MASSACHUSETTS INSTITUTE OF TECHNOLOGY

APPLICATION OF THE STRATEGIC SERVICE MODEL TO TRANSIT OPERATIONS

The Case of the San Diego MTDB

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INTRODUCTION: SICK TRANSIT—GLORY OR MUNDANE?

The U.S. transit industry occupies an unenviable place in the national pantheon of service providers. What had been at one time a profitable private-sector enterprise has become a publicly-owned, highly-subsidized service often seen as marginal to the life and functioning of most cities. Though there are historic (New York and Boston) and more modern (San Francisco through BART and Washington through its Metro) examples of cities defined in part by public transportation, transit as a whole has all but ceased to dictate or affect patterns of urban growth and development. Given a national political climate characterized by shrinking budgets, it is likely that the transit industry as a whole will be highly impacted by reductions in federal operating subsidies.

The issue of whether these challenges will result in a further deterioration in the industry or whether they will serve as the crisis that produces radical innovation is one that becomes especially acute as many transit properties face the need to achieve serious economies of operation. The transit industry in the US has traditionally responded to funding crises by cutting service and raising fares. Alternative responses—restructuring, using competition, and improving the marketing function—have not been the norm,[1] though some have suggested that such crises are precisely the opportunities that should be exploited for service redesign.[2] The resulting deterioration in service levels, matched with lack of service innovation, has

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[1] Charles A. Lave, "The Private Challenge to Public Transportation—An Overview," in Chalres A. Lave, editor, *Urban Transit: The Private Challenge to Public Transportation* (San Francisco: Institute for Public Policy Research, 1985), p. 28.

[2] Christopher Lovelock, Gordon Lewin, George S. Day, and John E. G. Bateson, *Marketing Public Transit: A Strategic Approach* (New York: Praeger, 1987), p. 4.

caused one federal transit official to compare public transit with the Maginot Line: expensive to build and maintain, and ultimately irrelevant to the purposes it serves.[3]

Such criticism is unnecessarily harsh; transit does indeed serve some purposes, though it serves some better than others. A cursory review of the public literature on transit systems suggests four primary social purposes transit is expected to serve:

1. Providing mobility to persons who lack other mobility options (namely, access to a private passenger automobile).
2. Reducing congestion on streets and highways by providing potential drivers with alternative means of transportation (with an emphasis on commuting).
3. Reducing environmental pollution by substituting shared-ride services (including bus and rail) for single-vehicle-occupancy travel.
4. Reducing urban sprawl by promoting more compact, pedestrian-accessible development.

It is instructive that, in the course of researching this report, the author did not find any mention of a potential fifth purpose: providing a convenient means for citizens and visitors to travel around a metropolitan area.

The "Four Purposes" are not necessarily complementary; at times, they even conflict. The recent lawsuit launched by the NAACP against the Los Angeles Metropolitan Transit Authority is a case in point; a recent newspaper article framed the problem neatly:[4]

> ...the Los Angeles case illustrates a more modern conflict: transit systems must convince affluent motorists to quite clogging roads and

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[3] Alfred A. Dellibovi, "The Business of Urban Mass Transportation," in Eric Bers and Chris Hendrickson, editors, *Managing Urban Transportation as a Business*, Proceedings of a Specialty Conference sponsored by the Urban Transportation Division of the American Society of Civil Engineers (New York: ASCE, 1987), p. 11.

[4] Mark Fritz, "Suit alleges overspending on transit for white riders," *San Diego Union-Tribune*, 12 December 1994.

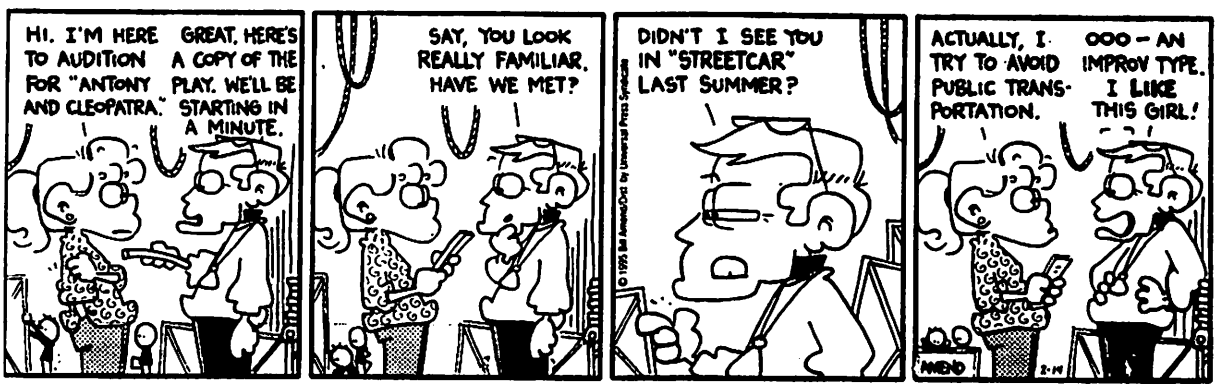
fouling air while still providing transportation to people who can't afford cars.

A central challenge facing any transit agency is designing transit services that make possible the realization of all of its goals. The evidence suggests that few US cities have been especially successful at meeting any goals other than the first, and even then, success has been marginal for many. Why is this so? More to the point, what would be necessary for transit agencies to be able to claim a greater share of success in attaining the goals society has established for the transit function? The answer to such a question must begin with a coherent statement of the transit problem.

Defining the Transit Problem

The primary challenge facing transit in the US has been defined as that of attracting—and retaining—riders.[5] This challenge is repeated continuously in the literature,[6] though with apparently little result.

FOX TROT by Bill Amend



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[5] Lovelock, Lewin, Day, and Bateson, "Marketing Public Transit," p. 7.

[6] see Dellibovi, "The Business of Urban Mass Transportation;" Eric L. Bers, "Foreward" to Eric Bers and Chris Hendrickson, editors, *Managing Urban Transportation as a Business,* Proceedings of a Specialty Conference sponsored by the Urban Transportation Division of the American Society of Civil Engineers (New York: ASCE, 1987); Lave, "The Private Challenge;" and C. Kenneth Orski, "Redesigning Local Transportation Service," in Charles A. Lave, editor, *Urban Transit: The Private Challenge to Public Transportation* (San Francisco: Institute for Public Policy Research, 1985).

Why should transit have so difficult a time in attracting riders? The literature suggests a serious mismatch between the travel needs of much of the public and the service offerings of most transit agencies. Charles Lave[7] comments that:

> transit did not lose passengers because of its deficits; it lost passengers because it did not provide the kind of service they desired. Few other sectors of our economy offer consumers such a uniform, mediocre product.

While Lave's comment on "mediocrity" may strike some as unfair, his observation as to the uniformity of transit services rings true. Kenneth Orski shares Lave's concern:[8]

> The demand for urban transportation has long ceased to be (if it ever was) a monolithic market that could be satisfied with a single type of service provided throughout the day and throughout the entire metropolitan area in a uniform manner. Today the market is highly segmented...

The notion of *demand* and *market* points to a central failing of many transit properties to adequately embrace the *marketing* function. George Smerk, writing on the management of transit systems, notes,[9]

> the conventionally well managed transit property is adept at ... utilizing vehicles and personnel in what is hoped to be the least costly manner. What traditional management lacks is a feel for the consumer and, perhaps even more important, the *potential* consumer of public transportation services.

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[7] Lave, "The Private Challenge," p. 18

[8] Orski, "Redesigning Local Transportation Service," p. 263.

[9] George M. Smerk, "Management of Public Transportation," in George E. Gray and Lester A. Hoel, editors, *Public Transportation*, 2nd edition. (New Jersey: Prentice Hall, 1992), p. 464.

What is the marketing function? It is that aspect of an organization that links what the organization does or produces to the needs of (potential) customers. It is customary to speak of the "marketing mix" of four kinds of strategic choices facing the management of an enterprise:

1. the design of the product or service being offered;
2. the pricing of that product or service;
3. the choice of distribution channels for making the product or service available to customers; and
4. the communication to potential and actual customers regarding the product and its attributes.

This last choice, sometimes referred to as *promotions*, has tended to dominate much of the attention given marketing in the transit sector. Fielding complains that marketing is too often confused with promotions in too many transit agencies.[10] An over-emphasis on promotions, to the neglect of the design, pricing, and distribution issues facing transit planning, is probably responsible for the discouraging record of most transit properties in increasing ridership, leading to Fielding's misplaced observation that "far too much attention has been paid to the infrequent user and to the nonuser in the vain hope that transit will be able to recapture a significant portion of urban travel."[11]

While there is some evidence to suggest that transit properties are beginning to focus more on market research, there is very little use of that research for service planning or service design.[12] The gap between transit goals and transit performance suggests a need for a more marketing-based service design and planning process capable of identifying and

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[10] Gordon J. Fielding, *Managing Public Transit Strategically* (San Francisco: Jossey-Bass, 1987), p. 197.

[11] Fielding, *Managing Public Transit Strategically*, p. 187.

[12] Phone interview with Rebecca Elmore-Yalch, Principal Investigator of Transportation Research Board's Project B-2 FY '92, *Integrating Market Research into Transit Management*, 23 March 1995.

implementing new, more popular services. The literature on service-sector management[13] is replete with stories of "service breakthroughs" involving changes in how the elements of a given service are reconsidered and recombined to create new value for the public and meet economic goals of service providers. Such service breakthroughs revolve around careful study of customers and their needs and the building of organizational structures and processes around these needs.

This paper is an initial foray into applying the concept of service breakthroughs to the US transit industry. It focuses on the case of the San Diego Metropolitan Transit Development Board, an agency highly regarded among its peers. It is not the purpose of this study to analyze in depth any specific issue or propose any concrete solutions to the problems facing either the San Diego MTDB or any of its sister agencies; rather, this study aims at *identifying* those areas worthy of greater attention in the hopes that a more sophisticated understanding of the needs of potential transit users can lead to the kinds of service breakthroughs necessary if society's goals for transit are to be realized.

The San Diego Metropolitan Transit Development Board

The MTDB is the public agency responsible for developing and coordinating San Diego's Metropolitan Transit System (MTS), an integrated network formed of seven fixed-route operators, six general dial-a-ride services, and four senior and disabled dial-a-ride services.[14] Its area of jurisdiction covers about 570 square miles in the southwestern quadrant of San Diego County, an area home to 1.8 million people (72% of the County's population).[15] The Board is the parent organization of three subsidiaries: San Diego Trolley, Inc., operator of San Diego's light rail lines; San Diego Transit Corporation, operator of 29 fixed bus routes;

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[13] Particularly James L. Heskett, *Managing in the Service Economy* (Cambridge, Mass.: Harvard University Press, 1986); and James L. Heskett, "Lessons in the Service Sector," *Harvard Business Review* (March/April 1987).

[14] Metropolitan Transit Development Board, *Metropolitan San Diego Short Range Transit Plan FY 1995–2001* (San Diego: MTDB, 1994), p. 2-9.

[15] MTDB, "Metropolitan Transit Development Board," undated information sheet (c. 1993).

and the San Diego and Arizona East Railway, a small freight railroad that shares some track with the San Diego Trolley. The 15-member Board is composed of 13 representatives appointed from the city councils of the ten cities served by MTDB (the City of San Diego sending four representatives), a representative of the County Board of Supervisors, and a Chairperson elected by other Board Members.

The MTDB was responsible for planning, designing, and building San Diego's 35.2 miles of light rail transit (LRT) service. Over 33 miles of new lines are currently in the planning, design, and construction stages.[16] The Board is also responsible for bus operations, and has been aggressive in contracting out bus routes and paratransit services to private operators.

The MTDB's FY 1995–2001 *Short Range Transit Plan* (SRTP) states that its primary goal "is to increase the number of people carried by the MTS network through improving the service on existing bus routes and expanding the light rail network," though it acknowledges that "in the recent past, the SRTP has focused on service refinements to meet tight budgetary constraints, and this year's SRTP may involve actual service reductions."[17] The issue of a system's goals is important, as it illustrates the nature of conflicting objectives outlined earlier. Indeed, much of the more visible work of MTDB—the expansion of the trolley system—is promoted and supported as a means of providing automobile users with an alternative. The Mission Valley West line, scheduled to begin construction in 1995, provides a telling example.

The MVW line is a 6.1 mile, $245.7 million project serving nine new stations stretching from Old Town to the Jack Murphy Stadium. It is projected to serve 4,000 riders a day during its first year.[18] Though it has encountered particularly strong opposition (due to cost

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[16] MTDB, *Short Range Transit Plan*, p. 5-1.

[17] MTDB, *Short Range Transit Plan*, p. S-1. "Service refinements" in practice mean service reductions, though in some cases it has meant improvements in frequencies or service span along some routes.

[18] Mark Arner, "Trolley line must bridge funding gap," *San Diego Union-Tribune*, 12 September 1994.

increases and potential environmental impact on sensitive wetlands)[19], it found a champion in San Diego City Councilwoman Valerie Stallings, who argued that the line "will help ease congestion, improve air quality, and get people out of their cars."[20] Her views were echoed by fellow councilman and MTDB director Ron Roberts, who described the project's "chief goal" as reducing traffic congestion and air pollution.[21] Just the same, certain financial goals were apparently central in the decision to build a light rail alternative, not the least of which is the lower operating cost of LRT compared to buses ($3 million annually for the MVW line compared with a $5.3 million estimate for comparable bus service).

The San Diego Trolley enjoys a far higher share of "mode-choice" riders—those who claimed access to a car but who *chose* to use transit instead of driving—than does the region's bus system (compare the Trolley's 37% share to the bus system's 5–9% share in 1990).[22] Still, the implication for the MVW line is that only about 1500 of its daily riders will be pulled from cars during its first year of operation—at over $160,000 each in infrastructure investment. While the number of riders can be expected to increase as the line is extended further east and infill development occurs,[23] it should be obvious that the trolley will not contribute significantly to reduction in automobile use *as the line is being currently developed.*

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[19] Libby Lucas of San Diego's Environmental Health Coalition explained her group's decision to oppose the MVW plan: "On the one hand, we know that Mission Valley is in desperate need for mass transportation, and the trolley is a non-polluting way to accomplish this. But after a lot of consideration, we believe that the environmental costs of destroying a watershed are simply too high for us to endorse the plan." (Melinda Powelson, "Trolley Foes Fear Massive Fish Death," *San Diego Reader*, 29 September 94)

[20] Mark Arner, "Trolley link to stadium funds OK'd," *San Diego Union-Tribune*, 24 February 1995. It is worth noting that Councilwoman Stalling's arguments specifically allude to problems two and three of the "Four Problems" model developed earlier in this study, and that the argument in favor of getting people out of their cars can be construed as relating to problem four. These goals can be construed as relating more to *mode-choice* riders than to *transit-dependent* riders, at least in the short-run.

[21] Mark Arner, "Funding on track for trolley extension," *San Diego Union-Tribune*, 16 September 1994.

[22] Interview with MTDB Marketing Director Anne Catherine Vinickas (22 December 1994).

[23] The Mission Valley West line was actually planned to serve a number of specifically transit-oriented high-density developments to have been built concurrently along the trolley right of way. None of these projects is currently under construction; those that are still on the drawing boards have had their densities reduced significantly, and others have been replaced by "big box" retailers. (Powelson, "Trolley Foes Fear Massive Fish Death").

Given the combination of unmet goals, budgetary pressures, and a shifting public climate, the MTDB is in need of a service breakthrough, some new means of responding effectively to the challenges facing it in the near and long-term.

STRATEGIES FOR BREAKTHROUGH SERVICE

"Breakthrough Service" is the name applied to service offerings that achieve an unusual degree of success in their fields, especially when this success is based on service characteristics that set them apart from the competition. Walt Disney achieved breakthrough service when he took the concept of an amusement park—typically an unsavory kind of place—and turned it into a preferred upscale family destination with Disneyland and later Disneyworld. Federal Express achieved breakthrough service when it introduced guaranteed overnight courier services at prices that were previously not possible.[24] Southwest Air has rocked the airline industry with its own service breakthrough: fares on many routes that beat Greyhound. And Connecticut Limousine Service achieved astounding market share (50% of all trips between Connecticut and the three New York City airports)[25] by innovating transportation services.

The case of Connecticut Limousine illustrates some of the elements that define Breakthrough Service. The market for airline shuttle services had been previously characterized as demanding door-to-door service. There are a number of problems with providing such service, though:

- it is expensive to operate;
- it plays havoc with schedules; and
- it results in inefficient operations (non-revenue service miles).

CLS responded with a new service defined by several criteria. Its vehicles would:

- show up on time as a result of fixed routing;
- make minimal (no more than 2-3) en route stops; and

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[24] It is interesting to note that they almost went broke in the process of establishing their business; Federal Express today is recognized as a successful company.

[25] Mayer Horn, "The Success Story of Connecticut Limousine," in Eric Bers and Chris Hendrickson, editors, *Managing Urban Transportation as a Business,* Proceedings of a Specialty Conference sponsored by the Urban Transportation Division of the American Society of Civil Engineers (New York: ASCE, 1987).

- run from Air Service Terminals designed and built by CLS.

The Air Service Terminals have turned out to be an "outstanding attribute" of CLS service.[26] They are generally comfortable terminals, with car rental agencies, CLS ticket counters, and snacks available. Many riders treat these terminals as "satellites" of the airport, and use them for dropping off and picking up airline passengers. CLS also prides itself on operating a "superior fleet of vehicles."[27]

In a sense, CLS's success[28] can be described simply as having created value for their customers. CLS targeted suburban air travelers, developed a clear sense of what it needed to do to serve them, innovated the concept of Air Service Terminals to make quality service financially feasible, and then insisted on service and facility standards to ensure the service met expectations. CLS could then position itself as the dependable and preferred means of airport access, could capitalize on its Air Service Terminals by renting space to related businesses, and then make sure that its operations never strayed from purpose.

How do service providers achieve Breakthrough Service? James Heskett of the Harvard Business School has identified at least five strategies that different companies pursue:[29]

- they integrate the marketing function with operations;
- they rethink quality control and the service encounter;
- they reassess the effects of scale;
- they replace assets with information; and

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[26] Horn, "Connecticut Limousine," p. 156.

[27] Horn, "Connecticut Limousine," p. 154.

[28] The success of CLS is all the more striking given the extraordinary difficulties faced by the same company in the 1990s: volume is off 54% from its peak in 1988, an expansion into Long Island became "a terrible disaster," and the high fixed costs of the business have been terribly draining; "as long as volume was constantly increasing, it made some sense," was the comment of a spokesperson for CLS's parent company.

Why the turnaround? Part of the answer may lie in the admission that CLS's parent company "[has] not been able to build up market share in other markets, nor [does it] have any sense as to how to do it properly in Connecticut." It is apparent that there has been some shift in the market (though they still believe they have a relatively high market share), but CLS has not followed just what that shift is (citations from letter written on behalf of Paul Seeger of The Schiavone Corporation, 21 March 1995).

[29] Heskett, *Managing in the Service Economy.*

- they build customer loyalty.

Integrating Marketing with Operations

Many service sector businesses understand that marketing is not the responsibility of one department; rather the marketing function is one which applies directly to operations. Heskett argues that this integration must occur wherever service is *produced*,[30] for it is at the point of service production that the elements of the marketing mix—the service being sold, price, communication, and distribution—most directly engage the attention of the customer.

Most transit properties, like many other transportation industries, have a strong operations orientation due in great part to the complex operations problems network-related businesses face.[31] And yet, an "excessive" concentration on operations has been criticized as a means of accelerating the decline of a transit system due to the frequent mismatch between what operations personnel view as costs and what clients view as central elements of the service they are purchasing. Indeed, marketing has tended to focus on revenue and ridership, while operations has tended to focus on costs and efficiency, leading to a built-in conflict between marketing's insistence on *change* and operations' concerns with *caution*.[32]

Some transit management specialists, such as Fielding, have long argued that a cooperative relationship between operations and marketing is essential.[33] But such an integration can only occur when two conditions are met.

- *The marketing function is better understood.* Transit properties have typically understood marketing as pricing and communications/promotions. Very little attention has been paid to issues of service design and quality *from a marketing perspective.*[34]

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[30] Heskett, *Managing in the Service Economy*, and Heskett, "Lessons."

[31] Smerk, "Management of Public Transportation."

[32] Lovelock, Lewin, Day, and Bateson, "Marketing Public Transit," p. 187.

[33] Fielding, *Managing Public Transit Strategically*, p. 192. It is interesting to note that, while Fielding makes clear the need to achieve this integration, he offers little in the way of analysis or techniques to make it happen.

[34] Lovelock, Lewin, Day, and Bateson, "Marketing Public Transit," p. 9.

- *Top management supports a marketing orientation.* Without top management support, it becomes all but impossible to arrange for the inter-functional transfers, task forces, teams, and decentralization of revenue responsibility that expose operations personnel to marketing concerns.[35]

Rethinking the "Service Encounter"

Effective service sector providers understand that the "service encounter"—the on-line instance when service is "produced" in the eyes of the client—is their primary opportunity to win customers or lose them. The service encounter is the interface between the organization and its clients. Companies that look at their service encounter process strategically make careful choices about:[36]

- the selection, development, and assignment of employees;
- facility layout and equipment; and
- how the customer should be "preconditioned" for the encounter, in terms of expectations and perceptions of risk.

The goal of this process is to build customer loyalty—and henceforth sales. Transit properties are no more free of these needs than any private-sector agency (see Appendix I); improved ridership and strong public support are essential to their survival (and to the meeting of espoused social goals).

UPS is a good example of a company that carefully manages its service encounter: from the arrival of the brown truck[37] (freshly cleaned and in good repair) to the appearance of the efficient, uniformed employee to the standard forms, the entire service encounter is designed

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[35] Lovelock, Lewin, Day, and Bateson, "Marketing Public Transit," p. 189.

[36] Heskett, *Managing in the Service Economy,*

[37] One commentator went so far as to claim that "the UPS brown vehicle is a very important component of the service delivered." It is presumed that it is the consistency and overall image, not the color brown, that is important. B. Kass, "Summary of Presentations" [on marketing], in Eric Bers and Chris Hendrickson, editors, *Managing Urban Transportation as a Business,* Proceedings of a Specialty Conference sponsored by the Urban Transportation Division of the American Society of Civil Engineers (New York: ASCE, 1987), p. 151.

to communicate efficiency, reliability, and speed: three qualities people want when shipping packages. Disney, previously mentioned, is another excellent example: from the moment one arrives at Disneyland, the facilities and personnel all are oriented at creating a positive, friendly image.

Reassessing the Effects of Scale

Some service companies reassess the effects of scale on their organization.[38] They distinguish between the organizational level (network size) and operating unit level of their enterprises. SAS achieved a notable increase in profitability—and customer satisfaction—when it made the decision to move from large planes flying a small network to much smaller planes flying an expanded network. In their case, the operating efficiency "loss" of a small plane was more than offset by the organizational efficiency of substantially increased ridership.

Replacing Assets with Information

Many service sector organizations improve their performance by getting *smarter*, not larger. They use information to replace fixed assets. Commercial airlines, for example, have achieved notable cost savings by more intelligently programming plane routing to minimize non-revenue-producing flights needed to access maintenance facilities, and by using up-to-date passenger demand information to adjust schedules and fare structures.

Building Customer Loyalty

Finally, many service sector enterprises learn how to build customer loyalty. They understand that it generally costs far less to keep a current customer than find a new one. They build loyalty through careful focus on their customer's needs and then designing services to *consistently* meet—and perhaps exceed—these needs. They offer premiums for customer loyalty (such as airline frequent flyer programs and special discounts). They establish service

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[38] Heskett, *Managing in the Service Economy.*

guarantees[39] to communicate to the customer what that customer has a *right* to expect. They focus on building—and *maintaining*—trust.

With the exception of monthly and other pass programs that "lock-in" users during the pass period, the US transit industry has all but ignored issues of customer loyalty.[40] It is perhaps for this reasons that one of the key problems universally facing transit managers has been that of attracting and *retaining* riders.[41]

The above strategies do not emerge from a conceptual vacuum; they are based on a careful understanding of the elements that go into defining and producing services. The same processes that work for private sector service providers can work for public sector transit agencies provided these agencies adopt standards and policies ensuring the fair and equitable application of these policies to the service area population. The following sections consider the elements involved in breakthrough service and analyze the MTDB's areas of opportunity for achieving such service.

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[39] Christopher W. L. Hart, "The Power of Unconditional Service Guarantees." *Harvard Business Review* (July/August 1988).

[40] Fielding, *Managing Public Transit Strategically*, pp. 184-185.

[41] Lovelock, Lewin, Day, and Bateson, "Marketing Public Transit," p. 7.

BREAKTHROUGH SERVICE: BASIC ELEMENTS

Service breakthroughs occur through a careful consideration of the elements that make up a service strategy. These elements include the processes by which customers (or "users") are identified, their needs assessed, a strategy developed for serving these needs, and the strategy placed into operation. There are four basic elements to any service:

1. *Targeting market segments.* This is the process by which potential customers are identified and their needs and perceptions understood.
2. *Defining the service concept.* This is the process through which the customers' needs are translated into a marketable service. The challenge at this stage lies in understanding the proposed service from a potential customer's perspective.
3. *Focusing the operating strategy.* This is the process by which the service concept is translated into a set of activities and relationships and given organizational form. It is also the process by which the concept is made financially viable.
4. *Designing the service delivery system.* This is the process by which the actual nuts and bolts service is produced and delivered to customers. It calls for special attention paid to the *experience* of customers as they *encounter* the organization and its service.

The following exposition describes the kinds of decisions and activities that characterize each element of the strategic service model. It raises the issues involved in applying the model to a transit operation. The specific application of the model to the MTDB is the subject of another chapter.

Targeting Market Segments

There are two central tasks involved in targeting marketing segments. The first of these is the development of a *segmentation strategy*; the second is a rigorous *analysis* of each segment.

Segmentation Strategy

A segmentation strategy is a decision as to how a potential market is to be subdivided based on shared characteristics. The purpose of segmentation is to identify those persons most likely to respond to the product or service one is offering.

Most "markets" break down into segments of people who respond differently to different offerings. A classic example is that of padlocks in India. The story is told of a company, formerly an exporter of large numbers of inexpensive padlocks to India, that went broke when faced with competition from two other companies: the first of these sold cheap, perhaps "worthless" padlocks, the other an expensive and heavy-duty model. These two upstarts enjoyed success because they each understood that there was not so much *a* market for padlocks in India as there were *distinct* markets. One segment of the population wanted "token" padlocks not as a means of protecting goods but as a way of signalling the privacy of personal items within the house (in much the same way that diaries have locks). Another segment was concerned about protecting goods from robbery, and needed a stronger lock. The company that didn't understand how the market was segmented went under. Their "one size fits all padlock" was too expensive for one market and not strong enough for the other.

The essence of a segmentation strategy is the discovery of groups most likely to respond positively to the service or product offering, and which are equipped to *value* the service or product enough to make its provision economically viable (or even profitable). There are many ways of identifying such groups. The most common method is through *demographic* segmentation, in which people are broken into groups by age, sex, income, residence, and household size. Most transportation demand planning uses such divisions to determine *overall* demand for transit services. Heskett advises, though, that a segmentation based on *psychographic* criteria, though more difficult initially, can prove far more rewarding.

How might psychographic segmentation work? One area worth investigation would be the categorization of people based on orientation toward driving. It is likely that the population would segment into passionately-devoted drivers, indifferent drivers, and those

who'd rather be driven than drive themselves. It is further likely that each group would respond differently to varied incentives and service offerings.

There is some evidence to suggest that such an approach to segmenting might yield useful results. Following the inaugural run of the recently-initiated Coaster commuter rail, the *San Diego Union-Tribune* reported the following:[42]

> Grandparents reminisced... [One] said out loud what many of his contemporaries were silently thinking: anything would be better than having to drive.

What stands out is not so much the existence of auto-averse persons, but the fact that these passengers were apparently unaware of the commuter buses replaced by the Coaster that provided service not unlike the train. This group of "transit-readies" is worthy of greater study and targeting.

Analyzing segments

Once a segmentation strategy is identified, the next step is to analyze each segment in terms of its size, its needs, the extent to which its needs are being met (or unmet), and the capability of the proposed service to meet these needs.[43] This last process is iterative; it may be that some need is identified that the current service proposal cannot meet, but that a modified service could.

What makes a segment attractive? There are two primary considerations service providers use when judging a segment. The first of these is the ability of the segment to generate additional sales; that is, the "room for growth" exhibited by the segment. The second of these is the potential for increased *profit* from each sale; that is, the extent to which each sale can generate additional revenues.

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[42] Patricia Dibsie, "Thousands enjoy new Coaster train ride," *San Diego Union-Tribune*, 19 December 1994.

[43] Heskett, *Managing in the Service Economy*.

While transit agencies are anything but profit-producing enterprises, they should certainly take advantage of opportunities for increasing revenues, especially when such revenues make it possible for these agencies to fulfill their societal goals. It may be that some segment of the riding public is willing to pay a premium for some additional service, far beyond the cost of providing that service. The act of serving that segment is not discriminatory, especially when that segment can help finance the cost of meeting an agency's social goals.

Service providers typically characterize segments by their relative sensibility to service design versus price. Some segments are extremely price sensitive, while others are more willing to pay for heightened service quality or design. A good segmentation strategy plays off of this relationship to tailor service offerings to the price/design sensibilities of different market segments. Such a strategy could be of great value to transit agencies; it would catalyze their ability to exploit the considerable price and service elasticities that are known to characterize the market for transit services,[44] as well as the known service sensitivities of mode-choice (*i.e.*, suburban) commuters.[45]

Defining the Service Concept

The Service Concept is not merely the service being offered; it is also all that goes into making that service unique or distinctive. A food service example should serve to illustrate. McDonald's doesn't just sell hamburgers (or fries or McNuggets or Filet-O-Fish or Hula Burgers or...); it sells convenience, location, consistency, speed, and price. McDonald's has long been aware that its "product" was actually a "service," and has consequently expanded its food offerings beyond the traditional hamburger.

All this is not to say that McDonald's doesn't sell hamburgers, or that hamburgers are not intrinsic to what McDonald's does. Rather, the purpose is to illustrate the central point

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[44] Fielding, *Managing Public Transit Strategically*, p. 160.

[45] Orski, "Redesigning Local Transportation Service," p. 261.

that customers (or users or riders) often see, understand, judge, and make decisions about products and services based on criteria that are often poorly understood by vendors and service providers.

By the same token, transit agencies don't just sell rides (or, as some have wryly commented, merely "run busses"),[46] they sell mobility, convenience, comfort, reliability, excitement, stimulation, sociability, anonymity, speed, slowness, social integration, access, and safety—*perhaps.* Absent a deep understanding of the transportation market, transit agencies may only just run buses or trolleys. They may be missing opportunities to reconceptualize what they do (and serve real needs currently being unmet). Perhaps even more important, they may miss the opportunity to build support among non-riders essential to the funding and development of new and existing services.

Once a market is targeted, a service enterprise must develop a service concept specifying how the needs of that market will be met. The service concept can be thought of as the statement of just what service *is* being offered. A popular example is Federal Express's concept of guaranteed overnight delivery for small packages and documents.

For a service concept to be effective, it must communicate clearly the *results* to be produced for customers, how these results should be *perceived* (by both customers and the general public), and what the public and customers should therefore *expect* when they use the service.[47] The Federal Express example illustrates this point. Their service concept makes it clear what result will be produced (*delivery*), how this result should be perceived (*guaranteed*), and what should therefore be expected of the service (*overnight*).

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[46] Lovelock, Lewin, Day, and Bateson, "Marketing Public Transit," p. 4.

[47] Heskett, *Managing in the Service Economy,* and Heskett, "Lessons."

Results

Service providers must define the services they offer in terms of the *results* that will be produced for clients—*because this is how clients will understand the service being provided.* This is what distinguishes the service concept from the operating strategy; the former is client-focused, the latter operationally-oriented. These results should likewise be expressed in terms that matter to the target market. Market research is a potent tool for identifying issues of importance to targeted segments. As is frequently the case with many products and services, the innumerable, perhaps unmeasurable "details" that go into a service can affect how that product or service is perceived, valued, and used by potential customers. Clowns, for example, might have little to do with hamburgers, but there can be little doubt that Ronald McDonald has proven of tremendous value to McDonald's (and perhaps, by extension, to other similar fast food restaurants)—in part because the character communicates to parents that their kids will be entertained at some level in a McDonald's restaurant—a "result" parents are obviously willing to value.

Perceptions

An important element of any service concept—and a strategic element at that—is that of paying careful attention to the *perception* held by the public (and customers) about the results produced by the service. It is not enough that a service will accomplish a task or fulfill a need; the public must first perceive that the need is important and that the service offering is a preferred means of achieving some desired goal.

From a service breakthrough perspective, perceptions are not merely the result of happenstance or something to be rescued in a crisis; it forms an integral part of the service offering and must be managed strategically. The most powerful means of accomplishing this task is through a careful positioning strategy, which is considered later in this report.

A good service strategy goes beyond public perceptions, however. It understands that employees, too, must understand "what's going on" if they are to actually produce the

intended results. Consequently, effective service providers focus on employee perceptions of service results as another element to be managed.

Expectations

Perceptions focus on the results to be achieved and the importance of these results. *Expectations* refers to the relationship that should exist between a service provider and its customers or clients. What should a customer expect from a service encounter with the organization? What are they likely to expect? If the gap between the two is negative (that is, if customers expect more than the company can provide), there is a need for serious refinement and communication of the service concept. In cases where customer expectations are "too low," the service provider can either gain competitive advantage by "raising the ante," educating consumers to expect more from a given service (especially when the competition is not capable of meeting those expectations), or lower its sights by readjusting its service offerings downward.

Focusing the Operating Strategy

An operating strategy is a battle plan for making a service concept viable. It outlines the steps necessary to produce the intended service, as well as the financial structure that will allow the organization to continue providing service into the future. It must address the question: what must occur for the service concept to be effectively implemented?

Elements central to production of service

A typical transit agency defines its task in terms of running vehicles (buses or fixed rail) along predetermined routes with frequencies derived in great part from an analysis of potential demand along that route. This operating strategy depends on the availability of appropriate vehicles, the provision of legally acceptable access to and from vehicles, an adequate planning facility to monitor and adjust service to changing demand, a system for the collection of fares, and a financing mechanism to fund both capital improvements and operating deficits.

The service concept (that of providing fixed-route, schedule-based transit services) is thus dependent for its execution on the proper functioning and interaction of a number of highly diverse elements. Effective service providers carefully manage this set of elements, and explicitly consider how any change in the service concept will make demands on any of the elements or of the interrelationships among them.

Taco Bell provides a fascinating example of a company that redefined the elements of its operating strategy following a revision of its service concept. Market research convinced Taco Bell's management that target customers valued price, freshness, and cleanliness above all other attributes of service. So management restructured the enterprise with the goal of maximizing the role these elements played in the service mix. Taco Bell had previously relied on its own in-restaurant capacity for prepping ingredients (slicing tomatoes, shredding lettuce and cheese, etc.). Management determined, though, that the element of food preparation was not central to its service concept; that is, it did not need to perform these set of tasks in-house to meet the expectations of its customers. Taco Bell therefore contracted out food prep, freeing its restaurant staff and management to focus on fewer and more relevant tasks (such as serving customers), all the while slashing costs and raising profits.[48]

The same lessons apply to any industry. An effective operating strategy clearly defines what *must* occur distinct from *how* it must occur. And it subjects the entire organization to the discipline of the service concept.

The role of finance in implementing service concept

Finance plays a central role in any service concept. For any organization to be effective, it must identify and carefully manage its source of funding. It must be especially attuned to changes in the external environment that can affect the organization's access to continued sources of funds. Savvy service concepts also learn to exploit the financial structuring of their

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[48] Ronald Henkoff, "Service is Everybody's Business," *Fortune* (27 June 1994), p. 56.

industry. Heskett[49] cites the case of Hypermarché, the French supermarket chain that masterfully exploited the cash-flow dynamics of their business (a time lag of 1-3 months on payments due for merchandise that could be sold in a few days) to finance (interest free!) the construction of new supermarkets throughout the country.

Service providers in industries with inherently poor cash-flow situations benefit greatly from strategies aimed at bringing more cash into the firm earlier than otherwise would be the case. Passes and multiple-use tickets are examples of such strategies in the transit sector.

Designing the Service Delivery System

A service delivery system is the means by which an organization produces a service. It refers not only to the actual *operations* of the organization but the nature of the *service encounter* through which the customer is served.

There are a number of elements of the service delivery system which can express the overall strategy of the service concept. The role of employees as service providers, though universally recognized, is rarely exploited to its full potential. Capacity management can likewise be turned from a chore or element of cost reduction into a tool for competitive advantage. An effective service delivery system considers the customer's encounter with the service, and is designed to reduce at each stage of that encounter the various risks involved for a potential customer. Service standards and quality control become important managerial tools. And an effective system can also be a tool of competitive advantage, creating barriers to entry for potential competitors—an important consideration for network businesses such as transit that can't afford to lose high-revenue routes to other modes (or competing transportation providers).

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[49] Heskett, *Managing in the Service Economy.*

Employees as service providers

Service companies that seek to improve their service delivery focus on the customer's encounter with the service. In many cases, this involves the customer's contact with service personnel. Some service providers have therefore made employee/customer relations a central element of continued attention. One leader in this area is Disney, which defines its service encounter in terminology borrowed from the entertainment industry. Employees at its theme parks are known as "cast members," and the moment they set foot into public space they are "on stage" and expected to conform to a set of expectations not unlike those confronting actors in front of an audience.

The distinction between "on-line" and "off-line" behavior extends to more mundane enterprises, but always has as its central point the recognition that employees will be working in (and frequently crossing between) two different worlds.

Capacity management

Effective service providers closely manage capacity, and employ a number of strategies to avoid the dangers of capacity mismatches. They understand that over-capacity is costly, but that under-capacity (and crowding effects) seriously deteriorates service quality—hence violating the promise of the service concept. Consequently, service providers that seek to maintain certain standards adjust service supply or pricing to ensure capacity is rarely strained.

The Disney Corporation again presents an interesting account of capacity management. The most popular rides at their theme parks cannot carry the loads that would naturally descend upon them, all things being equal. So Disney developed a multi-dimensional capacity management strategy:

- Alternative rides with shorter lines are available to relieve demand on the "major" attractions.

- A variety of shops, photo opportunities, snacks, and "sights" also serve to deflect demand.
- Cues are designed to minimize the frustrations involved in waiting. Indeed, cues become a part of the ride's design.

This last point is the most important. Disney took the least attractive element of service—waiting time—and redesigned it to provide a *perception* of movement as well as an experience in and of itself (as in Space Mountain, where people pass through different rooms of the space station with the "rocket ship" roller coaster swooping occasionally into view in the darkness above.

Reducing perceived risks

Any time a new or returning client approaches a service, there are risks involved. The customer risks a poor service encounter, confusion, frustration, perhaps even danger. It is no secret that part of the success of chain restaurants is their promise of *consistency*; it is surprising how many people forfeit the possibility of a great meal at an unknown restaurant in order to avoid the possibility of a poor meal.

Service standards and quality control

Service standards, and the mechanisms for ensuring that they are met, are an important element of any service delivery system. Such standards communicate to employees the level of expectation that customers—and management—have. Service guarantees—discussed in the following chapter—are one mechanism for establishing clear service standards.

Response to competition

Finally, service companies look for opportunities to prevent competitors from seizing control of targeted markets. Among the strategies employed for raising competitive barriers are the linking of services and service quality together in unique ways that raise entry costs for potential competitors. Other companies use the efficiency of their cost structure to keep

competitors at bay; Southwest Airlines is a good example (even with new "light" and "shuttle" services entering into competition with Southwest, Southwest still enjoys the flexibility that a lower cost structure gives it).

BREAKTHROUGH SERVICE: INTEGRATING ELEMENTS

Savvy service organizations understand that core service elements do not exist on their own; rather, these organizations learn how to relate each element to the others. Any effective service provider needs to ensure that its core strategic elements are well integrated with each other. Heskett[50] suggests three central integration challenges.

1. *Positioning the service.* This is the process by which the service concept is matched to and communicated to the target markets. Service providers must ensure that their service concept is appropriate for the markets they are targeting. They do this through careful *positioning* of the firm's offerings.
2. *Leveraging value over cost.* This is the process by which a service provider identifies "value-added" services that increase demand for (and the viability of) the core service. Such core services are rarely profitable on their own. Rather, they serve as the base upon which value-added services can be built. Service companies must therefore look for means to leverage value to customers over costs to make the operating strategy viable.
3. *Integrating operating strategy with service delivery.* This is the process by which operations are judged by the standards of the service concept—and the service concept "tested" for practicality. Many service providers develop coherent service strategies but bungle the implementation process. Such companies must learn to better integrate the service delivery system with the operating strategy.

The following discussion explores each of these three integrative elements in greater depth.

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[50] Heskett, *Managing in the Service Economy.*

Positioning the Service

A strong positioning strategy is central to communicating to potential users the *value* of the service being offered and what these users should therefore *expect* of the service provider. It translates the service concept into terms readily identifiable by potential customers. It must have as its object the *differentiation* of the service by cost or product features from otherwise similar services.

What is good service from the client's point of view? A positioning strategy must build on this question, taking into account the extent to which *competitors* provide it and the extent to which the *service concept* provides it. A positioning strategy therefore begins with a competitive analysis of the strengths and weaknesses of the service provider and its competition. The case of transit is complicated by a fundamental confusion as to whether the competition is the *private passenger vehicle* or the very *highways* and *freeways* along which such vehicles pass. Though it is customary to view the former as the "competitor," it might yield richer strategies to view the latter as the formal competitor to transit services.

In cases where there are mismatches between client expectations and server capabilities, the positioning strategy must explicitly account for and manage this difference, either by "raising up" customer expectations or by drawing attention to other benefits (such as cost).

Market research can play a central role in a positioning strategy. It can help identify *secondary factors* which at first appear little related to the actual service, but which in fact can be the determining element of success. Automobile manufacturers have long understood the role such "secondary factors" play in purchase decisions, and have outfitted otherwise ordinary cars with style and personality appealing to a host of non-transportation criteria. American Express is another company that has effectively exploited secondary factors; its core service product, a charge card with several distinct disadvantages compared to VISA or Mastercard (no ability to carry forward a balance, higher annual fee, and less acceptance are three key distinctions), positions its card as the "status" product, proclaiming that

"membership has its privileges." There was nothing inherent in the nature of a charge or credit card to suggest that "status" would be a key factor of competitive advantage—but American Express exploited that opportunity and grew rich and fat in the process.

Some might argue that American Express offers other services that make its card more valuable, such as discounted air fares for students or itemized year-end summary statements. These "add-ons" are a perfect example of a *leveraging* strategy. A good positioning strategy sets the stage for this next step.

Leveraging Value over Cost

Service firms can gain competitive advantage—and achieve financial viability—by adding value to their services. The goal of a leveraging strategy is to exploit all possible sources of revenue in order to meet financial goals. Many service companies have discovered that they make most of their money from these "additional" services. Restaurants have long understood that they make their money on beverages, not food. Club Med makes more of its profit from *flying people* to its resorts than it does from the vacations themselves.[51] And, as discussed above, many credit cardholders cite benefits such as extended warrantee or airline discounts as their primary reason for purchasing and using their particular cards.

Leveraging strategies typically differentiate between core services and custom elements. The service concept behind any typical commercial airline may be straightforward, but such airlines frequently overlay such custom services as "presidential" or frequent flyer lounges, first class seating, and other amenities. These custom elements are usually priced significantly above cost, and form an important source of revenues and (hoped-for) profits. In a sense, they help subsidize the otherwise prohibitive costs of providing the basic service.

Effective leveraging strategies frequently account for capacity restraints by attempting to better match supply with demand. Restaurants direct patrons to bar and lounge areas when

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[51] Crhistopher W. L. Hart, *Club Med (A)*, case study (Boston: Harvard Business School, 1986), p. 15.

tables are unavailable. Disney, as cited elsewhere in this report, turns waiting in line into part of the ride experience. Business hotels offer incentives to business guests with special family (or romantic) weekend rates.

One strategy used by service firms to reduce costs—and increase perceived value to the customer—is to involve customers in service delivery. Salad bars and buffet dining reduce labor costs to restaurants and can give customers a perception of abundant, fresher, and more highly customized offerings. Highways involve customers (drivers) in the production of service; this labor differential is an important source of the cost advantage highways have over transit for most users. Transit, if anything, is characterized by an almost complete lack of involvement of the customer in the provision of service; anecdotal evidence collected by this researcher suggests that one source of negative perceptions of transit is this "lack of control" some users experience when using buses or rail systems.[52]

A final source of opportunities for leveraging value over cost lies in the use of information. Any service generates data; how can this data be exploited for benefit? Supermarkets and office supply warehouse stores have long used "shoppers' clubs" to track purchases and generate customer profiles. These profiles are used to plan sales campaigns, direct promotional literature, and tailor-make catalogs and coupon offerings to the needs of customers. Transit agencies have many of the same opportunities, but generally have not invested in the information technologies or strategic planning necessary to exploit the data they could potentially generate. Privacy issues are frequently cited as a deterrent to better use of information, but such issues can be accommodated even while generating value for customers with better information services.

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[52] Postings to the Built Environment mailing list on the Internet, February-March, 1995. See also Roger Dooley's comments quoted in the following chapter under "Positioning Strategy."

Integrating Operating Strategy with Service Delivery

The final integration challenge facing service sector enterprises is achieving a close fit between their operating strategies and the daily functioning of their service delivery systems. Too many good strategies are defeated at the operating level by inflexible rules and procedures, poor information flows, poor employee morale, and cumbersome arrangements.

The gap between operating strategy and the service delivery system is exacerbated in public-sector organizations by the division between appointed management and civil service management. Appointed managers typically deal with issues somewhat removed from operations, whereas operations managers rarely are invited to focus on and consider strategic issues related to the marketing function. The result, as Fielding has pointed out,[53] is that "good" marketing plans are often thwarted by uninformed employees—though a central argument of this study is that "good" marketing plans must pay attention to all of the elements in the service breakthrough framework, including means of involving employees in the marketing function.

One means of ensuring a tighter integration between an operating strategy and the service delivery system is service guarantees. Such guarantees force attention on areas of operations that do not meet the stated goals of the service concept. When properly designed and executed, they can have a great impact on the organization; Christopher Hart suggests five such impacts:[54]

1. They can push the entire organization to focus on the *customer's* definition of good service;
2. They set clear performance standards, with attendant positive impacts on employee morale and performance;
3. They generate reliable data (through payouts) when performance is poor;

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[53] Fielding, *Managing Public Transit Strategically*, p. 186.

[54] Hart, "Unconditional Service Guarantees."

4. They force organizations to examine their service delivery system for possible failure points; and
5. They build customer loyalty, sales, and market share.

When do service guarantees make sense? Hart suggests that powerful marketing impacts grow likelier as any of several conditions are met:[55]

- The negative consequences of service failure are high;
- The industry has a bad image for service quality; or
- The organization depends on frequent customer repurchases.

Such conditions are generally met in the US transit industry; customers can be late for work or other appointments (a highly negative consequence), the industry has a poor image, and the industry depends on constant repurchases.

Service guarantees are not always a good idea, however. To be effective, they must be "unconditional, easy to understand and communicate, meaningful to the customer and the organization, easy (and painless) to invoke, and easy and quick to collect on."[56] And, as Hart warns, "a company whose operations are slipshod (or out of control) should not consider offering an unconditional guarantee; the outcome would be either bankruptcy from staggering payouts or an employee revolt stemming from demands to meet standards that are beyond the organization's capacity."[57]

Employee morale is another aspect of the integration challenge that must be proactively considered. Fielding notes that employee morale is a big problem in most transit agencies,[58] at the same time that driver attitude is, after frequency and reliability of service and fares,

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[55] Hart, "Unconditional Service Guarantees."
[56] Hart, "Unconditional Service Guarantees."
[57] Hart, "Unconditional Service Guarantees."
[58] Fielding, *Managing Public Transit Strategically*, p. 201.

"the most important attribute determining patron attitude toward bus travel."[59] It can be inferred, from Hart's discussion of the role of service guarantees, that tighter integration of the operating strategy and the service delivery system can boost morale if employees are granted some leeway in terms of improving customer orientation. There is certainly a large pool of anecdotal evidence to suggest that "happier" drivers are frequently the ones who err on the side of the passenger in ambiguous situations.[60]

A final aspect of an integrative strategy is the extent to which that strategy builds "barriers to entry" for competition. In the case of transit, that would mean achieving a level of service highways would find difficult to match. There is no question that service guarantees "up the ante" for those wishing to participate in the relevant markets; no similarly-priced overnight delivery service could hope to compete with Federal Express or UPS without matching their guarantees for on-time delivery.

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[59] Gordon J. Fielding, D. P. Blankensh, and T. J. Tardiff, "Consumer Attitudes Toward Public Transit," *Transportation Research Record* (1976), No. 563.

[60] A "love paean" to the buses of the MTDB reports many such incidence, and gives further insight as to potential attributes of employee morale. Bill Manson, "Buses Are a Bit Like Bread: A Love Letter to San Diego Transit," *San Diego Reader*, 15 December 1994.

THE MTDB AS A SERVICE ENTERPRISE

BASIC SERVICE ELEMENTS

Targeting markets

The MTDB does not generally target or design its services toward any particular segment of the transportation market (with the exception of senior and disabled demand responsive services). Rather, its goal is to "get the most out of each transit dollar, serve the most people."[61] It does not differentiate between transit-dependent or mode-choice customers. At the same time, the MTDB is cognizant of certain special-needs groups; to that extent it does practice a minor form of targeting:

- when cutting service as part of a recent "service refinement" process, the MTDB was cognizant of the need to maintain certain "lifeline services" to assure service to transit-dependent populations;
- the MTDB has conducted focus groups with riders and non-riders to explore perceptions about transit service, security concerns, and understanding of the financial realities of transit operations;
- the MTDB does conduct surveys every five years to determine important ridership characteristics, such as percentage mode-choice ridership on buses and the trolley;
- the MTDB provides special paratransit services for disabled riders; and
- the MTDB has conducted focus groups with seniors as well.

At the level of promotions, the one market segment that has received some attention is that of employers; the MTDB promotes an incentive program that encourages employers to either subsidize or make available transit passes to their employees. Fewer than 10% of the

[61] Interview with MTDB Marketing Director Anne Catherine Vinickas (22 December 1994).

45,000 transit passes sold monthly are purchased through this program; only 37 employers subsidize these passes (an additional 20 sell passes on-site as a convenience to employees). The bulk of monthly passes are sold to seniors, disabled, and youth. A complicating factor in promoting employer programs is the recent "upgrading" of San Diego's air quality by the Environmental Protection Administration (on the basis that much of San Diego's worst air quality problems were actually caused by migration of smog from the Los Angeles basin), meaning that large employers were freed from much of the pressure to reduce single-occupancy vehicle commuting by employees.

Defining a service concept

The MTDB views itself as providing a good product, though that product is defined mostly in general terms. The MTDB's "Service and Facility Concept Element"[62] specifies an overall mission "to enhance the personal mobility of San Diego area residents and visitors" and of "offering high quality public transportation services." While the Concept Element speaks of offering "a viable alternative to the automobile" it is more specific about providing "a means of travel for people without automobiles" and accessibility for disabled riders. The Concept Element states that "LRT and bus routes should provide service that is frequent and convenient to use," though we are left to guess how the public—or any segments within—defines "frequent" or "convenient to use."

MTDB defines four types of services: express/premium, urban, local/feeder, and demand-responsive. Express and premium services connect high-traffic points with freeway-based routing and service frequencies of 15 minutes peak, 30-60 minutes base, and 60 minutes otherwise. Urban service, comprising both line-haul (serving Centre City) and crosstown routes, are offered along major, higher-speed corridors with bus stops at least 1/4 mile apart and greater frequencies (6-10 minutes peak, 15-30 minutes base, 30-60 minutes

[62] MTDB, *Short Range Transit Plan*, pp. 3-1 to 3-3.

otherwise). Local/feeder routes aim at penetrating communities, especially in areas of high transit-dependency, with headways identical to express routes. They are designed to connect users to urban and express service. Finally, demand-responsive services are designed to serve areas inappropriate for fixed-route operations.

Though each of these four services is defined in part by service standards, these standards are not directly derived from an explicit statement of target needs. It is likewise doubtful that the general public distinguishes among these bus services (with the possible exception of express services, identified by a window placard stating "express") to any great degree. It is interesting to note that the Concept Element defines each service in terms of time relative to automobile use (in all cases, offering slower service), though it is unclear whether a 25% differential means the same thing for a short or long trip.

Elaborating an operating strategy

The basis of the MTDB's operating strategy lies in operating fixed-route and demand-driven fare-collecting vehicles, subsidized in part by grants from governmental agencies. Service expansion is financed through a variety of public sources, some of which are "guaranteed" but not fixed (such as dedicated sales tax revenues, which nonetheless fluctuate with the economy). Special passes (monthly, ten-pack, and tourist-oriented 1-4 day) are also sold, though their impact on cash flow is not as significant as in many other transit properties (due to the overwhelming number that go to heavily-subsidized groups such as students, seniors, and disabled).

The MTDB is dependent on a variety of sources to fund transit development. It has been especially affected by two recent public votes opposing scheduled bond issues to finance new rail projects. The MTDB's dependence on publicly-supported bond issues underlines the importance of public perception of the utility of public transit projects.

Though the MTDB makes a considerable effort to make information on routes and schedules available to the public, it is highly likely that all but the most regular of riders

understand or know when peak and off-peak periods fall, or know in advance what service frequencies are on any routes. The MTDB does not publicize travel times between any major points on the system (such information can be derived, though, from published schedules). The operating strategy appears geared to those who have already decided to take transit; one must make an effort to interface with the system before determining whether or not the service offering is appropriate.

The service strategy also recognizes the highly dispersed nature of San Diego. There are radial routes serving the downtown core (both bus and trolley) and a large network of crosstown and local services that connect at several specially-designated transit centers. These centers feature route-designated bus pads, seating, and schedule information. The system depends on—and achieves—a high transfer rate.

The trolley system is characterized by an operating strategy aimed at lowering the operating costs of providing transit services. Trolley stations are generally unsupervised and access to platforms is unhindered. Payment is made via machine; roving groups of inspectors check passenger tickets for proof-of-payment. Concern with crime and vagrancy has led a number of trolley waiting areas to be declared "fare-paid zones," especially in Centre City; persons within these zones who do not have proof-of-payment can be fined as if they had already boarded a vehicle. Trolley stations are generally simple; most feature some form of seating, shade, and system information.

The trolleys themselves are step-up vehicles; to enter, one must push a button, wait for the doors to open and stairs to drop, and then ascend. Trolleys are equipped with wheelchair lifts to provide access to disabled individuals. Elevated platforms are not used anywhere in the system (for cost savings); handicapped ramps are specifically not used because such ramps would impinge on freight railroad requirements.[63] Though trolleys are scheduled to spend

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[63] Interview with MTDB Marketing Director Anne Catherine Vinickas (22 December 1994).The east line of the trolley especially shares track with the San Diego & Arizona Eastern railroad, a short-haul line operated by the MTDB. There have also been recent discussions by political leaders in San Diego of reconstructing the SDA&E lines through the mountains to reestablish a rail link east to the major

thirty seconds at each station, the loading and unloading of wheelchair-bound passengers induces slightly longer delays in station dwell times (and therefore overall trip time).

Operating a service delivery system

The MTDB attempts to provide high quality transit services given strained resources and a lean staff. Service standards are a factor in daily operations for local, urban, and express buses and the Trolley, with cost penalties for contracted routes.[64] These standards cover a number of service dimensions, including on-time trips, breakdowns, driver uniforms, and vehicle cleanliness.

On-line employees (namely, bus drivers and fare inspectors) are treated to "on-going pep talks" but little else in the way of customer relations,[65] except for cases when customers complain about service.

The MTDB is embarking on a program of Total Quality Management, with the commitment of top management and involving all bargaining units.

Customer perception of risk is only belatedly receiving attention, and only in the dimension of personal safety. The MTDB has negotiated an agreement with Goodwill Industries to place manned donation trucks at selected Trolley stations, and has signed a contract with a concessionaire to provide snack carts at other stations, all with the intention of providing additional "sets of eyes" at these stations. It is clear from focus groups that non-riders have inaccurate or poorly-formed expectations as to Trolley service. Finally, it is obvious that most customers feel little control over the service process, though the MTDB

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transcontinental lines. The "NAFTA Train" would presumably not share track with the trolley, but would instead rely on a transborder connection and dedicated freight lines. Mark Arner, "Is city's future on track? Vargas touts revival of historic rail line," *San Diego Union-Tribune*, 20 November 1994; Mark Arner, "Rebuilt SD&AE seen as alternative to route for quake-prone L.A. ports," *San Diego Union-Tribune*, 29 March 1995.

[64] Interview with MTDB Marketing Director Anne Catherine Vinickas (22 March 1995).

[65] Interview with MTDB Marketing Director Anne Catherine Vinickas (22 March 1995).

does a creditable, if not admirable, job of making route schedules available to aid travelers in planning their itineraries.

The MTDB is, at the time of writing, reviewing proposed service improvements, including the provision of regional telephone information, improvement of the "Transit Store" in Centre City, acceptance of credit cards for purchase of transit passes, inauguration of a pass-by-mail program, and the institution of new training for customer service employees.

INTEGRATING ELEMENTS

Positioning Strategy

The MTDB has focused some attention on the positioning of the Trolley. Trolley vehicles are painted a bright "fire-engine red," ostensibly for reasons of economy (the use of a single, dark color makes touch-up work less difficult). At the same time, the unusual color of these vehicles has had a positive impact on public perception(see note 94). The original LRT line, connecting downtown with the Mexican border, was nicknamed "The Tijuana Trolley" (though the author has not heard this moniker used in the past several years). A ride on the original trolley was considered "fun;" one independent tourist guide to California referred to a ride on the trolley as a "high point" of a vacation to San Diego.

While there may have been some effort to position the trolley initially, events in the past several years have created a *de facto* positioning of the trolley in ways unforeseen to MTDB planners. The decision to build the second line of the trolley through an area of the city characterized by a public perception of crime should have called for a thoughtful strategy aimed at positioning the trolley as an oasis of safety and urbanity. The MTDB, by default, assumed that the same service strategy that had worked on the Tijuana line would transfer to

the East line, even though the basis of that positioning strategy (the "fun" route to the border) did not apply to a line with very different trip characteristics. It is not surprising, therefore, that the Trolley has come to be associated with the crime and violence characteristic of the southeastern neighborhoods of San Diego.

The extension of the East line to Santee illustrates the trolley's new *de facto* positioning. One Santee councilman explained his city's decision to locate a sheriff's station by the new Santee transit center:[66]

> If you look at any other trolley stop, the lack of security and law enforcement is a deterrent to ridership and a deterrent to people who want to visit that area. [Locating a sheriff's station by the transit center] will give an enhanced feeling of security and comfort.

It is worth citing the opening sentences from the newspaper article announcing the new station:[67]

> Trolley-riding troublemakers better forget about coming to Santee when the bright red trains start serving this town next summer.
>
> That's the word from city officials... The mini-station is designed to boost security amid some concern that the trolley might usher in transients and crime.

The crime associated now with the trolley is not limited to personal assault, but to assault on the vehicles. A stretch of track on the East line accounts for most of the five to ten *weekly* rock attacks against trolleys.[68] The *San Diego Union-Tribune*, in an editorial, apologized that "riding the trolley in San Diego is not nearly as dangerous as descending in

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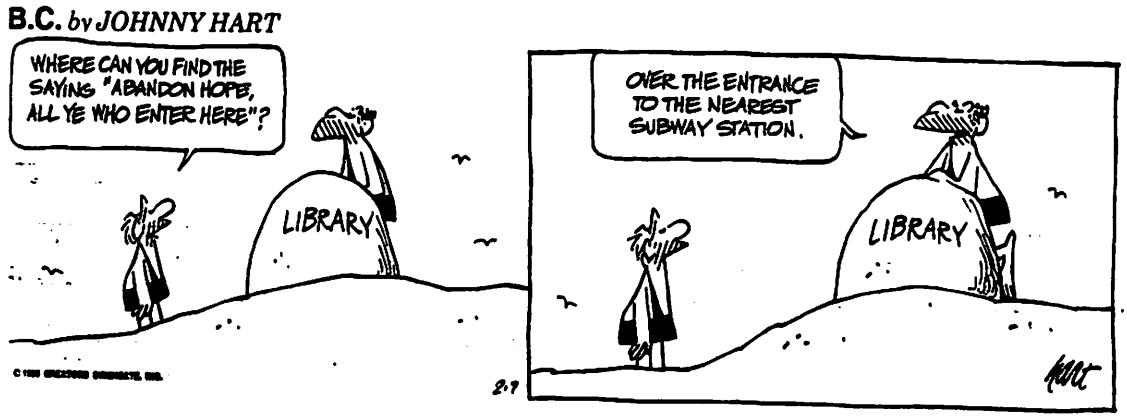
[66] David Harpster, "Santee trolley station will have the law for a neighbor when in opens in summer," *San Diego Union-Tribune*, 30 December 1994.

[67] Harpster, "Santee trolley station."

[68] David Hasemyer. "Three injured in rock attack on trolley," *San Diego Union-Tribune*, 13 November 1994.

to the bowels of the New York City subway...,"[69] a not entirely fortuitous comparison from the point of view of a positioning strategy. The comparison is echoed by others; one retiree, writing *in favor* of the new Coaster commuter rail line, noted:[70]

> Commuters remain skeptical of mass transit and they fear results similar to the New York City subway.
>
> At least in your own car you have some control over the quality of the ride and the company you keep.



Beyond the issue of *de facto* positioning is the very real attempt by the MTDB to promote certain transit services (namely, the trolley and express buses) as an alternative to the car, especially for commuters. The MTDB's "Service and Facility Concept Element" identifies park-and-ride lots specifically as an element in positioning transit:[71]

> Park-and-ride lots also provide visible focal points for transit within the community. They can help "market" transit to non-users by visibly identifying transit services available as an alternative to the automobile.

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[69] "Trolley ambushes: Crack down hard on rock-throwing youths," editorial, *San Diego Union-Tribune*, 11 December 1994.

[70] Roger Dooley, letter to the editor, *San Diego Union-Tribune*, 5 March 1995.

[71] MTDB, *Short Range Transit Plan*, p. 3-17.

Park-and-ride lots do not, however, identify transit services as an *alternative* to the automobile; they identify transit as a *supplement* to the automobile, as an alternative to *road congestion* or *parking costs*. The distinction is important, as it drives the positioning concept. Transit services, as currently offered in San Diego, cannot really hope to compete with the *automobile* on any dimension except overall cost. They can hope to compete, however, with highways and with paid parking lots.

The North County Transit District has done a more specific job of positioning its rail transit services. The recently inaugurated Coaster commuter rail is being promoted as a "reliable, safe and clean form of transportation."[72] Whether it lives up to its promises will be tested over the upcoming years.

One easily controllable element that affects how transit services are positioned in the minds of consumers is the choice of retail outlets through which transit passes may be purchased. The MTDB has recently scored a "victory" in this area by arranging with Ralph's Groceries—a chain of moderately upscale supermarkets—to sell transit passes.[73] Previously, the MTDB relied on lower-prestige retail outlets (such as check-cashing outlets and "mom-and-pop" grocery and liquor stores); prospective purchasers can now select from a more savory range of vendors.

Leveraging Value Over Cost

There are a number of things the MTDB does to increase the perceived value of their services in the eyes of the public. These additional services contribute to ridership by increasing convenience and security to potential and actual users of MTDB services. At the same time, there are opportunities for value-added services beyond those which are offered.

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[72] Patricia Dibsie, "Thousands enjoy new Coaster train ride," *San Diego Union Tribune*, 19 December 1994

[73] "Ralphs to sell transit tickets," *San Diego Union-Tribune*, 25 January 1995.

The primary means used by the trolley to increase the value of service in the eyes of customers lies in increasing the perception of security around selected trolley stations. To this end, as previously noted, the MTDB has signed an agreement with a master concessionaire to install snack carts at some stations; the MTDB has arranged with Goodwill Industries for manned donation trucks at other stations. The MTDB's strategy is to increase the perception of safety through the stationing of somewhat "official" eyes and ears (provided with cellular phones). There is some question, however, as to whether the strategy could backfire—thrift shop donation trucks further link the trolley with images of poverty, a dubious positioning strategy given current concerns.

The MTDB also takes advantage of advertising on its bus routes. Exterior bus ads add between five hundred thousand and six hundred thousand dollars a year to MTDB revenues.[74] The MTDB is now beginning to experiment with "full bus" ads,[75] though a recent proposal to place ads on the outsides of trolleys was voted down by the MTDB on the belief that the trolleys should remain consistently red.[76] Full bus ads, limited to 10% (30 vehicles) of the current bus fleet, would be expected to generate an additional three hundred thousand dollars in annual revenues.[77]

The MTDB does not actively exploit the information it gathers or could potentially gather on passenger flows through the metropolitan area.

Integration between Operating Strategy and Service Delivery System

The MTDB achieves a reasonably good fit between its service delivery system and its operating strategy. Most MTDB transit services are run as scheduled (on-time performance is

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[74] Interview with MTDB Marketing Director Anne Catherine Vinickas (22 March 1995).

[75] "Corporate Graffiti?" *San Diego Daily Transcript* (24 May 1995).

[76] "Simply Smart," *San Diego Daily Transcript* (26 May 1995). The role the color of the trolley has played in positioning the service is discussed later in this study.

[77] "Simply Smart," *San Diego Daily Transcript* (26 May 1995).

in the mid to upper 90's%),[78] though "early" buses are an apparent problem. The recent decision of top MTDB management to involve all bargaining units in a new Total Quality program bodes well for the continued match between the intended and actual service. At the same time, there is considerable room for question whether the trolley in practice has resulted in improved levels of service; with fifteen minute headways during much of the day, the trolley has traded off increased wait time for decreased in-vehicle time—a dubious trade by a number of standards.

[78] Interview with MTDB Marketing Director Anne Catherine Vinickas (22 March 1995).

STEPS TO BREAKTHROUGH SERVICE

What opportunities exist for the MTDB to achieve a service breakthrough? The above discussion suggests a number of areas where an investment of management attention might lead to improvements, realignments, or whole new additions to the transit services currently offered.

1. Developing a viable market segmentation strategy

There is some question as to how ultimately useful a segmentation approach would or could be to transit operations. It is commonly recognized that there are two principal markets for transit: suburban commuters and transit-dependents.[79]

As has been previously suggested, the use of exclusively demographic data for segmentation purposes may miss the real opportunity in transit service planning. Transit marketing consultants Lovelock, Lewin, Day, and Bateson argue that "transit can (and must) capitalize on the fact that there are weaknesses in the competition's position: not all automobile drivers are very happy with their situation."[80] Few if any agencies have fully exploited the price/design tradeoff among different segments of the market, even though:[81]

> ...all available evidence suggests that low fares have little influence on the white-collar commuter's choice of mode. Suburban commuters are much more sensitive to service quality—on-time performance, guaranteed seating, riding comfort, and convenience—than they are to cheap fares.

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[79] Fielding, *Managing Public Transit Strategically*, p. 188.

[80] Lovelock, Lewin, Day, and Bateson, "Marketing Public Transit," p. 12.

[81] Orski, "Redesigning Local Transportation Service," p. 261.

A savvy market segmentation strategy would look at each of the possible elements of service design, such as "comfort" and "convenience," ask how each segment *defines* such elements, and determine to what extent each segment were willing to *value* it. It would exploit the considerable variation that has been identified in price/service elasticity among intra-urban travelers.[82] And it would price transit services based on the value of each trip to the customer.[83]

Though the San Diego MTDB does not now even conduct research on price/design sensitivity,[84] it could potentially benefit from a segmentation strategy. It might discover the existence of segments for which MTDB could offer premium service, priced in such manner as to permit the MTDB to reduce its dependence on public subsidy. It might also discover that current aspects of its service planning can be significantly improved through better information on the reaction of different segments to various elements of the service mix.

Segmentation by public agencies

There is considerable debate as to whether public agencies should "segment" a market. The underlying concern is a real one: that segmentation end up being used as a strategy of discrimination in favor of or against any person or group. On the other hand, it does society little good to fund a service that rarely meets anyone's needs in an especially effective manner. A more productive question would be how to segment transit services in a way that enhances, not subtracts from, choice and opportunity. There are a number of design principles that can help ensure this goal is met:

- Whenever possible and practicable, services should overlap, compete, and be integrated to permit transfer from one service to another.

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[82] Fielding, *Managing Public Transit Strategically*, p. 160.

[83] Fielding, *Managing Public Transit Strategically*, pp. 193-195.

[84] Interview with MTDB Marketing Director Anne Catherine Vinickas (22 March 1995).

- All transit services should be judged, ranked, and compete by the same set of investment standards. Financial performance (especially in terms of net subsidy) criteria should not favor any one type of service.
- Market demand should drive the service adjustment process.

Taken together, there is little reason why an intelligent segmentation strategy cannot aid in the realization of public objectives—especially when the segmentation strategy is built around the need to meet multiple, otherwise contradictory objectives.

2. Clarifying the Service Concept

Though the MTDB views itself as offering a high quality transit product, differentiated among different service categories, the mode-choice public may not understand the service concept in the same manner. Though the MTDB defines four kinds of bus services, the general public hardly differentiates among them; express service is most likely seen as a "less-slow" bus than anything truly premium in any sense. The Trolley is certainly understood differently than the bus system; it connects stations using (mostly) grade-separated high-performance vehicles.

A good example of the mismatch between the MTDB's definition of service and the public's is the perception of bus stops. The MTDB Service and Facility Concept Element defines a hierarchy of five bus stop types, each with increasing level of amenity. The MTDB ranks these bus stops based on usage, so that a more frequently-used stop will have features not found in less-frequently used stops.

A potential customer for MTDB-sponsored transit services is not aware of the "rankings" of bus access points. This customer does not know *in advance* if a stop has a seat, shelter, is comfortable, is secure, holds visual or other interest, offers a view of any arriving bus, is near snack or restroom facilities, etc. The lack of differentiation *in the customer's mindset* leads to a lowering of expectation—as well as some degree of confusion as to what exactly the service concept is.

That the Trolley lines have a higher share of mode-choice passengers, all other things being equal,[85] is not surprising; in some sense, the Trolley system is clearer about its Service Concept. The Trolley network map identifies routes and stations; each station is expected to offer some level of amenity. Potential customers have a better idea of what to expect.[86]

Ultimately, an effective transit service concept must define service in terms meaningful to potential customers. Such a concept would likely define transit services as an *alternative* to other transportation modes (or even non-trips) and *superior* in some meaningful aspect. The traditional transit planning approach to service development—specifying a service to maximize the capturing of "demand" arrived at through study of a population's preferences regarding mode choice and mode attributes—does not necessarily lead to a transit solution that makes anyone especially happy; indeed, it could easily result in a muddied service concept that itself artificially depresses demand, *ceteris paribus.*

A central lesson of marketing is that customer preferences, or utility, are not a constant; indeed, a clear service concept can make a large difference in how the general public responds to a service. An example from the food products sector drives this point home: when Coca Cola abandoned its traditional formula for New Coke (on the basis of extensive, blind, revealed preferences taste tests), the resulting public uproar led to Coke's reintroduction of "Coke Classic," with an attendant rise in market share.[87] Whether this was a brilliant marketing ploy or a happy unintended consequence of crisis management, large numbers of people decided to effectively "abandon" their taste buds in favor of a product they "should have" valued less. In Coke's case, their product was not just another beverage; it was *Coke Classic*, the real thing, the all-important piece of Americana that still refreshes.

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[85] Interview with MTDB Marketing Director Anne Catherine Vinickas (22 December 1994).

[86] An interesting research question would be to compare expectations of service frequency with actual frequencies. It is possible, given other aspects of LRT service, that the general public assume service frequency to be higher than it actually is (normally, every 15 minutes throughout the day, with increased frequencies on the South line during peak hours and reduced frequencies at night and on weekends).

[87] Marc Rice, "10 Years Later, New Coke A Part Of American History," *San Diego Daily Transcript*, 13 April 1995.

There are at root two primary markets for transit services, but it would be a mistake to conceive of them as *transit-dependent* and *mode-choice.* It would be far more effective for service planning to understand the two markets as *price-sensitive* and *service-sensitive* and plan specific services targeted at each market. The following table represents an initial characterization of the two segments; a focused market-research effort could test the hypotheses embedded in the table and illuminate the elements each segment identifies as central to its notion of service.

Initial Categorization of Market Segments for Transit Services

Most important...	Price-sensitive segment	Service-sensitive segment
Service Dimension *In practice:*	Span *Service begins early and runs late*	Frequency *Short waits during service hours*
Attribute of Service *Objective function:*	Money *Minimize cost of transport*	Time *Minimize time spent in transit*
Environment *Typical example:*	Opportunity *Bazaar atmosphere*	Order *Office park and shopping mall*
Criteria for judging	Cheaper than shared ride?	Quicker than car?
Method for judging personal safety	How are other passengers behaving?	Who are other passengers?
Security issue *Sample question:*	Entering and leaving system *Will I be able to get to and from the system safely?*	Using system *Will I be a victim of or witness to crime?*
Added-value services *Reason:*	Aimed at making shopping easier (e.g., bus bins, shops) *Likely to make purchases on trip*	Guaranteed Ride Home and related services *Reduce risk of being stranded*

A transit service devised around a clear service concept (or concepts) would not abandon any of the elements of traditional planning in the least, but it would place much greater emphasis on tweaking the components of service design to most effectively reach chosen targets than is typically the case. It would also consider means of building market share, not merely respond to current "demand" as a given. Transit services designed around clear service

concepts would almost certainly be seen as more reliable than services which follow a mysterious logic inscrutable to the general public.

What might such service concepts look like? For premium service, it might specify speed: "anywhere in town in twenty minutes." For lifeline service, it might specify service span: "from 5 am to 1 am, we'll get you back home." But the central point is, the service concept must be clearly communicable and phrased in terms meaningful to the target markets.[88]

One means of focusing attention internally on a defined service concept is to develop—and apply—a clear metric that rates service according to criteria of importance to customers. One possible metric, formally proposed here, is a time-based metric of service coverage. It is traditional among transit agencies to describe service coverage in terms of per cent of local population living within 1/4 or 1/2 mile of transit access. Such a measure is useful, but does little to describe the nature of that transit access. Appendix 2 offers a set of tools which could prove useful in measuring service offered against a set of standards relating to user perceptions of transit.

Finally, it is worth noting that the above analysis suggests that an effective transit system might be composed of *overlapping, competitive,* and *highly-differentiated* services, one (or some) competing on the basis of price, the other (or others) on the basis of service. Such an arrangement, might strike the unsophisticated systems designer as "inefficient," but in fact is exactly how efficiency-producing market economies develop products and services (that is, market economies tend to evolve such systems). Public sector transit agencies can insist on a tight degree of integration among these systems (for example, by sharing stations within a given district in much the same way that airlines share airports), and can further insist that

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[88] Kenichi Ohmae tells an illuminating story about a market research effort that focused on the market for a specific camera; the breakthrough came when the marketing team realized that the target market was not interested in *cameras* as such, it was interested in *pictures.* The resulting product was therefore built around the concept of producing better pictures with less effort, and the market responded enthusiastically. Kenichi Ohmae, "Getting Back to Strategy," *Harvard Business Review* (November-December 1988).

public resources—and public investment in general—follow a single set of criteria to ensure that social equity goals are met—but they must begin to understand that markets are rarely well-served by single systems.

3. Refining the Operating Strategy

An effective operating strategy is one that makes a service concept viable. There are two issues relating to operating strategy that can determine whether or not the service concept is effectively implemented. The first of these is *fit* or *match*: does the operating strategy in fact respond to the elements of the service concept? The second of these is *opportunity*: are there opportunities for improving the implementation of the service concept? In both cases, the MTDB can find room for further development.

Fit with service concept. It goes without saying that the operating strategy should itself "match" the priorities and elements of the service concept. When such a concept is vague or unusually broad, it is still necessary to ask if the proposed solution answers the correct problem.

The Bayside extension of the trolley is an example of a solution that does not answer the correct problem. It represents a known operating strategy—the trolley system, with its fifteen-minute day-time headways, unstaffed stations, double tracks (and wide right-of-way), and bright red cars—applied to a transit problem that may not have been adequately understood. Consequently, although data are not readily available, it is nonetheless apparent to any casual observer that the line is barely used.

Why is this the case? There are many factors at work, some exogenous to the operating strategy and some endogenous. To be fair, the line was planned along with a series of major residential tower developments; one published drawing shows a beautiful boulevard lined with forty-story towers and some semblance of life. In practice, the two residential projects that were built—twin forty-story towers with a total of 202 condominium residences, and one thirteen-story building with approximately 320 residences—have sat empty (though the

twin towers, having recently been "repositioned" in the marketplace, are now reporting some sales). Most of the other proposed high-density developments have been either canceled or postponed indefinitely. One site that was to have been a tower will now remain permanently a one-story building (the relocated Children's Museum); another such site originally slated for a tower is now under construction as a one-story supermarket (with underground parking).

In a larger sense, though, the Bayside line suffers from not responding well to the problem it purportedly serves. First, it was built as an extension of the East Line, even though the Bayside extension serves primarily tourist (the Convention Center, four major hotels, and Seaport Village) and upper-income residential destinations; these same tourists and upper-income individuals have little interest in venturing into the poorer neighborhoods in town. Second, the line makes a circle in the downtown—but offers little improvement over walking in terms of trip time. Third, the line is *distant* from the trip generators it purports to serve. In all cases, one must cross over busy and wide Harbor Boulevard (as well as other train tracks and strips of parkland). While the walk may be considered "short"—it certainly is only two or three minutes from the entrance to the Convention Center or the principal hotels—it involves leaving one's immediate precincts, venturing across a wide and fast boulevard, and waiting in the open for a train with fifteen minute headways. In a more specific sense, the Seaport Village Station is located twice as far from Seaport Village as the most distant parking spot, the Gaslamp Quarter station is at least a block or two removed from the life of the Gaslamp Quarter, and the Convention Center stations are on the wrong side of the tracks. Fourth, it was built on "speculation;" it depended on major, massive, and multiple investments in high density construction. Unfortunately, the economists who projected the future prosperity of downtown San Diego did not anticipate the profound and debilitating economic recession that has changed the character and density of investment in the Centre City in the 1990's.

Was there an alternative? It might have been possible to route a single track along the bay side of these structures, running smaller "touristy" trolleys at slower speeds. It is ironic that such a "touristy" trolley line is envisioned for the Gaslamp Quarter's Fifth Avenue, though once again the line doesn't appear to make enough of the kinds of connections that tourists (or touristy locals) could be induced into making.

As it is now built, the Bayside line gives the appearance more of an advertisement than a viable means of transportation. It is very visible from the lobby of the Convention Center, and the sight of a two or three-car train of red trolleys moving through the green foliage backdropped by sleek residential towers is compelling, in its own way. The author has heard out-of-town delegates to the Convention Center point and comment as to how they did not know San Diego had such a system. These same delegates, unfortunately, appear to be doing more pointing than riding.

This notion of "advertisement" is reinforced by plans for a "Civic Pond;" a 200 foot diameter shallow pool to be constructed along the Bayside right-of way (with train and trolley tracks bisecting the pond). This pond is to include shower-type fountains, encouraging children to wade. The trolley was seen by the planners of this pond as a design element (red trolleys whooshing over blue water surrounded by green cypress trees);[89] it remains to be seen how well the combination of wading kids, whooshing trolleys, shower-type fountains, and overhead catenaries plays out in real life.

Opportunities for innovation. Another area in which an operating strategy may be improved is to identify its components and search for ways to capitalize on the opportunities posed by each component. The following table identifies a number of such opportunities.

Stage in Service Encounter	Opportunities for innovation

[89] The designer of the pond referred to the scheme as a "celebration of the red trains." Lynne Carrier, "A Civic Pond Wins Approval," *San Diego Daily Transcript* (22 May 1995).

People make their own way to an interface point (bus stop or transit station)	Identify (through creative signage and route markings) nearest transit access for high-volume places not directly served by transit.
(purchase ticket for trolley)	Increase payment options (credit cards); sell passes by machine; prepayment for select express bus routes (Curitiba-style)
People wait for transit vehicle to arrive	Passenger information systems showing position of approaching vehicle, time to arrival; creative queuing techniques at points of high demand
People board vehicle	Use of platforms for trolley and bus[90]
(Payment is made on buses)	Develop more options for off-vehicle payment, especially in heavily-used bus stations
Passenger determines where to sit or stand	Provide additional amenities for standing passengers (such as racks)
Vehicle moves to destination	Continue program of signal preemption development; restricted lanes
Passenger indicates drop-off point (for buses)	
Passenger exits vehicle	Use of platforms, multiple doors (for buses).
Passenger reorients	Improved transit station/center design, emphasizing neighborhood access; improved information kiosks
Passenger moves on to ultimate destination (by foot or other mode interface)	Major pedestrian connections to trip generators are highlighted and treated as part of transit system

As the above table makes clear, there are certainly opportunities at most stages of the service encounter to improve the effectiveness of the operating strategy, some at relatively little cost. More than any specific element, however, is an approach to transit development

[90] It has been argued by the MTDB that platforms are not an option for three reasons: cost, the need for vehicles to be able to operate in city streets, and to preserve wider space for freight vehicles on the East line. It should have still been possible to install ramp platforms for disabled users that "hinge" out of the way for freight vehicles. Such platforms could provide notable improvements in dwell time and handicapped service. Platforms can be used as well on some "express" bus services; the improvements in dwell time from such a system can be highly significant.

that seeks to match the operating strategy to a clear statement of the important elements of a service concept. It is from such attention that service breakthroughs occur.

4. Improving the Service Delivery System

The MTDB is aware of the role of employees in the service delivery system, and is making some effort to constantly improve the customer orientation of its on-line staff. The author of this study can attest that some employees do a super job of responding to the public, just as others are surprisingly unfriendly. Still, there are real limitations on just what is possible in the absence of resources.

It might be more instructive to consider the ways in which jobs are designed in future expansions of the fixed rail system. Automated guideway systems, for example, would permit the MTDB to transfer employees from vehicles to stations and lower the marginal costs of increasing service frequencies. It is clear that such a system is not practicable on any existing route, though such a system might make sense along other corridors (such as I-15).

The MTDB needs to more proactively understand customers' perceptions of *risk* in the service sense; what does someone risk when they use a transit service for the first time? The dimensions range from the typical personal safety to feelings of confusion, possibility of delays, even the possibility of being stranded. An effective service delivery system should be built around a sophisticated understanding of these risks *as customers perceive them*, and provide for their mitigation and management.

5. Rethinking the Positioning Strategy

The MTDB is, like many other transit properties, caught up in the tension between its attempts to position itself as providing a viable alternative for suburban commuters and the

generalized American perspective of transit as a service for the poor and unfortunate. One recent review of the transit industry lamented:[91]

> All too often, public transit finds itself positioned in the marketplace by consumers as the low cost, low quality transportation service.

Another reviewer spoke of the "image of transit as a service for the losers of society," in need of change "or those who identify with winners will not be attracted."[92] Too often, transit operators have viewed "positioning" as an element divorced from a clear service strategy; even Fielding only manages a warning that "management must be concerned about the image presented to the nonuser public and governmental organizations"[93] without relating that image to any strategic marketing sense. Positioning is more than "image;" it is the means of communicating to the public how that public should view transit and its alternatives. The trolley is a case in point.

The challenges involved in developing an effective positioning strategy are best illustrated by the development of the San Diego Trolley. Indeed, the case may be made that *the single greatest marketing challenge* facing the trolley system in the mid 1990's is that of *repositioning* the trolley in the eyes of the San Diego public. To understand why this is the case, one must review the history of the trolley program.

The first line of the Trolley was a single-track connecting the downtown area with the Mexican border. The shiny new red cars were a novelty, and the border destination clearly communicated that tourists were "expected" to use the system. There was some sense of the trolley being "fun;" even the bright red color helped define and position the trolley in the eyes of the San Diego public *as a viable alternative for traveling to Mexico.*[94] The operating

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[91] Lovelock, Lewin, Day, and Bateson, "Marketing Public Transit," p. 13.

[92] Smerk, "Management of Public Transportation," p. 472.

[93] Fielding, *Managing Public Transit Strategically*, p. 184.

[94] Though the choice of color was influenced in part by practical considerations (not the least of which would be ease in repainting), the trolley system became quite identified by its color. Many published references to the San Diego Trolley consistently mention its color, often with a positive adjective. William H. Whyte, in

strategy, designed to provide a low-cost, basic service, seemed to work. A large share of the ridership, particularly of visitors and mode-choice users, traveled from end to end, both of which were highly populated and relatively "safe."

In its euphoria of having developed a viable urban rail system, the MTDB sought to expand the trolley line to serve other areas of the city. There was considerable public support for this project, and voters approved bond issues to fund mass transit expansion. The decision to build a second line was fairly straightforward; existing railroad right of way cutting through the southeastern fringes of San Diego would allow the trolley to be expanded at low cost and serve areas with already demonstrated demand for transit (that is, transit-dependent riders).

Today, the trolley program is in trouble. Voters no longer support bond issues, and the newspapers regularly feature letters to the editor complaining about security issues with the trolley. Opposition is especially strong in upper-income areas, where the trolley is viewed as a means of introducing crime into more peaceful neighborhoods. There is considerable danger that community opposition might lead station and right-of-way decisions on planned routes to favor inaccessibility and further peripheralize the trolley.

It was erroneous to assume that the trolley could be built though low-income, high-crime neighborhoods without a careful consideration of the positioning strategy. The counterpoint to San Diego is found in Caracas, Venezuela, which faced similar problems in the extension of its metro system. Unlike San Diego, planners in Caracas actively developed a service concept and positioning strategy to deal proactively with the problems of crime and

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his influential study of urban centers, devotes only two sentences to San Diego, but manages to effuse that the "fire-engine red" cars "perk you up" as they come down the street. Another writer speaks of "the smashing red San Diego Trolley." Similarly, a recent article on a proposed Tijuana parallel trolley system included a photo of a San Diego Trolley car with these words: "The bright red trolley cars that are the defining component of San Diego's light rail system..." William H. Whyte, *City: Rediscovering the Center* (New York: Doubleday, 1988), p. 319; Richard Saul Wurman, *San Diego Access* (San Francisco: Access Press, 1991), p. 3; Diane Lindquist, "Dreams of private money for Tijuana's public transit," *San Diego Union-Tribune*, 11 April 1995).

poverty that otherwise would attach themselves to the transit system. Consequently, the Caracas planners made a number of strategic decisions:[95]

- Stations were to be designed as prominent, architecturally significant statements, built with top-grade materials. The metro system was to communicate urbanity.
- The metro system invested in promoting transit-appropriate behaviors, using both signs and roving "passengers" who would demonstrate metro etiquette.
- Stations in poorer areas were built along with significant public space, including stalls for vendors, fountains, and other amenities. Each station was designed to be the new heart its neighborhood.
- The metro system, as a result, was positioned as *extending the urbanity and civilization of the city to the more marginalized areas.* The stations, through design and personnel, communicated to the residents of these areas that, the moment they set foot on metro property, they had entered a safe and higher-class world. The effectiveness of this strategy is reflected in overwhelming public support for continued investment in the expansion of the metro system, even during the current period of severe economic recession.

The contrast to San Diego is illuminating. Whereas the San Diego trolley has inherited a *de facto* positioning as an agent bringing the disorder of marginalized areas into the more secure and established neighborhoods of the city, the Caracas Metro was strategically positioned as a civilizing agent bringing the security and glamour of the formal city into its more marginal neighborhoods.

6. Creating a leveraging strategy

The continued problems of financial crisis that plague the MTDB suggest a strong need for identifying and exploiting current service offerings to increase revenues. The current

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[95] These remarks are derived from a presentation by Arq. David Gouvernour, Vice Minister for Urban Design, the Republic of Venezuela, to the Encuentro UPR/MIT Sobre el Tren Urbano, San Juan, Puerto Rico, 16 January 1995.

emphasis on expanding the role of exterior advertising is one example of such an effort, but it is not enough. The paradox confronting the MTDB is that, while it resists raising fares (for fear of placing an even greater burden on transit-dependent riders, as well as for fear of decreasing ridership), it knows, through its own market research activity, that there are groups of riders willing to pay more for transit in exchange for service improvements.[96] The MTDB should investigate these price/service cross-elasticities and determine if they represent viable opportunities for both meeting unmet needs and improving the economic viability of the entire system.

7. Integrating operations with the service strategy

Finally, the MTDB should carefully consider whether its service delivery system is sufficiently integrated with its operating strategy. Clearly, in the case of the Bayside line, there is a serious mismatch; providing service with 15 minute headways and forced transfers to reach most destinations is inconsistent with an appropriate operating strategy for meeting the needs of upper-income residents and tourists. Indeed, it could even be argued that the trolley system as operated results in some service deterioration for users; the greater capacity of trolley trains allows the MTDB to reduce frequencies and still meet capacity demands. In this case, the trolley may actually cancel out any of its potential benefits for shorter trips (on longer trips, the increase in average vehicle speed begins to make up for the increase in mean wait time).

[96] Interview with MTDB Marketing Director Anne Catherine Vinickas (22 March 1995).

CONCLUSIONS: THE STRATEGIC LESSONS

There are a number of areas in which the MTDB can improve, and perhaps innovate, in the design and provision of transit services to meet a broader range of needs and do so in a more economically viable manner. Beyond the more technical issues, however, there are a number of strategic lessons that can be derived from the preceding analysis. Six lessons are paramount; they are phrased here as a series of design principles:

- The Cod Liver Oil Lemma
- The Gertrude Stein Negation (Demand is not Demand is not Demand);
- The Frankfurt Airport Lesson;
- The Caracas Positioning Paradox;
- The Harvard Square Rule; and
- The Field of Dreams Fallacy

Identifying the Need for Service: The Cod Liver Oil Lemma

Cod liver oil is supposedly good for growing children—but is rarely demanded by its purported beneficiaries. This is the essence of the Cod Liver Oil Lemma: just because something may be "needed," it may not at all be "demanded." Children need nutrients, but there may be better ways to obtain them.

The Mission Valley West line offers an example of the confusion between a need for *transit service* and a need for achieving a reduction in automobile usage (for purposes of alleviating congestion, reducing pollution, and/or minimizing additional urban sprawl). The difference is significant: a *need* for transit suggests the existence of ready-made demand. The "need" for a reduction in automobile usage is a screen for other objectives; it is posited as a means of improving mobility (through reduction of congestion) and reducing environmental

impacts. The danger lies in promoting transit as a means of achieving these underlying needs *without* designing transit services to actually accomplish them.

Does Mission Valley "need" transit? The *San Diego Union-Tribune* seems to think so:[97]

> The Mission Valley Line is crucial to the future of the trolley....
>
> [It] serves Mission Valley, the region's premier retail area, which is also home to expanding businesses and a growing number of apartment and condominium projects. The stadium is there as well, and up the hill is San Diego State University, with its 28,000 students. Mission Valley cries out for public transportation.

A similar sentiment is echoed by one environmental group (that nonetheless opposes the trolley expansion on other grounds), whose spokesperson acknowledged "that Mission Valley is in desperate need for mass transportation."[98]

Both the newspaper and the environmental group commit the error of assuming an area's relative congestion translates into a *need* for transit service. Mission Valley is not currently crying out for public transportation, if current demand for bus service is any indication (the bus line that roughly traces the proposed trolley route, the 81, runs on half-hour headways in the off-peak day hours; by means of comparison, the 11, which connects the State University with downtown and does not pass through the valley, operates on fifteen minute headways). There is no doubt, though, that the valley is San Diego's most important transportation corridor; I-8, San Diego's principal east/west route, runs the length of the valley, and I-5, I-805, SR-163, and I-15 cut across the valley at regularly spaced intervals. It is also the home of two major shopping malls, several important strip and mini-malls, some new big box retailers, a large collection of garden office developments (many low-rise but

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[97] "The missing link: Mission Valley trolley line should be funded," Editorial, *San Diego Union Tribune*, 3 March 1995.

[98] Libby Lucas of San Diego's Environmental Health Coalition, quoted in Powelson, "Trolley Foes Fear Massive Fish Death."

some high-rise), a large assortment of hotels, motels, and motor courts, a number of ;dential projects or varying density and configuration, and the major sports stadium.

Much of the development that clutters the valley is not served well by transit in the generic sense; it is suburban in character and pedestrian unfriendly. The new trolley line was to have been part of a major reorientation of the valley, linking planned high-density "transit-oriented developments" to have been built in what are now undeveloped stretches of flood plain. While the trolley *might have* captured significant ride share from residents and employees of these new developments, it would only have served existing development in a peripheral manner:

- The connection to the valley from points south would require all users to follow a circuitous routing, adding greatly to trip time;
- The trolley, assuming standard operations, could only expect to move a fraction of the people accessing the stadium (three-car trains every fifteen minutes would provide crush capacity of only 4800 passengers per hour; even with the construction of the Mission 'alley East branch, that figure would still remain under 10,000 passengers per hour).
- Preliminary drawings of transit stations planned for some major trip generators in Mission Valley show stations on the periphery, not the center, of the service target areas—even for such transit-oriented projects as the Rio Vista West project.

Equally disturbing is the nature of current travel through Mission Valley: relatively little of its traffic both originates and ends in the valley itself.

In other words, it is not so much Mission Valley itself that "needs" mass transit; if any *need* exists, it lies in getting *into, out of,* or *through* the valley from surrounding areas. Transit :an help play a role in meeting this need—but not necessarily as currently planned.

Differentiating Demand: The Gertrude Stein Negation

; all demand equal? Transit systems are sold to the public based on projections of ridership. ut what if that ridership comes from other transit systems? Given the nature of the political

budget-setting process, it is in the interests of transit agencies to promote even potentially expensive capital projects if the resulting transit product results in lower operating costs. The MTDB is apparently not immune to this tendency, and has cited the lower operating costs of the proposed Mission Valley East line as an argument in its favor (as compared to a bus-only solution).

The problem is, these same systems are justified publicly as means of eliminating congestion on roadways and reducing environmental impacts. To accomplish these goals, transit systems need to draw passengers from behind the steering wheel of private vehicles; they need to capture a significant share of mode-choice riders.

The distinction is crucial, because the ultimate "success" of transit in meeting societal goals depends on differentiating users. Demand is not demand is not demand, to use Gertrude Stein's poetic formulation.[99] Market segmentation must become a central tool of service planning if transit is to answer to this truth. Furthermore, the recognition that not all demand is equal must lead to the next stage in the service planning process: the recognition that different markets may well require different transit solutions. In the case of transit, this might mean overlapping, competing, distinct services. It might call for the trolley system matched with a network of trolley-like red-painted buses connecting stations along routes in which rail is not yet practical, but defining a single integrated high-performance system based on stations, high frequencies, and minimal travel times; it might also call for jitney-like shared ride services to provide low-cost services for those who are more price-sensitive than service-sensitive. Either way, the Gertrude Stein Negation demands that demand not be treated as a homogeneous entity.

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[99] "A rose is a rose is a rose" was Stein's comment on the different levels of meaning inherent in a single object.

Clarifying the Service Concept: The Frankfurt Airport Lesson

The clarity of a service concept is an element of the success of that concept. A clear service concept communicates the expectations that potential users should have of the service; it can serve as well as an element of strategic advantage, especially when the service concept stresses an expectation that competitive services cannot meet.

The train connecting the Frankfurt Airport in Germany with the city center is a case in point. The train posts information letting passengers know that service throughout the day leaves every ten minutes, and that the trip time is ten minutes. Travelers passing through the Frankfurt Airport therefore know that they are never more than twenty minutes away from the city center (and vice versa). Even passengers with only two or three hours between flights can run into town, do some shopping, and return in time for their departures.

Transit systems that are able to make clear the nature of their service can build a competitive edge over highways in congested zones—if they structure their service concept around dimensions of importance to users of the system. The lack of clear information, however, can induce people to not use a system, as the perceived risk of relying on the system is elevated. And if the transit system is not currently able to offer any clear advantage, it might consider ways of restructuring its service delivery system to build advantage.

In the case of San Diego, it is unclear what a delegate to the Convention Center should expect if she wishes to visit Old Town using the trolley (when the Old Town line opens, that is). How long might she need to wait? How can that maximum wait time be systematically reduced? These are questions that must be asked, if the Service Concept is to turn into an element of competitive strategy.

Confronting Crime and Poverty: The Caracas Positioning Paradox

The San Diego Trolley, when first implemented, represented a Service Breakthrough for the MTDB. It allowed for efficient operation of public transit service along an important corridor at an average operating subsidy well below that of traditional bus service. The trolley was an ingenious improvement in transit service. The shiny red cars also helped establish a positive image of public transit in the eyes of auto-saturated San Diegans. One influential guidebook to the city gushed effusively:[100]

> Public transportation in San Diego is extremely impossible, inefficient, time-consuming and confusing, except for the extremely efficient, inexpensive, worldwide model of excellence, the smashing red San Diego Trolley.

The guidebook's hyperbole illustrates the nature of the perceptual gap that exists between San Diego's bus and trolley services.

But no objective observer in 1995 can deny that public perception of the Trolley has declined, perhaps precipitously. Trolley expansion has been arousing stronger local opposition. Why has this occurred?

The current crisis of the Trolley is due in great part to a mismatch between the needs of the present period and the service concept being promoted to meet those needs.

- The honor system, intended as a cost-reducing aspect of service, has permitted the development of a public *perception* that the trolley is used by transients to disperse to previously inaccessible neighborhoods, where their presence raises security and crime fears.

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[100] Wurman, *San Diego Access*, p. 3. One wonders if Wurman had ridden the same buses as Alice Garrard: "San Diego has the finest bus system and drivers of any place I've visited. The friendly and helpful drivers have good rapport with their passengers, many of whom they have obviously come to know over the years." Alice Garrard, *Frommer's San Diego '91–'92* (New York: Prentice Hall Press, 1991), p. 33.

- The lack of station personnel, also a cost-saving measure, has contributed to a *perception* that such stations are unsafe and that auto-theft, if not rampant, is a concern.
- The south line of the trolley could potentially compete with cars in terms of trip time, given the difficulties involved (long lines and delays) in driving through the border. This unique situation occurs nowhere else in San Diego.
- The choice of the east line alignment, while understandable from a number of points of view, did mean that the trolley would pass through historically high-crime neighborhoods (and through some poorly-defensible spaces as well).

It can therefore be argued that the MTDB committed two strategic errors in the development of the trolley system. First, it lost its opportunity to position the trolley as a viable, preferred option for mode-choice passengers by choosing to build the second line through an area of high transit dependency. Second, it failed to adjust the operating strategy of the East line to meet local conditions and hence created a positioning nightmare for the trolley in terms of further expansion. Each of these points requires some elaboration.

When the MTDB chose to extend the trolley east, it chose expediency. The right of way existed, the trolley could be built at low cost, and there was known transit-dependent demand along the route. Unfortunately, the MTDB failed to realize that the position of the trolley in the minds of the San Diego public was not yet fixed; the South line to Tijuana passed through some rough neighborhoods but also connected the downtown (itself a rough neighborhood in places) with the border, a major tourist destination. The trolley therefore attracted a mix of riders (though the length of the commute—nearly forty minutes, or twice the amount of time required by private automobile, likely discouraged the use of the trolley by mode-choice businesspeople), but remained nebulous in terms of positioning.

Did other options exist? The trolley might have been extended north through Hillcrest, a dense, highly congested, pedestrian-oriented community, and perhaps into Mission Valley

via University Heights.[101] To be sure, the cost of such an extension would have been significantly higher than the East line, but the area had all of the ingredients necessary to ensuring a relatively higher share of transit choice ridership: congested roads leading into and out of the area, relatively high trip demand dispersed throughout the day (the area has a bustling commercial hub, extensive nightlife, two major hospitals and one minor one, and high-density residential dispersed along a long corridor), inadequate parking, relatively short distances to other major trip generators (such as Mission Valley and Centre City), and an economically and socially diverse population base. Had this routing been chosen for the second trolley line, the trolley could have been better positioned as a system serving the middle class and mode choice passengers. It could then have thought more specifically about how to adjust the service strategy to meet the challenges of providing service along the East line corridor.

How could the East line have been developed differently? The Caracas example cited earlier in this report provides a model—somewhat paradoxical—for just how to serve marginalized areas: *raise* expectations. Such a strategy involves a strong inter-institutional component, as it would need to involve other city agencies and the private sector in a concerted investment effort. That such a program is feasible is demonstrated by a number of such efforts which are underway in San Diego (apparently without a significant MTDB role), including the Barrio Logan Mercado project, the City Heights town center project, and another project slated for an area previously reserved for a canceled freeway. The Grossmont Center station is a counter-example; the passenger waiting areas are under a bridge, removed from the commercial development of the "Grossmont Trolley Plaza" and utterly ludicrous in terms of connections to the neighboring Grossmont Center Shopping Mall (the station is

[101] A similar route is actually proposed as part of the future trolley system. Maps of the proposed trolley system, with all extensions, show a possible link through Balboa Park, bending over toward Hillcrest, then on into Mission Valley via University Heights.

located beyond the edge of the parking lot and down a long, steep staircase). It clearly lowers the expectations users should have of the trolley and its role in the functioning of the area.

There are costs and risks involved in raising expectations. Then again, there are costs and risks involved in not raising them—especially in terms of graffiti, crime, reduced ridership, and loss of public support.[102] The paradox of Caracas is that, given conditions of marginality, a thoughtful investment might prove the best.

Positioning Transit as Central: The Harvard Square Rule

An effective positioning strategy communicates to the public a set of expectations that the public should hold regarding the good or service being positioned. In terms of the MTDB, and specifically the trolley, it is important to consider how station siting decisions—driven in great part by cost and demand impacts—have positioning implications, with potential longer-term impacts on how people *decide* to value (or not value) transit options.

The Grossmont Center station, previously described, may have been designed and specified for a variety of valid and "good" reasons, but there is little doubt it helps position the trolley as *peripheral* to the life and functioning of the city. It reduces the passenger to waiting under a bridge in the middle of nowhere, at the same time that it is surrounded (but at a distance) with activity centers. It is not a pleasant experience.

It is instructive to compare the Grossmont Center station with the Boston-area Massachusetts Bay Transportation Authority's Harvard Square Station. The principal station entrance sits at the heart of Harvard Square, a bustling area of offices, shops, restaurants, schools, and residences. The station is so central to Harvard Square it is practically synonymous with the area, and it serves as a major piece of regional transportation infrastructure (the station serves heavy rail, trolley bus, and diesel bus lines). There is no

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[102] Vandalism repairs for the trolley, including trolley stations, averages $20,000 a month. Mark Arner, "Rock-tossing vandals take their toll on trolleys as violent attacks climb," *San Diego Union-Tribune* (28 November 1994).

shame associated with using transit to access Harvard Square, and the central location of the station serves as a reference point and focus for the neighborhood.

A transit system that directly serves the center of a target area stands a better chance of being positioned as central to that area, perhaps even preferred to other modes, *ceteris paribus.* In contrast, a system that only touches on the periphery of a service target communicates its peripheral status in no uncertain terms. Given the challenges involved in providing mode-choice travelers with viable options, this aspect of a positioning strategy must be taken seriously.

Meeting Current Needs: The Field of Dreams Fallacy

A final lesson to be learned from the San Diego experience is the Field of Dreams ("build it and they will come") Fallacy. While it is certainly meritorious to build transit lines in undeveloped areas as a means of stimulating the development of transit-oriented mixed-use properties, it is risky to rely on such a strategy before the system itself is sufficiently defined and positioned in the marketplace.

Two of San Diego's trolley lines suffer directly from this fallacy (and, it can be argued, so do the rest, to some degree). Both the Bayside line and the under-construction Mission Valley West line were planned on the basis of stimulating and supporting massive private investment in high-density transit-oriented developments. In both cases, reality has set in to cancel projects, reduce densities, and diminish the potential impact these projects could have had in serving the region's transportation needs. Even the two main lines of the trolley—the South and the East—have failed to attract significant transit-oriented high-density development to the degree hoped-for.

This failure is all the more sad when one considers that there are areas and corridors with the densities and congestion that would normally favor more intensive transit development. It is expensive to build in these areas, but they represent areas where demand for housing and services remains high, meaning that transit could even make possible—and

desirable—even higher densities. The alternative—making major investments in transit systems that themselves serve areas of current low demand—can have the unintended consequence of making transit seem that much more peripheral to the functioning of the city.[103]

The MTDB will have its hands full over the next decade attempting to complete the development of the trolley system. It has won some notable successes, but it has also made a number of strategic errors that have certainly made its task more difficult. If it is to truly serve larger numbers of mode-choice passengers, it will need to carefully pay attention to the marketing function, becoming sophisticated in the way it understands its target markets and developing services targeted at meeting the needs of each of its markets. If the MTDB can take these steps, it can magnify its contribution to the development of San Diego and to meeting the needs of its residents and visitors.

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[103] The author recalls one conversation with a resident of La Mesa, a community served by the East line of the trolley, who commented that the trains always seemed to be empty. While the trolley does fill up during peak hours, the lack of major transit-oriented development around East line stations does lead to long periods where demand for transit remains weak.

APPENDIX I:
CAN PUBLIC-SECTOR AGENCIES ADOPT PRIVATE-SECTOR PRACTICES?

There are clear differences in the managerial environments surrounding private and public sector managers. Public sector managers are often constrained by committed funds, "real world" considerations of state oversight and public scrutiny, and internal policies (such as civil service regulations and especially strong labor unions) that offer less flexibility in meeting challenges.[104] And yet, Smerk argues that "transit management holds the reigns of a fairly large number of variables."[105]

The key variable separating public and public orientation is paradoxically the orientation of these organizations to the general public. This variable is mentioned repeatedly in the literature,[106] and it bears some attention.

Public sector organizations define themselves as serving the public; hence, whatever they do is understood as an element of that service. Private sector organizations lack this luxury, and must compete for the public's dollar. This competition frequently leads organizations to the recurrent realization that they misunderstand their "theory of the business."[107] The resultant market discipline is both humbling and enlightening. Public sector organizations,

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[104] Lester A. Hoel, "Can Urban Transportation Be Managed as a Business?" in Eric Bers and Chris Hendrickson, editors, *Managing Urban Transportation as a Business,* Proceedings of a Specialty Conference sponsored by the Urban Transportation Division of the American Society of Civil Engineers (New York: ASCE, 1987).

[105] Smerk, "Management of Public Transportation," pp. 473-474.

[106] Bers, "Foreward;" Hoel, "Can Urban Transportation Be Managed as a Business?;" Dellibovi, "The Business of Urban Mass Transportation;" Frank W. Davis and Ray A. Mundy, "Public Transit Marketing," in George E. Gray and Lester A. Hoel, editors, *Public Transportation,* 2nd edition. (Englewood Cliffs, New Jersey: Prentice Hall, 1992); and Smerk, "Management of Public Transportation."

[107] Peter Drucker, "The Theory of the Business," *Harvard Business Review* (September–October 1994).

lacking this market dependency on people served, often miss out on opportunities for refining and updating their inherent theory of the business.

Some have responded to the problem of matching private sector practices to public sector organizations by discounting the parallels between the two sectors. Such persons claim instead that public sector organizations have features which set them apart from their private sector counterparts. Fielding, for example, argues that the marketing of public transit is unlike marketing in the private sector, bearing a closer similarity to marketing in non-profit organizations. He gives four reasons why he believes this to be the case:[108]

1. transit sells a service, not a product;
2. transit is a service for which demand varies throughout the day and that cannot be held in inventory;
3. transit is expected to satisfy multiple demands and objectives; and
4. transit serves more than one public (users, occasional users, and the non-riding public).

It is true that transit systems are expected to satisfy multiple and at times competing demands, but the other three "reasons" are in fact common to service sector enterprises even within the private sector. It has been fairly common for many to equate the industrial sector with private industry and the service sector with government and non-profits,[109] but the reality is that the service sector is as dynamic and market-driven as any other branch of private industry. Indeed, given the predominance of service enterprises in the US economy, most private sector organizations sell services, not products; face cyclical demand of some nature (and hold no inventories); and attempt to serve or ameliorate multiple markets and publics. It is precisely because transit shares so many dimensions with its private sector counterparts that it needs to learn from them how to build a market-driven organization.

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[108] Fielding, *Managing Public Transit Strategically*, p. 184.

[109] Heskett, *Managing in the Service Economy*, discusses some of the confusion surrounding public perception of service-sector enterprises.

APPENDIX II: METRICS FOR MEASURING SERVICE CONCEPT EFFECTIVENESS

Transit planners frequently measure the provision of transit services using metrics which fail to capture how the public views these services. Three metrics are proposed here, two for the first time, as a means of better relating transit to public perceptions. All of these metrics build on a general rule of thumb in the transit industry: that passenger arrivals to transit access points are randomly distributed for routes featuring headways of ten minutes or less; the implication is that waits of less than ten minutes are "acceptable enough" for many users. This "ten minute" rule can be adjusted, of course, based on more careful study. The three metrics proposed are system coverage, service coverage, and mobility coverage. Their descriptions follow.

System Coverage:

Definition: Per cent of population living within a five-minute walk of transit access (1/4 mile). This metric is well-known and is used in a number of transit agencies to describe the reach of a regional transit system.

Goal: It is not realistic to cover an entire population with a transit system, as many zones cannot support the residential densities that make transit a viable option. On the other hand, it is reasonable to set up four kinds of goals for system coverage:

— Provide system access to 100% of all residents living in zones whose density achieves a certain threshold;

— Provide system access to a to-be-determined percentage of all other residents;

— Provide system access to 100% of all trip generators whose trip demand exceeds a certain threshold;

— Provide system access to a to-be-determined percentage of all other demand generators

Service Coverage

Definition: Per cent of population living within a five-minute walk of a ten-minute maximum wait. In practice, this measure gives the fraction of time those with *system access* can access that system without waiting longer than ten minutes.

Example: If a resident has access to a transit route that provides service every half hour in the off-peak, that person would only have "ten-minute access" to transit 1/3 of the time (within every half hour block, only those 10 minutes before the arrival of a transit vehicle). An illustration follows:

(a)	(b)	(c)	(b) × (c)
Access to routes with headways of:	% of population	% of time wait will be less than 10 minutes:	Total Service Coverage
10 minutes or less:	30%	100%	30%
15 minutes:	20%	67%	13.3%
30 minutes:	20%	33%	6.7%
60 minutes:	10%	16.7%	1.7%
Total population with system access:	80%	Service Coverage:	51.7%

Goal: The goals for service coverage can be two-fold:

— Improve total service coverage

— Tighten the definition of service coverage by reducing the waiting time specification. This should be done as part of an on-going attempt to define "good service" in the eyes of the public.

Issues: There are a number of issues that will need to be resolved for this measure to be implemented:

— Time of Day concerns. The measure of residential access is useful during certain hours, but is not necessarily useful during late-night hours. Appropriate measures might need to be defined for several periods throughout the day.

— Demand generator concerns. The metric as proposed is based on residential access. It may be useful the define a parallel metric defined in terms of demand generators.

Mobility Coverage

Definition: The percentage of residents who live within a pre-determined maximum journey time from all demand generators (weighted by demand). This metric purports to measure the actual *usefulness* of a system in terms of total travel time.

Description: San Diegans are frequently heard commenting that most any part of the city is only "twenty minutes" away from any other part; some wry comedian has no doubt commented that the "Twenty-Minute Rule" applies as equally to a trip downtown as a trip to the local supermarket. It could therefore be a useful—and sobering—measure of transit effectiveness to ask how well transit can get a passenger to any demand destination in that same twenty minutes.

This measure can be developed in two manners. In the first, it can be based only on in-vehicle travel time. In the latter, it can be based on total travel time. The latter is preferred as a true measure of transit effectiveness, though in practice both measures might be useful. Hence, Mobility Coverage can be split into two different metrics: En-Route Mobility Coverage and Absolute Mobility Coverage.

Example: One neighborhood is served by a transit line with twenty minute headways. Upon boarding, a passenger will be able to access 4% of travel-demand-weighted destinations (that is, places demanded by 4% of all travelers) within twenty minutes. The neighborhood could be said to have an En-Route Mobility Coverage of 4% and an Absolute Mobility Coverage less than 2% (50% Service Coverage cuts Mobility Coverage in half; wait time will cut it down even further).

The calculation of Absolute Coverage is more complex; it factors into the equation both Service Coverage and waiting time (subject to a maximum constraint of ten minutes waiting time).

The following table can give an indication of the calculation of Absolute Mobility Coverage for one neighborhood: For simplicity's sake, walking (access) time is averaged for the neighborhood within 1/4 mile of the transit access point; it is given here as 3 minutes.

Walking Time	Waiting Time	In-Vehicle Time	% of weighted demand generators accessible
3	0	17	1.6%
3	1	16	1.5%
3	2	15	1.5%
3	3	14	1.5%
3	4	13	1.3%

3	5	12	1.2%
3	6	11	1.0%
3	7	10	0.8%
3	8	9	0.8%
3	9	8	0.7%
3	10	≤7	0.5%

In the above case, with 20 minute vehicle headways, each of the above access percentages will need to be multiplied by the fraction of time it will occur (in this case, by 1/20). The resulting Absolute Mobility Coverage is 0.62%—abysmally low, yet reflecting something of mode-choice perception of transit services.

Goal: A reasonable goal for a transit system using these metrics is to look for opportunities to improve the Mobility Coverage offered to residents. There are, of course, a number of concerns to be resolved:

— Time definition. The perception as to what length of time amounts to a "reasonable" trip should be better ascertained through careful market research. Though traditional demand modeling often employs econometric analysis to determine the value of time per minute to travelers, it is worth exploring the hypothesis that a "fixed" time interval as proposed here might be of significant value to travelers independent of the value of travel time minutes.

— Time profile of demand. A significant refinement to this measure would weight demand generators not only by total demand but by the time-profile of that demand. A stadium, for example, might represent

2% of total travel demand, but only for very few hours a week; the metric, as it is refined, can be adjusted accordingly.

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