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Message in a Metro: Building Urban Rail Infrastructure and Image in Delhi, India

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Abstract

The world over, infrastructure mega projects have become more prevalent, even as evidence suggests that such projects often experience significant cost overruns while failing to fully deliver on their projected benefits. In this light, this article will argue that continued support for infrastructure mega projects stems from the way that such projects are presented to the public. Using the case of the development of a metro railway in Delhi, India, it shows that galvanizing public support and attracting patrons to a public transit system stems from creating an all-round positive image that combines tangible variables with an intangible set of symbolic meanings. Of course, image is only an impression, and does not necessarily reflect reality. In this light, the final section of this article examines the broad physical and societal implications of the metro development in Delhi, and uncovers the driving forces behind the project. The article concludes that, in spite of the cultivation of a positive image, the specific metro form that was developed in Delhi to satisfy each of the special interest groups involved in its production might be specifically one that fails to suit the transportation needs of the city.

Introduction

There was great optimism when the world's newest metropolitan railway system was inaugurated in Delhi India in December 2002. Against seemingly impossible odds in a country renowned for unimplemented urban plans (Kulabkar, 2002), officials in Delhi have moved mountains in making the metro a reality — attracting political cooperation between rival political parties, raising the US $2.4 billion in development funds, and building the first phase of the metro on time and on budget. And while questions still persist about the system's necessity and effectiveness, the revelry that has met the system since opening day is nothing less than overwhelming. Quoting an article in the *New York Times* (Rohde, 2003: A4), 'Hundreds of thousands of people take what they call joy rides, short trips to savour the efficiency, modernity and sense of progress the new system seems to generate'. So how did they do it; how did officials in Delhi create a metro with such an iconic stature that has attracted attention around the world? Perhaps more importantly, in a city where the average annual income is around US $1,190 per capita (Economy Watch, 2005), how was the local citizenry convinced to support such a large capital investment in public transit?

Answering such questions provides an important addition to the growing body of literature on infrastructure mega projects (Hall, 1982; Mackett and Edwards, 1998; Olds, 2001; Altshuler and Luberoff, 2003). To date, statistical analysis by Flyvbjerg and his colleagues (2003) has shown that the prevalence of infrastructure mega projects around the world is increasing at the same time that evidence suggests such projects often fail to achieve their stated benefits. Passenger rail projects have been particularly plagued

by construction cost overruns and ridership shortfalls (Pickrell, 1989). According to Flyvbjerg's research, the average rail project costs 45% more than estimated, while patronage was found to be 39% lower than forecasted.

Explanations for the discrepancy between predicted and actual performance have been varied, often focusing on the role of political interference, opportunism by special interest groups and Machiavellian machinations on the part of those planning the project (Hall, 1982; Altshuler and Luberoff, 2003; Flyvbjerg *et al.*, 2003). Situating infrastructure mega projects more centrally within a framework of economic and cultural globalization, Olds (2001) asserts that the prominence of a mega project development paradigm is embedded in the increasingly global flow of planning expertise and urban imagery. And Richmond (2005) highlights the importance of examining the historical and culturally rooted symbols, imageries, meanings and mythologies that have led to widespread political and public support for investments in large-scale projects.

Using the existing body of research as a starting point, I will show that the continued popularity of infrastructure mega projects, particularly in the urban transit sector, stems from the way such projects are presented to the public. In Delhi, as in cities across the globe, a conscious effort was undertaken to translate the official motivations for developing the metro into a broader public image for the project, one based on the metro as a catalyst towards the development of a modern city. The source of these official project motivations and the tenets upon which the metro was promoted to the public had their origins in the hopes and aspirations of the political establishment and certain segments of the local population, which themselves were based on history, culture, international imagery and first-hand experience with urban transportation systems.

Gaining political and public approval for such large-scale projects has necessitated what Brooks (1997: 17) has called 'an incredibly complicated selling job', which requires substantial capital. Using the case of the Delhi Metro, I will excavate the themes, motivations and techniques employed to cultivate a successful image in the urban public transit sector. Many studies have illustrated that the promotion of metro railway projects has relied on narratives that project the efficient movement of people (Richmond, 1998; Schrag, 2002; Siemiatycki, 2005). Beyond the movement of people, I will use a detailed content analysis of media representations and public relations material released by the project promoters to show that galvanizing political and public support for the implementation of a public transit system stems from creating an all-round positive image that combines tangible variables with an intangible set of symbolic meanings.

By integrating both tangible and intangible variables into the conscious construction of image, it will be shown that the promotion of public transit merges function with form, becoming the intersection of mass mobility and mass/popular culture. It is this broad appeal, and more specifically the conceptualization of the Delhi Metro as a vehicle for societal transformation, that has led to the widespread support for the project.

In Delhi, the development of a metro has been accompanied by land appropriations, slum clearances and a broad range of political and economic opportunism that threaten to exacerbate the rift between the wealthy and the poor. In this light, the final section of this article will peel through the layers of rhetoric and myth that surround this hyper-branded project to provide a glimpse of the substance that constitutes the Delhi Metro. Paradoxically, the combination of a necessity to cultivate a symbolic image, and the interference of vested political and economic interests, may have in fact compromised the ability of the Delhi Metro to meet the transportation needs of the community.

Constructing image in the transit sector: the case of Metro Delhi

The creation of both a tangible and symbolic meaning for public transit depends largely on the local context in which the system was developed. This section will begin by briefly exploring the history of the metro development in Delhi, and then link this history

to a series of variables and techniques that were used to garner public support for the new system.

An abridged version of the metro development story in Delhi

For some 35 years, there has been an official recognition of the need for a mass rapid transit system in Delhi. Evolving out of an eighth century warren of narrow streets and alleys, Delhi has experienced massive population growth, and increasing national and international significance as the capital city of the second largest country in the world. Since 1961, the population of Delhi has more than doubled every 20 years, growing from 2.6 million to 6.2 million residents between 1961 and 1981, and reaching 13.7 million inhabitants by 2001. Today, rapid growth in the city continues unchecked, and the population of Delhi is expected to reach 23 million by 2021 (Delhi Development Authority, 2003).

In developed countries, Sreedharan (2002) has observed that planning for metro systems usually begins when a city's population exceeds 1 million so that it may be in place by the time the population is between 2 and 3 million people. However, in Indian cities an extended jurisdictional tug of war between the central, state and city governments over which level has ultimate control over urban mass rapid transit, in combination with a general paucity of funds for large-scale projects, has resulted in an underinvestment in such systems.

Thus, according to Sreedharan (2002), Indian cities and their residents have had little experience with metro or commuter rail systems. While cities such as Mumbai and Chennai have urban mass rapid transit systems, the only direct experience with metro development that the country does have is in Calcutta, which has been plagued by safety concerns, stifling traffic tie-ups during construction, and low ridership. Focusing specifically on Delhi, the historical lack of an effective urban commuter rail system has meant that nearly all mobility for the city's inhabitants has been road based (Chopra, 1994). This has created an increasingly chaotic traffic situation. On any given road (including major highways), cars, trucks, buses, motorcycles and mopeds compete for space with three wheeled auto-rickshaws, bicycle rickshaws, horse-drawn carriages, donkey-drawn wagons, human-pulled carts and pedestrians. Not surprisingly, this state of affairs has resulted in extreme congestion, road accidents and air and noise pollution.

The first serious mention of a mass rapid transit system for Delhi emerged out of a 1969 traffic and travel characteristics study. Since then, many official reports by a wide variety of government departments have been commissioned to explore the issue, with key areas of contention related to debates over technology (underground rail, surface rail, light rail, bus based, etc.), route alignment, and whether urban mass transit is ultimately the jurisdiction of the national government or the Delhi Union Territory government (Sreedharan, 2002). As such, the desire for extensive technical study, in addition to ongoing political contestation and the search for appropriate financing, have contributed to the extended planning period. During this gestation period, the function and form of a mass rapid transit system has been shaped by a series of interrelated trends.

First was a shift in mobility patterns. While an extensive network of Indian-built buses served as the primary mode of transport for the first quarter century following independence, by the late 1970s, private automobiles and motorbikes became more affordable and pervasive. Between 1981 and 2001, the number of motor vehicles in the city grew more than sixfold from 540,000 to 3.8 million, leaving Delhi with more private motor vehicles than Mumbai, Calcutta and Chennai combined (Delhi Metro Railway Corporation [DMRC], 2004).

The rise in automobile ownership has been promoted and accompanied by shifting land use patterns. While Delhi originally formed as a walled city with a tightly contained warren of streets, the city has evolved in a dispersed, polynucleated manner, complete with a variety of business and residential districts. More recently, this land use pattern

has been exacerbated by the development of new satellite towns on the outskirts of Delhi, which have emerged as places of residence for the middle and upper classes. As footloose manufacturers and knowledge-based industries have followed these skilled workers out to the satellite towns, it can now be seen that more centralized business districts have become less attractive. Thus, unlike the classic mass transit metropolises of Europe and North America with their strong radial travel patterns, travel patterns in Delhi are more accurately characterized as orbital in nature, where it is often faster for commuters to move in a circular direction between origin and destination than pass through the city centre itself (Delhi Master Plan, 2021; Delhi Development Authority, 2003). This dispersed urban morphology and orbital travel pattern provide a definite challenge for the efficient provision of mass rapid public transit, as it creates a great diversity of mobility patterns.

Concurrently, Delhi's local culture has undergone significant changes that have influenced mobility patterns and the aspirations of the local residents. Rising wealth of the middle class as well as the proliferation of western culture and imagery through such media as satellite television and the internet have generated a society that is far more cosmopolitan and outward-looking than it was in the first decades of independence. In this context, the private motor vehicle features prominently as both a symbol of economic status and personal freedom, while freeing the affluent user from the deteriorating conditions of the public bus network (Chaterjee, 2002).

The dramatic increase in personal motor vehicle usage has left the city congested and choking in a thick cloud of smog. Simultaneously, the increased road usage has lessened the effectiveness of the bus network, driving a negative feedback loop where more people search for private mobility solutions, which in turn further worsens the effectiveness of on-street public transit. Road accidents have also reached disconcerting levels. With an average of five deaths and 13 serious injuries on the roads of Delhi each day, the city has about 40 times more motor vehicle accidents per capita than the UK (Sreedharan, 2002; DMRC, 2004).

Even travel on buses had become unsafe, with frequent accidents causing injury as well as a rising level of perceived incivility that added to a sense of insecurity. In light of these challenges, a random survey conducted in Delhi in the early 1990s found that 75% of commuters felt that the bus service was grossly inadequate (Chopra, 1994). With an increasingly affluent population seeking solutions to Delhi's congestion and environmental problems, the time had come to surmount obstacles of political contestation, funding shortfalls and technical debate about the most appropriate mode of transit for the city, and begin acting to address the decaying state of the transportation network.

In 1998, after nearly 30 years of planning, shovels finally broke ground on the Delhi Metro, representing a first sign of the mass rapid transit system to come in the city. The metro was financed through a combination of international and local funding sources: 64% of the project costs were provided by the state-sponsored Japanese Bank of International Cooperation; 28% of the project costs was financed through equal equity contributions provided by the Central and Delhi State Governments; both levels of government agreed to finance a further 5% of the project costs through an interest-free subordinate loan to cover the cost of land acquisition; the final 3% of the project costs were to be raised through property development (DMRC, 2003).

The Delhi Metro was planned and developed as a technology exchange, whereby international firms with expertise in the development of metro railways were contracted to aid with specific tasks such as general planning, station design, construction management and rolling stock production. These international firms, from countries such as Japan, Korea, France and the US, were required to partner and transfer their expertise to Indian firms, so that indigenous companies could take a lead role in the later stages of the Delhi Metro project. It was also planned that the indigenous firms would later be able to disseminate their knowledge to other cities in India that were seeking to develop metro railways.

While the construction of a metro system has been one tenet of Delhi's attempt to improve mobility and the environment in the city, it has been accompanied by a series of other measures. To date, perhaps the most visible and impacting change to Delhi's transportation landscape has been the National Capital Territory government initiative to overhaul the city's diesel bus and auto-rickshaw fleets with vehicles fuelled by compressed natural gas that have reduced emissions (Haider, 2004). Since the bus fleet in Delhi was the main source of air pollution created by motor vehicles, this change has resulted in significant reductions in air pollution. Compared with 1997, the concentration of carbon monoxide in 2002 fell by 32%; sulphur dioxide levels dropped by 39%; and particulate matter that causes respiratory problems has been mitigated. In fact, for their efforts in operating one of the largest compressed natural gas bus fleets in the world, Delhi was awarded the Clean Cities International Partner of the Year Award for 2003 from the United States Department of Energy (National Capital Territory, 2003).

Constructing an image for the Delhi Metro

Against the backdrop of Delhi's specific urban history and experience with public transportation, the metro developers from this point on set out to construct a positive image that would galvanize public support and attract patronage to the new system. Quoting the Delhi Metro Managing Director, E Sreedharan, from an article in *The Hindu* by Sandeep Joshi, it is possible to see the specific motivations that metro officials saw for developing the metro:

> It will be much more than a cheap and safer means of transport. It will reduce congestion on roads making movement easier. It will also reduce atmospheric pollution to a great level making the environment healthy … The Metro will totally transform our social culture giving us a sense of discipline, cleanliness and enhance multifold development of this cosmopolitan city.

In light of these objectives, the generation of a positive image for the metro served two purposes. First, it would raise public awareness and hence attract patronage to the new system, which was critical if the metro was going to attain its tangible goals of congestion reduction, environmental amelioration and increased safety.

More broadly, if the metro was going to achieve the desired objective of cultural transformation, it would need an iconic image that could generate a sense of public pride, ownership and respect for the values being instilled by the new system. The cultivation of this iconic, branded image relied on a promotional strategy that transcended the potential metro rider as the sole target market, and instead promoted the virtues of the metro to a diverse cross section of Delhi residents. Connecting with the wider community required a message that spoke to the aspirations of Delhi residents, for a city that was dynamic and modern, competitive and 'world class'. Thus the metro was trumpeted as a catalyst of societal change and a symbol of the potential for Indian ingenuity to overcome the challenges of a rapidly growing population.

To put the development of the Delhi Metro in both a historical and national context, it bears noting that this was not the first time that large-scale projects, and rail-based public transit investments in particular, had been used as means of driving social change in India. Writing about the development of the Calcutta metro in *The Statesman* (1987), MIT professor Bish Sanyal noted the potential for the new system to stimulate a positive transformation of the urban landscape while cultivating a modern urban image and symbol of hope for the city. More broadly, looking back over India's recent history, large-scale mega events such as the Asia 72 Exhibition and the Asian Games in 1982 have been used to catalyze urban beautification and infrastructure development, a path that is being largely followed in the run-up to the 2010 Commonwealth Games in Delhi. And the development of mega satellite town projects surrounding some of the country's largest cities have been developed to improve quality of life by promoting more modern ways of urban living.

In the context of the historical and national experience of using large projects to guide social change and urban transformation, such an approach became firmly rooted in the philosophy of the DMRC's upper management. Based on a site visit to Delhi, personal interviews with a broad range of people involved in the project, and a content analysis of official promotional materials as well as over 250 articles pertaining to the metro in six independent Indian English-language newspapers[1], I have identified four dimensions upon which the iconic image of the Delhi Metro was constructed: tangible benefits including congestion reduction, environmental amelioration and increased safety; the optics of political consensus; an image of a company that cares about the well-being of the community; and the metro as a vehicle for enabling a broader urban transformation. Despite having a tight promotional budget, within each dimension examined below, a variety of creative promotional techniques will be identified that contributed to the cultivation of an image for the metro as the backbone of a modern urban landscape.

Tangible transit benefits

Just as in the promotion of metro systems in cities around the world, the Delhi Metro was promoted for its potential to provide tangible transportation benefits (Mackett and Edwards, 1998). In order to attract the middle income rider back to public transit from their private motor vehicle while cultivating a clientele amongst existing bus users, mobility-related variables such as reduced travel times, and increased comfort and safety became the tangible backbone of the metro promotional campaign. This message was propagated primarily through the print media, which like other cities, had become captivated by the issue of traffic congestion.

In a series of articles leading up to the metro inauguration, journalists compared the experience of a bus trip with that of the metro. In one story describing a typical bus trip, Srivastava (2002) wrote in the *Times News Network*: 'Right from managing a foothold to getting down after a 45-minute journey, the entire episode was all a matter of survival . . . the stench from the roadside drain filled the bus . . . the journey was painfully slow due to red lights at every crossing'. Ten months later with the metro operational, a wire service reporter wrote in the 12 October issue of *The Times of India*: 'Imagine travelling in the middle of North Delhi at Rs 8 (about US $.20) and covering the distance between Trinagar and Shahdara in 19 minutes, instead of a bumpy, push-and-shove ride in a rickety bus that will take anywhere between 40 minutes and an hour'. This contrast played on the time savings, low cost, and comfort of the metro, and had the effect of highlighting the metro's potential to deliver an improved public transit experience.

The improved public transit experience was further related to improved safety and security. While the bus had become characterized by petty crime, high incidents of traffic accidents and rising incivility, the metro was promoted as a safe and secure environment. Articles appeared in the local newspapers promoting the extensive lengths to which metro planners have gone to ensure personal security, carrying headlines such as 'Strict measures to ensure a "perfect" metro', 'Lessons in security from overseas', and 'Bid to make the metro safe for women'. To date, the measures promoted by the DMRC have been successful in creating a secure environment and cultivating a feeling of personal safety on the metro. A 2003 survey by the MG School of Mass Communication found that 99% of women found travelling by metro safer than on the bus. This is perhaps less impressive than it would appear at first glance, since the metro is far less crowded than the local buses, and only 13% of the system's patrons are women (Batra, 2003).

Beyond mobility-related variables, the metro became a tangible vehicle for environmental amelioration in Delhi. In a highly publicized effort, Delhi became one of the few metro systems worldwide to achieve the voluntary International Standardization Organization (ISO) 14,000 certification, which ensures that a company maintains a

1 In addition to English, the Hindi language is also prominent in Delhi. While I did not systematically analyse the portrayal of the metro in the Hindi media, through my interviews I was able to confirm that the Hindi language media were running similar stories to those presented in English.

credible environmental management system. In addition to adopting special construction methods and track design to minimize the creation of dust and air pollution, the DMRC also pledged to replant three trees for every one that was cut during development. The subscription to the internationally recognized ISO 14,000 certification program projected a symbol of environmental care to the general public, which was backed by a verifiable set of protocols embodied in the standardization agreement (Bhatnagar, 2002).

Finally, the metro was promoted as a cost-effective mode of transportation for the general public of Delhi. In the first year of operation, metro service was operated at a 10–20% concession, making the fare structure comparable to the bus. However, on 30 March 2004, coinciding with the completion of Line 1, fares were raised by between 30 and 50%, making the metro considerably more expensive than the bus. While Managing Director Sreedharan conceded in a 2004 *Express News Service* article that the new fares were 'fairly harsh', he said that they were in line with the increased utility of the extended metro system.

The optics of political consensus

For over 30 years, the realization of a mass rapid transit system in Delhi was impeded largely by political antagonism between the Central and the Delhi Union Territory governments. Even as a consensus was reached in 1995 to proceed with the project, the Delhi Metro has been embroiled in a fierce and highly public struggle over which level of government deserves political credit for initiating the project, and who should have managerial control over the system. In the years leading up to the inauguration of the metro in December 2002, the conflict was exacerbated by the fact that the Central government was controlled by the BJP party, while the Capital Union Territory government of Delhi was in the political hands of the rival Congress Party. Thus, in the local newspapers, articles frequently appeared with headlines such as 'DMRC: whose baby is it? Centre, Delhi gov't argue', 'Delhi Metro: Congress, BJP vie for credit', and 'Delhi govt demands control over metro'. While the highly publicized political antagonism had the potential to tarnish the image of the metro, in Delhi it largely had an opposite affect.

The air of a political controversy ensured an ample supply of free publicity in a local print media that was highly attuned to partisan politics. Yet the controversy was not about the viability of the metro itself, but instead over which government (and political party) deserved credit for having the vision and the perseverance to implement a project that would deliver great benefit to the people of Delhi. In fact, the metro was portrayed as a city saviour, a much loved public project around which both the Central and Union Territory governments fiercely desired ownership to campaign for re-election.

This conflict spilled over into the advertisement of the metro project as well. In 2003, it was reported that the ruling Congress government in Delhi spent three times its allocated budget on advertising, much of which was spent to promote its efforts on the metro project (Srivastava, 2003). As such, big advertisements in leading newspapers and magazines were taken out to highlight the benefits of the metro. They also pointed out the role that the Congress government played in making this massive investment in the people of Delhi a reality.

This opportunistic rush for political ownership over the metro created an environment where there was little direct political criticism of the logic underpinning the project. The metro was presented in the media as being universally endorsed by all of the key politicians, which reinforced an image of the metro as the pride of Delhi. Furthermore, even amidst the political wrangling for credit, the fact that cooperation had been achieved between the rival political parties was a symbol to the public that the metro was an important effort to address one of the most pressing societal issues.

The DMRC as a community partner

The DMRC has consciously cultivated an image of a company that cares about the communities in which they operate. In the months leading up to the inauguration of the metro, DMRC officials recognized that many people in Delhi had never personally

experienced a metro railway system. This provided an opportunity to undertake an extensive public awareness and education campaign to introduce the virtues of the new metro to the people of Delhi, and also build a sense of excitement about the new system. Achieving this goal included an exhibit at the International Trade Fair in Central Delhi, the formation of a Yahoo news group, the staging of street theatre in central locations, the distribution of metro information door to door, education programs in schools and colleges, and radio advertisements in multiple linguistic dialects. Overall, the promotional campaign not only raised awareness about the new metro system, but also generated goodwill between the public and the DMRC. As one street theatre viewer summarized the public sentiment in a *Times of India* article (Nayak, 2002): 'Delhi Metro is really a wonderful thing and people should know about it. I am touched by the way these people have tried to convey it'.

Beyond the promotional effort, station designs and finishing have been important in cultivating an image of the DMRC as a company that cares about the community. Each of the stations has been equipped with special lifts, ramps, brail signs and tactile floor tiles to make the system accessible to disabled people (Mukherjee, 2002a). Signage is multilingual, and designed in such a way that it can be understood by people who are illiterate. And community artworks depicting the neighbourhood way of life have been installed in the stations to create a sense of connectivity between the metro and the broader local experience outside the station walls (Figure 1).

Viewed in its entirety, the combination of intense promotion and thoughtful design has shaped the perception of the metro as a vital piece of community infrastructure. Moreover, the promotion of the metro has presented a grassroots, community-driven feel to the transformation of the city into a modern metropolis. These efforts have served

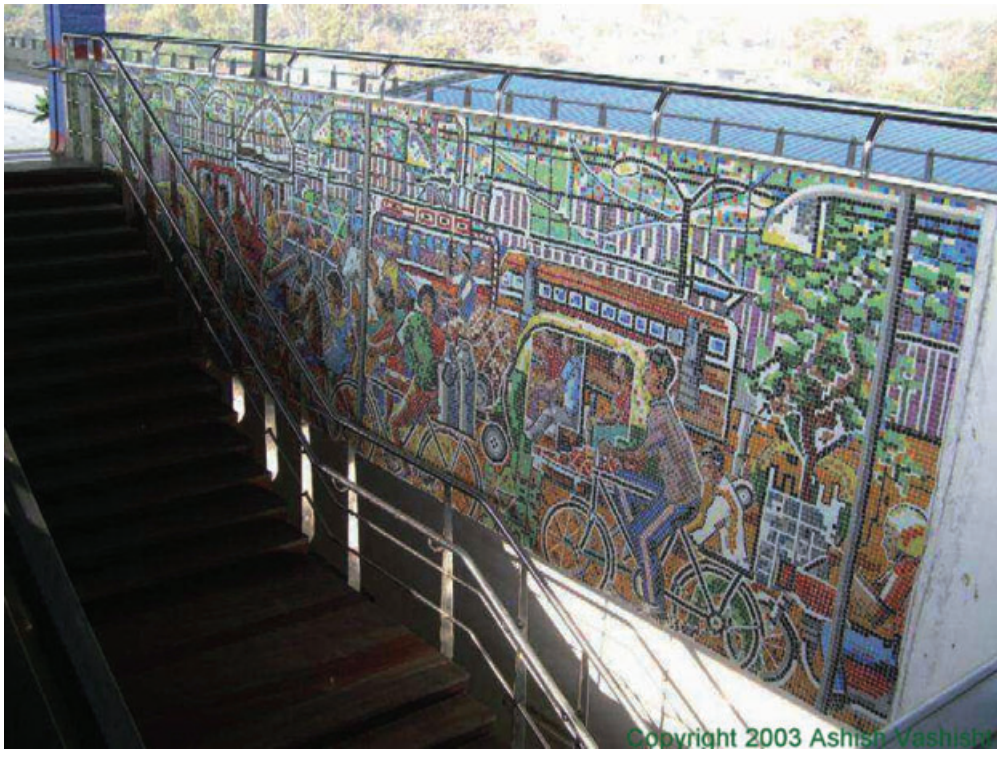

Figure 1 Station art at Seelampur Station depicting community surroundings (source: Ashish Vashisht, 2003)

to further the dual mandate of the metro as both a people mover and a vehicle for creating community cohesion.

The metro as a catalyst for promoting progress

Beyond the movement of people, the metro has been officially sanctioned as a vehicle for inculcating a culture of discipline, order, routine and cleanliness in Delhi. These ideals are in sharp contrast to the congested, unpredictable, chaotic pace of life in Delhi today. But what does the development of a metro have to do with social transformation and discipline? The answer to this question is that the metro has become both a metaphor and a tangible catalyst for achieving the fundamental tenets of a modern society, as was the intention with India's first metro developed in Calcutta (Sanyal, 1987). Inside the metro stations, aesthetics that include an open concept layout, technologically advanced no-touch turnstiles, security cameras and well-appointed station trimmings project an image of progress, order, cleanliness and security. The silver trains with their sleek industrial design, automatic doors, digital signs and climate control are a tangible embodiment of the future. While life outside the station walls may be uncivil, aggressive and crowded, inside behaviour is calm, unthreatening and comfortable. This is the vision for a modern Delhi, as promoted by the politicians and technocrats leading the development of the metro in their media sound bites and inauguration speeches.

In the local neighbourhoods outside the station walls, the metro planners have used construction as a mechanism to reorganize the urban landscape and social fabric. Purposeful landscaping has accompanied the installation of metro stations, replacing garbage and rubble with clearly demarcated defensible spaces. Furthermore, in neighbourhoods across the city, the metro has stimulated property development with an eye towards patterning values and behaviour. Metro officials have proudly led this development. Near the Old Delhi Railway Station, DMRC spokesperson Anuj Dayal boasted to a reporter (Mukherjee, 2002b) that a park will be redeveloped which is 'little less than a den for anti-social elements now'. In the impoverished neighbourhoods of Shahdara and Seelampur, vast swaths of shantytowns and commercial shacks have been cleared and replaced by more sanitary and formalized structures. And in more affluent locations, information technology parks, shopping malls, cafes, restaurants, cinemas and housing projects have been proposed to capitalize on the increased accessibility provided by the metro. Thus, following on their mandate, planners have sought to extend the metro benefits beyond the station walls, and bring increased cleanliness and order to the community.

In this sense, the metro is intertwined with shaping the definition of urban progress in Delhi. The metro is a tangible symbol of hope for the local populace that technology can alleviate many of the challenges associated with a rapidly growing population, such as the provision of efficient urban mobility, sanitary living conditions, employment opportunity and security. The Delhi Metro also fits into a dynamic of interurban competition. With its ultra-modern technology and visually striking design, officials in Delhi have used the metro to stake a claim as a 'world class city' that is ready to compete for attention and investment in the global economy. This image has been propagated by favourable comparisons of the Delhi Metro to other urban rail systems around the world in both the local media and in stories run by international press outlets such as *The New York Times, CNN, The Guardian* and the *British Broadcasting Corporation*. The metro has thus become a vehicle to promote the bright future of Delhi as a high-tech, rationally planned, competitive city, a vision which itself draws heavily on the experiences and imagery of cities around the world.

Evaluation of the Delhi Metro promotional campaign

Overall the promotional campaign launched by the DMRC has been met with a positive response. On a limited budget, metro officials were able to shape public opinion by successfully guiding the intense media attention and through creative programs such as

street theatre, infomercials and volunteer education projects. In May 2004, the *Times News Network* reported ridership on the completed phase I of the metro was 115,000 per weekday, well below initial daily forecasts of 150,000 passenger trips. And according to DMRC managing director E. Sreedharan, the forecasted number of riders by 2005 was revised downwards from 2.2 million passenger trips per day to 1.5 million riders (Saha, 2004). Despite the revision, ridership on the Delhi appears to be well below expectations. As of July 2005, *The Tribune* newspaper reported that the Delhi Metro was carrying an average of 250,000 daily riders, some 17% of the revised ridership forecast for 2005 and 11% of the initial forecast (Sharma, 2005).

This ridership underperformance, at least during the early phases of the Delhi Metro operations, are in line with the findings of Pickrell (1989) and Flyvbjerg and his colleagues (2003) that passenger rail systems rarely achieve their forecasted patronage. In fact, the level of ridership on the Delhi Metro largely parallels the experience of the Calcutta Metro, which was reported by Flyvbjerg's study to have carried 5% of the forecasted number of riders in the first year of operation.

Nevertheless, metro officials insist that the system is breaking even, buoyed by revenue from property development and advertisements. While *The Times of India* reported in May 2004 that fare revenue accounted for at least 200,000 rupees per day, property development and advertising brought in some 1.0–1.2 million rupees in daily revenue. Financially, the metro was more successful as a stimulant for development than as a mover of people.

Despite underperformance in terms of ridership in its first years of operation, while articles have criticized certain elements of the metro development process, few English language newspaper stories in the last four years have directly challenged the overall logic for building the metro or its potential long-term viability. The metro was also popular amongst its users, only 38% of whom had switched from private automobiles. Owing largely to reduced travel times and improved comfort and safety, an independent rider survey reported in *Express India* found that 100% of respondents were in favour of metro expansion (Batra, 2003).

At the same time, the system has achieved an iconic stature in Delhi that transcends the simple movement of people. The metro has become a symbol of hope for the future of Delhi, and a tangible vehicle for social transformation that will one day operate in cities across the entire country. The metro has been featured in Bollywood films, played host to international dignitaries such as Prince Charles and Japanese Prime Minister Junichiro Koizumi, had visits from local children with cancer, been on the cutting edge of using technology to mitigate environmental degradation, and implemented an HIV/AIDS awareness program for migrant workers involved in its construction (DMRC, 2005).

In spite of the unique local context in Delhi, the DMRC's experience with metro promotion is similar to the case of other cities around the world. Even as metro systems are developed for their tangible transit benefits, the cultivation of a symbolic image that pervades the movement of people serves an important role in galvanizing support for large-scale transportation investment.

The paradox of progress

Despite the skilfully cultivated official narrative for the Delhi Metro, the system promoters could not avoid an inherent paradox associated with its development. Accompanying the successful realization of a modern metro railway for Delhi that will reorder the local urban fabric has been a tidal wave of physical destruction and social disorientation, a phenomenon that has been seen in other cities that have developed metro railway systems including Calcutta and New York (Sanyal, 1987; Berman, 1988).

The physical destruction brought on by the Delhi Metro is relatively easy to tally. Along the route that the metro follows, land appropriations were necessary, often with

only minimal compensation. In illegal slum settlements along the Yamuna River, in the impoverished neighbourhood of Shahdrah, at the internationally recognized furniture market district along Punchkuian Road, and at a slew of other locations throughout the city, the direct toll of progress is being exacted by forced expropriation, forever altering the way of life for those being pushed aside.

In their place stand the physical outcrops of modernity: the elevated metro railway corridor and station installations, a train carriage cleaning facility, a new shopping centre complex, a parking lot. This transition has not occurred without a struggle on the part of those being displaced, and protests, petitions, hunger strikes, negotiations and legal action have all been initiated. But their voices have been largely drowned out by the chorus of progress-based narratives backed by a legal framework that gives the DMRC unencumbered right to acquire land it deems necessary for metro operations (Delhi Metro Railway Operation and Maintenance Act, 2002).

More broadly, the metro challenges the foundational tenets of Delhi's economic and social order by acting as a conscious catalyst for neighbourhood revitalization and for shifting the economy of Delhi towards a more formalized, high-tech, service-driven structure. Speaking about the station facilities that will include multinational retail chains such as McDonalds and Domino's Pizza, the Chief Urban Planner for the DMRC noted in an *Express India* newspaper story (Veda, 2002): 'The idea is to improve the way of life around a metro station's neighbourhood'. The development of business parks, shopping malls and mega Cineplexes fits into this logic as well.

However, the efficacy of this strategy to elevate the lives of those in the city's poorest neighbourhoods is questionable. Referring to DMRC efforts to implement their multinational based retail strategy at Shahdara and Seelampur stations in an impoverished neighbourhood of Delhi, an official noted (Veda, 2002): 'we did try to get the brand names to these stations as well, but then they refused. The passengers in these areas are not exactly the burger and pizza eating crowd'. This quote is reflective of the uneven distributional impact that the metro will have in Delhi. As Sharan (2002: 33) has written about the policy thrust of the Indian government: 'there has been a persistent strain of anti-poor bias and the rhetoric of social justice has failed to secure either dignity of life or a clean environment for the majority of the city's inhabitants'.

In a city with such a disparity between rich and poor already, the development pattern consciously stimulated by the metro risks driving a further chasm between the classes. The educated, the wealthy and the powerful are being invited to turn their gaze to the world, to sit down for a Big Mac or a slice of pizza and take advantage of the new employment opportunities in the information technology parks that are being stimulated by the metro. The poor, on the other hand, are seeing their homes disappear for a development they do not have the skills or the income to benefit from; metro fares were raised making it harder for them to afford to ride, and their income earning prospects as hawkers were made illegal.

In Delhi, modern mass transportation also comes accompanied by a sacrificing of individual rights and freedoms. In a society that feels threatened by terrorists, the metro operators have been vested with wide-ranging powers to maintain security (Pandey, 2003). Metal and bomb detectors have been installed at the station entrances, police with automatic weapons and sniffer dogs have been commissioned to patrol the premises, closed circuit cameras linked to a central control centre pervade the system, and all metro officials have been granted the authority to make arrests without a warrant.

Yet the security measures extend beyond those generally employed to prevent terrorism or even assault and vandalism, and seek to tightly control behaviour on the metro. Drawing on a survey of the problems plaguing the world's great metro systems, the Delhi Metro has strictly prohibited food and beverages to prevent littering; posting signs or unauthorized advertisements in the stations or train carriages is illegal; and drunken behaviour or the use of offensive language can be punished by a 500 rupee fine. The metro regulations also take a firm stance on who has legitimate entitlement to access the premises of a modern transit system. Demonstrations upon metro property are

banned. Hawking nick-nacks is illegal. And quoting the DMRC Chief Vigilance Officer (Mukherjee, 2002c): 'even in the US, Paris and London poor people try to look for shelter inside metro stations. We took a lesson from that and decided to create a system in which only commuters with tickets will be allowed inside the paid area'.

Through their suite of security measures, the Delhi Metro is not only seeking to be a safe people mover; it is also striving to inculcate a pattern of public behaviour that accompanies their vision of modernity. This vision of a genteel, orderly, unsoiled space for the metro commuter is in sharp contrast to the conditions that exist beyond the station walls on the streets of Delhi. It reflects an attitude that prioritizes the pleasures of the affluent and the profitability of multinational corporations over the needs of the city's poor.

This pattern of winners and losers is by no means accidental. The Delhi Metro project cannot be fully understood without a brief look at the self-interested and opportunistic behaviour that has accompanied the project. In his study of Asian metro development, Townsend (2003) identifies a broad series of coalitions, including politicians, property owners, planners, business groups and others who unite to guide mass transit decision-making in their favour. Since these relationships have been fairly well studied elsewhere, I will not go into great detail. Needless to say, while the planning and development of the Delhi Metro has entirely avoided accusations of bribery and corruption that often plague major infrastructure projects in India, opportunistic behaviour can be seen as a driving factor behind both the mode of transit and the expensive form that was selected. Below I will highlight a number of ways that opportunism has permeated the development of the Delhi Metro.

- To begin with, the public agency charged with making a final recommendation on the technical specifications of Delhi's new mass transit system had a particular mandate to consult on rail-based projects, and had recently been formed as a spin-off of the Ministry of Railways. With the selection of a rail-based alternative this crown corporation has since become a technical consultant for the Delhi Metro, as well as other national and international urban rail systems, based on the expertise it has gained.
- Later, as the plan for a metro in Delhi was finalized, debate over the final alignment has been largely guided by an officially sanctioned rhetoric of property development considerations. With 3% of the project revenue expected to come from property development and 5% from a land subsidy, the DMRC has become a major property developer, with plans to develop plots of land it has acquired along the route. In recent years, the proposed route alignment has thus been shifted as DMRC officials seek to find locations that can be most profitably developed for high-end business parks, amusement parks and residential developments that will provide the necessary return on investment to make the overall project viable. Simultaneously, it has also stimulated property price hikes in corridors to be connected, as well as land speculation by private developers (Shrivastava and Kumar, 2004).
- As the metro entered into the implementation phase, a business model was devised based largely on outsourcing engineering and construction functions. In order to make such endeavours enticing to the private sector, it became necessary to promote a sense of efficiency and imminence that defied the typical Indian public sector project. To achieve this goal, the development time frame set out by the government was compressed from 10 to 7 years (Sreedharan, 2002), inculcating a sense of urgency. As a constant reminder, clocks counting down the seconds until the project was set to be inaugurated were given to each employee and displayed at many work sites. This perpetual state of urgency made it appear reasonable for the DMRC and contractors to push workers to their physical limits, thus extracting maximum profits. This development approach has contributed to the first phase of the metro being delivered on time and on budget, a feat that defies the norm for Indian public sector infrastructure projects and the international experience of seemingly endemic cost

overruns associated with building urban rail systems (Pickrell, 1989; Flyvbjerg *et al.*, 2003). Nevertheless, even as the project maintained rigorous construction safety standards, the reporting of high stress levels within the ranks of the DMRC staff calls into question the merits of such a high-pressure development approach (Times of India News Network, 2002).

- Private financing for the Delhi Metro has accounted for 64% of the total development cost, and has been provided by the Japanese Bank of International Cooperation under the auspice that the soft loan assistance package is part of a critical investment in the social sector of Delhi (Staff Reporter, 2003). However, the loan has been accompanied by a series of general contracts going to Japanese firms. This has given the Japanese authorities added incentive to make the deal, knowing that not only did the Indian government guarantee the soft loan, but domestic firms would also have a chance to obtain some of the financial benefits.
- Political opportunism has been a constant presence in the creation of the Delhi Metro. The development of such an elaborate metro system can in large part be seen as the result of a polity seeking to construct a monument that could be leveraged for political gain. This required a transport system that not only alleviated Delhi's congestion problem but also embodied symbols of order, progress, hope and international competitiveness. At every turn, elected officials have sought to take credit for the tangible and intangible benefits that the metro will deliver.
- Across the full spectrum of newspapers, the print media in Delhi have taken an overtly favourable position towards the metro project, with very few dissenting opinions being publicized. In return, reporters have been granted extensive access to metro officials, providing a steady stream of human-interest stories related to the project.

In sum, the final form of the Delhi Metro can be largely seen as a by-product of the special interest groups that sought to maximize their own personal gain. Ironically, the metro form that materialized to satisfy each of the special interest groups might be specifically one that fails to suit the transportation needs of the city. With its high capital and operating costs, some people in the planning and academic communities are critical of the metro's viability over the long term. For example, distinguished transport expert Dr Denesh Mohan is on record as saying he does not believe the metro will survive until 2021 due to low ridership, caused by the fact that Delhi is a low-income and low-rise city that is not conducive to metro transportation. In his view, a rapid bus-based system would be more appropriate for the more orbitally focused transportation needs of Delhi (Mukherjee, 2002d). However, such a system may not have embodied the intangible characteristics of a modern world-class transit system that became important in the branding of the metro, and may also not have achieved the special interest goals that guided the specifications of the project. Delhi is thus left in a difficult position; imbued with a beautiful and expensive symbol of progress that may be hard pressed to achieve its functional mandate of alleviating congestion and its by-products.

Conclusion

Throughout history, the active construction of images and myths has served an important function in galvanizing public support for urban rail mega projects, in the face of considerable risk of cost overruns and ridership shortfalls. In Delhi, the successful construction of meaning based on both tangible and symbolic imagery created a public inertia to see the project realized, even in spite of the high development costs, a deeply divided political landscape and a chequered national past with delivering infrastructure mega projects. As development got under way, the project was driven forward by widespread public optimism about the potential for the metro to deliver on its official vision, and help transform Delhi into a modern capital city befitting of the world's largest democratic state and a central node in the global economy. When viewed within the

broader trajectory of infrastructure mega project development, the Delhi Metro experience suggests that mega projects are seductive for their potential to reorder space and culture, the direction of which is increasingly guided by international meanings and aspirations.

Intriguingly, while metro railways in other cities around the world have had their official mythical representations challenged by competing and insurgent visions (Brooks, 1997; Grengs, 2002), the imagery of the Delhi Metro since the project implementation began has gone largely uncontested. Whether the Delhi Metro will actually achieve its stated objectives is still an open question, although to date even a positive image has not been able to attract the predicted number of riders to the system or avoid the creation of physical destruction and social disorientation left in the project's wake. While there is evidence that more recently opened segments of the metro system have the potential to achieve higher ridership and international evidence suggests that public transit systems can take many years to achieve their ridership forecasts, should the overall trend of low ridership persist, over time it is possible that a more critical discourse will emerge surrounding the metro project. Yet at present, with such high hopes riding on the metro, those seen to be publicly critical of the project risk being dubbed anti-progress, a branding that can tarnish a political, bureaucratic or consulting career. As such, construction on the Delhi Metro continues unabated.

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Résumé

A travers le monde, fleurissent toujours plus de méga-projets d'infrastructure même si, à l'usage, ils connaissent souvent d'importants dépassements de budgets et ne réussissent pas vraiment à générer les bénéfices prévus. A cet égard, ces méga-projets trouvent un soutien constant grâce à la manière dont ils sont présentés au public. Comme illustration, l'article choisit l'aménagement d'une ligne de métro à Delhi (Inde) et montre que, pour galvaniser l'intérêt du public et attirer des capitaux au profit d'un réseau de transport public, il a été créé une image positive globale qui combine aux variables matérielles un ensemble immatériel de sens symboliques. Evidemment, l'image n'est qu'une impression et ne reflète pas forcément la réalité. Enfin, dans cette optique, l'article étudie les implications générales physiques et sociétales de l'aménagement du métro de Delhi, et dévoile les dynamiques qui sous-tendent le projet. Il conclut que, malgré la promotion d'une image positive, la forme spécifique de métro élaborée à Delhi dans le but de satisfaire chacun des différents groupes d'intérêt impliqués dans sa création pourrait être justement un type qui ne convient pas aux besoins de transports de la ville.