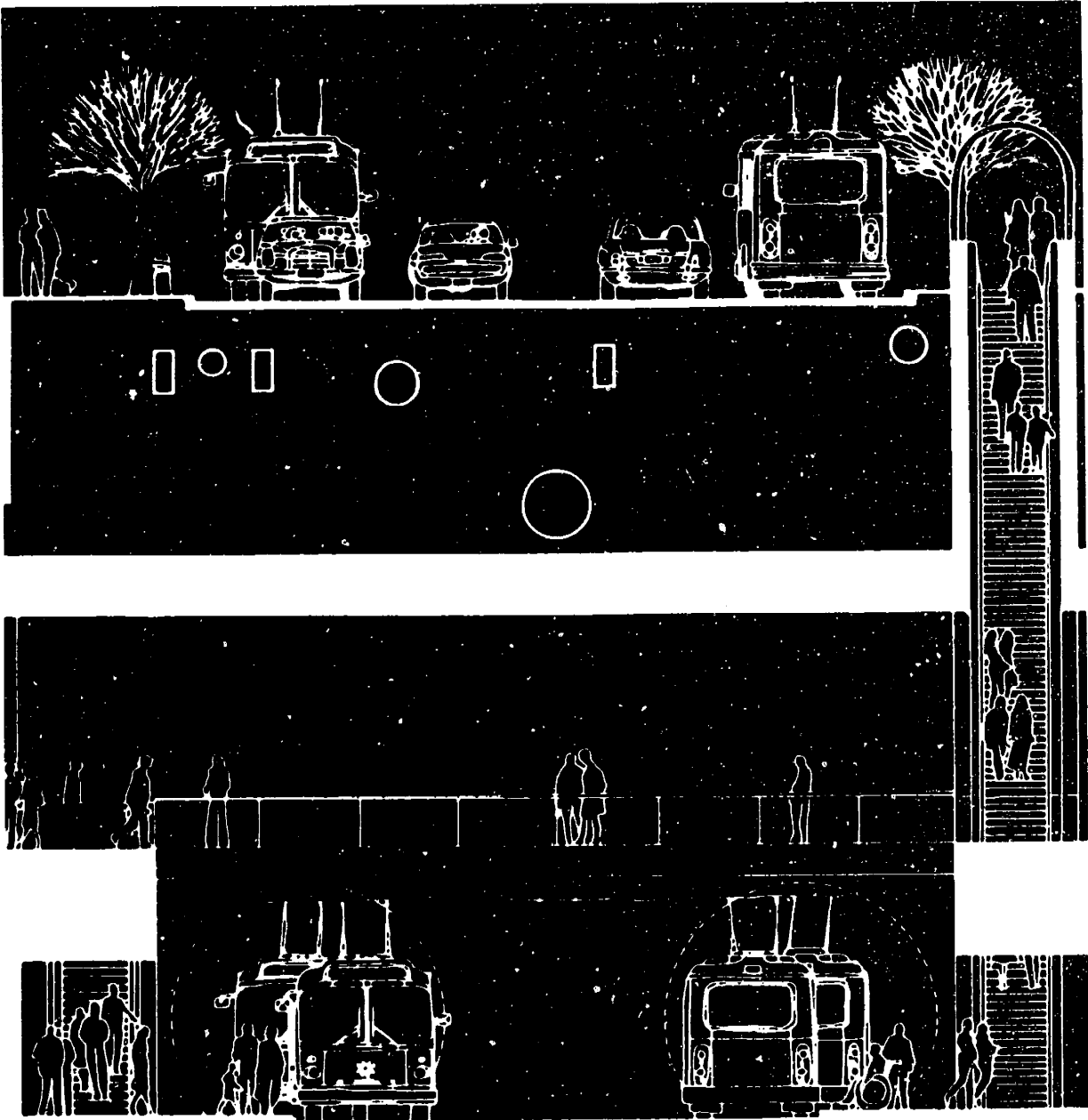
FROM THE ABOVE, IT IS CLEAR THAT rail has a symbolic meaning which extends far beyond its function as a provider of transportation. It derives that meaning from a rich context of historical associations, and from the experiences and memories of those for whom it seems desirable.

From our childhood, we learn that trains are friendly. Trains evoke nostalgia and romantic memories. They represent power and sex. The "thrill" and "elegance" of trains goes to the heart of our human quest for the colorful and the plea-

surable, rather than the utilitarian and the mundane.

Trains are no mere objects, but hold meaning. Like humans, they are to be mourned when they pass away: their death symbolizes the passage of a way of life, a connection with our history and our identity. Trains, like objects which become transformed by worship into pagan gods, come to acquire religious identities through their rich, positive, historical associations, and their promise to bring blessing in the future: they become subjects of worship. Associated with the "good life" of other, supposedly, successful cities, they are desired for their supposed ability to make Los Angeles successful, too. And, although this belief is as absurd as to expect "a material aeroplane to land on a symbolic airstrip" as in the New Guinea cargo cult, the collection of symbolic associations manifest in the idea of the train make that belief quite compelling, and quite real.

These associations have little or nothing to do with the transportation benefits rail service might provide in Los Angeles, yet they reinforce the images examined in Chapter 8 which are directly — if misleadingly — linked to transportation attributes. The apparent technological virtuosity of a train reinforces the image that it is fast. The sex appeal and romantic imagery make it seem more comfortable. The concept of pride in having a train goes along with the idea that the community won't vandalize trains and that they will be safe to ride. These associations all help draw attention to that part of the total trip spent on the train (rather than on access and distribution to and from the train), and perhaps provide clues as to why — in our culture — we metonymically reduce our total trip to that part spent on the line-haul.



Reverse shot of part of a graphic from the Final Environmental Impact Statement for the Downtown Seattle Transit Project (METRO, 1985, p. 2-10)

*They love the bus system.
But they dream about light rail.*

— Bob Neir, Former Chair, Seattle METRO Transit Committee

11 A Seattle Counter-Example

THE STORY OF SEATTLE'S DECISION to build a bus tunnel through downtown provides a valuable counter-example to the choices made in so many other West Coast cities to go for rail. What makes it interesting, however, is that the forces in operation in Seattle in fact appear to reflect similar origins to those extant elsewhere.

As Malm (1986) (relied on for most of the historical account below) points out, Seattle became the first large city in the United States to own its entire streetcar system on April 1, 1919. Seven years later, a report of the Rapid Transit Committee of the City Planning Commission described streetcar patronage as declining, while population was doubling. A rapid rail transit — rather than bus — system was proposed but no action was taken.

By April, 1938, the Seattle Municipal Street Railway was bankrupt and, as the 1940 Seattle Transit System Annual Report stated:

The year 1940 will long be remembered both by the citizens of Seattle and, more particularly, by the personnel of the transit system as a year of almost complete changeover from rail to rubber.

In the late 1950s rail was put forward as an element to be part of freeway con-

struction, but a committee appointed by Mayor of Seattle Gordon Clinton found that there was insufficient information available to justify further delay of freeway construction for the inclusion of rail transit facilities.

A November, 1965 report for the Puget Sound Government Conference called for both bus-on-freeway operations and high-speed rapid rail transit routes to connect north Seattle and Bellevue with downtown Seattle. By February, 1967, the city was successful in getting financing of preliminary studies, analysis and design of a rail rapid transit system (Kurtzweg, 1967, p. 37-41). The Puget Sound Regional Transit Study, however, issued a summary report in April, 1966 (Kurtzweg, p. 57), stating that expected ridership would not support a rail rapid transit system. In contradiction to the beliefs of the rail advocates, furthermore, this report did not consider that rail would significantly affect locational patterns of development.

An organization called the "Forward Thrust Committee" first met in July, 1966 and in November, 1967 called for a \$385 million rapid transit program. A campaign promising a better "way-of-life"

used 3000 volunteers to boost rail. Opposition came from King County Democrats, who opposed the "elitist" methods used by Forward Thrust, the Teamsters Union, and a group called "Citizens for Sensible Transit." The Forward Thrust's 12 propositions were voted on in Seattle and King County on February 12, 1968. Seven proposals were approved, but not the one for rapid transit: it received a 51% vote but required 60% to become law.

In 1979 a further proposition vote led to a further failure, with only 46% of voters in favor. The focus now shifted towards a bus program which would not require bonding (and so only require 50% voter approval), and which seemed more likely to get UMTA funding. A September, 1972 vote for such a system passed, with 58% in favor. The vote authorized an additional sales tax of up to 0.3%.

"Metro Transit" came into being on January 1, 1973. Action was taken to improve and integrate suburban and city routes, replace obsolete buses, and build park-and-ride lots, passenger shelters, flyer stops and exclusive bus lanes.

In October, 1976, UMTA Administrator Robert Petricelli said during a Seattle visit that funding would not be offered for rail planning, but would be available for an all-bus system. The METRO staff and city council called for moving for an "aggressive" all-bus alternative, given the lack of available funding, lack of evidence that rail would reduce operating costs, and a belief that an all-bus system would work.

Following a September, 1980 defeat, another vote on November 4 secured approval for an increase on METRO's portion of the sales tax from 0.3% to 0.6%. On March 5, 1981, the METRO Council approved:

a doubling of transit services by 1990, with corresponding increases in transit facilities and transit-related highway improvements.

To address service to the Seattle Central Business District, METRO established a specific project. A draft EIS was released on March 23, 1984, the final report following on June 14, 1985. The preferred alternative was for a bus tunnel with five stations. By 1995 METRO would purchase about 490 dual-power buses:

which would operate under diesel power when on freeways and surface streets and electric power in the tunnel. The dual-power buses would enable Metro to reduce bus noise and emissions downtown without substantial increases in transfers [METRO, 1985, p. 2-17].

The report was careful to state that: This is not an EIS on a rapid rail transit system for the Puget Sound and King County region. The proposal before UMTA, the City of Seattle and Metro is to improve the transit system in downtown Seattle for the near and mid term. . .

Several agencies. . . are studying a rail system for the long term [Foreword, p. 3]. . .

There are several reasons why Seattle is proceeding with a major bus rather than rail capital project. Perhaps most important is the project's convertibility to rail. As the FEIS said:

Effort has been put into developing Downtown Seattle Transit Project alternatives that could be converted to fixed guideway or light rail. This approach enables the Downtown Seattle Transit Project to address problems now and in the future [Foreword, p. 3].

As Wes Fryztacki, Executive Director of Puget Sound Council of Governments put it during an interview:

You could say that the downtown bus tunnel is actually a rail tunnel that's being used in the interim by buses. . .

Technically we need rail eventually. And that's been concluded and endorsed by our local elected officials. That's the common goal of everybody.

But in the meanwhile, federal money, which can currently be secured for a bus but not for a rail project, can therefore be

said to ultimately be an investment in rail.

But other reasons which enable a bus system to gain favor are as equally rooted in symbolic processes as those which make rail the obvious option elsewhere. To start with, buses in Seattle do not have the sort of negative connotations of buses elsewhere. Seattle-based UMTA Regional Administrator Aubry Davis pointed out the fears middle-class travelers have of buses:

And I'm the only white person on the bus sort of thing. When I ride the bus in Baltimore I notice: I'm the white person on the bus.

That's not true here. An awful lot of white people ride the bus. White people wearing good suits and with yuppie uniforms ride the bus. The buses are kept clean, the drivers' uniforms are not deliberately drab, drivers get to select their uniforms and they're sort of kinda sporting clothes people wear. Jackets and sweaters, don't have to wear ties, more casual, more relaxed, more comfortable to be with, less formal.

There was "no question", that the positive associations of buses in Seattle had helped make the bus tunnel project a possibility in Seattle, said Aubry. As Dan Graczyk of METRO staff added:

We get a lot of commendations from people from out-of-state: "Your drivers are so friendly, your drivers are so clean. . ."

In Portland, there's not a real high satisfaction with buses. The payroll tax is their source of revenue, which the people see all the time and they hate. And their bus system, they've had a lot of problems, their system isn't in as high a regard as ours has been. . .

Seattle's been regarded as a top-notch transit system. We were one of the first ones to win the highest-achievement award when it came out from APTA, and we're very highly regarded throughout the transit industry as a good bus system.

As Bill Stafford of the City of Seattle attested, Seattle itself:
has a good image. I think one of the is-

ssues here is that Seattle feels good about itself. We're not paranoid like a lot of cities. We don't need big symbols of progressiveness.

But Seattle does in any case already have its share of technological sex symbols: a monorail and a waterfront streetcar:

Yes, It's a fun thing. Tourists ride it, and they think of Seattle with the waterfront streetcar. It's a neat thing. It's like the monorail. Whenever you think of Seattle, you think of the monorail.

[Like a St. Louis Arch?]

Sure.

Even so, the bus system is being designed so as to have a sex appeal lacking elsewhere. As Graczyk said the new bus:

will be designed by the same guy that designs Ferraris. . . I mean, it will be a pretty slick-looking bus. . . As a matter of fact we even have the option of putting his signature on the buses. It'll be a very class operation, just like riding in a Ferrari.

Seattle's buses will not only be every bit as sexy as neighboring Portland's trains, but they will have a positive environmental image, too. Bill Stafford explained that the image of cleanliness associated with electrified buses helped make the bus tunnel a serious possibility:

If you're going to have a bus tunnel, there's no way it was going to be a diesel bus tunnel. We have a major commitment to electrification, we have 52 miles of wire, and so we already have quite a trolley [bus] system, which we've been expanding. And people like it here because it's environmentally clean.

And one of the issues was having smelly buses going through a tunnel. And all of a sudden the Director of METRO said "HaHa," in Europe they have dual-mode buses and we could run them as buses, and then hang up the wire 2 seconds into the tunnel, and we've got a clean, efficient tunnel, ultimately convertible to rail, and this will allow us to make that decision.

Finally, the commitment to buses shown by the funding supplied by successful passage of sales tax initiatives has left

Seattle with a bus-oriented management in its transit system, if not in its regional Council of Governments. And the then Chair of METRO's Transit Committee, Bob Neir, is down-to-earth Vice-President of Marketing for Boeing, derisive of:

a lot of people who still remember choo-choo whistles. . .

Look, I've been in transportation all my life. I started off as a naval architect; I've been in every damn thing, tanks and automotive vehicles, I've been 33 years with Boeing in airplanes; I'm the market director of market development for Boeing Commercial aircraft. I've been in the bus business, I've played with railroad trains. To me it's just ways of getting around. I have no love affair with all these things. so I have a very cold approach. I just say they're tools to do something.

While rail advocates have had experience of trains in other cities, Neir has had the experience of being a business

manager:

And don't give me an argument about you've only got one driver. Who gives a damn? I market 747s. They're not selling so good. You know why? They're too big. So what, so they've got three men in the cockpit? Who cares? The airlines want frequency, so they're buying two smaller airplanes.

Los Angeles followed its losing rail propositions with one which — through the ingenuity of Kenneth Hahn — succeeded. Seattle also failed to get rail measures passed and — lacking a Kenneth Hahn — passed one for buses and demonstrated through attractive bus service that buses could be a viable option. In Seattle as in Los Angeles, however, rail is nonetheless a “sexy way to get to work, you know” (Graczyk) and, as Bob Neir said, “They love the bus system. But they dream about light rail.”



One of the Watts Towers

From a conversation with C. West Churchman

RICHMOND: *What should be our priorities in transportation policy and why?*

CHURCHMAN: *I'm not interested in priorities within transportation.*

RICHMOND: *Why?*

CHURCHMAN: *Because. . . the majority of people in this world are still using sticks for energy.*

RICHMOND: *So we should not attend to localized problems?*

CHURCHMAN: *No, I just say if you ask me where the priorities should be. The Catholic bishops put out a pastoral letter and they asked that question: "for the world what's the top priority," and they said "poverty." Much more so even than the nuclear threat.*

RICHMOND: *We've moved from transportation to poverty.*

CHURCHMAN: *Do you want me to shut the door and go into the transportation room?*

12 Light Rail and the Symbolic Promise of Community Renewal in Watts and Compton

INTRODUCTION

THE RED CARS GAVE WATTS ITS name. Now the Long Beach light rail project — which crosses the depressed City of Compton in addition to passing through Watts (a part of the City of Los Angeles) — is

seen by many as a way to brighten prospects for a sector of the metropolis where poverty and deprivation continue to rule.

As we shall, however, see, the relief the new Blue Line is expected to bring is conceived in symbolic terms, which project a far rosier outcome than the benefits economic principles dictate the light rail

Listening to Ajit, I began to realize that underlying our apparent disagreement over the metro-rail were different visions of Calcutta's future. There was an irony in our different visions: Ajit, who lives in Calcutta, seemed less concerned about poverty than about modernization; yet I, who was now living in one of the most affluent countries of the world, believed that Calcutta's poverty was of such magnitude that efforts to change the city into a vast technological landscape were futile at best. To put it another way, Ajit, who daily confronts Calcutta's poverty, seemed less pragmatic about it and, instead, longed for a "modern" Calcutta. The construction of the metro-rail seemed to him a step in the right direction. I, who have virtually no direct contact with poverty of such dimensions, as in Calcutta, was being more pragmatic in thinking that Calcutta will essentially remain a city of the poor, around whose needs the city should be primarily organized. That would mean more jobs, shelter, transport and health care for the poor; not the kind of development usually associated with an image of modernization.

— Bish Sanyal (1987)

system will actually likely bring.

To study the attraction of the Blue Line to Watts, it is necessary to range beyond transportation issues to understand the larger problems the community must face and appreciate why light rail might be seen as a cure for them. It is only then that light rail's symbolic status as a beacon of hope emerges; only then is its appeal to politicians seen as what it is: an action which is both feasible and which looks good; an action taken at a time when neither easy solutions nor political commitment exists for overcoming the complex social problems at play.

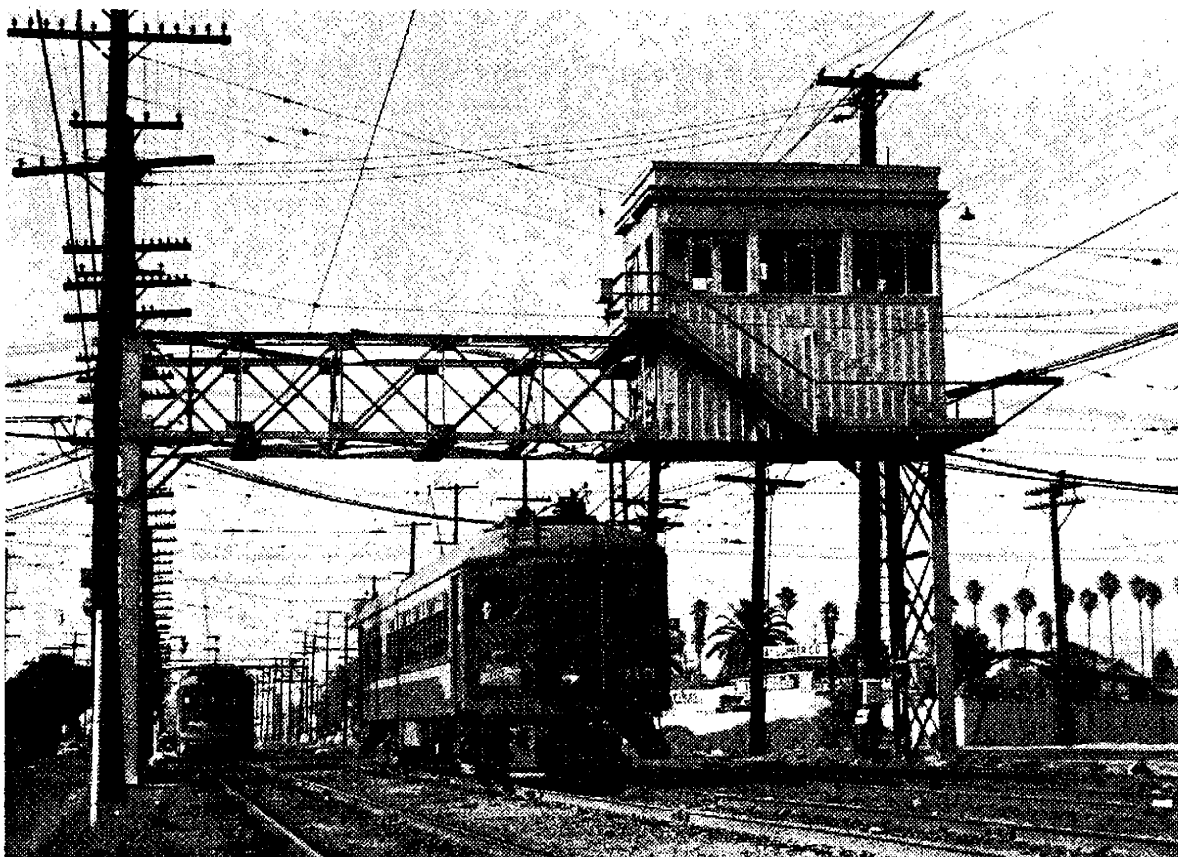
The following will first establish the historical context of problems in Watts, then illustrate perceptions of the light rail project and discuss their place in the larger framework of political assumptions. In that light, the issue of social improvement translates into one of representation and empowerment: light rail is symbolically attractive within the assumptions of exist-

ing political frameworks. Other forms of political power distribution might, however, enable more effective answers to the problems of Watts to emerge.

HISTORY

IN 1883 THE COMPLETION OF THE SANTA Fe and Southern Pacific Railroads launched a wave of land speculation in Los Angeles. One of the communities to arrive along with the railroad was Tajuata, founded on the right-of-way of the old Los Angeles and San Pedro Railroad.

As McCone (1965) recounts, two of Henry Huntington's Red Car lines — from downtown Los Angeles to Long Beach, and from Santa Monica to Venice — intersected close to Tajuata on land owned by the Watts family. The station at the intersection was named Watts, and soon afterwards Watts displaced Tajuata as the name of the community at that lo-



In this scene from the 1950s an interurban express heads for Bellflower on the right, while a Watts "local" follows on the left.

cation, too.

The railroad brought the first Blacks to Watts. Employees of the railroad, they lived in company houses until they had earned money to buy homes (Adler, 1966).

New Black arrivals during World War II were attracted to Watts, says McCone, partly because:

Deed restrictions and other forms of discriminatory practices made it extremely difficult, often impossible, for Negroes to purchase or rent homes in many sections of the city and county [p. 76].

As Blacks moved in, whites moved out:

Thus over the course of a quarter century did the large majority of the Negro population in Los Angeles, or elsewhere, come to reside in segregated areas [p. 76-77].

With Watts a major rail junction, the

Red Cars were a part of everyday life, and have left a rich heritage of memories. Diane Watson, who represents Watts in the California Senate, for example, recalls that: "I used to use that [the Red Cars] and it was just a tremendous way:"

Yeah, there are experiences, you see, as children. And I used to have a dress-maker that lived out in Watts. And she was very cheap, and I was very tall, so I used to have my clothes made, even when I was in school. . .

I'll never forget them taking up the tracks to make way for more cars down Jefferson.

Grace Payne, Director of the Westminster Neighborhood Association, a major community service organization in Watts also remembered the Red Cars as a positive element of Watts life:

I personally have had experience on the Red Car, and remember the joy of riding on the Red Car, so I think that would be

a great experience for the younger generation, and very convenient for the older people.

The Watts Riots and After

When McCone wrote his inquiry into the Watts riots in 1965, 88.6 percent of the Black Los Angeles population lived in areas considered segregated, concentrated especially in the 46.5 square miles of Los Angeles placed under curfew when the riots erupted in August of that year.

The six days of riots left thirty-four people dead, 1,032 wounded and \$40 million of property damage, according to McCone. There were 3,952 arrests:

The lawlessness in this one segment of the metropolitan area had terrified the entire county and its 6,000,000 citizens [p. 2].

In the ugliest interval, which lasted from Thursday through Saturday, perhaps as many as 10,000 Negroes took to the streets in marauding bands. They looted stores, set fires, beat up white passerby whom they hauled from stopped cars, many of which were turned upside down and burned, exchanged shots with law enforcement officers, and stoned and shot at firemen. The rioters seemed to have been caught up in an insensate rage of destruction [p. 1].

The report identified core problems "sowing the wind" as a shortage of jobs, inadequate education and resentment, "even hatred" of the police. In circumstances where law and order has only "tenuous hold, the conditions of life itself are often marginal; idleness leads to despair and finally, mass violence supplies a momentary relief from the malaise."

Early in the report, McCone says: Moreover, the fundamental problems which are the same here as in the cities which were racked by the [other] 1964 riots, are intensified by what may be the least adequate network of public transportation in any major city in America [p. 4].

The report called for improvements in law enforcement and police-community

relations; in job programs, including efforts to end discrimination in employment; a reorganization and strengthening of programs for schools; control of business practices which put consumers at a disadvantage; improvements in health, welfare, and housing; and improvements in transportation:

If the Los Angeles area as a whole and the Watts area in particular are to have better bus transportation service, it can only be provided through a public subsidy to accomplish three purposes: reduce fares, purchase or condemn the multiple uncoordinated bus system, and provide system-wide transfers [p. 67].

Additionally, McCone called for: immediate establishment of an adequate east-west cross town service as well as increasing the north-south service to permit efficient transportation to and from the area [p. 68].

McCone's report received heavy criticism. As Fogelson, (1969) for example, put it:

The Negroes rioted because they could not passively accept conditions in the ghetto any longer and not because they were unprepared for urban life or because their leaders were contemptuous of law and order. . . . The Watts vicinity is, by any physical or psychological criteria, a slum, in which Los Angeles' Negroes are rigorously and involuntarily segregated [p. 115].

McCone, Fogelson said, had erroneously led Los Angeles residents to the "conclusion that the rioting was meaningless or drawn the implication that the Negroes somehow lack the qualifications for responsible citizenship" (p. 143). To Blauner (1969), "The spirit of the Watts rioters appears similar to that of anti-colonial crowds demonstrating against foreign masters." And, Blauner adds, "There was no attempt [by McCone] to view the outbreak from the point of view of the Negro poor" (p. 169).

Rustin (1969) has a tale which nicely sums up the intensely political and revolutionary nature of the riots which McCone could not understand:

At a street-corner meeting in Watts when the riots were over, an unemployed youth of about twenty said to me, "We won." I asked him: "How have you won? Homes have been destroyed, Negroes are lying dead in the streets, the stores from which you buy food and clothes are destroyed and people are bringing you relief." His reply was significant: "We won because we made the whole world pay attention to us. The police chief never came here before the mayor always stayed uptown. We made them come" [p. 150].

On McCone's specific proposals for transportation, Fogelson (1969) commented that:

It is undeniable that mass transit is woefully inadequate in southcentral Los Angeles as well as in greater Los Angeles. But, according to a 1965 census, fully sixty-five percent of the families in the Negro ghetto, and not, as reported by the McCone Commission, only fourteen percent, own one or more cars. . . The southcentral ghetto is indeed isolated, but not for reasons as simple and reassuring as dreadful bus service [p. 131-132].

McCone Revisited (Los Angeles County and City Human Relations Commissions, 1985), a report to investigate the impacts of McCone two decades later found, however, "that the greatest progress since 1965 has been made in transportation" (p. 11). RTD had received both state and federal funding, while — at the time of writing — Proposition A was helping to keep local bus fares at a low 50¢ (the low fares were to end after three years, however, as Proposition A money used to subsidize them was to be used for the rail program after this period). Bus-to-bus transfer privileges, recommended by McCone, were in effect, while "SCRTD has acquired most of the smaller bus companies, which has standardized and simplified service and improved efficiency." A reorganization of RTD operations into a grid service had, meanwhile, "led to an immediate upsurge in ridership."

In contrast to the transportation improvements:

Many of the problems cited at the hearing were identical to those noted by the McCone Commission, and the overall conclusion of those testifying was that conditions are as bad, or worse, in South Central Los Angeles today as they were 19 years ago. As one speaker testified: "A basic problem in South Central Los Angeles in 1984, as it was in 1985, is poverty: grinding, unending, and debilitating for all whom it touches" [p. 2].

The details were depressing. Police-community conflicts persisted, while "severe unemployment in 1984 continues unabated." Infant mortality in South Central Los Angeles remained over double the rate for White infants in Los Angeles:

One-third of the residents live in old, crime-ridden public housing projects. Of the 600 low cost housing units authorized, only 300 have been built during the 19 years since the riots, and no single family housing has been built in the area [p. 8].

Educational funding, meanwhile, was "inadequate compared to the need." Not only were there "several hundred classrooms in South Central Los Angeles. . . staffed by substitutes," but also a "chronic shortage of Math and Science teachers" (p. 9).

Problems of Welfare and Social Services also remained "critical:"

Representatives of civil rights and community organizations testified that South Central Los Angeles is a low government priority: they felt there was, and is, a lack of commitment in government leadership and more generally a failure to initiate planning, strategy or solutions to problems and issues cited in the McCone Commission report [p. 2].

Commented Larry Aubry, staff to the Los Angeles County Human Relations Commission:

I don't think it's changed, because I don't think there's a public will to change. . . You have people there who are essentially disenfranchised. Now, why they are is a whole other area for discussion, but they are — they're as disenfranchised in the greater South

Central Los Angeles area now as they were in 1965. . .

I think that racism still obtains. Goodies — in other words rewards and punishment, incentives if you will, and disincentives, are meted out on the basis of color in this country still. The closer you are to White on this continuum, the better off you are. I'm sorry: that's the way it works. The closer you are to Black on the continuum, the worse off you are.

Felicia Bragg is a professional who grew up in Watts, and is now on the board of the community service Westminster Neighborhood Association. Only a small part of our meeting revolved around transportation questions, as Bragg pointed to the more pressing problems of the community, and how distant the majority White power structure was from understanding them. She told of being one of the brightest at Watts' Jordan High School, and of the culture shock she faced upon entering the University of California at Santa Barbara:

It was the first time I had really run into racism in its overt form, first time anybody called me nigger, first time I understood the absolute difference between poverty and non-poverty and what it could do for you, and it took a while to regain my confidence in my innate abilities, my own talents. It was also the first time a White teacher told me that I simply could not have produced a paper of that caliber because I was from Watts. You have those problems. But on that score I should tell you the same thing happened to me at USC a few years ago. I was in the MBA program, and it was a similar situation where they absolutely refused to believe that I produced something and had to call in the Dean to testify to my scores to kind of legitimize the whole thing.

And here I am, years later, I'm in business for myself, and I have to tell you frankly that we don't even hope to get White clients any more. I mean I did at first, but it just doesn't work. It isn't happening. When you think about racism, people think about the 60s and Martin Luther King and the days of the Civil Rights movement, but it's still very very much alive in some very insidious

kinds of ways. And it isn't anything you can just put your hands on and say if we could only solve this then it would all be solved. It isn't all solved.

Some of the perceptions of the Watts community of which Aubry and Bragg complained emerged during certain interviews conducted for this project. Walter King, Alternate Commissioner to Kenneth Hahn, for example, referred to transit riders as a "bunch of animals. . . We don't have discipline any more. You tell the guy to sit down and he won't do it." King's conception of the Blue Line was more as a defense mechanism against the people of Watts than a service for them: "Because we're building in millions of dollars worth of things, it's going to make it safe." On the problems of Watts, he added: "But they're not poor people in Watts. They've got as much money, more than we do, and they've got better cars than I have." Norwalk Councilman and LACTC Alternate Commissioner Bob White, when asked about the effect of a fare increase on the poor, replied:

I get a kick out of that. My real opinion on that is that they'll have enough money always to ride the bus to get some place that they want to go because those same people sometimes are playing bingo every night, they're going to the race-track, they're doing everything they want. That's a cop-out. I think they really overdo that.

Gerald Leonard, former aide to Baxter Ward, meanwhile drew a contrast between two mandates:

One is to carry the people we *need to carry*; the transit dependents, and the other is to carry the people we'd like to carry, the commuters.

Long Beach Councilman Wallace Edgerton gave this reason as to why the car would remain important in South Central Los Angeles:

You take a young Black male, and he's got to have a car. The car's probably got to be yellow and big with light walls, horrendous ornament out there on the hood.

While these comments cannot be said

to represent the interview sample as a whole, they provide evidence of the distance of the White political establishment from understanding the problems of Watts.

PERCEIVED BENEFITS OF RETURNING THE TROLLEY TO WATTS

CLAIMS HAVE BEEN MADE THAT the Blue Line will bring benefits to Watts and Compton beyond mere transportation links. Light rail was seen as a way of providing access to employment and other improvements, as a spur to economic development and civic improvement and to integrating the

communities through which the service passes into greater Los Angeles as a whole. It is important to examine the sources as well as the merits of such claims.

Transportation and Employment

On April 1, 1966, four months after the McCone Commission report was issued, the California State Transportation Agency applied to the US Department of Housing and Urban Development for a research and demonstration grant to study the relationship between a public transportation system, and job and other opportunities of low-income groups (State of California Business and Transportation Agency, 1971, p. v) and in particular to



The Blue Line station at 103rd St. in Watts

test what the McCone Commission:

Appeared to suggest. . . that the disadvantaged poor can be placed in jobs if a way is found to get them there, and that lack of adequate public transportation might be an important cause of unemployment [p. vi].

The report stated that the transportation-employment demonstration project — which monitored the effects of improved public transportation — was:

significant because it did not demonstrate that providing transportation for the jobless cures unemployment; but it did underline something that is at times forgotten — that adequate transportation is a necessary but not sufficient condition for people to have access to job opportunities. If jobs are not available, for whatever reason, no amount of transport will create them. Between the lines, one may also discern that discrimination, as well as lack of job skills, remain key barriers to job opportunity [p. v].

The report additionally said that employers seeking low-skilled labor tended to prefer people living close to their plants and with their own cars to commute in. Furthermore:

Many of the jobs that have been made available through the special job programs are low paying and at great distances from the project area. People willing to accept such employment cannot usually afford the high costs of travel by either bus or private automobile and do not generally stay on the jobs very long. Poor people who are placed in minimum wage jobs fifteen to twenty-five miles from their homes do not regard those jobs as permanent solutions to their employment problems.

Despite these findings, the McCone Commission's definition of isolation in terms of public transportation remained in good currency. In 1973, for example, a report examining the case for rapid transit for the RTD (SCRTD, 1973), declared that:

Aside from having an easier, safer, quicker, and less costly trip to work, many members of the labor force will find better jobs, because rapid transit

will make employment centers more accessible. More important, however, is the fact that rapid transit will enable some unemployed people to find jobs. Today, many of the unemployed do not have an auto. Although bus service is usually available, the service provided by the bus makes job hunting difficult. Rapid transit will take these people to major employment centers where they can find jobs [p. 35].

The October 16, 1983 *Los Angeles Times* recalled, furthermore, that:

As far back as 1965, the McCone Commission investigating the Watts riots blamed bad public transit for isolating the area.

Since then, bus transit has been improved, but county transportation commission officials said the light rail system will help even more.

“We think it provides a real improvement to mobility in the inner areas because it provides top-quality service downtown (where thousands work in the garment district and in other jobs) and to Long Beach and to the other industrial and commercial development in the port area,” said Rick Richmond. . . “a lot of the [bus] service in the area is east-west service,” which does not take riders to jobs in Long Beach or downtown Los Angeles.

“The line is trying to significantly increase the transportation service for the people in South Central,” said Dan Caufield, project manager for the commission. . . “Today the buses that serve South-Central are not very frequent. Perhaps those buses are not any more inconvenient than buses anywhere else, but the fact is that in South-Central, people are more dependent on public transit, so public transit is more important to get to jobs.”

There were several references to providing access to employment in interviews for this study. “It will give them an opportunity, perhaps, to hold jobs in Long Beach, and grab the light rail down here, and work at the Hyatt Regency, and be back home again,” said Long Beach Mayor Ernie Kell. “More and more of the Black and Hispanic population will find employment affordable if they have afford-

able transportation," said citizen member of the LACTC Rail Construction Committee Allan Jonas. LACTC staff member Richard Stanger claimed that the light rail would open up "a very direct service" to "job opportunities that really are difficult now to get to."

Census data, however, contradict assertions that the light rail service could provide connections to important centers of employment opportunity. As data prepared for a *Los Angeles Times* (October 20, 1985) article show:

Less than 10% of the workers living in the so-called "mid-corridor" between the two downtowns work in downtown Los Angeles, though many of those who do take public transit. By far, most residents in the mid-corridor either work within the area or travel to widely dispersed locations such as the Westside, South Bay and San Gabriel Valley [See Fig. 12-1].

Most mid-corridor bus ridership, the *Times* reported, was for local trips, and that was why then RTD General Manager, John Dyer, had explained RTD did not offer express bus service from there to downtown Los Angeles. At the same time, the *Times* article quoted (without full citation) a 1982 Parsons Brinckerhoff study for the LACTC, which stated that:

In the case of local trips, convenience in gaining access to service plays a more important role than the travel time or quality of service.

The light rail service is unattractive for short trips because of the need for making transfers to and from buses. Direct service on a large network of bus lines does much better at providing for such journeys. The statement by Caufield that buses were not very frequent sidesteps the question of why they could not be made more frequent, as against installing a capital-intensive rail project. The tenor of the interview statements in the 1983 *Los Angeles Times* article, however, re-kindles the McCone concept criticized by Fogelson that community isolation is somehow a function of poor public transportation

links.

Those working in development programs who were interviewed for this study, were, however, unconvinced that the rail service would open job opportunities. While Richard Benbow of the Los Angeles Community Redevelopment Agency did acknowledge that transportation was a "very key factor" in making jobs accessible, he said that transportation improvements by themselves were:

not going to do anything. It has to be a comprehensive approach. . . Now I know where the jobs are and I can get there, but I still don't have the education and the qualifications to get the job, so what's the point of going out there?

Others also drew attention to the deeper problems of the community, which transportation alone could not cure. These problems were receiving inadequate attention as transportation improvements went ahead, they said. Larry Aubry saw that people were out of work:

basically because they're ill-equipped. They're unskilled. They're unemployed. . . They're not motivated, but they aren't motivated simply because they're not prepared, and that gets back to the education thing again. . . You are talking about [people] here who, for the most part, are probably reading at the 6th grade level, albeit many of them have graduated from high school. That's a problem. . .

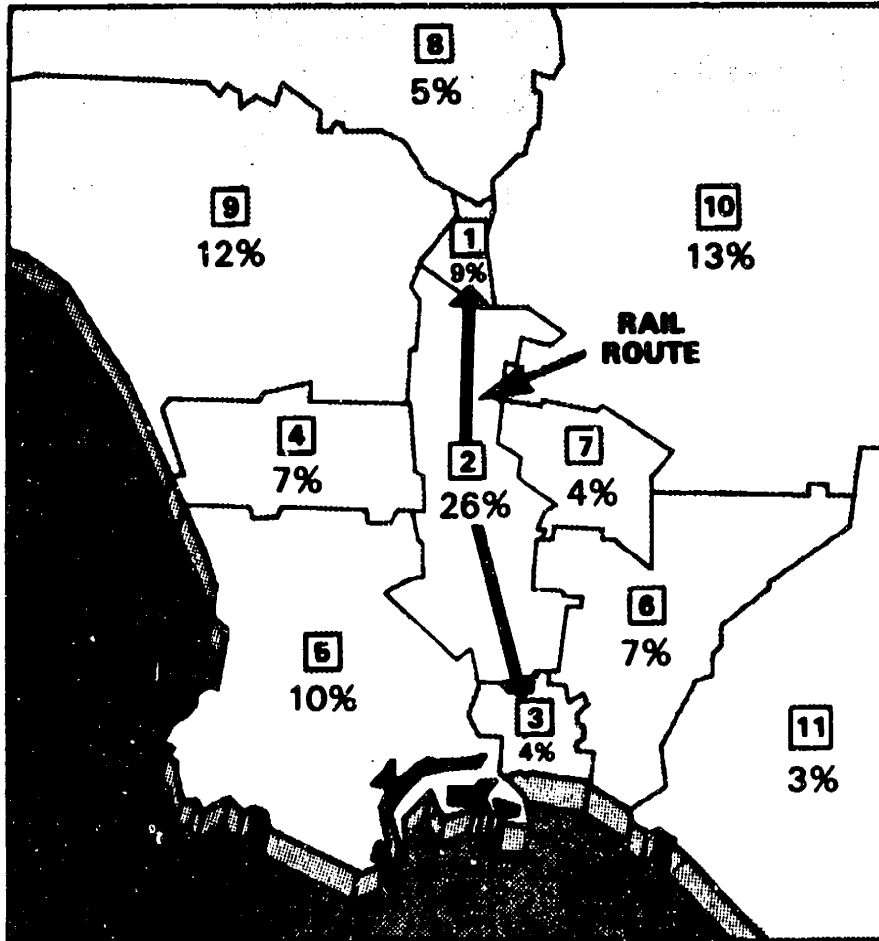
There's little doubt but that most of those students out there are essentially dead by the time they're in third grade. It's over. Because they have very little expectations. You have this almost classic lack of expectations that goes on. That becomes a self-fulfilling prophesy. They don't feel that they can accomplish anything. Most of them have a low self-concept. They have very little experience for success. That's hardly — not only on their minds, it's not an agenda item.

And you've really got to be careful, because this has very little to do with intelligence. It has to do with degradation.

As Marilyn Lurie of the Community Development Department of the City of Los Angeles underlined, difficulties in

WHERE PEOPLE COMMUTE

Census data prepared for The Times by the Southern California Assn. of Governments shows where residents along the rail route travel to work. Highlighted are commuter patterns for those living along the middle of the route (Zone 2), where most boardings are expected. The percentages are Zone 2 workers employed in that area. Relatively few commuters travel between downtown Los Angeles and Long Beach. Critics say that the rail line will serve only a small percentage of commuters. Proponents say that those who do commute to downtown Los Angeles can make greater use of public transit.



- | | |
|-----------------------------|---|
| 1. Downtown Los Angeles | 7. East L.A. |
| 2. Mid-Corridor Area | 8. San Fernando Valley |
| 3. Downtown Long Beach | 9. Westside and Ventura County |
| 4. Century Freeway Corridor | 10. San Gabriel and North L.A. |
| 5. Southwest L.A. County | 11. Orange, Riverside and San Bernardino Counties |
| 6. Southeast L.A. County | |

Source: Census and Southern California Association of Governments

PATRICIA MITCHELL / Los Angeles Times

(reprinted with permission)

Figure 12-1

getting people to jobs were far more complex than laying on transportation:

They have a real hard problem with youth. Something like 40 percent of the job training funds in the city were supposed to go for youth training. The agency has a real hard time finding youth. One theory is the competing underground labor market. You know: drugs. . . Motivation is one [reason]. Seeing your way beyond the cycle. People who are on welfare, you've got the problem that unless the job at the end of the job training is going to be something more than a welfare payment, what incentive is there?

New rail service alone would not improve things.

Those professionals directly connected with community development therefore, did not see rail as a panacea. Those who did believe rail could open up job opportunities were involved in transportation issues, and unconnected with the deeper needs of the community.

Bringing Development to Watts

The physical presence of the light rail was in several cases seen as sufficient of itself to attract benefits. The mere fact that the light rail line "goes through" Watts and Compton was seen as conducive to positive change. The circulation metaphor was in operation here: just as the blood flowing through arteries brings nutrients wherever it flows, the rail line was seen to bring revitalization to communities through which it passes. "It does *go through* an area which has a potential for future development," said then Los Angeles Councilwoman Pat Russell. LACTC Commissioner Marcia Mednick agreed that "it *goes through* areas that are definitely transit-dependent; it may open up possibilities for different types of development in terms of growth in developing those areas." Then LACTC Chair, Jackie Bacharach also stressed that it is "*going through* one of the most depressed areas in Los Angeles, a transit-dependent community." Debbie George of Supervisor Dana's

office, meanwhile, was convinced that "it will just stimulate growth there, economic growth, by having a major light rail system *go through* there at grade, go through their city." "At grade" means that the rail system would be visible from the city, and vice-versa. The implication is that people on board might look out of the window as they are going through the city, spot opportunities, and get out to take advantage of them.

Los Angeles Councilwoman Joan Flores said that:

part of the incentive to put the Watts shopping center in was the fact that there would be light rail. Once that starts happening and *people congregate around there*, that's where the development will be.

Light rail in Flores' eyes, then, is not only a focusing device; it also provides elements of community, around which people will "congregate." And, according to Grace Payne of the Westminster Neighborhood Association:

If it's convenient for people to travel to an area, they would certainly do more shopping in that area, or seek more services for that area, so I'm sure that there would be a lot of improvements in the area of new economic growth.

Compton Councilman Floyd James "has argued that the trolley would allow commuters from throughout the region to see that Compton is rebuilding itself" (*Los Angeles Times*, Apr. 25, 1985), while City Manager Laverta Montgomery backed the trolley system "as a way to "showcase" a rebuilding Compton" (*Los Angeles Times*, March 28, 1985).

Mayor Tucker of Compton was among those who believed the city would derive such benefits: "we know that it would enhance our shopping centers for people to be able to come to Compton. We have a junior college, we have certain things." But Compton Councilman Maxcy Filer was skeptical:

The City's saying, the City of Compton, that in essence we want it to travel at

grade so that people will stop and shop in our shopping center. If I'm on my way to work in Los Angeles from Long Beach, I'm not going to stop in Compton just to shop. If I'm on my way home from Los Angeles to Long Beach from work, why should I stop in Compton and shop, as much as I love Compton, when the rapid transit as they call it — a light rail it really is — will actually stop in downtown Long Beach, right in the heart of the shopping center. So why would they shop in Compton? I don't see it. It doesn't logically follow.

LACTC staff were divided in their opinions over the likely development benefits of light rail. Although Long Beach light rail Project Manager, Dan Caufield, described the light rail as an "urban redevelopment project," Rick Richmond, Paul Taylor and Richard Stanger were skeptical. According to Taylor:

The development effect absent public intervention will probably be nil, apart from the ends. In the middle, where there isn't a market for development other than publicly catalyzed development, you're not going to find it. What it does is it provides an ingredient that makes it a little easier to catalyze development through public intervention. . . . You don't do it for development purposes.

Said Richard Benbow of the Community Redevelopment Agency:

I'm not at all optimistic about it [development]. I think if there were people, investors, developers who are looking to take advantage of this opportunity, we would know about them now, but I don't see them. They're not lining up outside my door, so I can't be sure that they're out there at all.

A report prepared for the LACTC's environmental work by Sedway Cooke Associates (1984) declared that:

In the Mid-Corridor, a small amount of retail development might be stimulated at each of the stations. In addition, the project could provide the support needed to expand the 103rd Street and Imperial Highway stations and to generate new development in the Florence Avenue Business District and in downtown Compton [p. III-19 - III-20].

But, an evaluation of development potential for LACTC (Keyser Marston et al., 1973), said, "market support for new industrial uses" in the northern part of the midcorridor which contains several older industrial areas "is very weak: lease rates are generally too low to support new space, and obsolescent buildings and vacant lots attest to the low level of reinvestment in the area" (p. 31).

In addition, "new retail development in neighborhood centers of community centers generally has limited market support in the midcorridor" because of static or declining population; low income levels; a considerable inventory of already-available low lease rate retail space; and sales competition from nearby areas (p. 31-32).

The limitations listed above. . . are expected to severely restrict the future development of market-induced retail space in the midcorridor for the next several years [p. 33].

The image of the train "going through" the community and bringing economic growth with it nonetheless acts to apparently counteract the likely reality for those under its influence. As in the New Guinea cargo cult, where airstrips or docks are built without any reason to believe that cargo would arrive, the benefits to which light rail symbolically gives rise lead to a desire to have light rail in place, despite the lack of evidence that such benefits would likely actually materialize.

LARGER UNDERSTANDINGS OF CONNECTION

THE TRAIN IS SYMBOLICALLY important in spirituals, representing as it does the way to life, death and redemption: a perfect example of the representation of the abstract in terms of the physical, and clearly tied to the train's role not only in nation-building, but in taking people apart from each other, and bringing them to start out

new lives. In "The Gospel Train is Coming:"

*The fare is cheap and all can go,
The rich and poor are there,
No second-class on board the train,
No difference in the fare.*

In "The Railway to Heaven:"

*One grand first class is used for all,
For Jew and Gentile, great and small;
There's room for all the world inside,
And kings with beggars there do ride.*

The train, these spirituals say, is for one and all: on the train the whole community will be tied together as one; wealth and status will hold no more sway on board than poverty. The words of the spiritual ring true in the comments of Watts community activist and longtime resident "Sweet" Alice Harris. "We need transportation," she said:

It's not only transportation. It's education. That's one way our children, even the small ones that have never been out of Watts, can get on the train and go from here to Long Beach. There's many educational sights that you can see between Watts and Long Beach, if it's no more that the people are the same as we are. Communities are the same as our communities. You have high class, low class.

The belief in the powers of trains as forces for social integration was, furthermore, promoted in a May 1, 1983 *Los Angeles Herald-Examiner* commentary article by David Israel:

A subway helps to develop a sense of community in a city. It establishes a common thread through diverse neighborhoods. It forces you to understand where and how different people live, it gives you a shared experience. . .

In the subway you aren't containerized separately, you're containerized together; you have to look the other fellow in the eye, and eventually you will probably wink or nod or maybe even engage in conversation.

This view of the socially unifying pow-

ers of transit has a long history, as discussed by Holt (1972). Holt cites an 1841 magazine article on the "levelling and democratic Omnibus" in which:

The statesman and politician. . . the greasy citizen who votes against him; and the zealots of different sectaries, dismounted of their several doxies, are compelled to ride, cheek-by-jowl, with one another.

While putting people in physical proximity may have metaphorically suggested social integration, however, Holt reports that:

The differences between city populations revealed themselves in cheap public conveyances, and class, ethnic, and racial differences became open controversies and the subject of legislation regulating public carriers. Examples abound: Gentlemen righteously refused to give up their seats to working-class women; men with muddy boots or those with hand tools were forced to ride on the platforms; the "better sort" of Philadelphia and St. Louis decreed that the workers could not have their horsecars to the suburbs on Sunday because their noisy operation interrupted the hymns and prayers of the faithful in churches along the lines; Black men had to conduct the equivalent of a modern sit-in in the 1870s before they were allowed to ride in Louisville, and in the City of Brotherly Love they had to go to court to obtain the same right. The hope that public conveyances would somehow advance equality and democracy faded as the century aged.

An understanding of connecting people to more than just places came through strongly in several interviews. Peter Ireland of Supervisor Deane Dana's office talked in terms of a metaphor of "connection" to opportunities: the physical transportation link symbolizes abstract connections to employment and the good things of life, even if there is no evidence such "connection" can actually be provided without change at a much deeper level:

If you have an area of the city, that is, where [we] feel that we're trying to improve their lot in life and to do that they need to have access to jobs, have access

to the *mainstream*, the other components of the city, then by a transportation system connecting them to the other parts of the city, indeed by virtue of having that access it certainly would lead to the conclusion that there would be some improvement there.

Providing access to the "mainstream" fits well with the image of restoring access to major blood arteries, and the concept is compatible with the circulation metaphor: the suggestion is that the transportation link will integrate area residents into mainstream society; their isolation and deprivation would be removed.

Walter King suggests the same idea when he says "you'll find that those people wanted it because they wanted out of their ghetto." Again, the train is seen as doing more than simply providing for physical movement in and out of Watts: it symbolizes an escape from the deprivations of "ghetto" life.

Baxter Ward also saw the train as a vehicle for upward social mobility. An article in *Reader* (March 14, 1980) magazine cites a claim by Ward that:

A system of trains would "raise the whole social tone" of the community. Ward recounts the tale told him by a vice president of a major corporation in town. The man grew up in New York; he attributed his escape from the ghetto to the fact there were trains in New York that gave him ready access to the city's cultural, recreational, and commercial centers.

Grace Payne of the Westminster Neighborhood Association, felt that the light rail is "going to enhance our community," while California Senator Diane Watson supported "the reinstatement of the old Red Car that used to run down Long Beach," because "I want my people, the people I represent, to have more opportunity to be *connected*" (my emphasis).

But the most powerful symbolic imagery to extend the concept of "connection" from mere transportation to access to actual opportunities came from Mayor

Tucker. "We know that poor people need it," he said:

and we're trying to do everything we can to keep Compton alive and to substitute jobs in the place of dope. . .

We want to do things to make it so that our kids won't be set on drugs. . . I'm saying that if people don't have jobs, then that creates stagnation and causes problems.

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," he said.

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. . . Everybody can't go to the beach because they don't have a car. Everybody can't go to the cultural events in LA, you know, can't get to schools elsewhere. . . It would definitely serve a purpose, and the right-of-way is in place, it's just that they have to do justice with us. They want to spend a lot of money to put a Harbor City drive down in Long Beach instead of grade separation in Compton, you know, and it's unfair. . .

Whatever they do, we want to be included. But right now the problem is to bring the light trolley through. You understand. *We're trying to work with people, not against people.*

Tucker establishes a causal link between the arrival of the light rail system and the relief of the critical problems Compton now faces. The Watts riots, he says, were fuelled by an inability to get "in and out." Shut up, closed in, caught as in a locked pressure cooker, problems fermented. People are stuck jobless in Compton, he says, so they end up on drugs. If the light rail were to come, an escape valve would be provided, and people would go out and take jobs instead of dope. Compton residents would be able to go to the beach, to cultural events, to college. And people would be encouraged to come in from outside to use the Compton shopping center. The light rail system, in short, symbolizes a whole range of desirable social changes.

Tucker's main complaint is about a lack of planned grade separation for Compton. But he wants to work "with people," *within the system* to have that problem resolved.

Others also seem content to secure change within existing systems. Grace Payne was asked how she knew the light rail would provide the type of services Watts residents needed. She cited the work of LACTC planners in response. How did she know that work was reliable?, she was asked:

I would not question that, because we try to put people in the places that we trust, have faith in, and are capable and knowledgeable to do the kind of thing that it's impossible for us to do.

People had questioned the judgment of the Commission, she was told.

Did you read the book that said the same thing about Jesus Christ? Did you remember that book? There are a lot of radicals, you know, that find fault with everything that people do. There are people who disagree with everything that they are not doing.

Most significantly, Payne did say that "If I had access to that much money [being spent on the light rail], I might build another recreation center for the children, some more day care centers, if I had access to the money." But, given control of the money by someone else, Payne supports the light rail project.

The largest proportional vote for Proposition A of any of the five supervisorial districts was in Kenneth Hahn's district, where 68 percent were in favor, indicating broad community support. And Alice Harris has worked to support the case for light rail there. She described how the LACTC had sent a representative to talk to the Watts community about plans for the project (LACTC has an extensive community outreach effort to convince residents of the benefits light rail would bring them). Following that visit, residents had called city council members to press for the light rail service, and

teenagers were used to help spread the word to their parents and around the community:

Well, what I think you have to do is have teenagers going door-to-door with information and signatures. Would you like this? You live here. You buy your home here. You rent here. Would you like this light rail? Have you heard about the light rail transit that's coming through?

Another long-time Watts resident and activist, Frieta Shaw-Johnson, played down the role of transportation in the riots:

I don't think transportation had anything to do with the riots. Nearly everybody owns some kind of car. . .

It's true the Red Car doesn't run. But the bus'll take you downtown. I don't feel that transportation is it. I'm not a soft one to give excuses.

Despite this, Shaw-Johnson nonetheless thought "the money is well spent putting the train in." Perhaps Pat Roche of the Community Development Agency summed up the community perception best in saying:

I think the community views anything that is built — a public facility — as a positive project. . . It also is a sign of confidence in the community, it is saying that we believe in this community, and that we're going to put this here.

Councilman Maxcy Filer of Compton, however, approaches the problem from a different angle, unwilling to accept the symbolic confidence others might feel as indicative of the arrival of any meaningful positive change for the community. Filer, who personally filed suit to stop the trolley project (*Los Angeles Times*, Apr. 25, 1985), is not impressed by the argument that light rail will link Compton to downtown Los Angeles and Long Beach. "It isn't taking you where you want to go," he said. "If I don't want to go to downtown Los Angeles, it's not taking me anywhere." People who might use the service need to go to a variety of destinations, he said.

Light rail is not going there. So it will

not serve them. Those that are working do not again as best I know work in downtown Los Angeles. . . I know very few Comptonites that work in downtown Long Beach. I know many that work in scattered areas, out in the Veterans' Administration: would this get you to 11,000 Wilshire Boulevard? I don't think it would.

Light rail will take you to a rail station, Filer said, but people aren't going to a station but to a destination which may be far from a station.

Filer does not see any development advantages, either. Not only does Filer refuse to accept that merely because the light rail will travel at grade through Compton people would get out and shop there. Filer does not buy the argument that the light rail line will open up new job opportunities, either. 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. . . And I could build a better transit system as far as buses are concerned.

Filer's community-oriented viewpoint extends to impacts the line might have on the city as a whole. He expressed concern that six-foot chain-link fences required on both sides of the tracks would divide the city into east and west, much as it was split two decades ago along racial lines (*Los Angeles Times*, Apr. 25, 1985).

Filer was offered a trip to San Diego to see how the light rail system there worked, but turned it down. "You might say, well, why does it work in New York and it doesn't work here? Why does it work in Chicago and it doesn't work here. Because actually, geographically things are different."

Filer is not operating under the assumption of the circulation metaphor. Free flow in an arterial system is not enough if it will not take people where they want to go, he says. While others look at the connectivity of a system of physical channels, Filer looks at peoples'

patterns of interaction. The presence of an artery is not enough. A train may stop at a station, but not near the final destination. A train may stop at a shopping center, but that alone is not reason why people will get off and shop there; a train may go to Long Beach, but if there were jobs in Long Beach, residents would find other ways to get there, Filer said. Alone, Filer talks of unemployment in terms of the need to create jobs *within* the community, rather than to simply provide links to a number of points *outside*.

To help understand the sharp distinction between Filer's conception, and that of Tucker (and most of the others interviewed), we need to uncover other metaphors. Tucker sees Compton as part of an *organic whole* that not only includes the set of opportunities available in the Los Angeles metropolitan area, but its system of governance. Compton is part of that larger community, and Compton is part of the government of the larger community. Tucker, seeing himself as a part of that larger system, wishes to work *within it* to secure just treatment. He slots into place in a chain of command. The higher levels have decided to go ahead with the light rail project; his role is to secure the best deal for Compton, *given that the project is going ahead*. Filer, in contrast, takes a view from *outside* the system. He sees Compton as a separate political entity, fighting against hostile forces from without. Filer's metaphor is one of self-determination.

See, they're using us," he says:

When they took it [previous streetcar service] out, they say we're taking it out because it's obsolete and buses can get you there just as fast as cars, buses can get you to different places. You can't take the Red Car and then send it down Broadway or send it East - West when it's going North - South, but you can do that with buses. That's what they sold us on in order to take it off. Now, all at once, they're going to put it back, it's the same Red Car, just with a silver streak painted down it, that's all it is.

Dan Caufield, director of the Long

Beach light rail project “wouldn’t answer my questions when I came before them, and not only that, they made sure in my opinion that they divided the Council, *our* Council,” Filer said.

Asked about Supervisor Kenneth Hahn’s concern for the welfare of poor minority residents, Filer replied: “Tell him to take his paternalistic thinking and throw it in the river, as far as I’m concerned.”

He feels that Compton is being duped in terms of job opportunities. “Now, if you’re going to help the unemployment rate, I’ll put them on the bus now,” he says. “You find the jobs and I’ll find the transportation.” He talks about using the transit funds for other purposes, and of direct help for people in Compton, *within* the community — providing a plant in Compton, for example. Filer is a community activist, a “grass-roots” man. If the imagery of the majority of politicians is of gleaming trains shooting across Los Angeles with the speed of bullets, and comes from the experience of visiting vital cities seemingly transported to success by smooth, efficient rail transit, Filer’s imagery comes from the experience of close-up observation of the problems of his constituents. “I think what you’ve got to do is something that *they* haven’t done,” he says. “That’s get on the buses. Then talk to people. And ride them for about 6 months or so.” Don’t get your imagery from expense-account trips and elaborate fantasies, he is saying. Find out, instead, how my people actually cope.

Filer feels close to his constituents, poor, Black, traditionally cheated by “the system,” and that his duty is to fight the system, not work within it. The focus on the direct needs of constituents and distrust in the political system outside makes him suspicious of symbols and provides a framework which allows him to move beyond the bounds of the circulation metaphor and escape the lure of the symbolic imagery of the train.

Felicia Bragg, though not opposed to the light rail project *per se* was one of the only others interviewed to see limited social change for Watts and Compton as a function of a lack of commitment by the political leadership or of lack of empowerment for local residents to force that change upon the leadership. “There’s no real commitment in the United States to engineer the solution of human problems,” she said.

Part of it is we don’t want to accept “ugly” in our lives. And we’re living in a society where there is going to be ugliness. We train our children to go “ugh” when they see a bum on the street, instead of saying there is a human being who has not had the same breaks I’ve had. And if you carry it a step further, there’s a human being that one day I may be replacing. We just don’t really have any Christian ethic of brotherhood towards people.

I’m a product of the riots. And I was one of those who was snatched up. And tell us how you feel and come and speak to us. I’ve never forgotten that I tasted my first ham as a result of the Watts riots, because a White family had me brought to their home. I was there basically to entertain them with stories of how it was to live in this war-torn city and grow up poor, and they felt good because they did that.

So there was some of that rushing in and trying to do things. I can’t tell you the number of programs set up after the riots. But people were people. And when they discovered a), that the natives were not suitably appreciative of their efforts and b), that it was damn hard work and was going to take a long, long time to turn even a tiny piece of that around, they kind of drifted away. Other things caught their attention.

Walter King, alternate commissioner and close friend to Kenneth Hahn, gave some background to the supervisor’s interest in issues of poverty, stressing that the problems of the poor constantly caught Hahn’s attention:

Nobody that you’ll ever meet was any poorer than Kenneth Hahn. His mother told me, well in the first place his father

died when they moved from Canada down here, she raised 7 boys, she never had food to feed them many times, many times she didn't know where the next food was coming from. All his life he went to churches and places that had free birthday cakes for his birthday. He was a little fellow like this. He worked to bring in milk for the family by swamping, they called it, running the milk back and forth from the trucks. So, Kenny is the most conservative man financially, fiscally, you'll ever meet. But he'll see that the poor and the rich are taken care of — I'm sorry, poor and the elderly, makes him a liberal.

King pointed to Hahn's attention to basic things, to making sure that visibly the community looks good:

One of the things is transportation. There's nothing closer to Kenny's heart than streets, paving. He started basically. You can tell when you're in and out of Kenny's district because the streets and alleys aren't paved. But every one in his is. And he's got traffic improvements and signals; there's more — go check with the public works and see how much money is spent in his district — he works his district from a transportation angle.

Making the community look superficially smart may symbolically suggest impacts at a deeper level. But Bragg, while acknowledging that Hahn does give "a damn in a granddaddy kind of way," does not:

think he's equipped to really talk about solutions that run deep through the layers of the problem. . .

Hahn is sort of like a Great White Father to his district. You know. And he plays that role, too. It's too bad you can't go with him particularly when he goes out to Watts. He plays that role to the hilt. He's the Great White Father and he feels very paternalistic and speaks to them like that. You are my children kind of thing. . .

He's sincere in that paternalism. He really feels that way. He really cares about Watts in the same way that a plantation owner cared about his darkies. He wanted them to be clean, and he would call the doctor when they got sick and all of that. Now he didn't care if they

learned to read or write, he wouldn't want them to go get a job somewhere. And Hahn is the same way. You can almost see him patting people on the head and saying "be good, I'm going to take care of you. . ."

The point is that he's taking care of them. He doesn't respond to what they want or in any way attempt to empower people to do for themselves. He has simply said I'll take care of you.

Bragg described the symbolic actions of the White political leadership, the decision "to completely tear down 103rd St." (center of the riots), for example. "They left nothing of the way it was before, and I think that that was a deliberate attempt to say it never happened. . . I'm simply saying that they could have left us something of our old community."

The light rail was also of symbolic importance, something which could be accomplished to show progress, Bragg said.

It's easier to build a Metro Rail system with your billion dollars than it is to attack some other problems. If you have a billion dollars, for example, can you imagine the chaos, and you went into Watts and said ok, there's going to be a billion dollars spent here? Can you imagine the chaos that would ensue, the political blood letting that would happen by the time that decision how you're going to spend that billion dollars was made? And frankly, given the number of people and number of problems there, what would you really accomplish with a billion dollars? Maybe if you sunk it into education, but there's 15 different views about that. Some people think Jordan High School should be shut down because it's the pits. Other people think it should be resuscitated. The President of the school board is absolutely committed to bussing, others are absolutely committed that their children should go to school in their own neighborhood. There's nothing that could be easily decided.

The trolley, in short, is a response to complexity: something that is a potent symbol of progress, is feasible, and can be agreed upon:

Symbolically, it brings South Central

Los Angeles into the twentieth century. It binds them closer with the rest of the world. . . . It's bright and beautiful and fast and modern and it's going to be clean for a while, it's going to be new.

Yet, despite her awareness, Bragg has memories of the Red Car in Watts:

I used to live a block from where the Red Car ran, and I remember our mother taking us on that very Red Car downtown Los Angeles to go to the movies or shopping, to Long Beach. . . sometimes just to go for a ride. We would visit my grandmother because she lived close to it.

Trains were "cleaner and faster," Bragg said, and she did see some benefits from putting them in. "I guess I don't have any problem with them spending \$1 billion on that." She did not have any confidence that if not spent on the trolley:

they would spend it wisely, and if only a few people get a good ride, if my mom can get on that thing — she lives right near there — and ride down there in comfort and do her little shopping and stuff and then ride on back home, I'm happy. I'm happy. There are going to be some benefits, and I think the trick is not to expect so much. I'm not sure that I have a better idea anyway about what to do.

Ultimately, therefore, while Bragg would agree with Filer on the need for political change, she feels that "I'm not sure that he's thought through all of these issues." Bragg would take what the existing political system has to offer; only Filer, in the end, insists that it is the system that must change.

CONCLUSION

TWO DECADES BEYOND THE WATTS riots, little had improved for that community — except for transportation. Yet, with endemic problems of unemployment, poor education, drugs and crime, the most significant project to come to town — the light rail service — is one likely to offer the community few benefits. Light rail does

not serve the principal employment destinations of the community, nor the needs of local trips in general.

Transport is such a common metaphor for more abstract issues, however, that light rail appears to offer the otherwise unattainable. When we talk of "social mobility" we are using a metaphor rooted in transport to understand what it means to change social status; the idea of "social integration" is also understood through the concept of movement: a "bringing together" of people. "Getting out of the ghetto" may mean far more than a physical displacement but the concept is — once more — understood in terms of transport.

It is not surprising in the light of such powerful metaphorical structuring that McCone's heavily-criticized conception of isolation in terms of poor public transportation lives on in efforts to bring the Blue Line to Watts today. It is easy to appreciate, given the metaphorical understanding, why bringing people together in a train might be seen as conducive to greater inter-community understanding; why providing a "connection" to jobs, schools or concert halls might be seen as conducive to social improvements, especially when reinforced by memories of the "connections" the Red Cars did provide in days gone past.

The reality, of course, is that the attitudes of those in different communities must change if they are to be brought together, and that provision of a physical "connection" to jobs and other opportunities is futile in providing *actual* "access" to such opportunities, barring changes in educational and other social factors which are the real barriers to such "connections" being made. Bringing light rail through Compton and Watts may, under the circulation metaphor, be akin, furthermore, to the provision of "new blood" to improve the health of the community, but without changes to the state of depression and lack of incentives for development to



A community festival in Watts celebrates the opening of the Blue Line

occur, there is no reason to suggest that any will materialize.

As in Bish Sanyal's Calcutta, so in Watts: While solutions to the deep underlying problems remain unavailable, a new light rail system lies within the scope of feasibility, and is symbolic of progress, even if it can bring few benefits compared to those which might come from other ways of spending the money. It is something people can rally around and — politicians and public alike — believe in. Perhaps most tragically, the trolley is a vehicle of massive self-delusion, not of bad intentions — those in power genuinely believe they are doing something for their constituents — the sort of delusion that allows existing political systems to stay in place and societies to operate with aspirations of hope in times of adversity.

The light rail project seems like a good solution *within* existing systems of

political power structure: systems where not only may there be a lack of commitment to deep social change, but a lack of a concept of where to start on such a massive endeavor. Mayor Tucker wishes to work *with* people, and play his part within the existing order. Grace Payne might have higher priorities than light rail; but, given that other uses of the light rail money are not within her control, supports the project as something for the community. But while everyone else works within the bubble of an existing political order, Maxcy Filer would burst that bubble in applying his understanding of the problem as the need for self-determination. Perhaps before poverty can be displaced that bubble must be burst. In the interim, to communities that feel cut off from the world of opportunities that elusively seems to wait just a few miles distant, the trolley's arrival is a sign of hope: in the midst of gloom, it is a transport of delight.

Politics is the process by which the irrational bases of society are brought out into the open. . . The rational and dialectical phases of politics are subsidiary to the process of redefining an emotional consensus.

— Harold Lasswell (1960, p. 184-185)

13 Synthesizing the Political and the Mythical

THE LOS ANGELES - LONG BEACH Blue Line light rail service is not the result of a calculated — let alone a reflective — effort to provide for the transportation needs of Southern California's congested autopolis, even if participants in the process which brought it to fruition sometimes delude themselves into thinking it is the result of such an effort. The decisions which led to the Blue Line were constrained by the agendas of the political units where they were made. Such agendas — which bound the scope of actions which may be taken — are both set by and reinforce mythologies created from the mass of symbols, images and metaphors which rule daily experience and which — despite their imaginative qualities — possess the appearance and power of truth. The Blue Line, together with the remainder of the Proposition A rail system to follow, is a transport of delight: a symbol of progress at which all can marvel, whatever the reality of its actual performance in enhancing mobility, alleviating congestion, or reducing pollution.

The following summarizes and synthesizes the political and mythical dimen-

sions of decision making. A summary is first provided of why rail makes for a poor policy choice in Los Angeles.

LIGHT RAIL IS A BAD PROPOSITION FOR LOS ANGELES

NEITHER THE LONG BEACH LINE, nor the other components of the Proposition A rail system can be justified from the perspective of either analytical or reflective reason. In contrast to cities focused on an urban core which makes a natural terminal for rail services radiating out to the suburbs, the low density and widespread distribution of both population and economic activity in Southern California generates a complex pattern of transportation demands between a myriad of origins and destinations, which cannot be effectively served by rail. Critics — this author included — call for increased use of high-quality bus services to more efficiently and conveniently reach more destinations than rail, with less vehicle-to-vehicle transfers required by passengers and at lower subsidy cost per passenger transported to the taxpayer. They demand,

also, better use of existing highways: the use of ramp meters to maintain operating speeds; incentives to increase vehicle occupancy; and road and parking pricing.

Assumptions for SCAG's ridership forecasts for the Long Beach line were, biased, producing an inflated estimate of 54,700 daily rail passengers in the year 2000. The overall lack of validity of the methodology is, however, more noteworthy than the bias, in that even were the forecasted ridership to be attained, this would be a result of good luck or other factors, rather than because of the "reliability" of the modeling procedures employed. These procedures are invalid, especially because the "gravity" model used cannot properly reflect residence-employment travel, and since the "trip distribution" model cannot separate flows on proximate transit lines, leading to an expected error rate for light rail which renders the forecast meaningless.

LACTC initially projected 35,000 daily riders one year from opening, and this is close to being attained, with 896,000 passengers carried during March, 1991, a weekday daily average of 31,000 passengers, an overall daily average of 29,903 passengers. This ridership was already equaled by local bus line 60 prior to commencement of Blue Line service, however, while several other local bus lines operating in the neighborhoods the light rail serves also carry high loads: The levels of Blue Line ridership do not therefore reflect an unusual achievement compared to the performance of local buses.

More significantly than the high level of ridership SCAG forecasted, the agency concluded that even if all expected riders were indeed to take to the rails, the light rail system would not bring relief to the congested freeways, since it could only attract a tiny number of people out of their cars. Rather, SCAG said, the service would mostly accommodate travelers who would otherwise have taken buses (and this is the pattern reflected in the results

of initial rider surveys). For the same reason, the system cannot contribute meaningfully to reductions in pollution or energy use.

Demand for transit travel is predominantly short distance, with few people expected to travel the length of the line. Connecting in future rail links is unlikely to improve ridership, since even fewer could be expected to make lengthy, indirect treks around the county, transferring from one light rail vehicle to another.

The argument that light rail costs less to operate because fewer drivers are needed per passenger than with buses is invalidated when other rail system costs — as well as the need to provide feeder bus services — are considered. Current Blue Line per passenger subsidy is substantially higher than for RTD bus services, with the Blue Line expected to cover only 9.3 percent of its fiscal year 1991 operating and maintenance expenses with fares. Buses, by comparison, are expected to cover 41.7 percent of these costs from fares. Given the high capital expense of the Blue Line, furthermore, it is clear that far more passengers could have been served at far lower cost had funds been channeled towards improving bus services and keeping bus fares low, instead of being spent on the Blue Line.

Despite the McCone Commission's belief that the isolation engendered by poor public transportation helped trigger the Watts riots, a subsequent study showed that improving transportation was ineffective in enhancing employment prospects for Watts residents: problems of unemployment run much deeper, to issues of education, deprivation and race. Claims that light rail would significantly benefit depressed South Central Los Angeles and Compton are invalidated when it is seen that service is ill-matched to the most pressing trip needs: far better service

could be provided for these communities with buses. There is no evidence, furthermore, that the arrival of rail will stimulate development, given the lack of intrinsic attraction to developers to invest in these communities.

So, why has rail been chosen?

Complexity is unnatural to us — our minds reject it — and we fear the incurable, the intangible, and the unknown. Rail offers a simple and reassuring solution to the unbearable problems of Los Angeles, one which appears to have the potential to do much good. Members of the Los Angeles County Transportation Commission, growing desperate to “do” something about an overwhelming transportation problem, seized upon it as an answer: first as a part of the packaging of Proposition A of 1980, then by bringing it to life in the form of the Long Beach light rail line. The public embraced rail, making Proposition A law, cementing rail further into the popular culture and, ten years later, endorsing new propositions designed to devote even more resources to rail transit.

If the rail system is certainly the product of political action, the trolley's arrival in Los Angeles cannot be adequately explained from an account of either the pushings and shovings of interested parties or the actions of those elected to make public decisions: to appreciate the re-birth of rail, we need to see how its benefits are conceived and are understood by interested parties, decision-makers, and the public at large. When we set rail in its mythical context, we see that it was no mere cynical political response to pressures, nor a deceptive attempt to fob an illusory solution off on an unknowing public, but the product of a powerful myth, lived by politicians and public alike. And, as Turbayne said, for those who conceive and transmit myth, “there is no make-belief, only belief.”

MAKING POLIS

It is characteristic of large numbers of people in our society that they see and think in terms of stereotypes, personalization and oversimplifications, that they cannot recognize or tolerate ambiguous and complex situations, and that they accordingly respond chiefly to symbols that oversimplify and distort.

— Edelman (1964, p. 31)

THE DECISION TO PUT PROPOSITION A on the ballot and, subsequently, to select the light rail line to Long Beach as the first project for implementation, is a successful example of what Churchman (1979, p. 157) calls “making polis,” a term conceived after the activity of free Athenians meeting to engage in “polis” (literally “city-state”), “the actions of citizens in a nondictatorial society.”

Making polis is the coming together of groups for action over a concern. As Churchman indicates, this process “has no self-consciousness about what the ideal planner calls “overall progress,” or even about his “measure of performance.”” Instead, it focuses on a specific issue, around which “polis-makers” can gather. For polis-making to succeed, there must be something suitably solid and well-defined to anchor both thought and action. Success, Churchman says, “depends on the feeling of the polis; success is evidenced by expressions of joy, celebrations, parties, cheerful announcements, etc., even by monetary awards.”

The case for developing a new rail system is a good cause around which polis might form: it is something quite tangible and solid. Yet, polis around this issue had not been successfully made right up until 1980. We can understand why if we trace both the actions of political systems and the development of popular conceptions of alternative policy options, which come

from symbolic understandings, not systems of either analytical or reflective knowledge. We can then see that a window of political opportunity was coincident with the emergence of an available mythology. And, to judge from the ensuing "happiness," the polis-making proved successful and self-replicating, whatever its merits — or lack thereof — in analytical terms.

Since 1925, Los Angeles central city interests had lobbied for rail transit, but to no avail. To most other Angelenos, the thought of creating a city focused on a concentrated core — such as in the eastern cities from which they had fled — did not jibe with the image of the good life.

As the streetcar declined and went out of existence, the road and car flourished in Los Angeles, becoming symbolic of the free-flowing, unfettered, lifestyle of the Southland. The automobile had transcended the limitations of the metal wheel on fixed rails and become the transport of choice. Even so, rail transport's role in the creation of Los Angeles and its low-density suburban lifestyle could not be lost. If Henry Huntington's obituary talked of his "romantic and imaginative soul" having found an outlet in railroads, the romance of the rails — which opened up Los Angeles — as well as the West as a whole — lingered on, leaving behind a repository of symbolic associations to reawaken and fuel the myth-driven dream later on.

The 1925 Kelker De Leuw proposal, with its imagery of speed and technological prowess overcoming barriers of space and time, also generated mythical understandings of the power of rail even if, for now, they lurked in the shadows. The 1948 Rapid Transit Action Group proposal, which brought further claims of easy technological answers to complex social problems, emphasized the alleged luxury, speed and sex appeal of rail service, projecting trains yet more powerfully as mythical saviors. But the automobile by

now dominated the public imagination.

A report issued in 1950 — at a time when *freeways* remained symbolic of *freedom*, and none of the negative connotations had hit home — stated that while 40 percent of those surveyed in a study favored one of three fixed-rail options, 47 percent called for buses on freeways. Highway construction meanwhile continued at a rapid pace, uncontroversially, and with broad public support. The time for forming polis around rail had not yet arrived.

Donald Schön (1971) defines "ideas in good currency" as:

ideas powerful for the formation of public policy. . . They change over time; they obey a law of limited numbers, and they lag behind changing events, sometimes in dramatic ways [p. 123-124]. . .

Characteristically, what precipitates a change in that system of powerful ideas is a disruptive event or sequence of events, which sets up a demand for new ideas in good currency. At that point, ideas already present in free or marginal areas of the society begin to surface in the mainstream, mediated by certain crucial rules. . . When the ideas are taken up by people already powerful in society this gives them a kind of legitimacy and completes their power to change public policy. After this, the ideas become an integral part of the conceptual dimension of the social system and appear, in retrospect, obvious [p. 128].

Highway-building was an "idea in good currency" of the 1950s, but as the 1960s and 1970s brought increasing highway congestion and pollution the image of the freeways was transformed from one of liberty into one of entrapment and dis-ease. With concern, also, over issues such as the environment, poverty, and unmet social service needs, highway-building went out of vogue, and an opportunity was created for a new "idea" to emerge. Federal attention became increasingly focused on transit programs, and the concept of transit as a commodity to be supplied by the private sector according to market forces was transformed into one of

transit as a social service to be publicly-supplied and subsidized.

A series of center-city backed propositions, starting in 1968, nonetheless failed. The 1968 proposition re-stimulated the previous debates over core domination versus dispersed urban forms. The same happened in 1974. Yet, if one thing is clear, it is that opponents as well as supporters felt rail would have an impact on patterns of accessibility and hence locational utility and property values, an impact which, when compared with the accessibility of existing transportation links, was at best questionable: there was something about rail which made it seem powerful, yet there were enough people who saw this power as against their interest to turn it down.

1974 was, also, the year of the Snell Report, and its highly emotional and equally unsubstantiated conspiracy theory. The Los Angeles of the Red Cars, Snell said, became an "ecological wasteland" largely because "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."

If the Snell Report ignored the reality of rail's obsolescence in the new autopian Los Angeles, and its decline due to its failure to meet public needs, it nonetheless captured the public imagination, and its broad-brush impressions of good and evil, of heroic trains being trampled under by iniquitous automobiles and filthy buses, were to emerge again later on. If we ask why it found a sympathetic reception we need look no further than our daily experiences: the freeways are congested, many local bus services are less than pleasant to use, and rail systems we see in cities elsewhere appear impressive. Here was a theory with simple, visceral appeal.

Baxter Ward's 1976 Sunset Coast Line proposal encapsulated the virtues attributed to rail by Snell, adding futuristic imagery: here was the system that would get

you where you were going in no time at all, with elegance as well as speed, without pollution or discomfort. While Ward's proposal played a significant role in myth-building, it was an expensive one and not one which the public would yet buy. By then, however, a subtle shift had occurred. With Los Angeles Mayor Tom Bradley giving his support for the Wilshire subway in August, 1974, and Long Beach Mayor Clark criticizing him for endorsing "a system that will be totally within Los Angeles," the debate moved from whether there should be any rail at all to arguments over whether rail should serve mainly the core, or reach out to serve the more dispersed communities. Despite the local infighting over this issue — which prevented a consensus from emerging — rail was now firmly accepted and on the agenda.

As we build up to the dramatic events of 1980, we see the Los Angeles County Transportation Commission, in place since 1977, under pressure to show accomplishment. Its then Chairman, Supervisor Kenneth Hahn, in a statement of goals in January, 1978, reflected a feeling that the public "want their leaders to act. . . It is time that we act decisively together to get on with the needed transportation improvements."

By 1980, rail was a regular favorite on TV and in news articles, not only exposing its symbolic appeal to the public, but re-kindling the appeal that already lay locked in memories. Pictures of speeding Red Cars suggested quick and easy answers to the snarled-up roads; and the understanding that the Red Cars had suffered a "painful murder" at the hands of "rubber interests" — rather than because they no longer served the needs of a dispersed Southern California — was disseminated along with the images. This gives the impression that if only the Red Cars had been kept, Angelenos would not have been turned into "gas addicts." People in San Diego were said to have real-

ized that buses could not carry as many people as trains, and the triumphant “unveiling” of a light rail train in San Diego gave a vivid impression of progress in that city, compared to paralysis in Los Angeles.

A survey conducted by LACTC in July, 1980 via advertisements in the *Los Angeles Times* and *Los Angeles Herald-Examiner* elicited the response that while 20 percent called for a rail-based system, 60 percent wanted a mixed rail/bus system. Given this expression of interest, Kenneth Hahn’s packaging of Proposition A to include both rail and bus elements was entirely logical. The myth of rail had taken hold, and the popular images flashing across the TV screen needed to be turned into a renewed reality.

The initial formulation of Proposition A did not specify that rail was to be put in place: the money, should the proposition pass, was to be available for any sort of transit improvements, and bus-on-freeway systems were particularly favored by staff. Rail was still, however, very much in mind among elected officials. And at a crucial LACTC meeting on August 20, 1980, Supervisor Hahn finally forged a consensus. To secure Baxter Ward’s vote, he had language changed to *mandate* that rail be built should the proposition pass. The heady influence of the myth of rail now made this readily acceptable. Hahn, furthermore, included a 25 percent “local return” element to secure the support of those from dispersed communities. A reduction in bus fares for three years and a map designed to show service provision to as many corners of Los Angeles County as possible contributed to making the package sellable to the public; yet rail was only sellable in the first place because a mythical belief in its powers was by now firmly in place.

Also highly significant was that unlike earlier proposals, the system did not appear to cater primarily to the interests of downtown. Rail now appeared to reach

out to the dispersed lifestyle as well. In this form, the proposition was approved by the Commission, put on the ballot, passed by the voters, and became law.

The popular theory (put forward by Whitt (1982), for example), that rail is a product of a central city conspiracy and geared primarily to increasing land values in the urban core, holds no water when we appreciate both that when these interests *were* the prime pushers for rail the public refused to endorse their proposals, and that, in the case of Proposition A, the central city lobby was hardly involved at all: it was the broad appeal of the measure, based on both the three-year bus fare reduction it incorporated and the belief in the powers of rail to alleviate the transportation problems of Los Angeles, that carried the day.

Despite the claims that Hahn engaged in “bribery” in putting the Proposition A package together, the process could arguably be said to be politics working as it should: providing something the voters liked enough to democratically approve. Yet, to simply assert that the proposition passed because of the successful operation of a political process and because it appeared to meet a need begs the question — one typically ignored in political analyses — why did the elected officials and the public feel it met a need? The answer lies in myth.

At a key, August 1981, meeting of the California Assembly Transportation Committee in Long Beach — which paved the way for the Long Beach light rail project to become reality — we see the mythology of rail in full operation. We hear of the “untimely death” of the Red Car system, which until the 1940s had provided a “good balanced transportation system;” that light rail provides for comfort and convenience without polluting the air and at low cost, while buses are “dirty, smelly, and definitely not rapid,” that light rail was successful in San Diego, and could similarly succeed in Long Beach, the city

which had "kept faith" with the Pacific Electric the longest. And there were the boyhood memories of growing up with the Pacific Electric, which speakers wanted revived today.

At the crucial LACTC meeting at which the decision was taken to proceed with the Long Beach line, we hear that the light rail "connects two major population centers," that it "will provide a key transportation link to recreation and employment centers," and that "we need look no further than our clogged freeway system any working day to see the need for transportation alternatives."

THE COHERENCE OF MYTH

HOW DO WE KNOW SUCH STATEMENTS are not simply examples of grandstanding rhetoric? They are rhetorical, of course, for here we have politicians who are out to convince. But what makes such statements vastly more interesting and indicative of deep underlying beliefs is the extraordinary set of coherences, the logic within the mythical system which enables it to all make sense.

A study of the elements comprising the myth of rail shows why the idea of rail systems developed a great symbolic appeal, one little-related to the benefits rail might actually bring. These elements paint bold pictures, drawing clear-cut answers from out of a web of otherwise intolerable complexity: they fulfill the human need for simplicity. The associations mesh together coherently, furthermore, not with the logic of analytical reason, but with a power possessing a symbolic logic of its own. As de Neufville suggests, images act as a proxy for unstated assumptions, and serve to anchor inferential logic. The logic acts subconsciously and synthetically, putting together impressions, rather than taking "facts" apart. History and experience paint powerful imagery of the potential of rail to provide

benefits, while the metaphorical ways in which understanding takes place provide interpretations of such images which conclude that rail presents the way ahead.

These conceptions are the work of experience: experience is powerful because it presents the evidence of our bodily senses. We see traffic locked in congestion; we thrill to the acceleration of a fast train; we smell the fumes of a bus. Because we get close to these technologies, they become objects of emotional attachment — and hatred — and are desired or spurned with the logic of a mythical world with its special set of rules.

Experience of freeways and buses in Los Angeles, of trains elsewhere, and images of the trains which might come to LA, tell us that trains are fast, comfortable, safe, clean, classy and efficient, while buses are slow, uncomfortable, crime-ridden, dirty, low-class and inefficient. The fact that trains are seen as fast, buses slow, makes trains win out in our metonymic understanding of a trip, which focuses on the time spent on the main vehicle, and ignores the time getting to and from rail stations. Because the conclusions we are so apt to erroneously draw come from the obvious evidence of our everyday world and common-sense assumptions about how it runs, such inferences are as compelling as they are natural.

Gaining this experience is a form of natural experimentation in which the merits of the different transportation systems are "tested" by trying them out. As we have seen in Baxter Ward's test for the case between rail and bus — taking the judge for a ride to evaluate the experience — and in the accounts of visits to other cities — this type of experimentation seems to have widespread acceptance. The superficial impressions formed by the immediately-experienced technology may be misleading when extrapolated to wider social and economic domains, but they not only contribute to the formation of

evocative imagery, but provide for the mass of associations that the technology-as-symbol then acts to recall.

These images and symbols take part in a process which provides for the making of inferences based on experience. Because other cities appear to have successful rail transit systems and are seen to be successful cities, it is inferred that a rail transit system will make Los Angeles successful. As Walter King said, "all I'm saying is good sound logic:" central to the functioning of the myth is the belief of those making such inferences that they are being perfectly logical.

The symbolic act of crossing contexts translates experience from one setting to another. Monorail, experienced at Disneyland, becomes a symbol of speed, efficiency and flair: the evident success of monorail at Disneyland is thereby extrapolated to likely success elsewhere, without a testing of the assumptions upon which that success would depend. Images of trains working on other cities similarly evoke images of successful rail in a rejuvenated Los Angeles.

A principal act of symbolism and imagery is the displaying of partial impressions as if they made up the whole picture. The parts, we have seen, get chosen according to their visibility and familiarity. Just as we take "the face for the person" we take the trolley car for the transit trip. Complete journeys are metonymically wholly understood in terms of the time spent on the principal vehicle, thereby giving the speed of the principal vehicle undue weight. Where people actually wish to travel is not investigated and problems of a total trip — in particular getting to and from the main transit vehicle — are overlooked because the problem is structured simply in terms of getting the "right" line-haul vehicles. Everything else is expected to fall into place, just as a person's stomach is expected to be below the face. The metonymy explains why the vehicle that is to provide the "free-flow" the

circulation metaphor demands must be the train.

Buses seen spewing fumes are seen as necessarily bad. The gleaming surface imagery of Washington's METRO or San Francisco's BART suggests that the rail concept as a whole is good, and that concept-seen-as-good is symbolically transported to Los Angeles. Because trains are seen to have only one driver who transports several hundred people it is assumed that they are more efficient than buses; this is further reinforced by the perception that there would be lower maintenance costs for electric (read clean) versus diesel (read dirty) equipment. Trains are seen to be more comfortable as well as more glamorous than buses; buses, in addition to being perceived as slow, causers of congestion and of pollution, are seen to be uncomfortable and associated with crime.

The choice of parts which come to symbolize the whole reflects the tendency to see abstract concepts in physical terms. There are assumptions about economic and social conditions implicit in particular technological choices, but they are not examined directly: instead, they are seen as a function of the physical performance characteristics so much more readily perceived by the eye.

There are several ways we have seen symbols acting as gateways to larger patterns of associations: the bus has its myriad associations of poverty and vice even if a bus service need not in reality be any less pleasant than a train; trains symbolize middle-class values and convey associations of cleanliness and security. These suggest not only that trains are safer to ride than buses, but that they might also bring social reforms: because people apparently won't vandalize nice vehicles. A complex social problem is thereby seen as soluble merely by changing the physical infrastructure.

Because trains have been seen in European and concentrated core-based city

contexts, the concept of a European-style city founded on the central place is symbolized by the train. Through memories of Red Cars conveying Watts and Compton residents to college, employment, and to the beach, the train comes to symbolize connection in more than a transportation sense: it is a link to a world of opportunities outside, a way to escape unemployment, dope and other urban problems. In this way, the train acts as a symbol which serves to remember and recall, promising that the supposedly good things of the past can be here again today. This illustration also shows the power of the physical symbol to convey abstract ideas: providing "connections" to opportunities in fact requires far more than the laying of a steel rail, yet the steel rail is seen as the road to attainment of these more complex connections.

We have seen how symbols can act in the manner of the "imperious and infantile" and can link the idiosyncratic and the personal with the general and the universal. The train given to children in train sets is a friendly thing. And because kids like playing with toy trains, it is assumed that when grown up they will ride real ones. The childish thrill of hearing a train in a distant city go "whoosh" makes it seem that trains which go whoosh are universally good. The fact that San Diego has a bright, shiny red toy in front of which people like to have their photo taken and that San Diego appears to be a bustling, successful city, suggests that if only Los Angeles had a similar transport, it would result in delight there, too.

Personal experiences of modern railways and of the "grief and hassle" of overcrowded freeways give the technologies symbolic power, a power which acts with a refusal to take difficulties into account. "I wanted a train," said Baxter Ward and, when the route he initially wanted was unavailable, he went ahead and took any route available simply to have the train, whatever the merits of the

train for that particular route.

If symbols represent emotions, there is no shortage of these displayed in the interview transcripts. We have seen a love of trains, and trains carrying romantic connotations. The technology becomes an object of emotional attachment; it becomes a god for religious worship when the virtuosity of its performance captures our imagination. Roy Donley's "high-powered locomotion" has more than transportation value: the power has allure of its own, and the train as symbolic of power satisfies a central human desire. The sexual connotations of the train also exert influence. San Diego "whips it out" first, while Los Angeles must stand by, cuckolded. All these associations are unconnected with any transportation advantages rail service might have.

All of this symbolism and imagery not only meshes coherently with but serves as the inputs for a set of metaphors which shape fundamental understandings of transportation systems and of how — when in disrepair — they should be fixed. Most fundamental is the circulation metaphor with its entailments of an interconnected system of arteries focused on the heart of the city. The circulation metaphor explains the desirability of employing major arteries to link major cities even though there is little demand for travel between them. The metaphor, furthermore, dictates the need for "free-flow." With freeways seen as choked or the city strangled, the metaphor prescribes a new system — isolated from contamination from the old system — through which free-flow can take place. The image of the bus — slow and stuck in traffic — and of the train — dashing at high speed on its own right-of-way tells us why, under the circulation metaphor the way to go is by train and not by bus.

Like blood, traffic is seen as a homogeneous substance which is to be kept flowing round the system, giving life wherever it passes: the actual origins or

destinations of particular units of traffic are not seen as being of great importance. No mention is made of real equity issues — “going through” poor areas is seen as enough. While the metaphor is guiding thought in the interviews, no consideration is given to the possibility that transportation might be improved by *regulating* flow — charging tolls, encouraging the use of high-occupancy vehicles, or implementing other forms of road management — because the goal is simple “free flow.” It is this picture — which highlights certain features compatible with the metaphor and leaves out others, and which makes solutions consistent with the metaphor seem obvious — which suggests that the metaphor is operating at a deep level.

Two metaphors — of “balance” and of an “escape valve,” provide further ways of seeing why a new rail system is desirable. Common to both metaphors is the notion of providing a separate system in which free flow can be maintained: both metaphors align with the free-flow ideal of the circulation metaphor. In both cases, the way the technologies are understood in being “processed” by the metaphors, is determined by the symbols and imagery associated with the technology in question. The balance metaphor tells us that predefined transportation technologies need to be assembled to create a state of equilibrium in which all function according to their place in the “natural order.” The apparent oddity of interviewees who malign buses but approve of their use as feeders to rail transit is explained when it can be seen that the feeder function puts buses in their correct place in the envisaged “natural order:” it is not that no buses are required, but that they cause imbalance when they try to perform the line-haul function of rail.

Under the balance metaphor it is believed that an equilibrium with free flow on both road and rail systems is attainable. Under the escape valve metaphor it is accepted that this is not within reach.

Under the “balance” metaphor, rail is part of a natural ordering of transportation systems, and is desired as part of an ideal balance. Under the “escape valve” metaphor, however, rail is an alternative needed only because of the inadequacies of the road system: it is not natural, but an artificial device installed to take excess pressure with which the “natural” road system cannot cope.

The two metaphors were not generally used together by one interview subject, indicating an important difference between the ways in which each frames the problem, possibly a difference between an idealism from those promoting “balance” and a resignation (on the part of those subject to the “escape valve” metaphor. But of greater importance than the differences between the assumptions of the metaphors is the same conclusion they both point to: that a rail system is required, whether to return free-flow to the entire system or to provide it only on the new rail part of it. In providing for at least some new free flow, both metaphors fit coherently with the circulation metaphor; both fit coherently with and use as inputs the symbolism and imagery of freeways, buses and trains. The image of the bus caught in congestion, to give one example, helps put it on the “roads” side of the balance scale.

A further metaphor — of evolution — which charts the development of transportation technology on a fixed path of progress — also fits with the above: if the evolutionary step up to rail has not occurred in Los Angeles, then of course the system is out of balance; of course there’s no surprise that the freeways are clogged. If there are no trains which go “whoosh” it’s no surprise that LA grinds to a halt. The image of the train as both a vehicle of high capacity and modernity gives the impression that it is on a genetically more advanced level according to the tenets of the “evolution” metaphor. This complex system of metaphors, symbols and im-

ages, then, comes together to coherently structure the myth of rail.

It is important to note the compelling, rather than compulsory nature of symbolism, and to see that those not predisposed to be influenced by a particular symbol or aspect of symbolism, can escape its influence. Kenneth Hahn, though subject to most aspects of the myth of rail is a supporter of the bus: his daily contact with constituents who depend on buses makes him aware of the buses' key role in transportation.

Los Angeles Councilman Ernani Bernardi is immune to the myth as a whole because he starts with an image of a dispersed Los Angeles which is antithetical to the core-based circulation metaphor, and because he is unwilling to believe that just because the Proposition A map shows rail reaching out throughout Los Angeles County, actual interaction patterns will be served. Because his framing of the problem — which starts with the assertion that there is too much development taking place at downtown — is entirely at odds with a rail system and its associations of the concentrated city, the myth has no meaning to him and is seen as myth, not reality.

Roy Donley and Eunice Sato, on the other hand, while apparently opposed to light rail, are not immune to the myth: their problem with the light rail is that it will not go fast enough. Both believe in high-speed rail systems: while Donley might not "worship" at the "alter" of light rail, he is taken with the virtuosity of true high-speed rail. While Sato is unimpressed by the slowness of the "streetcar," she — like the light rail supporters — concentrates her attention on the physical link between major centers and on the vehicle to provide that link, but sees the speedier monorail as superior to light rail.

Christine Reed and a number of others, meanwhile, had critical comments about the Long Beach light rail by itself,

but became supportive when the line became seen as part of a total "system," in other words as part of the network of interconnected lines the circulation metaphor would demand. These respondents — under the metaphor's spell — assumed the believed benefits of interconnection would come to fruition, and did not verify whether the system would actually likely be attractive for the sorts of longer trips for which connections would be necessary.

But doubtless the most interesting outsider is Maxcy Filer. He is entirely outside the mythical world of rail — indeed while the rail supporters see their perceptions as truth, Filer sees them as myth. Filer does not operate under the influence of any of the metaphors examined above, nor is he swayed by the symbolic imagery of rail cars. Nor, despite his long-term connections with his community, is he influenced by nostalgic memories of the "good old days." Because his framing of the problem is at odds with a framing supportive of the rail myth, he is not open to persuasion by any of the arguments supporters put forward, which build up the myth.

The key to Filer's different orientation lies in his political conception — he is working for constituents whom he views as an island seeking self-determination. His view is a "grass-roots" community view. He sees peoples' problems, and he wants jobs now, and in Compton. He rides the buses, sees where people go, and seeks to directly serve their needs. While others, such as Mayor Tucker, work *within* "the system," Filer works outside it. His metaphor (for it is not that Filer operates *without* metaphor, but that his metaphors are different) is of self-determination, of Compton's need to free itself from a colonial periphery-center relationship with Los Angeles; and it allows him to view the assumptions of the myth of light rail from the outside, and thereby see the myth for what it is.

Other Cities

Examples have been included from other cities, and similar patterns found at work in San Diego, Portland, San Jose and Sacramento. In San Diego and Portland, the light rail system is an anchor of civic pride quite unrelated to its transportation advantages; in Sacramento and San Jose, the symbolic merit of light rail has brought it into reality, despite strong evidence of basic conceptual weaknesses. The situation in Seattle — the city that went for an innovative bus system — alone appears different yet, ultimately, in Seattle too, symbolism and imagery has been all important. Because buses had a long history of development as a high-quality service; had a strong middle-class ridership; and lacked the negative connotations of buses elsewhere, they made for a politically-acceptable option. Even so, the craving for rail apparent in other cities is at work in Seattle, too, with the bus regarded as but a short-term solution which makes use of federal funds which would not be available for rail. Images of rail hold the imagination as the ultimate, long-term “solution.”

CONCLUSION

THE MYTHOLOGY, WE HAVE SEEN, is linked with the politics. The set of available political actions is driven by the mythology in

good currency. Elements of the mythology — in this case the vast storehouse of symbolic associations of rail — may stay dormant or only partially active and, in turn, be spurred to action when the politics demands a vehicle for forming polis. As the old savior — the freeway — faded from favor and good currency, rail emerged in response to the need for a new mythical hero, a new symbol around which to form polis. The train: concrete, sexy — transport of intimate memories and powerful ideas — provided a firm basis for polis formation, something denied to more complex, abstract ideas, whatever their merit, or to technologies with negative symbolic connotations. Rail had an almost universal appeal, just as the highways had 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 to a renewed life built on our experience of life in the past and our imagination of how it might be better in the future.

As rail-building became a stable element in the policy realm, it took on an ascendancy that put it above other ideas, placing it in a bubble of its own, impenetrable by other ideas, and unable to see itself as the product of imprisonment in a limited set of erroneous concepts. Rail had become a transport of delight and, until events occur to transcend its prestige, promises to remain so.



[I]t may be safe to say that at the present time inquiry has become part of the unconscious life of most people: they are unaware of the ways in which they function as inquiring systems. Nor is there a strong inclination for them to give expression to this function so that its nature appears at the conscious level.

— C. West Churchman (1971, p.272)

14 Concluding Implications — On the Need to Burst Bubbles

FROM THE THEME OF THE PRE-SOCRATIC philosopher Anaxagoras — “in everything there is everything” — Churchman (1979) finds an important lesson: “In systems planning, in any problem are to be found all other problems” (p. 36) In world malnutrition, for example, “one will eventually be forced to recognize the relevance of militarism and energy and all other problems.”

Churchman’s “systems approach” demands the ever-broadening of inquiry to reach beyond the superficial and into the profound, to identify and tackle the roots of universal problems, rather than merely masking their symptoms. Yet, if a question of transportation is to be broadened into questions of urban form, employment, education, equity, poverty, and race — as it must be to be meaningfully answered — it becomes increasingly complex. And we find complexity unnatural. We yearn for simplicity. And in doing so we leave the core problems facing us untouched.

Metaphor renders the abstract concrete, the complex simple and more amenable to comprehension and action. At the same time it acts to mask the real — complex — nature of problems, and through providing distorted accounts of possible solutions misleads those under its power into thinking they have answers when they have none. Metaphor helps us simplify, and it can mislead us. The myriad symbols and images which impress us in our daily lives also tell partial, if compelling stories, which can lead us to make bad decisions. Our symbolic world provides our primary, most elemental way of understanding. Living as we do within it, it is hard to escape its boundaries and view it from the outside.

Central to the definition of the transportation problem in Los Angeles and the prescription for its cure, is a focusing on technologies: the “pre-selected” possible solutions to problems become the center of attention at the expense of discussion of the problems such “solutions” are supposed to solve. The questions of technol-

ogy act as proxies for more abstract — and difficult — social and economic questions to which there are no easy answers. Technologies provide a sharply-defined focus of attention, one of simplicity and seeming certainty. Technologies provide a ready source of imagery: they are easy to imagine, and leave concrete — and lasting — impressions. These impressions, operating within the realm of understandings available in the symbolic world where we live, depend upon the assumptions we build for ourselves out of our experiences and history within a particular culture, and lead to solid common-sense conceptions of what action should be taken to cure the transportation malaise.

While political actors preoccupy themselves with the most superficial and misconceived questions of technology choice, planners in government agencies succumb to an equally myopic narrowness in the approaches they take. Their analysis begins with given technologies to be “evaluated,” rather than social problems to be addressed. It then proceeds to operate through the lens of given techniques, rather than by arriving at research approaches through reflection on the framing of the problems at hand. Such standard quantitative techniques generate results with an aura of certainty, even though they depend on assumptions which must be subjectively chosen, the applicability of which for forecasting future conditions is at best uncertain.

In the case of the Long Beach light rail forecasting exercise, the results obtained were simply meaningless, not only because of the use of “unreasonable” assumptions, but because the model could not represent the system it purported to simulate. By “correctly” following standard procedures, however, the planner avoids responsibility for the inadequacy of his or her work, just as the Vietnam bombardier avoided responsibility for killing people by simply “correctly” following externally-specified instructions on how

and where to drop bombs. The wider issues just don’t appear to be relevant in either case: the planner or bombardier acts just as a cog in a larger machine. But, perhaps even more disturbingly, the planning process does not exist — as popularly believed — for the making of choices, but for the legitimization of choices already made on other grounds.

Those choices are, nonetheless, regarded as justified by decision-makers (unaware that they are being tacitly guided by erroneous symbolic understandings) on rational grounds, and the technical analysis conducted in connection with such work is seen as providing solid substantiation, even by many of those at least partly aware of its problems: the lure of data with the appearance of certainty is a beguiling invitation to self-delusion. When some evidence does emerge which is not favorable to the favored technology — as did occur in the Long Beach line evaluation — it is discounted, disbelieved or ignored.

The reduction of complex problems to simple ones, whether by politicians or planners, is a natural function of the mind: not only does it appear to clear away ambiguity, but also to create “solutions” which are attainable. The problems of freeway congestion cannot be eliminated overnight; but a rail system, symbolic of free-flow, can indeed be installed.

Rail, furthermore, is something which can be promised and delivered within a predictable time-frame. The reformation of life in Watts cannot materialize so fast. Tragically, the rail project becomes a symbol for the solution of deeper problems and one around which polis can be successfully formed, but leaves them untouched. Its impact enters the political realm in a subtle, but insidious way: as noted from reports on the lack of progress in Watts, there is no real political commitment for dramatic action to better the community’s lot.

Putting in the rail system gives the impression of action, not only to constituents but to politicians making the move: they delude themselves into believing that a solution is in effect, and it is a delusion which allows them to continue in office without any real commitment to social change. As Edelman (1964) says, "emotional commitment to a symbol is associated with contentment and quiescence regarding problems that would otherwise arouse concern," (p. 32) but the effect is not on the "victims" of the symbol alone: it targets and influences politicians and constituents alike.

We note, significantly, that Compton Councilman Maxcy Filer, who does show real commitment to social change, is immune from the symbolic powers of rail. It is because he is aware of the deep problems affecting his community, and works on the basis of the need for self-determination for his constituents, that he rejects the plans which come from outside. His political view keeps him outside the mythical world of rail, just as both those prepared to offer no real change, and those content to work "within the system" and accept whatever is given, are imprisoned within it.

The process we have observed is deeply conservative, and on a number of levels. Despite some of the futuristic images of rail solutions to urban problems, it is far from innovative, in that it reflects technological and other conceptions from the past: rail is a technology of the 19th century, being implanted in a non-central-place city of the twenty-first century. Yet symbols are generally created out of past memories, experiences, and identities, so ideas of the past — with past associations of good — become inappropriately transplanted to the future.

Conceptions of existing systems depend on experience of them today, not on how they might be re-arranged in the future. This failure to explore possible innovations to these systems is intrinsic to the

"weighing" that takes place as part of the "balance" metaphor: when objects are weighed they are already in their final form, and the act of weighing does not include consideration of how they might be changed. With powerful impressions of buses causing congestion and providing uncomfortable and unsafe rides, there is little to draw the imagination to the possibility of buses operating on clean fuels or electricity, or to ways of operating them better so that they can provide a more attractive service, except in Seattle, where social and historical circumstances have led the bus to develop a positive image which can lend itself to the case for future bus development.

Darker and more deep-rooted is the political conservatism implied by the whole process. By acting only on symptoms of social problems (and not even eliminating those), rather than going to their root causes, the problematic status quo is preserved: the city remains polluted, the freeways congested, the poor uneducated and unemployed, despite any slight extra mobility which might be provided to reach opportunities from which they cannot benefit; and political power remains concentrated among those who have created symbolic solutions which to all everyday appearances represent progress.

Those at the bottom of the social ladder are made to feel that they have been given something, while what they really need is a voice. Just about everyone is happy with the symbol of success but, while many resources have been expended, nothing has changed. And it is that ability to convey impressions of salvation while leaving root problems untouched that lies at the heart of the symbolic power of the train. And to all caught in the mythical world of rail, the illusion of progress is very real.

In the end, if we follow Churchman's "systems approach" and direct ourselves to broaden our scope to universal prob-

lems, we may come to appreciate that compared to the other, more pressing, difficulties of Los Angeles, transportation is hardly the most urgent problem at all: the resources being expended on rail will not only produce virtually no benefits — other than symbolic ones — but would be more effectively spent elsewhere, such as on education or employment development. Yet, our political, budgetary, and mental processes put these problems all in separate bubbles, protecting us from the complexity of considering them together, and making us all the poorer as a result.

VOICES FOR CHANGE

IN THE FIRST CHAPTER, “ANALYTICAL rationality” was differentiated from “reflective rationality.” Analytical rationality implies a taking apart and examination of a set of parts; it operates within a bubble of given variables and assumptions.

Much of the technical analysis we have seen has been bad analysis — biased and insubstantial even according to the standards of the trade. Other analysis has faltered simply because it either cannot answer the questions it purports to address or because in its narrowness it asks the wrong questions. Analytical rationality cannot, furthermore, itself provide help with the framing of evaluative questions. Too often issues of framing are ignored, and the frame becomes a tacit *consequence*, of rather than a basis for, the analytical technique in use. If, however, framing is explicitly considered up-front, and the use of a particular technique follows from that framing, there are many questions which analytical rationality can usefully address. While the fragility of assumptions necessarily make large-scale forecasting futile, we can analyze the nature of urban transport patterns to deduce the type of transportation most conducive to serving them; we can compare the costs of different transportation options based on past

experience; we can evaluate claims that particular types of transportation will reduce congestion based on past performance. In all these instances, analytical rationality, honestly applied, has its place.

Yet to ask which questions should be asked and to inquire into how to ask them we must shift to a reflective mode where the task is to burst bubbles rather than to merely live inside them. Breaking free from a warm and familiar environment is rarely a comfortable proposition, but may be our only path to innovation and wisdom. Bubble bursting may tell us to steer away from our obsession with questions of technology to instead ask ourselves about needs and about the values we would have steer those needs. Bubble bursting may tell us that our questions of transportation must become larger questions of urbanity and society, and that ultimately the larger questions must be addressed before the transportation ones will fall into place. In the end, it may seem that we can never escape from some sort of bubble. We must always interpret the world through the artifacts of our culture and lifetime’s experience. But we do have the ability to burst at least the smaller bubbles which constrain our effectiveness. If we may draw comfort, it is through the knowledge that while, in our narrowness, we spurn reflection, reflection is a uniquely human quality. By definition it is in antithesis to the pre-programmed quality of the machine.

The political decision makers whose minds we have observed at play follow the paths of neither analytical nor reflective rationality: they tacitly follow the tenets of a myth-creating system of symbols, images and metaphors that works with a “logic” of its own. It is not a logic to give the name of “reason,” for it operates subconsciously: while it may wear the guise of thought, it is not thoughtful.

One clue to possible progress is the mismatch between claims about rail transit and how benefits of transit modes are understood. While inferences may be

based on mythical understandings, claims decision-makers make are generally couched in rational economic terms. A claim may be made that trains cost less to operate than buses. It may be based on the observation that high-capacity trains require only one driver. That observation may provide “evidence,” but verification — according to the structure of the claim — requires a statement in terms of dollars. It can be shown that the cost of a given unit of rail service is not lower than the equivalent cost of using buses.

Claims on ridership may be tacitly based on high-tech imagery, claims to congestion-relief on a metaphor of balance restoring free-flow, but each claim — as stated — depends for verification on a measurement that is the preserve of the analytical world. There is a tension, which may be used to advantage, to show that the decision-makers claims are quite at odds with the reality of actual performance. The tension is dissipated, however, by the power of myth to lead those under its power to reject “facts” which run counter to the mythology. While, following the stated nature of the claim, verification could be expected in terms of dollars or riders, it is actually subconsciously supplied by the tacit network of symbols, images and metaphors that comes together to constitute myth.

Members of the academic community have long derided rail solutions for dispersed western cities. In California, Martin Wachs at UCLA, Peter Gordon at USC, and Melvin Webber at UC, Berkeley, for example, have all been vociferous critics, and the majority of their colleagues have been in agreement. Their complaints have almost always been voiced in terms of economic efficiency: quite simply, the patterns of transportation demands in Los Angeles make it a bad candidate for rail. Yet, such criticism has been almost entirely ignored by those making decisions. This study has shown why: decision-makers do not act accord-

ing to a logic of either conscious analytical or reflective reason, but subconsciously according to their experience in the symbolic world in which they live. Economic analysis — abstract, academic, distant — has only a very limited role to play in such a world, compared to vivid images, meaningful symbols, and the powerful tacit metaphors which guide our everyday life. Showing politicians that their images do not match the “reality” therefore proves to be insufficient: the problem is that the images *constitute* their reality. If we are to exploit the tension between claims made in economic terms and inferences drawn in mythical terms, we therefore need more than analyses and facts. And the reflection we must engender must involve not only reflection on how the problems to be solved are to be framed, but on how they *are* framed now: we must surface the subconscious.

If the greatest need is for reflection, such thought must recognize the reality of the symbolic forces which give our perceptions and actions meaning. To win the ears of decision-makers, we have to do more than tell them they are wrong: we have to find a way to enable them to understand how they have formed the conceptions which hold their attention, and to ask themselves whether in that knowledge, those conceptions are still desirable.

We learn the importance of this if we contrast the thinking of Mayor Tucker and Maxcy Filer. Tucker is not aware of the way his thought is molded by a myth which deceitfully leads him to believe rail will bring benefits to his community. Although the benefits are symbolic, to him they appear real. While Filer may not believe in rail, he is not exempt from metaphor. His thinking — talking in terms of bringing jobs *to* Compton and casting it as a center rather than a periphery, for example — is deeply metaphorical. Filer is, however, aware of the way he frames his analysis and his metaphors are in league with his objectives. Mayor Tucker’s are

not.

The most refreshing interview of this study was conducted with a strong rail advocate. After most of the questioning was over, I started talking with him about my theories. As he was interested, not offended, I pointed out the nature of the symbolic and metaphorical impressions behind many of the statements he had given me. We had already been talking for two hours, but we continued for over two hours more, the subject fascinated by the symbolism, if somewhat disturbed that it meshed so well with the claims he had made. As we progressed, economic facts were presented which discounted the alleged benefits of rail. With a growing awareness of the symbolic nature of the understandings previously held, the subject seemed to increasingly feel the tension between his previous views and what the economic data suggested. While at interview's end he was not wholly "converted," the subject (whose honesty I will not betray by naming) had shifted to a substantially more critical view of rail.

Most importantly, then, it follows that we need to instill a process of psychotherapy to bring to the surface the assumptions which constrain our creativity, for it is only through being made to realize that we are in a prison that we can be persuaded to try to escape. It is to be hoped that the account provided here might make for

a modest start to such a psychotherapeutic process. As Will Glass pointed out at my thesis defense, however, another word for psychotherapy — in the sense used here — is "education," and perhaps — to burst the bubble of the story which has been unraveled here — the biggest constraint to our creativity is an educational system that focuses on delivering skills at solving bounded problems, rather than instilling an ability to criticize, go beyond boundaries, and think for ourselves. If we are to equip ourselves to burst bubbles, then, we may have to reform our very systems of learning.

But, not only must we learn to reflect on the sources of the stories in which we daily dwell; we must find ways to convey alternative and richer stories. If Maxcy Filer lives in a different realm than the mythical world of rail, we need to find ways to illuminate his experience and understandings for others. And that means telling stories not only of economically wasteful rail services but of disenfranchisement and the need for political change, stories those in power will be reluctant to hear. Perhaps, ultimately, it is only through grass roots organization and the development of a voice for the deepest of urban problems that different stories can be heard, the myth of rail displaced, and real change effected.



Blue Line Train Number 1 approaches Pico Station in downtown Los Angeles on July 14, 1990.

*Yet by June 1990
the taxpayers of Los Angeles
will have been paying sales taxes for 9 years
and for 9 years they will have been reading about the promised beginning
of the end of their gridlock nightmares. For over 4 years they will have been
negotiating construction disruption in downtown LA and elsewhere. For
as long as they can remember, they have been fed promises of this great new
set of trains that will whisk them to their jobs conveniently.*

*If the day arrives and the trains are not there,
the taxpayers will vent their wrath in the press and at the polls.
Our duty is not to let the public down when the big day arrives.*

*That big day is what we are referring to
as "Show Time."*

— Norman Jester, LACTC staff (1989)

*In real terms today, children's lungs will be healthier.
Their immune systems will be stronger. . .
[I]t's going to reduce those traffic and smog problems
in a very significant way.*

— California Lieutenant Governor Leo McCarthy

Epilogue

“AND THROUGHOUT THIS county, 150 miles will be started here today,” announced Los Angeles County Transportation Commission Chairman and County Supervisor Ed Edelman as he addressed his fellow commissioners and other dignitaries sitting wearing engineer's caps on the platform of Pico Station in downtown Los Angeles, together with the crowds who had gathered to watch from stands sited across the tracks.

“Now, it's hard to believe that it was just 1960 that we had the last of the Red Car line on this virtually almost identical route, but here we are today knowing how important providing an *alternative* [underlining is my emphasis throughout this chapter] to the automobile is,” he said.

Back in the 1950s and 1960s I think we were not aware of the congestion problems that would be. But today we know what the congestion problems are every day in our lives.

So we're here today to celebrate a very important event in the transportation history of Los Angeles County.

Edelman acknowledged Supervisor Kenneth Hahn for his leadership role, to great applause from the crowds, and then

praised the voters for what they had done:

For this line the people of Los Angeles County had the wisdom back in 1980 to vote a half-cent sales tax and that money is *as you can see today* very well spent.

Edelman now introduced Los Angeles Mayor Tom Bradley who in turn thanked those responsible for bringing “those *beautiful Blue Cars*” to Los Angeles: “It's been a long journey, but this is the beginning of a new and happy journey.”

Long Beach Congressman Glenn Anderson was on next to announce that:

The opening of the Blue Line, the first of the Metro lines to open, marks the beginning of a new era, which will bring benefits of *fast, clean and efficient* rail transportation to millions of residents of Los Angeles County, and never have we needed it more than we do right now.

And I know that all of you share my *pride in this modern, world-class transportation system, which will serve a world-class community.*

Anderson had brought remarks from President Bush from Washington, and read these next:

I am pleased to extend my warm greetings and congratulations to everyone gathered for the inaugural run of the Metro Blue Line *connecting* Long Beach to Los Angeles. The residents of Los



Tom Bradley at Pico Station. Ed Edelman is to his left.

Angeles County can take great *pride* in the opening of this line, the area's first new rail line in 30 years, and by approving a local sales tax to fund this project, you not only demonstrated an exemplary sense of civic responsibility, but also *helped to alleviate highway congestion and improve air quality*. I applaud the outstanding spirit of civic cooperation that helped to make this project a reality. Your efforts will benefit Southern Californians for years to come and will long stand as a shining example of the kind of local commitment that we need as we work to build a better America.

Barbara joins me in sending our best wishes for many years of safe and successful operation. God Bless You.
George Bush.

Nicholas Patsouras, President of the Southern California Rapid Transit District was next on the podium.

Kenny, you remember, you held my coat when I *danced at the groundbreaking ceremonies for Metro Rail, and I feel like dancing again here today*. Last time I was President of the Board, there were a lot of skeptics out there. Bring rail transit to LA? Come on, it will never happen, they said. Well, I take great pleasure to say here with you today triumphantly, the skeptics were wrong.

The *beautiful trains*. . . are the culmination of long planning, hard planning and dedication of thousands of people, many of you in the audience, who *had a vision for LA*, and they knew it could be realized. The dream is a reality. The rhetoric is over. The trains are back. But this is the beginning of a *rail renaissance for LA* as we look into the twenty-first century.

Commissioners Christine Reed and Jackie Bacharach, representing the smaller cities of Los Angeles County were introduced next, and Reed stated that:

We're as excited as everyone else to be here today. *This M* that you see on these hats and on the signs *represents movement all over Los Angeles County* that we're introducing today. . . We are ready to ride.

California Lieutenant Governor, Leo McCarthy, began his speech by praising Kenneth Hahn, then lamented the:

very severe health problems because of smog and traffic. This today helps change that. In *real terms* today, *children's lungs will be healthier*. Their immune systems will be stronger.

"You bet," chimed in Kenneth Hahn, as McCarthy continued:

Fewer than the 300 people who die of cancer each year will suffer because of that. What's happened here today because of good leadership is an extraordinary thing that should be imitated throughout the State of California. When 12,000 passengers ride this Blue Line next year, *it's going to reduce those traffic and smog problems in a very significant way*, and many more in years beyond that, so today I say thank you Ken and thank-you Ed, thank you Jackie and Chris and Tom and all the others who



RTD President, Nick Patsouras, Supervisor Kenneth Hahn, and Supervisor Ed Edelman ring the bell to open the Blue Line on July 14, 1990 at the Pico station in downtown Los Angeles. LACTC member Jackie Bacharach is to the far left, former Commissioner Christine Reed is next to her. Mayor Tom Bradley is behind the bell.

In rain dances and victory dances men achieve symbolically something they collectively need or want by reaffirming their common interest, denying their doubts, and acting out the result they seek. The motor activity, performed together with others, reassures everyone that there are no dissenters and brings pride and satisfaction in a collective enterprise. A simplified model or semblance of reality is created, and facts that do not fit are screened out of it. Conformity and satisfaction with the basic order are the keynotes; and the acting out of what is to be believed is a psychologically effective mode of instilling conviction and fixing patterns of future behavior.

— Edelman (1964, p. 16-17)

have made this possible, but particularly to the people of Los Angeles County. *You made cleaner skies, clearer roads and healthier children a reality.* Thank you. From the state to all of you, to the people of Los Angeles: congratulations.

Supervisor Edelman once more acknowledged that "We're here today because of Kenny Hahn's efforts, and the other people who supported Proposition A," then waxed nostalgic:

I'm going to in a moment here declare the first metro line going by ringing this historic bell. This was a bell that was used on the Red Car line from Long Beach to Los Angeles. I as a young boy lived in Long Beach during the war, and *I remember riding that Red Car* to visit my relatives in Eagle Rock and Hollywood. It was *a wonderful line*. We're here today some 30 years later, duplicating that line but bringing it up to the current technology, *making it swift, making it efficient*, and so we're back in a sense *in an old era with new technology*, and hopefully the people of LA will ride this Metro Rail. . . . It's a pretty good investment for a ride free of congestion, a ride free of discomfort. So I'm going to ask you, Kenny Hahn, the other speakers, if you would join me as I kick off the opening of the Metro Line of Los Angeles, today July 14th, we Los Angeles County Commission, dedicate this light rail line. Kenny, why don't you ring it.

As the bell rings, the crowd cheers, then spacey, "futuristic" sounds are broadcast over loudspeakers and voices are heard, as if direct from Star Trek:

Metro Control, this is Pico Station. Requesting the status of the Metro Blue Line.

Pico Station, this is Metro Control. The Blue Line system is fully operational. *All systems are go* for the inaugural ride of America's newest rail transit line.

Roger, Metro Control, and thank you. This is Pico Station. Blue Line Number 1, this is Pico Station. Metro Control informs us the system is ready. You are cleared for the inaugural ride.

Roger, Pico Station, this is Blue Line train Number 1 standing by.

There are now assorted further

strange sounds, and then the light rail train is sighted (the moment is referred to in an LACTC release as the "reveal" of the train) and, in a cloud of blue smoke and with much hooting, breaks through the banner stretched across the track and glides into the station. The dignitaries excitedly board to consummate Los Angeles' new marriage, and the train sets off southwards, escorted out of downtown LA by a platoon of motorcycle-borne Sheriff's deputies.

There are crowds awaiting the train's arrival in Watts, the line for free rides on the train stretching two hours into the distance. The dignitaries — and accompanying press entourage — disembark for a ceremony at a site close to the center of the Watts riots. Supervisor Edelman begins by telling Watts residents that:

This is the beginning of 150 miles of light rail line that will link this community to the other communities of Pasadena, the San Fernando Valley and Norwalk and the LA International Airport.

One person in particular I want to salute and that is Supervisor Kenny Hahn [cheers]. Kenny Hahn made it possible to get the money to build this line. He had the wisdom and courage and tenacity.

Watts representative on the Los Angeles City Council, Joan Milke Flores now declares that "There is probably no part of Los Angeles that has *missed* the Red Car more than this community," expressing her pleasure at the:

return of that transportation to our community. Today that *dream* is realized. . . . For the first time in almost thirty years, people who live and work in Los Angeles, especially in the Watts community, will have an *alternate mode of transportation, one which will help reduce gridlock and pollution*. The Blue Line is a welcome addition to our community. This line will *connect* downtown Los Angeles and downtown Long Beach and provide a tremendous opportunity for immediate access to either civic center and cities along the line. And the Blue Line will provide *access to transportation and to shopping centers and employment*.



The Blue Line arrives at 103rd St. in Watts.

Referring to the project as an “investment in this community,” she said it “gives us a . . . sign of progress.”

Tom Bradley now appeared to talk of the beginning of “this new era with the Metro Blue Line,” and Kenneth Hahn was then introduced, amidst many cheers:

The Blue Line is here. . . Thank you Tom Bradley. Now, here is my speech. It is the shortest political-speech I have ever made: Here’s the Blue Line: use it!

The train continued to Compton, where another massive crowd was waiting to try out the Blue Line. “I see the citizens of Compton want to ride the train,” said Ed Edelman.

People have been standing out waiting to ride the train for two hours already. *That shows you the need that the people will be able to ride quickly wherever they want to go, and I wanted to simply tell you that this would not have been possible without Kenny Hahn. . . It was Kenny Hahn who moved this Proposition A to the ballot, he got the funds to get it approved, and*

thanks to him, we have the beginning of a light rail line that will bring Los Angeles County to the world-class cities that have adequate ways to move people other than automobiles, so we know the people of Compton are going to use it.

Kenneth Hahn now spoke again: Well, this is a great day for everybody. It was a hard fight, but we won, and I’m going to make the second shortest speech of my life, time me: We won the fight, the Blue Line is here, now use it.

“Let the Blue Line roll!” shouted Tom Bradley.

The next stop was Carson, and Mayor De Witt said that:

It’s a bit of irony that today’s events in celebrating the opening of the Blue Line that the Red Car was retired some 30 years ago as people took to their auto and to the freeways and now it’s ironic that we’re *relying on the new Blue Line to get people out of their cars and off our freeways.* It too will become, the Blue Line will become a part of our history, the part that has yet to be ridden [sic] and we’re



Celebrating the Blue Line's arrival in Carson

hopeful it will be a chapter that speaks of success and solutions to mass transit challenges, solutions that will make our lives better all around. I have with me today a proclamation that I'd like to present to Supervisor Edelman. It's a proclamation proclaiming "Blue Line Days" here in the City of Carson, and I'd also like to congratulate the Los Angeles County Transportation Commission on the Blue Line's opening and wish great success to the track of the future. We'd like to present you with this proclamation.

Ed Edelman thanked her and asked the crowd:

How many of you would like to ride the new trains?: raise your hands. I can see that you're going to enjoy it. I've ridden the first train coming from Los Angeles. We stopped off in Compton, we stopped off at Willowbrook, we stopped off at 103rd St. and people along this way are excited. They are excited because this is a new day. It's a new day in terms of *linking our communities together in a fast and*

efficient manner. How many of you don't like the heat today? Raise your hands. Alright, *even if you don't have to travel anywhere, get on one of these cars and cool off!* It's like 65 degrees on those cars. It's wonderful! So, we're celebrating here today a new beginning, that's 150 miles are going to be built after this 19 miles, going to Pasadena, going to the San Fernando Valley, going to the Airport.

I remember as a young person — I grew up in Long Beach — not very far from here, and I remember 1945, 47, riding the Red Car — that one right there, from Long Beach to downtown, and then I went up to Hollywood to visit some relatives. Well, you're all going to be able to do the same thing. . .

Kenny Hahn was the real force behind Proposition A. The people of LA County, believe it or not, voted a tax increase. You know, today we're not supposed to use the T-word. Back in 1980, thanks to Kenny Hahn, the people realized that the T-word was a pretty good word. *It wasn't so bad, because look what*

we've got. We've got this new light rail line. We're going to get the rest of it built, too, thanks to the leadership of Kenny Hahn.

Kenneth Hahn repeated his "short" speech. Next stop Long Beach, where a marching band and majorettes meet the train. Ed Edelman started the ceremonies there:

We've returned to Long Beach. The old Red Line is here, but it's now the Blue Line, and it's returned to the second largest city of this county, the city that has a proud history and a proud heritage. One of those heritage was that it was the base for the Red Line that ran from Long Beach to Los Angeles back in the 30s, 40s, 50s, till someone had the idea that we ought to do away with it. Well, that wasn't a very good idea then, and it's a worse idea now, because we have more traffic, more congestion, more need to move people, to link communities than ever before. . .

People are waiting two an three hours, four hours to get a chance to ride

this new light rail system, and I can tell you riding it, *it's the coolest place to be on a hot day, it's one of the quietest places to be on a hot day, the ride is smooth, the ride is fast, it's wonderful. . .* So I'm just pleased to be here today to see a *dream* come true.

Over to Kenneth Hahn:

We had a hard fight, we won that fight and Proposition A, we have the Blue Line, now, the people of Long Beach: you use it.

Long Beach Mayor Ernie Kell declared that "We're proud and honored that this is going to be the first *link* of a 150 mile system."

Deane Dana spoke next, and was followed by Glenn Anderson, who talked of "the benefits of fast, clean and efficient rail transportation:

And never have we needed it more than we do now. The residents of Long Beach will be able to travel comfortably throughout Los Angeles County, from LA to the Universal City, the Airport,



The opening day queue for a train ride in Long Beach

all around. . . And I know that all of you share my pride in this *modern, world-class transportation system which will connect two world-class communities*. Of course, we all know that the living is going to be a little better at the end of the line, and once again congratulations to everyone involved.

The message from President Bush is read again. More speeches follow, and the dignitaries adjourn to a celebration lunch. The Blue Line opens, the crowds pack on to try out the newest, most exciting ride in the park — and with no admission fee! Everyone is happy.

After lunch, the dignitaries board specially scheduled RTD buses to return them express to downtown in half the time it would have taken by Blue Line light rail.

CLOSING THOUGHTS

The ceremony is heavy in political posturing: a combination of tribute-paying and self-congratulation. But it is much more than that, as can be seen from an appreciation that it operates according to the edicts of the symbolic world we have seen above. And that is what gives it meaning, makes it seem real to its participants.

The rail is seen as an “alternative” to the roads (“escape valve” metaphor): the fact that they are “fast, clean, and efficient” is taken to mean that they can provide benefits, without consideration of whether they provide service to where people want to go. In the implicit metonymic reduction, the trip is seen in terms of time on board the train, without the problems of getting to and from the train registering on the imagination.

The train is said to be capable of reducing “those traffic and smog problems in a very significant way” — and thereby improving the condition of children’s lungs — even though consulting work done for the Commission, itself, says it

will make no significant difference. The politicians do not generally read the details of consulting reports and, even when they do, reject conclusions which go against the logic of the everyday symbolism and imagery to which they are exposed and the common-sense through which they understand it. The “M” in the engineer’s hats “represents movement all over Los Angeles County,” and that symbolic understanding is very real.

The train is seen as providing “access” to employment for people in Watts, even though without the skills to get the jobs, no real “access” can actually be provided. It is seen as “linking” communities in a physical sense, even if there is no economic or social basis upon which such links might be secured. It is a “sign of progress” even without any evidence that “progress” will be provided.

There is a nostalgic boyhood remembering of the Red Cars, now defunct and “missed” as if they were people. There is a recalling of what a bad decision it was to scrap them, as if congestion could have been prevented were they to have been retained: The powers of a speeding train appear strong; any abstract academic understanding of the changing patterns of transportation interaction in Los Angeles which made it impossible for rail to keep a significant role, is absent.

The old bell is rung: a reliving of something with good associations from the past which, through the transport of memories, is taken to symbolize good even today. An “old era” is re-evoked, except with supposedly “new technology,” even though the basis for the technology and its mismatch with modern needs is — except on the most superficial level — as old as the era from which it originates.

Proof is ever in the eyes: The “T-word” wasn’t so bad because “look what we’ve got. We’ve got this new light rail line.” “As you can see today the sales tax money voted with Proposition A is “very well spent.” How can this be seen? By

looking at and riding on the trains, not from conducting an economic evaluation. And, to the eye, the trains look very good. The rail cars are "beautiful" as well as "quiet," "smooth," and "fast," and have a sensual allure. The train is something out of Hollywood (viz. the "Star Trek" presentation), an exciting extraterrestrial experience, a Disneyland ride. It is something to experience "even if you don't have to travel anywhere" because the cars have wonderful air conditioning. It is something to be "enjoyed," rather than a necessity. The fact that people are standing waiting to ride "shows you the need" even though those people are waiting to partake of a one-time fantasy experience, rather than to go anywhere in particular.

Having such a "world-class transportation system," of which everyone can be "proud" is symbolically linked to having a "world-class community." The train is the result of a vision, not of analytical reason: it stands for the kind of Los Angeles that is sought, a Los Angeles flourishing in a "rail renaissance," and whether or not it can actually bring that Los Angeles into existence is irrelevant, given the power of the dream to appear real. The opening is an occasion for dancing, as in rain or victory dancing a denial of doubt, a

display of pride, an establisher of conformity.

With "expressions of joy, celebrations, parties, cheerful announcements" (Churchman 1979, p. 157), polis had been successfully formed. Most disturbingly, the political success of the rail project has little or nothing to do with whether it is of any real value. The symbolic success is to all intents and purposes real. And so what if the trolley cannot be useful as a transport of a necessity? It is a transport of delight.

Are all the speeches "just" rhetoric? No, the logic connecting the threads of understanding is too palpable, the history, the memories, the experiences, the visual imagery all offer evidence to support what is being said, and offer evidence according to the way most of us most of the time think. We think naturally according to our human experiences; we create realities for ourselves unknowingly that can lead us deeply astray. But, in our rain dances we sometimes transcend a reality we would rather escape. And, for the moment, with the happy crowds of disenfranchised and poor people cheering the train sailing through Watts, that's all that matters. Even if the cruel elements of an unchanged reality will nonetheless return once the train has disappeared into the distance.

References

- Abercrombie, Patrick (1933), *Town and Country Planning*; London: Oxford University Press;
- Abercrombie, Patrick (1937), *Planning in Town and County*; An Inaugural Lecture in the Department of Town Planning, School of Architecture, University College, London: Hodder & Stoughton;
- Ackoff, Russell L. (1978), *The Art of Problem Solving*; New York: Wiley;
- Adler, Pat (1966), "Watts: A Legacy of Lines;" *Westways* 58, August;
- Adler, Sy (1986), *Understanding the Dynamics of Innovation in Urban Transit*; Center for Transit Research and Management Development, Portland State University, Portland, Oregon; US DOT report UMTA-OR-11-003-86-1, Washington DC: US Department of Transportation;
- Alexander, Christopher (1964), *Notes on the Synthesis of Form*; Cambridge, MA: Harvard University Press;
- Alexander, Christopher (1965), "A City is Not a Tree;" *Architectural Forum* 122, Part 1: No. 1, 58-61 & Part 2: No. 2, 58-62;
- Allison, Graham T. (1971), *Essence of Decision: Explaining the Cuban Missile Crisis*; Boston, MA: Little, Brown & Co.;
- Altshuler, Alan A. (1979), *The Urban Transportation System: Politics and Policy Innovation*; Cambridge, MA: MIT Press;
- Andreski, Stanislav (1972), *Social Science as Sorcery*; London: Andre Deutsch;
- Ascher, William (1978), *Forecasting: An Appraisal for Policy-Makers and Planners*; Baltimore, MD: Johns Hopkins University Press;
- Automobile Club of Southern California (1937), *Traffic Survey*; Los Angeles, CA;
- Bail, Eli (1984), *From Railway to Freeway: Pacific Electric and the Motor Coach*; Glendale, CA: Interurban Press;
- Baker, Donald M. (1933), *A Rapid Transit System for Los Angeles, California*; Los Angeles, CA;
- Barton-Aschman and Associates and Richard H. Pratt and Associates (1981), *Traveler Response to Transportation System Changes*, Second Edition; Report No. DOT-FH-11-9579; Washington, DC: US Department of Administration, July;
- Bartel, Roland (1983), *Metaphor and Symbols*; Urbana, IL: National Council of Teachers of English;
- Benveniste, Guy (1977), *The Politics of Expertise*; Second Edition, San Francisco, CA: Boyd & Fraser;
- Black, Max (1962), *Models and Metaphors, Studies in Language and Philosophy*; Ithaca, NY: Cornell University Press;
- Blauner, Robert, (1969), "Whitewash over Watts: The Failure of the McCone Commission Report;" in ed. Fogelson, Robert M., *The Los Angeles Riots*; New York: Arno Press & The New York Times;
- Board of Public Utilities (1926), *Annual Report*;
- Bonsall, John (1985), "A Bus For All Seasons;" paper presented at seminar on *The Canadian Experience: Making Transit Work in the Golden Gate Corridor*; co-sponsored by the Golden Gate Bridge,

- Highway and Transportation District and the Canadian Consulate General, San Rafael, CA, October 3;
- Boulding, Kenneth E. (1956), *The Image; Knowledge in Life and Society*; Ann Arbor, MI: The University of Michigan Press;
- Boulding, Kenneth E. (1968), "The Ethics of Rational Decision;" *Management Science* V. 12, No. 6, B-161-B-169;
- Bradbury, Ray (1957), *Dandelion Wine*; Garden City, NY: Doubleday;
- Braybrooke, D. and Lindblom, Charles E. (1963), *A Strategy of Decision: Policy Evaluation as a Social Process*; New York: The Free Press;
- Brewer, Garry D. (1973), *Politicians, Bureaucrats and the Consultant*; New York: Basic Books;
- Brodsky, David (1981), *L.A. Freeway: An Appreciative Essay*; Berkeley, CA: University of California Press;
- Bronner, Ethan (1987), "The Wearing of His Uniform Is Also an Issue;" *Boston Globe*, July 9, p. 14;
- Brubaker, Rogers (1984), *The Limits of Rationality: An Essay on the Social and Moral Thought of Maximization Weber*; London: George Allen & Unwin;
- California Legislature (1950), *A Preliminary Report on Rapid Transit for the Los Angeles Area*; California Assembly Interim Committee on Public Utilities and Corporations, Sacramento, CA;
- California Legislature (1975), Senate Committee on Public Utilities, Transit, and Energy, Southern California Rapid Transit Subcommittee, *Hearings*, July 25;
- California Legislature (1981a), "Light Rail Transit in Southern California — Return of the Red Cars," *Transcript of Proceedings*; Public Hearing before the California Assembly Committee on Transportation, Long Beach City Hall, Long Beach, California, August 14;
- California Legislature (1981b) *Light Rail Program for Los Angeles County*; Assembly Committee on Transportation;
- California Railroad Commission (1940), Decision No. 33088, May 14, 631-632;
- California Railroad Commission (1941), Decision No. 33984, Mar. 11, 379;
- California Railroad Commission (1950), Decision No. 44161, May 9, 661-662;
- Caltrans (California Department of Transportation) (1978), *Freeway Transit Element of the Regional Transit Development Plan for Los Angeles County*; District 7, Transit Branch, August;
- Caltrans (1981), *Long Beach to Los Angeles Light Rail Transit Feasibility Study*; Los Angeles, CA: Caltrans District 7 — Public Transportation Branch, October;
- Cassirer, Ernst (1944), *An Essay on Man*; New Haven, CT: Yale University Press;
- Cassirer, Ernst (1955), *The Philosophy of Symbolic Forms*; Vol. 2, "Mythical Thought," New Haven, CT: Yale University Press;
- Cervero, Robert (1984), "Light Rail Transit and Urban Development;" *Journal of the American Planning Association*, Spring, 133-147;
- Chorley, Richard J. and Haggett, Peter (1967), *Models in Geography*; London: Methuen;
- Churchman, C. West (1971), *The Design of Inquiring Systems: Basic Concepts of Systems and Organization*; New York: Basic Books;
- Churchman, C. West (1979), *The Systems Approach and Its Enemies*; New York: Basic Books;

- Churchman, C. West (1982), *Thought and Wisdom*; Seaside CA: Intersystems Publications;
- Citizens Advisory Council on Public Transportation (1967), *Improving Public Transportation in Los Angeles*; Los Angeles, CA;
- City Club of Los Angeles (1926), *Report on Rapid Transit*; supplement to *City Club Bulletin*, 30, January;
- City of Santa Monica v. Jones (1951), 104 C.A. 2d 463, 469;
- City of Toronto Planning Board (1963), "Air Rights and Land Use Adjacent to the Bloor-Danforth Subway;" June;
- City of Toronto Planning Board (1971), "Report in a Proposal to Rezone Lands Along the East/West Subway Route to Permit High Rise Apartments;" October 12;
- Conforti, Joseph M. (1989), "The Cargo Cult and the Protestant Ethic as Conflicting Ideologies: Implications for Education;" *The Urban Review*, Vol. 21, No. 1;
- Crain, John and Associates (1974), *First-year Report: San Bernardino Freeway Express Busway Evaluation*; Menlo Park, CA: John Crain and Associates;
- Crump, Spencer (1970), *Ride the Big Red Cars: How Trolleys Helped Build Southern California*; Corona del Mar, CA: Trans-Anglo Books;
- Crump, Spencer (1978), *Henry Huntington and the Pacific Electric*; Corona del Mar, CA: Trans-Anglo Books;
- de Bono, Edward (1967), *The Use of Lateral Thinking*; Harmondsworth, Mddx.: Penguin Books;
- de Bono, Edward (1969), *The Mechanism of Mind*; Harmondsworth, Mddx.: Penguin Books;
- Deloitte/Kellogg Joint Venture (1989), Memorandum Re: *Start-up Review Report No. 2* from Rodney J. Dawson to Ed McSpedon, LACTC, Los Angeles, CA, September 15;
- de Neufville, Judith Innes (1981), "Symbol and Myth in Public Choice, The Case of Land Policy in the United States;" *Working Paper 359*, Berkeley, CA: Institute of Urban & Regional Development, University of California;
- Didion, Joan (1970), *Play It As It Lays*; New York: Bantam Books;
- DMJM (Daniel, Mann, Johnson and Mendenhall) (1965), *Planning and Economic Considerations Affecting Transportation in the Los Angeles Region*; Los Angeles, Southern California Rapid Transit District;
- Dror, Yehezkel (1968), *Public Policymaking Reexamined*; Scranton, PA: Chandler Publishing Company;
- Dyckman, John W. (1976), "Riding the Sunset Coast Line;" in ed. Gordon, Peter and Eckert, Ross D., *Transportation Alternatives for Southern California*, Conference Proceedings of a Symposium, The Institute for Public Policy Research, Center for Public Affairs, University of Southern California, April 12, 19-45;
- Edelman, Murray (1964), *The Symbolic Uses of Politics*; Urbana and Chicago, IL: The University of Illinois Press;
- Electric Railway Journal (1927), "Henry E. Huntington Dead;" May 28;
- Electric Traction (1925), "Street Cars Coming Back;" editorial, October;
- Ellul, Jacques (1964), *The Technological Society*; New York: Knopf;
- Firth, Raymond (1973), *Symbols: Public and Private*; Ithaca, NY: Cornell University Press;
- Fisher, Franklin M. (1980), "Multiple Regression in Legal Proceedings;" *Columbia Law Review*, May, 702-736;
- Florman, Samuel C. (1976), *The Existential Pleasures of Engineering*; New York: St. Martin's Press;

- Fogelson, Robert M. (1967), *The Fragmented Metropolis: Los Angeles 1850 - 1930*; Cambridge, MA: Harvard University Press;
- Fogelson, Robert M. (1969), "White on Black: A Critique of the McCone Commission Report on the Los Angeles Riots;" in ed. Fogelson, Robert M., *The Los Angeles Riots*; New York: Arno Press & The New York Times;
- Foss, Martin (1949), *Symbol and Metaphor in Human Experience*; Princeton, NJ: Princeton University Press;
- Foster, Mark S. (1971), *The Decentralization of Los Angeles During the 1920s*; doctoral dissertation, Los Angeles, CA: University of Southern California, Department of History;
- Foster, Mark S. (1975), "The Model-T, The Hard Sell, and Los Angeles' Urban Growth: The Decentralization of Los Angeles during the 1920s;" *Pacific Historical Review* 44, November, 459-484;
- Freud, Sigmund (1938), "Three Contributions to the Theory of Sex;" in ed. and translated Brill, A. A. *The Basic Writings of Sigmund Freud*; New York: Random House, 551-629; also available as Freud, Sigmund (1962), *Three Contributions to the Theory of Sex*; New York: Dutton;
- Friedmann, John and Hudson, Barclay (1974), "Knowledge and Action: A Guide to Planning Theory;" *AIP Journal*, January, 2-16;
- Gabor, Dennis (1970), *Innovations: Scientific, Technological and Social*; New York and Oxford: Oxford University Press;
- Garrison, William L. (1979), "Urban Transportation and Land Use;" in ed. Gray, George E., and Hoel, Lester E., *Public Transportation: Planning, Operations and Management*; Englewood Cliffs, NJ: Prentice-Hall, 515-526;
- 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;
- Glaab, Charles N. and Brown, A. Theodore (1967), *The History of Urban America*; London: Macmillan;
- Gleicher, P. and Fried, M. (1967), "Some Sources of Residential Satisfaction in an Urban Slum;" in Bellusch, J. and Hausknecht, M. (eds.), *Urban Renewal: People, Politics and Planning*; Garden City, NY: Doubleday Anchor;
- Gómez-Ibáñez, José A. (1985), "A Dark Side to Light Rail?;" *Journal of the American Planning Association*, Summer, 337-351;
- Gómez-Ibáñez, José A. (1986), "Author's Response;" *Journal of the American Planning Association*, Winter, 89-90;
- Goodwin, H. Marshall Jr. (1965), "From Dry Gulch to Freeway;" *Southern California Quarterly* 47, Summer, 73-102;
- Ed. Gordon, Peter and Eckert, Ross D. (1976), *Transportation Alternatives for Southern California*; Conference Proceedings of a Symposium, The Institute for Public Policy Research, Center for Public Affairs, University of Southern California, April 12;
- Gruen Associates, Inc. (1977), "Indirect Environmental Impacts;" TM 244-77, BART Impact Program, Berkeley, CA: Metropolitan Transportation Commission;
- Hacker, Frederick J. (1965), "Psychology and Psychopathology in Symbolism;" in ed. Rcyce, Joseph R., *Psychology and the Symbol, An Interdisciplinary Symposium*; 73 - 87, New York: Random House;
- Hall, Peter (1982), *Great Planning Disasters*; American Edition, Berkeley, CA: University of California Press;

- Hallihan, Joseph P. (1929), "Relation of Rapid Transit to Community Development;" *Electric Railway Journal*, 73, September 14;
- Hamer, Andrew M. (1976), *The Selling of Rail Rapid Transit*; Lexington, MA: Lexington Books;
- Hart, Douglas A. (1976), *Strategic Planning in London: The Rise and Fall of the Primary Road Network*; Oxford: Pergamon Press;
- Hayakawa, S. I. (1965), "Discussant I;" in ed. Royce, Joseph R., *Psychology and the Symbol, An Interdisciplinary Symposium*; 88-94, New York: Random House;
- Hebert, Ray (1982), "Prop A: From Bleak to Bright in LA;" *Mass Transit*, September, p. 38-42;
- Heenan, G. Warren (1968), "The Economic Effect of Rapid Transit on Real Estate Development in Toronto;" *The Appraisal Journal*, April, 213-224;
- Henderson, C. and Billheimer, J. (1972), *Manhattan Passenger Distribution Project: Effectiveness of Midtown Manhattan System Alternatives*; Menlo Park, CA: Stanford Research Institute;
- Hilton, George W. (1967), "Rail Transport and the Pattern of Modern Cities: The California Case;" *Traffic Quarterly*, Vol. 3, July, 379-393;
- Hinman, Lawrence M. (1982), "Nietzsche, Metaphor, and Truth;" *Philosophy and Phenomenological Research*, Vol. XLIII, No. 2, December, 179-199;
- Hochberg, Julian E. (1978), *Perception*; Englewood Cliffs, NJ: Prentice - Hall, second edition;
- Holt, Glen E. (1972), "The Changing Perception of Urban Pathology: An Essay on the Development of Mass Transit in the United States;" in. ed. Jackson, Kenneth J., and Schultz, Stanley K., *Cities in American History*; New York: Knopf, 324-343;
- Hoos, Ida R. (1969), *Systems Analysis in Public Policy*; Research Monograph No. 19, London: Institute of Economic Affairs;
- Hunt, Rockwell D. and Amert, William S. (1929), *Oxcart to Airplane*; Los Angeles, CA: Powell Publishing Co.;
- Ittelson, W. H. (1952), *The Ames Demonstrations in Perception*; Princeton, NJ: Princeton University Press;
- Jester, Norman J. (1989), "Preparations for "Show Time:" The Los Angeles Story;" in *Light Rail Transit, New System Successes at Affordable Prices*, Washington, DC: Transportation Research Board, Special Report 221, 336-348;
- Johnson, Mark (1987), *The Body in the Mind: The Bodily Basis of Meaning, Imagination and Reason*; Chicago, IL: University of Chicago Press;
- Johnston, Robert A., and Sperling, Daniel (1986), *Politics and Technical Uncertainty in Transportation Investment Analysis*; Davis, CA: Division of Environmental Studies and Department of Civil Engineering, University of California, October 15;
- Jones, David W., Jr. (1985), *Urban Transit Policy: An Economic and Political History*; Englewood Cliffs, NJ: Prentice Hall;
- Kagan, Debra, Newman, David, Sander, Stan and Woltoncroft, Bonnie (1972), *Mass Transit in Los Angeles: An Analysis*; Claremont, CA: Program in Public Policy Studies of the Claremont Colleges, June;
- Kain, John F. (1990), "Deception in Dallas: Strategic Misrepresentation in Rail Transit Promotion and Evaluation;" *Journal of the American Planning Association*, Spring, 184-196;
- Kaiser Engineering and DMJM (Daniel, Mann, Johnson and Mendenhall) (1974), *Technical Study of Alternative Transit Corridors and Systems, Plan Refinement, Volume I: Engineering and Planning, Phase III*; Los Angeles, Southern Cali-

- fornia Rapid Transit District, March;
- Karr, Randolph (1973), *Rail Passenger Service History of Pacific Electric Railway Company*; unpublished. Available through Southern California Rapid Transit District Library, Los Angeles;
- Karr, Randolph (1973), *Rail Passenger Service History of the Pacific Electric Railway Company*; unpublished. Available through Southern California Rapid Transit District library, Los Angeles;
- Kelker, de Leuw & Co. (1925), *Report and Recommendations on a Comprehensive Rapid Transit Plan for the City and County of Los Angeles*, Chicago, IL;
- Kelman, Steven (1985), "Cost-Benefit Analysis and Environmental, Safety, and Health Regulation: Ethical and Philosophical Considerations;" in ed. Wachs, Martin, *Ethics in Planning*; New Brunswick, NJ: Center for Urban Policy Research, 233-245;
- Keyser Marston Associates, Katz, Hollis, Coren & Associates, and Jefferson Associates (1973), *Long Beach - Los Angeles Rail Transit Project, Internal Memo 3.4: Evaluation of Development Potential*;
- Kirkman-Harriman (1937), "The Kirkman-Harriman Pictorial and Historical Map of Los Angeles County, 1860 AD;" Los Angeles, CA;
- Knight, Robert L. and Trygg, Lisa L. (1977), "Evidence of Land Use Impacts of Rapid Transit Systems;" *Transportation*, 6, 231-247;
- Kovach, Carol (1974), "On Conducting an 'Impact' Study of a Rapid Transit Facility — The Case of Toronto;" presented to Joint Transportation Engineering Meeting, Montreal, July 15-19, Meeting preprint MTL-23;
- Kramer, Fred A. (1975), "Policy Analysis as Ideology;" *Policy Analysis*, September/October, 509-517;
- Kuhn, Thomas S. (1957), *The Copernican Revolution*; Cambridge, MA: Harvard University Press;
- Kupferberg, Herbert (1980), "Bus Talk;" *Parade*, Dec. 14;
- Kurtzweg, Clifford L. (1967), *Mass Rapid Transit Organization in the Seattle Region*; unpublished Master's thesis, Seattle, WA: University of Washington;
- LACTC (Los Angeles County Transportation Commission) (1978), *Staff Budget Memorandum*; April 26;
- LACTC (1979a), *Transcript of LACTC meeting*; July 11;
- LACTC (1979b), *LACTC Minutes*; January 10, 1979;
- LACTC (1979c), *LACTC Minutes*; August 8;
- LACTC (1980a), *Staff Report on Transit System and Financing Alternatives for Los Angeles County*; Jan. 23;
- LACTC (1980b), *Minutes*; Commission Meeting, March 26;
- LACTC (1980c), *Minutes*; Commission Meeting, August 6;
- LACTC (1980d), *Transcript of Commission Meeting*; August 20;
- LACTC (1981a), *Staff Report on a Rapid Transit Development Strategy for Los Angeles County*; September 9;
- LACTC (1981b), *Minutes*; September 23;
- LACTC (1981c), *Minutes*; October 13;
- LACTC (1981d), *Minutes*; October 28;
- LACTC (1982a), *Rapid Transit Development in Los Angeles County: Staff Recommendations*; Los Angeles, CA, March 17;
- LACTC (1982b), *Memorandum from John Zimmerman, Chairman, Ad Hoc Rapid Transit Committee, to LACTC members and alternates on "March 17 Actions of Ad Hoc Rapid Transit Committee"*; March 19;
- LACTC (1982c), *Transcript of Commission meeting held March 24*;
- LACTC (1984) *The Long Beach - Los Angeles Rail Transit Project, Draft Environmental Impact Report*; May;

- LACTC (1985) *The Long Beach - Los Angeles Rail Transit Project, Final Environmental Impact Report*; March;
- LACTC (1990), *LACTC Blue Line: Staff Requirements and O & M Costs*; January 10;
- LACTC (1991), *Metro Moves*; February;
- LACTC/SCRTD (1990), *Minutes/Proceedings*; Joint Meeting of the Southern California Rapid Transit District and the Los Angeles County Transportation Commission, December 5;
- Lakoff, George, (1987), *Women, Fire, and Dangerous Things; what Categories Reveal about the Mind*; Chicago, IL: University of Chicago Press;
- Lakoff, George and Johnson, Mark (1980), *Metaphors We Live By*; Chicago, IL: The University of Chicago Press;
- Langer, Susanne K. (1949), "On Cassirer's Theory of Language and Myth;" in ed. Schilpp, Paul Arthur, *The Philosophy of Ernst Cassirer*; Evanston, IL: The Library of Living Philosophers;
- Langer, Susanne K. (1957) *Philosophy in a New Key: A Study in the Symbolism of Reason, Rite and Art*; Third Edition; Cambridge, MA: Harvard University Press;
- Laski, Harold J. (1974), "Limitations of the Expert;" *Chemtech*, April, 198-202, originally published in 1930 in *Harpers*;
- Lasswell, Harold (1960), *Psychopathology and Politics*; New York: Viking Press;
- Lave, Charles A., (1979), "The Mass Transit Panacea and Other Fallacies About Energy;" *The Atlantic*, Vol. 244, No. 4, October, 39-43;
- Leamer, Edward E. (1983), "Let's Take the Con out of Econometrics;" *American Economic Review*, March, 31-43;
- Lee, Douglass B., Jr. (1973), "Impacts of BART on Prices of Single-Family Residences and Commercial Property;" BART Impact Studies, Berkeley, CA: Institute of Urban and Regional Development, University of California;
- Lee, Douglass B., Jr. and Wiech, D. F. (1972), "Market Street Study;" BART Impact Studies, Berkeley CA: Institute of Urban and Regional Development, University of California;
- Libicki, Martin C. (1975), "Land Use Impacts of Major Transit Improvements;" Urban Analysis Program, Office of the Secretary of Transportation, Washington, DC, March;
- Lieberman, William (1986), "Illuminating the dark side of light rail;" letter to the editor, *Journal of the American Planning Association*, 87-89;
- Los Angeles Central City Committee and the Los Angeles City Planning Department (1960), *Los Angeles Centropolis 1980: Economic Survey*; Los Angeles, CA;
- Los Angeles County and City Human Relations Commissions (1985), *McCone Revisited: A Focus on Solutions to Continuing Problems in South Central Los Angeles. Report on a Public Hearing Jointly Sponsored by the Los Angeles County and City Human Relations Commissions*; January;
- Los Angeles County Regional Planning Commission (1931), *A Comprehensive Report on the Regional Plan of Highways: Section 4, Long Beach - Redondo Area*; Los Angeles CA;
- Los Angeles County Regional Planning Commission (1941), *Master Plan of Highways*; Los Angeles, CA;
- Los Angeles County Regional Planning Commission (1943), *Freeways for the Region*; Los Angeles, CA;
- Los Angeles Metropolitan Parkway Engineering Committee (1946), *Interregional, Regional, and Metropolitan Parkways*; Los Angeles, CA;
- Los Angeles Times* (1926), Feb. 1;
- Los Angeles Traffic Commission (1924), *A*

- Major Traffic Street Plan for Los Angeles*; prepared by Frederick Law Olmsted, Jr., Harland Bartholomew, and Charles Henry Cheney: Los Angeles, CA;
- Los Angeles Transportation Engineering Board (1939), *A Transit Program for the Los Angeles Metropolitan Area*; Los Angeles;
- MacCormac, Earl R. (1976), *Metaphor and Myth in Science and Religion*; Durham, NC: Duke University Press;
- MacIntyre, Alasdair (1985), "Utilitarianism and the Presuppositions of Cost-Benefit Analysis: An Essay on the Relevance of Moral Philosophy to the Theory of Bureaucracy;" in ed. Wachs, Martin, *Ethics in Planning*; New Brunswick, NJ: Center for Urban Policy Research, 216-232;
- Malm, Richard F. (1986), *Transit Planning in Metropolitan Seattle: A Historical Perspective*; Seattle, WA: Municipality of Metropolitan Seattle;
- Manheim, Marvin L. (1979), *Fundamentals of Transportation Systems Analysis*; Volume 1: Basic Concepts; Cambridge MA: MIT Press;
- Marcou, O'Leary & Associates (1971), *Transit Impact on Land Development*; Washington, DC;
- Maxwell, Nicholas (1984), *From Knowledge to Wisdom: A Revolution on the Aims & Methods of Science*; Oxford and New York: Basil Blackwell;
- McCone, John (1965), *Violence in the City — An End or a Beginning? A Report by the Governor's Commission on the Los Angeles Riots*; Dec. 2;
- McFadden, Daniel (1974), *The Measurement of Urban Travel Demand*; Working Paper No. 227; Berkeley, CA: Institute of Urban and Regional Development, University of California, Berkeley;
- McGean, T. J., Haussmann, J. G., Lee, M. T., Watzich, J. and Bamberg, W. (1983), *Assessment of the San Diego Light Rail System*; N. D. Lea & Associates with Gannett Fleming, prepared for Technical Assistance Program; Washington, DC: Urban Mass Transportation Administration, US Department of Transportation, Final Report, UMTA-IT-06-0248-84-1, November;
- McSpedon, Edward (1989), "Building Light Rail Transit in Existing Rail Corridors — Panacea or Nightmare? The Los Angeles Experience;" in *Light Rail Transit, New System Successes at Affordable Prices*, Washington, DC: Transportation Research Board, Special Report 221, 426-441;
- McWilliams, Carey (1973), *Southern California: An Island on the Land*; Santa Barbara and Salt Lake City: Peregrine Smith;
- Merleau-Ponty, Maurice (1964), *The Primacy of Perception*; Evanston, IL: Northwestern University Press;
- METRO (Municipality of Metropolitan Seattle) (1985), *Final Environmental Impact Statement, Downtown Seattle Transit Project*; June;
- Miller, George A. (1979), "Images and Models, Similes and Metaphors;" in ed. Ortony, Andrew, *Metaphor and Thought* 202 - 250; Cambridge: Cambridge University Press;
- Miller, Gerald K. and Goodman, Keith M. (1972), *The Shirley Highway Express-Bus-on-Freeway Demonstration Project: First Year Results*; Washington, DC: Technical Analysis Division, National Bureau of Standards;
- Morrison, Philip (1985), "Knowing Where You Are: A First Essay Towards Crossing Critical Barriers;" in Apelman, Maja, Hawkins, David and Morrison, Philip, *Critical Barriers Phenomenon in Elementary Science*, p.80-86; Grand Forks, ND: Center for Teaching and Learning, University of North Dakota;
- MTDB (San Diego Metropolitan Transit

- Development Board) (1986), *East Urban Corridor, San Diego Region, Final Environmental Impact Statement*; San Diego CA: San Diego Metropolitan Transit Development Board, and San Francisco CA: Urban Mass Transportation Administration, US Department of Transportation;
- Mulvey, John M. (1983), "Computer Modelling for State Use: Implications for Professional Responsibility;" paper given at meeting of the American Academy for the Advancement of Science, Detroit, May;
- Nash, Allan N. and Hille, Stanley J. (1968), "Public Attitudes Toward Transport Modes: A Summary of Two Pilot Studies; *Highway Research Record 233*; Washington DC: Highway Research Board;
- National Analysis (1963), *A Survey of Commuter Attitudes Toward Rapid Transit Systems*; Vol. 1; Washington, DC: National Capital Transportation Agency;
- Nelson, Howard J. (1959), "The Spread of an Artificial Landscape over Southern California;" in ed. Thomas, William L., Jr., *Man, Time, and Space in Southern California*; special supplement to *Annals of the Association of American Geographers* 49, September;
- Nietzsche, Friedrich, (1969), *The Will to Power*; New York: Random House;
- Olmsted, Frederick Law, Jr., Bartholomew, Harland, and Cheney, Charles Henry, *A Major Street Plan for Los Angeles*; Los Angeles, CA: Los Angeles Traffic Commission;
- Pacey, Arnold (1983), *The Culture of Technology*; Cambridge, MA: MIT Press;
- Padron & Associates (1990), *Blue Line FY 1991 Budget (Revised)*; letter from Manuel Padron to Sharon Neely, LACTC; Atlanta, GA, June 26;
- Parsons, Brinkerhoff, Hall, and Macdonald (1956), *Regional Rapid Transit*; Report to the San Francisco Bay Area Rapid Transit Commission, January;
- Parsons, Brinckerhoff, Quade & Douglas (1982a), *Investigate Potential Ridership for Baseline Los Angeles - Long Beach Light Rail Project*; Working Paper No. 7, part of *The Los Angeles to Long Beach Light Rail Project and Evaluation of Other Rapid Transit Opportunities Study*; prepared for Los Angeles County Transportation Commission, Los Angeles, CA;
- Parsons, Brinckerhoff, Quade & Douglas (1982b), *Summary Report, The Los Angeles - Long Beach Light Rail Project and Evaluation of Other Rapid Transit Opportunities*; Santa Ana, CA;
- Pegg, Alan F. (1990a), *Memorandum to SCRTD Board of Directors on Fiscal Year 1990 Third Quarter Operating Budget Forecast and Year-to-Year Changes of Operating Revenues and Expenses*; also signed by Tom Rubin, and Larry Schlegel; April 27; Los Angeles, CA: Southern California Rapid Transit District;
- Pegg, Alan F. (1990b), *Memorandum to SCRTD Board of Directors and LACTC Commissioners: Blue Line Operating Update Report*; November 29; Los Angeles, CA: Southern California Rapid Transit District;
- Peters, Ted (1978), "Metaphor and the Horizon of the Unsaid;" *Philosophy and Phenomenological Research*, Vol. 38, March, 355-369;
- Peterson, Neil (1990), *Memorandum to LACTC Planning and Mobility Improvement Committee: Interim Downtown METRO Blue Line Shuttle Update*; prepared by Alan E. Patashnick, September 14; Los Angeles, CA: Los Angeles County Transportation Commission;
- Peterson, Neil (1991), *Memorandum to LACTC Planning and Mobility Improvement Committee — 5/15 Meeting on "Metro Blue Line Monthly Update*; Los Angeles, CA: Los Angeles County Transportation Commission;

- Pickrell, Don H. (1985), *Urban Rail In America: A Review of Procedures and Recommendations From the Regional Plan Association Study*; Cambridge, MA: Research and Special Programs Administration;
- Pickrell, Don H. (1989), *Urban Rail Transit Projects: Forecast Versus Actual Ridership and Costs*; US Department of Administration, Urban Mass Transportation Administration;
- Polanyi, Michael and Prosch, Harry (1975), *Meaning*; Chicago, IL: The University of Chicago Press;
- Pomerantz, James R. (1981), "Perceptual Organization in Information Processing;" in ed. Kubovy, Michael & Pomerantz, James R., *Perceptual Organization* 141-180; Hillsdale, NJ: Lawrence Erlbaum Associates;
- Pomerantz, James R. & Kubovy, Michael (1981), "Perceptual Organization: An Overview;" in ed. Kubovy, Michael & Pomerantz, James R., *Perceptual Organization* 423-456; Hillsdale, NJ: Lawrence Erlbaum Associates;
- Primack, Phil (1979), "Death of the Hiawatha;" *The Washington Monthly*, December, 16-23;
- Pushkarev, Boris S., Zupan, Jeffrey M., and Cumella, Robert S. (1982), *Urban Rail in America: An Exploration of Criteria for Fixed-Guideway Transit*; Bloomington, IN: Indiana University Press;
- Purdom, C. B. (1945), *How Shall We Rebuild London?*; London: Dent;
- Quarmby, David A. (1967), "Choice of Travel Mode for the Journey to Work;" *Journal of Transport Economics and Policy* 1, 273-314;
- Rapid Transit Action Group (1948), *Rail Rapid Transit Now!, LIVE where you like, WORK where you please, An Immediate Program by The Rapid Transit Action Group, Los Angeles Chamber of Commerce — Coordinator*; February;
- Rappoport, Anatol (1965), "Discussant II," in ed. Royce, Joseph R., *Psychology and the Symbol, An Interdisciplinary Symposium*; 95-105; New York: Random House;
- Reddy, Michael J. (1979), "The Conduit Metaphor — A Case of Frame Conflict in our Language about Language;" in ed. Ortony, Andrew, *Metaphor and Thought* 202-250; Cambridge: Cambridge University Press;
- Ed. Reagan, Charles E. and Stewart, David (1978), *The Philosophy of Paul Ricoeur, An Anthology of His Work*; Boston, MA: Beacon Press;
- Rein, Martin (1979), *Social Science & Public Policy*; Harmondsworth, Mddx.: Penguin Books;
- Rhodes, Richard (1977), "Semantics in Relational Grammar," *Proceedings of the Thirteenth Annual Meeting of the Chicago Linguistic Society*; Chicago, IL: Chicago Linguistic Society;
- Richmond, Jonathan E. D. (1981), *Perpetuum Mobile — AMTRAK: The Original Sin*; unpublished Masters thesis; Cambridge, MA: Massachusetts Institute of Technology, September;
- Richmond, Jonathan E. D. (1982), "The Costly Lure of the Bullet Train — Legislature Acts Quickly and Blindly on an Untested Scheme;" editorial article in *Los Angeles Times*; September 8;
- Richmond, Jonathan E. D. (1983), *Slicing The Cake: The Case for a Los Angeles - San Diego Bullet Train Service*; Tustin, CA: City of Tustin, August;
- Richmond, Jonathan E. D. (1985), "Metro Rail: Wrong Track to Meeting Transit Needs;" editorial article on *Los Angeles Times*, February 15;
- Richmond, Jonathan E. D. (1986), "Light Rail: the dream vs. reality; Despite glowing imagery, few tangible benefits;" editorial article in *Long Beach Press-Telegram*, January 24;

- Richmond, Jonathan E. D. (1987), "Mental Barriers to Learning and Creativity in Transportation Planning;" *Carolina Planning*, Vol. 13, No. 1, Fall, 42-53;
- Richmond, Jonathan E. D. (1989), "Theories of Symbolism, Metaphor and Myth, and the Development of Western Rail Passenger Systems or Penis Envy in Los Angeles;" paper presented at the Conference of the Association of Collegiate Schools of Planning, Portland, Oregon, October 7;
- Richmond, Jonathan E. D. (1990a), "Introducing Philosophical Theories to Urban Transportation Planning or Why All Planners Should Practice Bursting Bubbles;" *Systems Research*, Vol. 7, No. 1, 47-56;
- Richmond, Jonathan E. D. (1990b), "The Little Engine That Couldn't;" editorial article in *Los Angeles Times*, July 13;
- Richmond, Jonathan E. D. (1990c), "The Mythical Role of Forecasting in Transportation Planning;" paper presented at the Conference of the Association of Collegiate Schools of Planning, Austin, Texas, November 4;
- Ricoeur, Paul (1977), *The Rule of Metaphor, Multi-disciplinary studies in the creation of meaning in language*; Toronto: University of Toronto Press;
- Robinson, W. W. (1981), *Los Angeles: From the Days of the Pueblo*; San Francisco, CA: Chronicle Books, for the California Historical Society;
- Rubin, Tom (1990), *Memorandum to Alan Pegg, Art Leahy, Al Perdon, John Richeson and Gary Spivack on "Bus vs. Rail Costs"*; Los Angeles: Southern California Rapid Transit District, August 21;
- Rustin (1969), "The Watts "Manifesto" and the McCone Report in ed. Fogelson, Robert M., *The Los Angeles Riots*; New York: Arno Press & The New York Times;
- Sanyal, Bish (1987), "The Make-Believe World of the Calcutta Metro-Rail;" *The Statesman*, July 12, 4-5;
- Sartre, Jean-Paul (1972), *The Psychology of Imagination*; London: Methuen;
- SCAG (Southern California Association of Governments) (1968), *Status of Regional Transportation Planning and Coordination in Southern California*;
- SCAG (1974), *Southern California Regional Transit System Plan: An Element of the Southern California Association of Governments Critical Decisions Program*; Los Angeles, July 11;
- SCAG (1983), *Transcript of SCAG Executive Committee Regional Transportation Plan Workshop*; September 1;
- SCAG (1984b), *Los Angeles - Long Beach Light Rail Transit Project, Patronage Estimation and Impacts*; March;
- SCAG (1985), "Re-Training the Region: Rail Systems Prepare to Make a Comeback in LA;" *Crossroads, The Southern California Transportation Magazine*, 8-13;
- Schabarum, Peter F. (undated), *Moving People: A Layman's Handbook for Improving Public Transportation*; Los Angeles, CA: Office of Supervisor Peter F. Schabarum;
- Schön, Donald A. (1963), *Displacement of Concepts*; London: Tavistock Publications;
- Schön (1971), *Beyond the Stable State*; New York: W. W. Norton;
- Schön (1979), "Generative Metaphor: A Perspective on Problem-Setting in Social Policy;" in ed. Ortony, Andrew, *Metaphor and Thought* 254-283; Cambridge: Cambridge University Press;
- Schön (1983), *The Reflective Practitioner: How Professionals Think in Action*; New York: Basic Books;
- Schaldenbrand, Mary (1979), "Metaphoric Imagination: Kinship Through

- Conflict;" in ed. Reagan, Charles E., *Studies in the Philosophy of Paul Ricoeur*; Athens OH: Ohio University Press;
- SCRTD (Southern California Rapid Transit District) (1973), *Rapid Transit for Los Angeles, Summary Report of Consultants' Recommendations*; prepared for the Southern California Rapid Transit District and The Citizens of The Los Angeles Region, July;
- SCRTD (1985), *Line Performance Trends Report*; data as of Dec. 19;
- SCRTD (1990a), *Short Range Transit Plan: Guideway Plan, Fiscal Years 1991 through 1995*;
- SCRTD (1990b), *Proposed Annual Budget, Fiscal Year 1991, June 7*;
- Shaffer, Gina (1980), "Warding Off Opposition;" *Valley Trader*, July 11-17;
- Sedway Cooke Associates (1984), *Technical Report to the Long Beach - Los Angeles Rail Transit Project Environmental Impact Statement/Report: Land Use and Development Impacts*;
- Shaw, Peter L., Baker, Keith G., Powell, Mel D. and Simon, Renee (1979), *Los Angeles County Transportation Commission Public Policy Impact Study (September, 1978 — August, 1979)*; Final Report; Long Beach, CA: Institute for Transportation Policy and Planning, Bureau of Governmental Research and Services, Center for Public Policy and Administration, California State University; US Department of Transportation, Urban Mass Transportation Administration, available through National Technical Information Service, Springfield, Virginia, November;
- Shaw, Peter L. and Simon, Renee (1981), *Los Angeles County Transportation Commission Public Policy Impact Study (September, 1979 — August, 1980)*, Final Report; Long Beach, CA: Institute for Transportation Policy and Planning, Bureau of Governmental Research and Services, Center for Public Policy and Administration, California State University; US Department of Transportation, Urban Mass Transportation Administration, available through National Technical Information Service, Springfield, Virginia, April;
- Shepard, Roger N. (1981), "Psychophysical Complementarity," in ed. Kubovy, Michael & Pomerantz, James R., *Perceptual Organization*; 279-341; Hillsdale, NJ: Lawrence Erlbaum Associates;
- 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;
- Spivack, Gary S. (1991), *February 1991 Rail Patronage Report*; Los Angeles: Southern California Rapid Transit District;
- State of California Business and Transportation Agency (1971), *Transportation-Employment Project: South Central and East Los Angeles, Final Report*; August;
- Stauffer, J. R. (1930), "Opportunities for Profits in De Luxe Bus Operation;" *Electric Railway Journal*, Feb., 91-96;
- Steinbruner, John D. (1974), *The Cybernetic Theory of Decision*; Princeton NJ: Princeton University Press;
- Stocks, Carl W. (1930), "Improving the Bus to Increase Its Usefulness;" *Electric Railway Journal*, June 14, 387-390;
- Stopher, Peter R. and Meyburg, Arnim H. (1975), *Urban Transportation Modeling and Planning*; Lexington, MA: Lexington Books;
- Tiresias (1984), *Notes from Overground: Man is Born Free, and is Everywhere in Trains*; by Roger Green; London: Paladin Books;

- Transit Journal (1936), "How the New Gas Buses Have Improved Earnings;" September 15, 337-341;
- Transportation Research Board (1985), *Highway Capacity Manual*; Special Report 209;
- Treutlein, Theodore E. (1973), "Los Angeles, California: The Question of the City's Original Spanish Name;" *Southern California Quarterly*, LV, Spring, 1-8;
- Turbayne, Colin Murray (1970), *The Myth of Metaphor*; 2nd. edition, Columbia, SC: University of South Carolina Press;
- UMTA (Urban Mass Transportation Administration, US Department of Transportation) (1984a), *A Detailed Description of UMTA's System for Rating Proposed Major Transit Investments*; Washington, DC, May;
- UMTA (1984b) *Summary of UMTA Comments on MTDB Analysis Results: East Urban Corridor*, June;
- US Congress (1979), *Hearings before the House sub-committee on Transportation and Commerce of the Committee on Interstate and Foreign Commerce*, April;
- Vance, James E., Sr. (1972), "California and the Search for the Idea;" *Annals of the Association of American Geographers* 66, 185-210;
- Veysey, Laurence R. (1953), *The Pacific Electric Railway Company, 1910 - 1953, A Study in the Operations of Economic, Social and Political Forces Upon American Local Transportation*; unpublished. Available through Southern California Rapid Transit District Library, Los Angeles;
- Von Bertalanffy, Ludwig (1965), "On the Definition of the Symbol;" in ed. Royce, Joseph R., *Psychology and the Symbol, An Interdisciplinary Symposium*; 26-72; New York: Random House;
- Wachs, Martin (1976a), "Consumer Attitudes Toward Transit Service: An Interpretive Review;" *AIP Journal*, January, 96-104;
- Wachs, Martin (1976b), "The Case for Bus Rapid Transit in Los Angeles;" in ed. Gordon, Peter and Eckert, Ross D., *Transportation Alternatives for Southern California*, Conference Proceedings of a Symposium, The Institute for Public Policy Research, Center for Public Affairs, University of Southern California, April 12, 64-77;
- 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;
- Wachs, Martin (1985), "Ethical Dilemmas in Forecasting for Public Policy;" in ed. Wachs, Martin, *Ethics in Planning*; New Brunswick, NJ: Center for Urban Policy Research, 246-258;
- Wachs (1991), "Transportation Demand Management: Policy Implications of Recent Behavioral Research;" *The Journal of Planning Literature*, Forthcoming;
- Wachs, Martin and Schofer, Joseph L. (1969), "Abstract Values and Concrete Highways;" in *Traffic Quarterly*, Vol. 23, No. 1, January, 133-155;
- Ward, Baxter (1976), *The Sunset Coast Line: Route of the New Red Cars*; Prepared through office of Supervisor Baxter Ward by county departments and others; Los Angeles CA;
- Ward, Baxter (1978), *Sunset, Ltd.*; Los Angeles, CA: Board of Supervisors, County of Los Angeles, Office of Supervisor Baxter Ward;
- Warman, Cy (1895), *Tales of an Engineer, with Rhymes of the Rail*; New York: C. Scribner's Sons;
- Warner, A. T. (1930), "Development of the Bus for Mass Transportation;" *Electric Railway Journal*, December, 745-746;

- Wason, P. C. (1960), "On the Failure to Eliminate Hypothesis in a Conceptual Task," in *Quarterly Journal of Experimental Psychology* 12, 129-140;
- Watts, Alan W. (1954), *Myth and Ritual in Christianity*; New York: Macmillan;
- Webber, Melvin M. (1976), *The BART Experience — What Have We Learned?*; Monograph No. 26, Berkeley, CA: Institute of Urban and Regional Development, University of California, Berkeley, October;
- Weizenbaum, Joseph (1976), *Computer Power and Human Reason: From Judgment to Calculation*; San Francisco, CA: W. H. Freeman;
- Wells, William R. (1973), "Rapid Transit Impact on Suburban Planning and Development, Perspective and Case Study," Department of Industrial Engineering, Stanford University;
- Wheelwright, Philip (1962), *Metaphor and Reality*; Bloomington, IN: Indiana University Press;
- Whitt, J. Allen (1982), *Urban Elites and Mass Transportation: The Dialectics of Power*; Princeton, NJ: Princeton University Press;
- Wohl, Martin (1976), "The Case for Rapid Transit: Before and After the Fact;" in ed. Gordon, Peter and Eckert, Ross D., *Transportation Alternatives for Southern California*, Conference Proceedings of a Symposium, The Institute for Public Policy Research, Center for Public Affairs, University of Southern California, April 12, 54-63;
- Yoos, George E. (1977), "A Phenomenological Look at Metaphor;" *Philosophy and Phenomenological Research*, Vol. 37, No. 1, Sept., 78-88;
- Young, Robert M. (1979), "Why are Figures so Significant? The Role and the Critique of Quantification;" in ed. Irvine, John, Miles, Ian, and Evans, Jeff, *Demystifying Social Statistics*; London: Pluto Press;

Appendix A — List of Interview Subjects

Titles/Positions as of 1985/6

Board of Supervisors, County of Los Angeles

Supervisors

Antonovich, Michael, Supervisor, County of Los Angeles

Hahn, Kenneth, Supervisor, County of Los Angeles

Staff to Supervisors

Roche, Burke, aide to Supervisor Kenneth Hahn

Mull, Howard, aide to Supervisor Mike Antonovich

George, Deborah, aide to Supervisor Deane Dana

Ireland, Peter, aide to Supervisor Deane Dana

Lewis, Mike, Deputy to Supervisor Pete Schabarum, former Chairman of the Board, SCRTD, Los Angeles

Former Supervisor & Staff

Ward, Baxter, Former Supervisor, County of Los Angeles

Leonard, Gerald, former aide to Baxter Ward

Los Angeles County Transportation Commission

Commissioners and Alternate Commissioners

Bacharach, Jackie, Chair,

Donley, Roy, Alternate Commissioner to Supervisor Michael Antonovich (1986)

King, Walter, Alternate Commissioner to Supervisor Kenneth Hahn

Mednick, Marcia, Commissioner

Pierce, Ted, Alternate Commissioner to Supervisor Michael Antonovich (1985)

Reed, Christine, Mayor, City of Santa Monica, Commissioner, LACTC

Sanborn, Blake, Alternate Commissioner to Supervisor Peter Schabarum

Szabo, Barna, Alternate Commissioner to Supervisor Deane Dana

White, Bob, Councilman, City of Norwalk, Alternate Commissioner to Christine Reed

One interview not for attribution and off the record: not cited in this study.

Citizen Members, LACTC Rail Construction Committee

Jonas, Allan, Citizen Member, Rail Construction Committee

Perez, Manuel, Citizen Member, Rail Construction Committee

Staff

Caufield, Daniel, Project Manager, Long Beach light rail (1985)

McSpedon, Ed, Project Manager, Long Beach light rail (1986)

Richmond, Rick, Executive Director

Sims, Jim
Stanger, Richard
Taylor, Paul, Deputy Executive Director

Former Staff

Premo, Jerry, former Executive Director

Department of Public Works, County of Los Angeles

Staff

Burger, Roger, LA County, Department of Public Works
Kaufman, John, LA County Division of Public Works
Willis, Alan, LA County Division of Public Works

Southern California Rapid Transit District

Board Members

Estrada, Carmen
(Hall, Jan, Councilwoman, City of Long Beach, Long Beach listing)
Holin, Marvin

Staff

Planning

Bevan, Leo
Killough, Keith
Lee, Byron
Odell, Anne
Parry, Steve
Spivack, Garry
Woodhull, Joel

Modeling

Stopher, Peter, Demand Modeller, Schimpeler Corradino, under contract to and working at SCRTD, Los Angeles

Community Relations

Flagg, Wanda

Lobbyist, Washington, DC

Slagle, Roger, Lobbyist for RTD, Washington

Southern California Association of Governments

Staff (*All interviews not for attribution*)

Demand Modelling

Three staff

Other Transportation Planning

Three staff

Others

Two staff

Commuter Computer

Staff

Widby, Tad

City of Los Angeles

Members of the Council

Bernardi, Ernani

Ferraro, John

Flores, Joan

Russell, Pat, Chair, Transportation Committee

Staff to the Mayor

Lawson, Craig, Transportation aide to Mayor Bradley

Staff to the Council

Goldthwaite, Princess, aide to Councilwoman Pat Russell

Hedrick, Bob, Assistant to Councilman John Ferraro

Lovejoy, Tracy, office of Councilman Joel Wachs

McCarberry, Dennis, office of Councilwoman Flores

Stewart, Mike, office of Councilwoman Flores, Watts office

Melnick, Jay, aide to Councilman Ernani Bernardi

Department of Transportation

Rifkin, Allyn

Lepis, Alice

City of Long Beach

Members of the Council

Kell, Ernie, Mayor

Wallace Edgerton, Councilman

Hall, Jan, Councilwoman

Sato, Eunice, Councilwoman

Staff

Paternoster, Bob, Director of Planning

Long Beach Merchants Interests

Caso, Bob and Lee, Robert

City of Compton

Members of the Council

Tucker, Walter, Mayor

Filer, Maxcy, Councilman

Staff

Johnson, John (joint interview with Ed Satello)
Satello, Ed

Westminster Neighborhood Association, Watts

Payne, Grace, Director
Corbett, Ed
Harris, "Sweet" Alice

Other Watts-related interviews

Shaw-Johnson, Freita
Saucedo, Robert, Young People of Watts
(See also Mike Stewart interview under City of LA, council staff)

Other Black Community

Bragg, Felicia

Automobile Club of Southern California

Barrett, Dick
Gilbert, Keith
Ortner, Jim

Other Interests

Central City

Steven Gavin, Chairman, Gavin Associates, member, Central City Association, Los Angeles
Lamb, Ron, Los Angeles Chamber of Commerce
Williams, Pam, Central City Association, Los Angeles
(Caso, Bob and Lee, Long Beach included under Long Beach)

Rail Advocates

Falick, Abraham
Hart, Stanley (Sierra Club)
(Roger Slagle, RTD lobbyist included with RTD)
Multiple interviews of membership during a Los Angeles railway historical society meeting

Others

Shay, Paul, LA Tax
(Yaksik, Nick, APTA included below UMTA)

Community Development

Community Development, City of Los Angeles

Lurie, Marilyn

Community Redevelopment Agency, Los Angeles

Benbow, Richard
Roche, Pat

Human Relations Commission, Los Angeles County

Aubry, Larry

Other

Dukett, Steve, County of Los Angeles

Air Quality

Wuebben, Paul, Southern California Air Quality Management District

Other LA-related interviews

Brodsly, David, City of Los Angeles

Comapana, Lori

*One interview not for attribution***Bus trip**

Interviews on LA - Orange County express bus

California State Legislature**Members****Democrats****Senators**

Alquist, Alfred, San Jose (Santa Clara),

Deddeh, Wadie, Bonita (San Diego)

Foran, John F., San Francisco, Chairman, Senate Transportation Committee,

Greene, Bill, Los Angeles

Torres, Art, Los Angeles, Senate Transportation Committee

Watson, Diane, Los Angeles

Members of the Assembly

Areias, Rusty, Los Banos (Santa Clara), Assembly Transportation Committee

Clute, Steve, Riverside, Assembly Transportation Committee

Elder, Dave, Long Beach

Harris, Elihu, Oakland, Assembly Transportation Committee

Katz, Richard, Sepulveda (Los Angeles), Assembly Transportation Committee

Killea, Lucy, San Diego, Assembly

Republicans**Senators**

Beverly, Robert, Manhattan Beach (Los Angeles), Senate Transportation Committee

Ellis, Jim, Senator, El Cajon (San Diego), Senate Transportation Committee (Ranking Minority)

Members of the Assembly

Brown, Dennis, Long Beach, Chairman, Assembly Subcommittee on Transportation, Assembly Committee on Ways & Means

Frizzelle, Nolan, Huntington Beach, Assembly Transportation Committee, (ranking minority)

Lancaster, William, Covina (Los Angeles), Assembly Transportation Committee
Mojonnier, Sunny, Encinitas (San Diego)

Legislators' Staff

Democrats

Brokaw, Barry, Chief of staff, office of Senator Daniel E. Boatwright, Concord
Higginbotham, Keith, assistant to Senator Art Torres, Los Angeles
Medina, Leslie, assistant to Assemblyman Rusty Areias, Los Banos (Santa Clara)

Republicans

Jerome, Gary, assistant to Senator Marian Bergeson, Newport Beach (Orange County)

Committee Staff

Schifferle, Patricia, Consultant, Assembly Transportation Committee, Richard Katz, D
Sepulveda, (Los Angeles), Chair
Lange, L. Eric, Consultant, Assembly Transportation Committee, Richard Katz, D
Sepulveda, (Los Angeles), Chair
Lind, Alan, Counsel, Subcommittee on Transportation, Assembly Committee on Ways
& Means, Dennis Brown, R Long Beach, Chair
Watts, Mark, Principal Consultant, Assembly Committee on Ways & Means

California Transportation Commission

Commissioners

Duffel, Joe
Hulitt, Stanley
Leonard, Bill
(Nestande, Bruce, Supervisor, Orange County, listed under Orange County)
Romero, Richard

Staff

Nielson, Robert, Executive Director
Bohlinger, Linda

California Department of Transportation (Caltrans)

Sacramento

Cross, Don
Deter, Lee
Hendrix, Alan
Lynch, Ray
Miller, Steve
Schaeffer, Bill, Deputy Director
Shirley, Earl,
Simpson, Phil
Tolmach, Rich
Vostrez, John
Weber, Warren
Wieman, Larry

District 7, Los Angeles

Dove, Don

Heckerth, Heinz, District Director (1985), Commissioner, LACTC, *ex-officio*Watson, Donald, District Director (1986), Commissioner, LACTC, *ex-officio*

Michalak, Steve, with Daniel Butler and Dale Ratzlaff

Roper, David

US Congress**Members of Congress****Democrat**

Bates, Jim, Representative, San Diego, Former member MTDB

Republican

Fiedler, Bobbi, Representative, Los Angeles (San Fernando Valley)

Staff**Democrats**

Dodgson, Jerry, Office of Rep. Henry A. Waxman, Los Angeles

Hershman, Mark I., Legislative Assistant, office of Rep. Robert T. Matsui, Sacramento

Rideau, Rodney M., Legislative Assistant, Office of Rep. Julian C. Dixon, Los Angeles

Roberts, Glenn E., Legislative Director, Office of Rep. Norman Y. Mineta, San Jose

Sampson, Phil, staff, Senate Urban Affairs & Banking Committee, Majority

Schlesinger, Paul L., Professional Staff Member, Subcommittee on Surface Transportation, (Committee on Public Works and Transportation), Rep. Glenn M. Anderson, Long Beach, Chairman

Republicans

Staff member to Senator Proxmire

Bobeck, Jeff, Legislative Assistant, Office of Rep. David Dreier, Los Angeles (La Verne, Pomona)

Ives, Lori, Legislative Assistant, Office of Rep. Daniel E. Lungren, Long Beach, Washington, DC

Kraft, Ken, Office of Rep. Coughlin, Subcommittee on Transportation

Malakoff, Bob, staff, Senate Urban Affairs & Banking, Minority

Rehr, David K., Executive Assistant, office of Rep. Vin Webber, Minnesota

US Department of Transportation**Urban Mass Transportation Administration**

Davis, Aubry, Seattle

Emerson, Don, Washington, DC

Harrant, Don, Washington, DC

Stout, Bob, Washington, DC

Thomas, Ed, Washington, DC

Zimmerman, Sam, Director of Planning, Washington, DC

Federal Highways Administration

Clinton, Glen, Sacramento

American Public Transit Association

Yaksik, Nick, Washington, DC

Board of Supervisors, Orange County

Supervisors

Clark, Ralph

Nestande, Bruce, Member California Transportation Commission

Orange County Transportation Commission

Staff

Greene, Sharon

Mortazemi, Kia

Orange County Transit District

Staff

Ordway, Jeff

Board of Supervisors, County of San Diego

Supervisors

Bilbray, Brian

City of San Diego

Member of the Council

Struiksma, Ed, Councilman, City of San Diego

San Diego Metropolitan Transportation District

Board Members

Mills, Jim

Staff

Larwin, Tom, Executive Director

Liebermann, William

Robenheimer, Bob

San Diego Association of Governments

Staff

Franck, George

Hultgren, Lee

Santa Clara Transportation Commission

Commissioner

Fadness, David, Santa Clara, Chairman

Santa Clara Transit District

Staff

Miller, Les & Gordon Smith (joint interview)
Pierson, Jim

Sacramento

Regional Transit

Wiley, Mike

Other

Bauer, Arthur

Metropolitan Transportation Commission (San Francisco Bay Area)

Staff

Dahms, Larry, Executive Director

San Francisco Municipal Railway

Staff

Bernhard, Bruce, Assistant to General Manager
Natvig, Carl

Tri-Met, Portland

Staff

Higbee, Director, Banfield light rail
Arrington, G. B.
Post, Bob

METRO, Portland

Staff

Katugno, Andy

City of Portland

Staff

Dotterer, Steve
Siegel, Steve, Portland Development Commission

Oregon Department of Transportation

Spence, Ted

METRO, Seattle

Board Member

Neir, Bob, Chair, Transit Committee

Staff

Graczyk, Dan, Downtown Tunnel Manager
Kalberer, David
Postuma, Ron

Puget Sound Council of Governments

Staff

Fryztacki, Wes

City of Seattle

Member of the Council

Williams, Jeannette, Seattle

Staff

Stafford, Bill, Director, Government Relations Office

Vancouver

London Transport International

Calver, Dave

Academics

Churchman, C. West, University of California, Berkeley
Edner, Sheldon, Portland State University
Gordon, Peter, University of Southern California
Jones, David
Webber, Mel, University of California, Berkeley

Appendix B — Questionnaire

Four different questionnaire plans were used in the conduct of this research. Each one provided a guideline for proceeding with interviews. Interviews were generally allowed to proceed free-form, however. In many instances, only a part of the material on the guideline was covered, and in some cases several topics not on the guidelines were included.

The most commonly used questionnaire — for decision-makers in Los Angeles County — is reprinted below.

Do you support the plans for the development of a light rail system between Los Angeles and Long Beach (in the Los Angeles area)? Why? (prompt) Congestion? Pollution? Conservation of energy? Providing mobility to the poor/minorities/elderly?

What particular areas would be helped?

Any advantages for Compton/Watts?

What sources of information were helpful to you in reaching this view? How do you know that they were reliable?

What is the role of forecasting in such a decision? Suppose that forecasts suggested that few people would use the Long Beach trolley. Would you have still supported its construction?

What has been the relationship of technical analysis to political decision making? What do you think it should be?

How important was public opinion in reaching a decision? How was it canvassed? How could one be sure that it was reliably canvassed? Do you consider it to be important?

What influence should be accorded to vocal special interests? For example, downtown interests?

(Explain move back to more general questions).

What is a transportation problem? How should we go about making choices of transportation facilities? On what criteria? How do we choose the criteria? How do we select transportation alternatives for consideration?

Suppose you are told to design a new transportation system for an imaginary new city. What sort of questions would you want to ask? How would you go about finding answers to them (prompts: Agency research, forecasts, public participation, interests?)

(Return to Long Beach)

Why is it important for people to use the train rather than to travel by some other means?

The document prepared by SCAG to project patronage for the Long Beach line says that there will only be 1600 extra work trips made by transit in the Los Angeles - Long Beach corridor (2900 in Los Angeles County), only 2% of auto traffic. It also says: "From a county-level or even a corridor level, the LB/LA project has only a very minor positive impact on traffic." The other passengers on the trolley would otherwise have gone by bus. Why is it better for them to go by train than by bus? (Explain problems of access/distribution in Southern Calif. Why "telephone" network the best. . .)

Were alternatives of express buses seriously considered? Possibilities for increasing carpooling?

Blue collar worker job opportunities are mostly in an East-West direction, so the trolley can't be of great use in helping to serve them. The trip time from LB - LA will be as long as the current express bus takes. . . Express buses retained in N. Cal. Might happen here. Lower ridership?

(Prop. A)

Why did Proposition A specify that a rail network be built? Didn't that limit options rather? Was there a case for doing this?

Evidence suggests that people voted for Prop. A for the lower bus fares, rather than for rail transit. The increased bus fares will probably lose far more transit riders than the Long Beach trolley will gain. The fare increase will also cause hardship to those of low income. In this context, why is the trolley more important than lower bus fares?

We rarely look at transportation in a larger context. We say that we should build this facility, rather than that one. What is the case for examining transportation in the context of larger social needs? There may, for example, be programs of community revitalization of greater importance to Compton/Watts. How should they be weighed against transportation expenditures?

Appendix C — Resolution for Proposition A

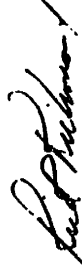
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Tuesday, November 4, 1980, to vote upon the Proposition set forth in this resolution. The polls shall be open for said election from 7:00 a.m. to 8:00 p.m. The Registrar-Recorder shall cause this proclamation to be published in a daily newspaper of general circulation, printed, published, and circulated in Los Angeles County, for at least one (1) time not less than fifty (50) days before the 4th day of November, 1980, pursuant to Elections Code Section 2554.

The Acting Executive Director of the Los Angeles County Transportation Commission is ordered to file a copy of this resolution with the Registrar-Recorder at least seventy-four (74) days prior to the date of the election.

ANALYSIS OF ORDINANCE. The County Counsel of the County of Los Angeles is hereby requested to prepare an analysis of said ordinance pursuant to Section 3781 of the Elections Code.

I certify that the foregoing Resolution was adopted by a majority vote of all members of the Los Angeles County Transportation Commission, at its meeting held on the 20th day of August, 1980.



RYCK RICHMOND
Executive Director
Los Angeles County
Transportation Commission

RESOLUTION CALLING SPECIAL ELECTION PROPOSING A RETAIL TRANSACTIONS AND USE TAX FOR PUBLIC TRANSIT PURPOSES BE SUBMITTED TO THE VOTERS OF THE COUNTY AT THE SPECIAL ELECTION AND ORDERING THE CONSOLIDATION OF THE SPECIAL ELECTION WITH THE NOVEMBER GENERAL ELECTION

BE IT RESOLVED by the Los Angeles County Transportation Commission, that a special election is hereby ordered and called to be held on Tuesday, November 4, 1980, and that the following Proposition be submitted to the electors of the County of Los Angeles at the special election.

BE IT FURTHER RESOLVED that the Los Angeles County Transportation Commission requests that the Board of Supervisors of the County of Los Angeles, State of California, order the consolidation of the special election with the November General Election and orders that the Proposition be placed upon the same ballot as shall be provided for the General Election to be held on the 4th day of November, 1980, and that the same precincts, polling places, and precinct board members as used for the General Election shall be used for the Special Election pursuant to Elections Code Section 23300 et seq.

The exact form of the Proposition as it is to appear on the ballot and a complete text of the proposed ordinance is as follows:

BALLOT PROPOSITION. (See attached Exhibit A)

ORDINANCE. (See attached Exhibit B)

Proclamation. Pursuant to Section 2553 of the Elections Code the Los Angeles County Transportation Commission hereby PROCLAIMS that a special County-wide election shall be held on

ORDINANCE NO. 16

AN ORDINANCE ESTABLISHING A RETAIL TRANSACTIONS AND USE TAX IN THE COUNTY OF LOS ANGELES FOR PUBLIC TRANSIT PURPOSES.

The Los Angeles County Transportation Commission do ordain as follows:

SECTION 1

A retail Transactions and Use Tax is hereby imposed in the County of Los Angeles as follows:

SECTION 1. DEFINITIONS. The following words, whenever used in this Ordinance, shall have the meanings set forth below:

- (a) "Commission" means the Los Angeles County Transportation Commission.
- (b) "County" means the incorporated and unincorporated territory of the County of Los Angeles.
- (c) "Transaction" or "Transactions" have the same meaning, respectively, as the words "Sale" or "Sales"; and the word "Transactor" has the same meaning as "Seller", as "Sale" or "Sales" and "Seller" are used in Part 1 (commencing with Section 8001) of Division 2 of the Revenue and Taxation Code.

SECTION 2. IMPOSITION OF RETAIL TRANSACTIONS TAX. There is hereby imposed a tax for the privilege of selling tangible personal property

<p>LOS ANGELES COUNTY TRANSPORTATION COMMISSION - PUBLIC TRANSIT: to improve and expand existing public transit Countywide, reduce fares, construct and operate a rail rapid transit system serving at least:</p> <ul style="list-style-type: none"> San Fernando Valley West Los Angeles South Central Los Angeles/Long Beach South Bay/Harbor Century Freeway Corridor Santa Ana Freeway Corridor San Gabriel Valley <p>and more effectively use State and Federal funds, benefit assessments, and fares for those purposes, shall the Commission approve an ordinance authorizing a Countywide 4 percent sales tax?</p> <p>Revenues will be allocated: 25 percent to local jurisdictions for local transit; a specified reduced fare structure for SCMTD for 3 years; and specified allocations for rail rapid transit and to the Commission for public transit purposes.</p>	YES
	NO

EXHIBIT A

at retail upon every retailer in the County at a rate of one-half of 1% of the gross receipts of the retailer from the sale of all tangible personal property sold by him at retail in the County.

SECTION 3. DEPOSITION OF USE TAX. There is hereby imposed a complementary tax upon the storage, use or other consumption in the County of tangible personal property purchased from any retailer for storage, use or other consumption in the County. Such tax shall be at a rate of one-half of 1% of the sales price of the property whose storage, use or other consumption is subject to the tax.

SECTION 4. APPLICATION OF SALES AND USE TAX PROVISIONS OF REVENUE AND TAXATION CODE. The provisions contained in Part 1 of Division 2 of the Revenue and Taxation Code (Sales and Use Taxes, commencing with Section 6001), insofar as they relate to sales or use taxes and are not inconsistent with Part 1.6 of Division 2 of the Revenue and Taxation Code (Transactions and Use Taxes, commencing with Section 7231), shall apply and be part of this Ordinance, being incorporated by reference herein, except that:

- (a) The Commission, as the taxing agency, shall be substituted for that of the State;
- (b) An additional transactor's permit shall not be required if a seller's permit has been or is issued to the transactor under Section 6067 of the Revenue and Taxation Code; and
- (c) The word "County" shall be substituted for the word "State" in the phrase, "Retailer engaged in business in this State"

in Section 6203 of the Revenue and Taxation Code and in the definition of that phrase.

A retailer engaged in business in the County shall not be required to collect use tax from the purchase of tangible personal property unless the retailer ships or delivers the property into the County or participates within the County in making the sale of the property, including, but not limited to soliciting or receiving the order, either directly or indirectly, at a place of business of the retailer in the County or through any representative, agent, canvasser, solicitor, or subsidiary or person in the County under authority of the retailer.

All amendments subsequent to January 1, 1970, to the above cited Sales and Use Taxes provisions relating to sales or use taxes and not consistent with this Ordinance shall automatically become a part of this Ordinance; provided, however, that no such amendment shall operate as to affect the rate of tax imposed by the Commission.

SECTION 5. USE OF REVENUES RECEIVED FROM IMPOSITION OF THE TRANSACTION AND USE TAX. The revenues received by the Commission from the imposition of the transactions and use tax shall be used for public transit purposes, as follows:

- (a) Definitions:
 1. "System" or "Rail rapid transit system" means all land and other improvements and equipment necessary to provide an operable, exclusive right-of-way, or guideway, for rail transit.

2. "Local transit" means eligible transit, paratransit, and Transportation Systems Management Improvements which benefit one jurisdiction.
- (b) Purpose of Tax.
 This tax is being imposed to improve and expand existing public transit Countywide, including reduction of transit fares, to construct and operate a rail rapid transit system hereinafter described, and to more effectively use State and Federal funds, benefit assessments, and fares.
- (c) Use of Revenues.
 Revenues will be allocated as follows:
1. For the first three (3) years from the operative date of this Ordinance:
 - a. Twenty-five (25) percent, calculated on an annual basis, to local jurisdictions for local transit, based on their relative percentage share of the population of the County of Los Angeles.
 - b. To the Southern California Rapid Transit District (District), or any other existing or successor entity in the District receiving funds under the Mills-Alquist-Dedden Act, such sums as are necessary to accomplish the following purposes:
 - (1) Establishment of a basic cash fare of fifty (50) cents.
 - (2) Establishment of an unlimited use transfer charge of ten (10) cents.

- (3) Establishment of a charge for a basic monthly transit pass of \$20.00.
 - (4) Establishment of a charge for a monthly transit pass for the elderly, handicapped and students of \$4.00.
 - (5) Establishment of a basic cash fare for the elderly, handicapped and students of twenty (20) cents.
 - (6) Establishment of a comparable fare structure for express or premium bus service.
- c. The remainder to the Commission for construction and operation of the System.
2. Thereafter:
 - a. Twenty-five (25) percent, calculated on an annual basis, to local jurisdictions for local transit, based on their relative percentage share of the population of the County of Los Angeles.
 - b. Thirty-five (35) percent, calculated on an annual basis, to the Commission for construction and operation of the System.
 - c. The remainder shall be allocated to the Commission for public transit purposes.
3. Scope of Use.
 Revenues can be used for capital or operating expenses.

(d) Commission Policy.

- 1. Relative to the Local Transit Component:
 - a. Allocation of funds to local jurisdictions shall be subject to the following conditions:
 - 1. Submission to the Commission of a description of intended use of the funds, in order to establish legal eligibility. Such use shall not duplicate or compete with existing transit service.
 - 2. The Commission may impose regulations to insure the timely use of local transit funds.
 - 3. Recipients shall account annually to the Commission on the use of such funds.
 - b. Local jurisdictions are encouraged to use available funds for improved transit service.
- 2. Relative to the System Component:
 - a. The Commission will determine the System to be constructed and operated.
 - b. The System will be constructed as expeditiously as possible. In carrying out this policy, the Commission shall use the following guidelines:
 - 1. Emphasis shall be placed on the use of funds for construction of the System.
 - 2. Use of existing rights-of-way will be emphasized.

c. The System will be constructed and operated in substantial conformity with the map attached hereto as Exhibit "A". The areas proposed to be served are, at least, the following:

- San Fernando Valley
- West Los Angeles
- South Central Los Angeles/Long Beach
- South Bay/Harbor
- Century Freeway Corridor
- Santa Ana Freeway Corridor
- San Gabriel Valley

SECTION 6. EXCLUSION OF TAX IMPOSED UNDER BRADLEY-BURNS UNIFORM LOCAL SALES AND USE TAX LAW. The amount subject to tax under this Ordinance shall not include the amount of any sales tax or use tax imposed by the State of California or by any city, county, or county, pursuant to the Bradley-Burns Uniform Local Sales and Use Tax Law, or the amount of any State-administered transactions or use tax.

SECTION 7. EXEMPTIONS FROM RETAIL TRANSACTIONS TAX.

- (a) There are exempted from the tax imposed by this Ordinance the gross receipts from the sale of tangible personal property to operators of waterborne vessels to be used or consumed principally outside the County in which the sale is made and directly and exclusively in the carriage or persons or property in such vessels for commercial purposes.

(b) There are exempted from the tax imposed under this Ordinance the gross receipts from the sale of tangible personal property to the operators of aircraft to be used or consumed principally outside the County in which the sale is made, and directly and exclusively in the use of such aircraft as common carriers of persons or property under the authority of the laws of this State, the United States, or any foreign government.

(c) Sales of property to be used outside the County which are shipped to a point outside the County pursuant to the contract of sale, by delivery to such point by the retailer or his agent, or by delivery by the retailer to a carrier for shipment to a consignee at such point, are exempt from the tax imposed under this Ordinance.

For purposes of this Section, "delivery" of vehicles subject to registration pursuant to Chapter 1 (commencing with Section 4000) of Division 3 of the Vehicle Code, the aircraft license in compliance with Section 21411 of the Public Utilities Code and undocumented vessels registered under Article 2 (commencing with Section 580) of Chapter 5 of Division 3 of the Harbors and Navigation Code shall be satisfied by registration to an out-of-County address and by a declaration under penalty of perjury, signed by the buyer, stating that such address is, in fact, his principal place of residence.

"Delivery" of commercial vehicle shall be satisfied by registration to a place of business out of County, and a declaration under penalty of perjury signed by the

buyer that the vehicle will be operated from that address.

(d) The sale of tangible personal property is exempt from tax, if the seller is obligated to furnish the property for a fixed price pursuant to a contract entered into prior to the operative date of this Ordinance. A lease of tangible personal property which is a continuing sale of such property is exempt from tax for any period of time for which the lessor is obligated to lease the property for an amount fixed by the lease prior to the operative date of this Ordinance. For purposes of this Section, the sale or lease of tangible personal property shall be deemed not to be obligated pursuant to a contract or lease for any period of time for which any party to the contract or lease has the unconditional right to terminate the contract or lease upon notice, whether or not such right is exercised.

SECTION 8. EXEMPTIONS FROM USE TAX.

(a) The storage, use or other consumption of tangible personal property, the gross receipts from the sale of which have been subject to a transaction tax under any State administered transactions and use taxes ordinances, shall be exempt from the tax imposed under this Ordinance.

(b) The storage, use or other consumption of tangible personal property purchased by operators of waterborne

PASSED AND ADOPTED by the Los Angeles County Transportation Commission this 20th day of August, 1980, by the following vote:

- AYES: Geoghegan, Hahn, Rubley, Russ, Szabo, Ward, Zimmerman.
- NOES: Cox, Remy, Russell, Schabarum.
- ABSENT: None

The Los Angeles County Transportation Commission

By _____ Chairman

ATTEST:

Executive Director of the Los Angeles County Transportation Commission

Rick Richmond
RICK RICHMOND

I hereby certify that at its meeting of August 20, 1980, the foregoing Ordinance was adopted by the Los Angeles County Transportation Commission.

Executive Director of the Los Angeles County Transportation Commission
Rick Richmond
RICK RICHMOND

APPROVED AS TO FORM:
JOHN H. LARSON
County Counsel

By *Ronald Schneider*
RONALD SCHNEIDER
Principal Deputy County Counsel

of this division, unless the claimant establishes to the satisfaction of the Controller that the claimant has paid local sales tax reimbursement for a use tax measured by the sale price of the fuel to him.

If the claimant establishes to the satisfaction of the Controller that he has paid transactions tax reimbursement or Commission use tax measured by the sale price of the fuel to him, including the amount of the tax imposed by said Part 2, the Controller shall repay to the claimant the amount of transactions tax reimbursement or use tax paid with respect to the amount of the motor vehicle license tax refunded. If the buyer receives a refund under this Section, no refund shall be made to the seller.

SECTION 11. ADOPTION AND ENACTMENT OF ORDINANCE. This Ordinance is hereby adopted by the Commission and shall be enacted upon authorization of the electors voting in favor thereof at the special election called for November 4, 1980, to vote on the measure.

SECTION 12. OPERATIVE DATE. This Retail Transactions and Use Tax Ordinance shall be operative the first day of the first calendar quarter commencing not less than 180 days after the adoption of said Ordinance.

SECTION 13. EFFECTIVE DATE. The effective date of this Ordinance shall be August 20, 1980.

[Map of proposed rail system follows.
Included in this document as Map 6-3.]

Appendix D — Proposition A Ballot Arguments

ANALYSIS OF PROPOSITION A

By John H. Larson, County Counsel

Present law provides that the Los Angeles County Transportation Commission may, by ordinance, and subject to voter approval, impose a retail transactions and use tax (commonly called a "sales tax") in the incorporated and unincorporated area of the County of Los Angeles for public transit purposes.

The Commission has adopted such an ordinance imposing a one-half cent sales tax, the revenues of which would be used to a) improve and expand existing public transit Countywide, including reduction of transit fares, b) construct and operate a rail rapid transit system, and c) more effectively use State and Federal funds, benefit assessments, and fares. The revenues would be allocated as follows:

1. For the first three years from the operative date of the ordinance:
 - a) Twenty-five percent, calculated on an annual basis, would be allocated to local jurisdictions for local transit, based on their relative percentage share of the population of the County of Los Angeles.
 - b) From the remaining seventy-five percent, sufficient funds would be allocated to the Southern California Rapid Transit District or any other existing or successor entity in the District receiving funds under the Mills-Alquist/Deddeh Act to accomplish the following purposes:
 - (1) Establishment of a basic cash fare of fifty cents.
 - (2) Establishment of an unlimited use transfer charge of ten cents.
 - (3) Establishment of a charge for a basic monthly transit pass of \$20.00.
 - (4) Establishment of a charge for a monthly pass for the elderly, handicapped and students of \$4.00.
 - (5) Establishment of a basic cash fare for the elderly, handicapped and students of twenty cents.
 - (6) Establishment of a comparable fare structure for express or premium bus service.
 - c) The remainder would be allocated to the Commission for construction and operation of a rail transit system.
2. Thereafter:
 - a) Twenty-five percent, calculated on an annual basis, would be allocated to local jurisdictions for local transit, based on their relative percentage share of the population of the County of Los Angeles.
 - b) Thirty-five percent, calculated on an annual basis, would be allocated to the Commission for construction and operation of the rail transit system.
 - c) The remainder would be allocated to the Commission for public transit purposes.

Revenues would be used for capital or operating expenses.

The rail transit system would be constructed and operated in substantial conformity with a map attached to the ordinance and areas proposed to be served, at the least, are described.

The ordinance also indicates Commission policies relative to local and rail transit.

Provisions detailing the imposition and application of the tax as well as certain tax exclusions, exemptions and a deduction are indicated in the ordinance.

The ordinance would be operative, and the tax would be imposed beginning July 1, 1981.

(For full text of Proposition, see Sample Ballot; the full text of the proposed sales tax ordinance is available at the Los Angeles County Transportation Commission, 311 South Spring Street, Suite 1206, Los Angeles, California 90013.)

ARGUMENT IN FAVOR OF PROPOSITION A

It's time for some plain talk about transportation in Los Angeles County: It's a sick patient and needs some strong medicine to heal itself.

Let's face facts:

- Gasoline doubled in price last year; many experts feel that it will soon exceed \$2.00 per gallon;
 - Midwest instability could result in more gas lines or gas rationing;
 - Because we don't have an adequate public transit system, most people must continue to drive on increasingly clogged streets and highways; that costs them time and money and wastes energy.
- Proposition A is a realistic, sensible approach to these problems. It will:
- Improve and expand existing public transit countywide by providing substantial funding directly to each city for transit improvements;
 - Guarantee a 50¢ countywide bus fare, 10¢ transfer, and \$4 monthly pass for seniors, handicapped and students for at least 3 years;

REPLY TO ARGUMENT IN FAVOR OF PROPOSITION A

Proposition A is a bad tax! It would finance a transportation proposal that will cost too much — and serve too few!

Proposition A may sound good and look good, but when you read the fine print — this proposal is nothing but air. It has no specific program to permanently improve public transportation and there are no assurances or protection for the taxpayers public.

Where does it guarantee that the rail lines on the map will actually be built???

Where does it say that there will be no more bus strikes if this tax passes???

Where is the assurance that your neighborhood will really get more frequent bus services???

What will keep the politicians from squandering all the dollars on their own pet projects???

Finally, will this new tax really make it any easier for you and your family to travel to their desired destinations???

Proposition A is the bureaucrats usual answer to solving a complex problem — "throw more money at it and may be it will go away."

Don't be fooled by their smooth sales pitch. Save your tax dollars for a better proposal — VOLE NO ON PROPOSITION A.

PETE SCHABARUM

L. A. County Supervisor and
Chairman, L. A. County Transportation
Committee

MICHAEL W. LEWIS

Director, RTD

J. EDWARD MARTIN

President, Southern California
Transportation Action Committee

ARGUMENT AGAINST PROPOSITION A

Proposition A will raise your taxes every time you make a purchase. In return, if you live in the suburbs, it offers you nothing.

Proposition A will make a lot of politicians very happy because they'll have the chance to spend this new tax money almost as they please.

To call this a transportation improvement tax is very misleading.

1. It offers lower fares, but not for long distance commuters.

2. It offers money to local cities, but only if they don't "duplicate or compete" with existing transit services. That could create up to 81 more bus operators in this County.

3. If there is any money left over, the politicians will "expeditiously" construct and operate the fixed rail system as it appears on the map.

This new tax money for transit won't necessarily get more bus service on the street and it won't put an end to transit strikes.

By the Transportation Commission's own admission, it will take 75 years to construct the system envisioned on their map. That's a long time to wait for an alternative to our next energy crisis.

The public is already being taxed heavily for transportation. We now pay over 17¢ per gallon in gas tax. Unfortunately, much of it goes into the State's General Fund rather than the transportation fund. We should be seeking the return of our tax money, not asking the taxpayers to provide more tax money.

The taxpayers wisely rejected these multi-billion dollar transit proposals in 1968, 1972 and 1976. Yet some how we have managed to purchase 1200 new buses, acquire funding for a downtown people mover, a Wilshire subway, and a Century Freeway with exclusive bus lanes.

Tell the politicians they'll have to make do with the millions they've already got — vote NO on Proposition A.

PETER F. SCHABARUM

Supervisor, 1st District
County of Los Angeles

MICHAEL W. LEWIS

Director, RTD

J. EDWARD MARTIN

President, Southern California
Transportation Action Committee

ESSENTIAL TO ARGUMENT AGAINST PROPOSITION A

You can tell a lot about a proposition by who supports it and who opposes it. Proposition A is supported by economy-minded taxpayers, the League of Women Voters, labor and civic leaders.

The opponents of better transportation consist of a politician, (Peter Schabarum), his deputy, and the highway lobby. These obstructionists are trying to block the citizens' last hope for effective transportation.

The obstructionists offer continued crowded freeways, wasteful use of energy, long gas lines, and the prospect of our entire local economy grinding to a halt in the event of Middle East oil shut-off.

These prophets of doom make several false statements.

The truth is, this balanced transportation plan:

1. **WILL** reduce bus fares **EVERYWHERE** in Los Angeles County.
2. **WILL NOT** create 81 more bus companies.
3. **WILL** begin rapid transit construction immediately.

There are always some politicians who hesitate and do not act courageously. They never offer positive alternatives, but only excuses. These are the obstructionists who defeated transit proposals in 1958, 1974 and 1976 (if only 5% more voters had supported transit in 1968, we would have rapid transit today). Let's not be fooled again.

"Where there is no vision, the people perish." Do what is best for your family, do what is best for Los Angeles County, and do what is best for America.

Fight inflation. Conserve energy. Create jobs. Solve our transportation mess.

Now, in 1980, your vote must count.

Vote for Proposition A. It will put us back on the right track.

KENNETH HAHN
Los Angeles County Supervisor
Past Chairman and Current Member of the
Los Angeles County Transportation Commission

BURKE ROCHE
Executive Vice President
Los Angeles Taxpayers Association

LEAGUE OF WOMEN VOTERS OF LOS ANGELES COUNTY

WILLIAM R. ROBERTSON
Executive Secretary-Treasurer
Los Angeles County Federation of Labor, AFL-CIO

- Construct and operate a rail rapid transit system serving the areas shown on the attached map. This will create productive jobs to boost our economy;
- Help Los Angeles County get back its fair share of Federal and State tax dollars for transportation. Currently, Atlanta receives over \$728 per capita from the Federal government for transit, Los Angeles receives \$54.

Transportation is like the nervous system in the body of our community. If that system is sick, we all suffer the consequences. We pay the price in increased energy costs, more smog and congestion, fewer jobs, and a stagnating economy.

Because of previous inaction, Los Angeles County is the only urban area of its size that does not have a rapid transit system. Approval of this 1/2% sales tax will bring immediate action through lower bus fares and development of rapid transit countywide.

Proposition A will end the delay and get Los Angeles moving in the right direction.

Vote YES on Proposition A.

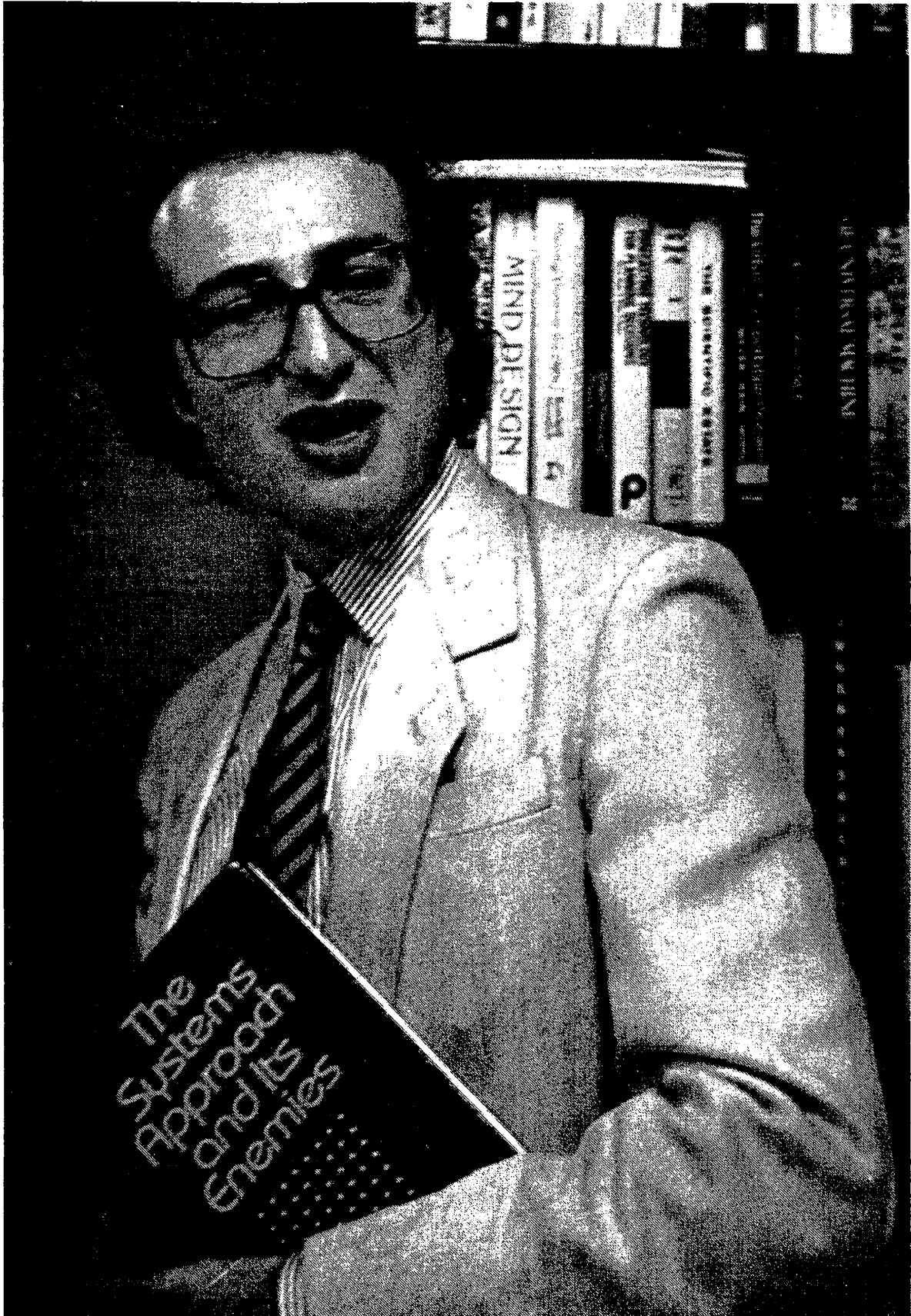
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Los Angeles County Federation of Labor, AFL-CIO

[Map of proposed rail system follows.
Included in this document as Map 6-3.]



Biographical Note

JONATHAN RICHMOND WAS EDUCATED first at St. Paul's School and the London School of Economics, and came to MIT in 1979 with a Fulbright Scholarship to work on a Master of Science in Transportation degree, completed in 1981.

After a brief period at the University of California, Berkeley, he went to work for Southern California Association of Governments, where he became involved with a controversy over a proposed "bullet train" for the Los Angeles - San Diego corridor. His California Senate committee testimony and subsequent consulting report for the City of Tustin in Orange County, California, was instrumental in revealing the technically and ethically deficient nature of modeling used to support the proposed rail project and in bringing about its demise.

After a year at the Woodrow Wilson School, Princeton University, Richmond returned to MIT to complete his Ph.D. His doctoral work was financially supported principally through consulting, providing ethical oversight of technical work.

Richmond has developed and taught new coursework, incorporating ethical concerns into transportation courses. Started as a half-semester course on Transportation Policy Analysis at MIT, this was developed into a full course when he was a Visiting Lecturer at the University of North Carolina, Chapel Hill, during the 1986-87 academic year. Richmond also participated in sponsored research at Chapel Hill, and supervised graduate student research assistants there.

The author of numerous editorial arti-

cles in the *Los Angeles Times* and elsewhere, Richmond has also been extensively interviewed in places such as the *Los Angeles Times*, *New York Times*, *Wall St. Journal* and *USA Today*, and his work on the Los Angeles - San Diego bullet train received widespread media coverage on television and radio as well as through the printed press.

In addition to presenting three papers at conferences of the Association of Collegiate Schools of Planning, Richmond was also invited to address the National Academy of Sciences/Engineering Transportation Research Board Executive Committee at their 1990 Annual Meeting in Washington, DC. He has published a refereed article in *Systems Research*, which will also form the basis for a chapter of a new collection of readings on planning theory. He has written on engineering ethics for *Technology Review* and been asked to review papers for the *Journal of the American Planning Association* and the *Journal of Planning and Educational Research*.

In 1990, Richmond was awarded the Laya and Jerome B. Wiesner Student Art Award at MIT for his founding and management of *The Tech* Performing Arts Series discount ticket service, designed to promote student attendance at arts events, and for his music criticism in *The Tech* — MIT's student newspaper. He has also been a classical music critic for the *Christian Science Monitor*, specializing in the review of "Authentic Instruments" performances and recordings, and has appeared on Monitor Television, discussing alternative approaches to the interpretation of Beethoven.