THE TACTICAL URBANISM ORIGINS OF THE DENVER BIKE SHARING SYSTEM

ABSTRACT

How did one of the most historically automobile-dependent cities in the United States end up with the first modern bike sharing system in the United States? More importantly, how did this city end up with such a successful bike sharing system that has quickly become a symbol for an evolving local transportation culture and a rapidly increasing bicycle mode share? The story is less about transportation demand planning and engineering and more about collectively preparing for and building upon the short-term success of tactical urbanism. That the first bike sharing system in the United States began as a tactical urbanism intervention is quite remarkable and illustrative of the potential of this strategy. Beginning with the preparations for the 2008 Democratic National Convention (DNC) in Denver, Colorado, this paper details what went into creating the temporary, but noteworthy, Freewheelin' bike share system and how that was able to be leveraged in developing a permanent bike sharing system, Denver B-Cycle, just over two years later. Consistent with the key characteristics of tactical urbanism, the DNC served as a strong catalyst to assemble public and private partnerships and local citizens to organize, plan, and promote bicycles as transportation.

.

INTRODUCTION

Despite their current propagation, modern bike sharing systems – those that use technology to check out and track bicycles – have only been around in the United States since Earth Day 2010 in Denver, Colorado. Known as Denver B-Cycle, the Denver bike sharing system had since grown to 53 stations, with 2,700 annual members and over 40,000 short-term members during 2012, and more than 500,000 cumulative rides since opening (Denver B-Cycle 2012). Based on a recent survey of Denver B-Cycle users, 35% reported using bike sharing to substitute for trips they would have taken by car; this suggests that the Denver bike sharing system is responsible for 1.5 million fewer vehicle miles traveled, 73,000 fewer gallons of gasoline consumed, and $1.25M savings in parking costs (Denver B-Cycle 2012). Over that time period, the overall bike to work mode share in Denver has increased from 1.6% to 2.4% (ACS 2012). The extensive data collected via the dissertation work of Duvall (2012) also makes the case that regular users stand to gain substantial health benefits (Duvall 2012). Such a long list of benefits begs the question: How did the ubiquitous red bikes that now dot Denver's downtown end up there in the first place? Moreover, what can we learn from the story that these bikes, and the subsequent successes, have to tell? Not surprisingly, the story is less about transportation demand planning and engineering and more about building upon the short-term success of a temporary tactical urbanism implementation.

While the current incarnation of what is generally known as tactical urbanism sprouted from the first Park(ing) Day in San Francisco in 1995, the movement can trace its roots as far back as 16th century Paris with the pop-up book vendors along the Seine and later the Play Streets of New York and London from the first half of the twentieth century (Lydon, Bartman et al. 2012). The key concept behind tactical urbanism – also known as DIY urbanism, pop-up urbanism, and guerilla urbanism – is the idea that temporary interventions can help garner an understanding of what interventions might work in a particular context and lay the foundation for more permanent ones. This ability for a city to learn can actually be linked to one of the most maligned names in city planning: Le Corbusier (McFarlane 2011). While Le Corbusier's designs may not have stood the test of time, his theory that urbanism can and must be relearned fits right into the creed of tactical urbanists everywhere. Similarly, Bel Geddes' Futurama exhibit at the 1939 World's Fair proved to be an extremely effective way to translate an abstract and fundamentally different envisioning of a city into peoples' minds. For Bel Geddes, the World's Fair happened to be the perfect opportunity for projecting his vision; for Denver's and the heretofore un-American conceptualization of a bike sharing system, that opportunity was found with the 2008 Democratic National Convention (DNC).

In 2007, Mayor John Hickenlooper declared that the forthcoming DNC would be the "greenest in the history of mankind" (Denver B-Cycle 2012). With this proclamation, Denver's long-standing bike community saw an opening that might help it finally break through and push

Denver toward becoming a more bike-friendly city. This paper details the work that went into the 1,000 bike, short-term bike sharing program called Freewheelin' that saw 5,552 rides totaling 26,463 miles over the course of the 2008 DNC (Denver B-Cycle 2012). We then describe the efforts that went into turning this tactical urbanism experiment into a permanent reality, the first of its kind in the U.S. This case study of the Denver bike sharing system is preceded by a review of literature related to both bike sharing and tactical urbanism, followed by a discussion of the lessons to be learned from these incremental planning efforts in Denver.

LITERATURE REVIEW

The existing academic literature strands related to bike sharing and tactical urbanism are still in their infancy. However, neither concept is particularly new. In terms of bike sharing, most of the early implementations were based in Europe and could characteristically be described as poorly organized (DeMaio 2003). Such systems – based upon making older bicycles available free to be used by anyone – typically disintegrated quickly, especially without any security or maintenance strategies in place. With technological advancements came better organization and greater viability, particularly in Western Europe during the late 20th century (DeMaio and Gifford 2004; Shaheen, Guzman et al. 2010). As of 2012, there are more than 165 cities worldwide with public sharing systems – including more than a dozen cities with systems of 100 bikes or more in the United States (DeMaio and Meddin 2012). With this proliferation has come a lot of attention, but until recently, very little academic research (Duvall 2012). Most of this research was published over the last two years with focuses ranging from travel behaviors in China (Shaheen, Zhang et al. 2011) to health outcomes in Spain (Rojas-Rueda, Nazelle et al. 2011). The story that has yet to be adequately told is how we got to this point here in the U.S. More specifically, how could something like a large-scale public bike sharing system – that few believed viable for even the most bike-friendly U.S. cities – first achieve U.S. success in an automobile-oriented city such as Denver? The answer suggests a relationship to the theories of tactical urbanism, which will be explored further in the remainder of this section.

Tactical urbanism, like bike sharing, is an understudied topic in academia. Lydon et al. (2012) list the following five key characteristics of tactical urbanism in their well-regarded guidebooks:

1. "A deliberate, phased approach to instigating change;
2. An offering of local ideas for local planning challenges;
3. Short-term commitment and realistic expectations;
4. Low-risks, with a possibly high reward; and
5. The development of social capital between citizens and the building of organizational capacity between public/private institutions, non-profit/NGOs, and their constituents" (Lydon, Bartman et al. 2011; Lydon, Bartman et al. 2012).

Despite being a somewhat trendy topic, many of the theories that comprise tactical urbanism are not particularly novel. McFarlane (2011) points this out in his paper about the city as a learning machine and the connection to urban change (McFarlane 2011). In other words, tactical urbanism intends to translate and transform knowledge through an informal learning process. The so-called 'learning' process – that is fundamental to tactical urbanism – facilitates an understanding of how different communities (i.e. traffic engineers, urban planners, politicians, business owners, and the general public) respond to interventions (McFarlane 2011). McFarlane goes on to describe a book by Callon et al., which is not about urbanism in the least, but one where the lessons apply (McFarlane 2011). In that work, Callon et al. portray what they call 'hybrid' forums where competing interests create knowledge controversies that can best be solved by collective experimentation (Callon, Lascoumes et al. 2009). Cities certainly have competing interest groups and urbanism is not immune to knowledge controversies between traffic engineers, urban planners, politicians, business owners, and the general public. Tactical urbanism is thus a great response for critically assessing uncertainty and facilitating knowledge toward city relearning. In the words of Anaclaudia Rossbach, the director of a Brazilian foundation that addresses urban poverty: "Talking is important, but I guess seeing it on the ground… you see that it has credibility" (McFarlane 2011).

This brand of straightforward, iterative thinking that tactical urbanism promotes seems to help provide a foundation for the emergence of new urban paradigms. The bike sharing system in Denver adhered to these theories of iterative urban learning, and it is difficult to say that the system would have been fully implemented otherwise. The following sections detail that evolution of the Denver bike sharing system from a tactical urbanism intervention – initially promoted as a temporary green transportation solution for a major event – into a potentially transformative permanent solution for a city.

CASE STUDY

A major component of the planning process for the August 2008 Democratic National Convention (DNC) in Denver was a goal to reduce the carbon footprint of the event. Mayor John Hickenlooper's Greenprint Denver initiative had previously assembled specialized personnel to improve the environmental sustainability of the city, and several Greenprint personnel became involved with DNC planning efforts. In late 2007, a bike-sharing subcommittee emerged to study the possibility of conducting a temporary bike sharing experiment during the DNC. The subcommittee established partnerships with Bikes Belong, a bicycle industry national advocacy group, and Humana Healthcare, a private healthcare company. Bikes Belong worked with bicycle companies to acquire new bicycles donated for the project, while Humana provided funding for project management and staff. Individuals from local bicycle groups, such as the

Denver Mayor's Bicycle Advisory Committee, BikeDenver, and Bicycle Colorado contributed practical knowledge and volunteer time to the project. All entities involved saw the main benefits of the project as a way to present the concept of bike sharing on a national stage and to expose convention attendees to the concept of utilitarian bicycling. More importantly, they saw this as an opportunity to expose bike sharing to local residents and the powers that be.

During the eight months preceding the DNC, the bike-sharing subcommittee met several times a week to plan and coordinate the temporary bike-sharing project, known as "Freewheelin'." The subcommittee developed detailed plans for six temporary station locations in central Denver to be staffed by volunteers during the four days of the convention (Duvall 2008). The plans were informed by local knowledge and community engagement, where members of the local bicycle community were asked to provide ongoing feedback and research. Agreements were secured for land access for the station sites, procedures and technology were developed to assemble and manage the fleet of bikes, staff and volunteers were recruited and trained, and safety and security protocols were coordinated with the Denver Police Department and the Secret Service.

The project catalyzed the local bicycling community to develop stronger connections, empowering the main advocacy group BikeDenver to evolve from a casual collective to a more professional organization. The Mayor's office was extremely pleased with the accomplishments achieved in a short time, and even before the DNC project had been conducted, the Mayor called upon the assembled group to envision a more bike-friendly Denver. Approximately 30 key individuals met in July 2008 to identify goals toward inducing more of the population to incorporate bicycling for transportation into daily life and to begin plans for a permanent bike-sharing system to be developed and implemented as soon as possible (Duvall 2008).

The Freewheelin' project quickly became a prominent public face of the sustainability efforts of the convention and received prominent media attention. Denver and DNC officials encouraged convention attendees and the general public to use Freewheelin' bikes or privately owned bikes to reduce traffic congestion. Suddenly, bicycling had become popular with the public as the fastest way to traverse downtown Denver, which was choked with traffic and security checkpoints for the convention. During the final day of the convention, more than 500 of the shared bikes and more than 1,000 privately owned bikes were parked at Invesco Field for then-candidate Barack Obama's acceptance speech.

Following the success of the Freewheelin' bike sharing system during the DNC, Greenprint Denver served as an incubator for the development of permanent bike sharing in Denver. BikeDenver and Greenprint jointly fostered the Denver Bicycle Initiative, a continuation of the

effort of the bike-sharing subcommittee for the DNC. So when the 2008 Denver Host Committee was looking to make a charitable donation that would benefit the city, they decided to donate $1 million to establish Denver Bike Sharing, a non-profit set up to own and operate the eventual permanent bike-sharing system (Denver B-Cycle 2012). Local civic and business leaders gathered their support behind Denver Bike Sharing, assisting with legal work and additional fundraising. The City of Denver was verbally supportive of the development of Denver Bike Sharing, but the project was funded entirely through private means (Denver B-Cycle 2012).

An aftereffect of the DNC Freewheelin' bike-sharing project was the development of B-cycle, a bike-sharing equipment vendor under the direction of Trek Bicycle Corporation. B-cycle partnered with Denver Bike Sharing in development and field-testing of its bike-sharing equipment. Early iterations emerged as small test fleets. In 2009, 20 retrofitted bikes and two stations were made available to Denver city employees. A second test fleet used 40 purpose-built bikes, for use only by Denver University students. Finally, on April 22, 2010, the Denver B-cycle system came online, initially with 410 bikes at 41 stations around downtown Denver.

In tandem with the development and testing of equipment, the City of Denver made efforts to underscore a stronger commitment to supporting bicycle use. Denver hired its first dedicated bike/pedestrian planner in mid 2009 and began concerted efforts to expand and connect its on- and off-street bicycle facilities. Concurrently, Denver Moves – a project intended to develop a comprehensive plan to support bicycling options in the city – began. Community engagement informed the core of the Denver Moves plan, which outlines infrastructure, policy, and social goals, including a 15% bicycling and walking commute mode share by 2020 (City and County of Denver 2011). Many of the individuals and groups central to the development of Denver Moves first came together in the effort to plan for the DNC bike-sharing project.

DISCUSSION

As described in the preceding case study, the coordinated effort to develop the temporary Freewheelin' bike-sharing system for the 2008 DNC was the primary catalyst for wide scale implementation of Denver B-Cycle, where bicycling is now more integrated into daily life. Riders of the distinctive red bikes are now visible on nearly any street in central downtown, and the bikes have become iconic of Denver itself. It is not unusual to see the red bikes at outdoor public events, sports venues, or even in wedding processions. Three consecutive Mayors of Denver have been photographed on the red bikes at multiple events. Denver B-cycle has conspicuously become woven into the social fabric of the city.

Beyond the fleet of Denver B-cycle bikes, bicycling in general has been on the rise in Denver since the 2008 DNC. Between 2005 and 2008, the bicycle commuter mode share in Denver ranged between 1.4% and 1.8%; in 2010, the figure rose to 2.2% and then again to 2.4% in 2011 as depicted in Figure 1 (League of American Bicyclists 2009; ACS 2012). Part of this rise is attributable to Denver B-cycle: With highly visible B-Cycles on the street, more people are compelled to also bicycle, whether on shared or private bicycles. Coupled with efforts to improve bicycle infrastructure and to promote bicycle use, Denver has made dramatic progress in a short period of time. Other, related efforts soon followed. For example, the city's recent passage of a new transportation policy for "moving people instead of cars" (City and County of Denver 2011) has helped maintain the city's momentum for transforming its urban environment toward decreased car dependency and increased placemaking, health, and quality of life (Frank, Andresen et al. 2004; Lucas 2009).

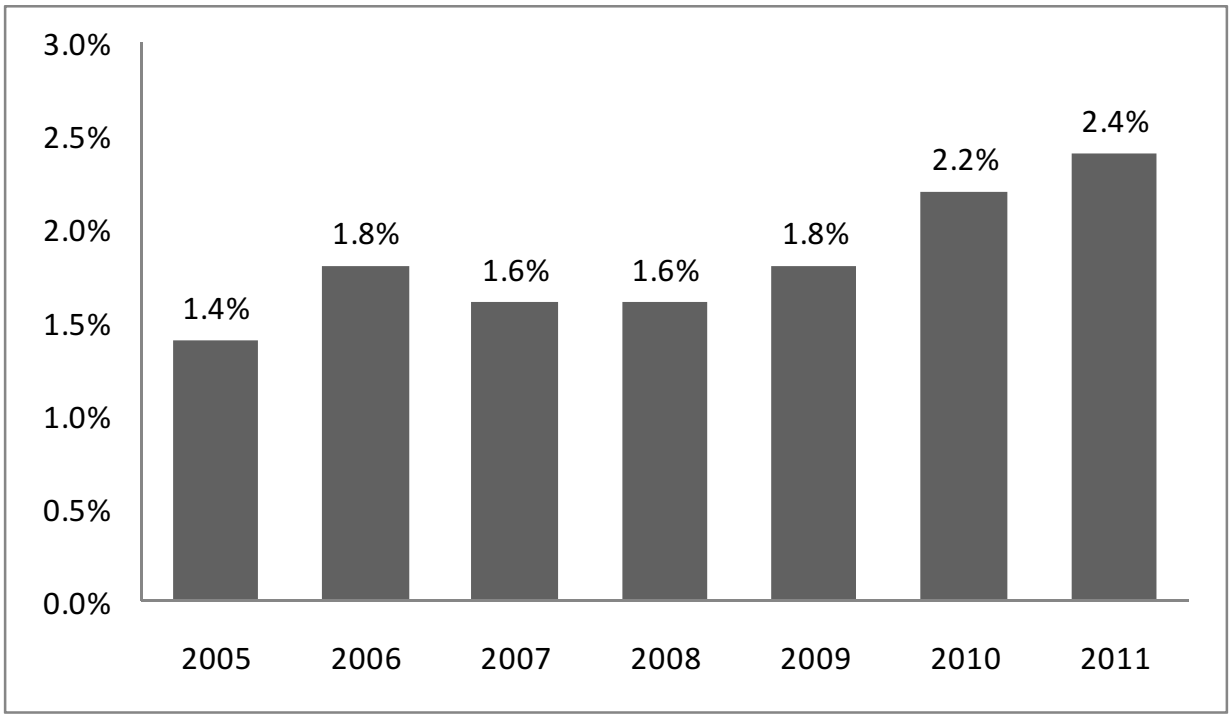

FIGURE 1 Bicycle Mode Share to Work for City of Denver (League of American Bicyclists 2009; ACS 2012).

The presence of Denver B-cycle stations in a neighborhood or council district is emblematic as an improvement to the built environment of a community. In evidence of this, Councilman Paul Lopez issued a vote in protest of the expansion of the system (Meyer 2012). However while Lopez is supportive of Denver B-cycle, he would like for the system to be more available to citizens of his district (The Denver Post 2012). Denver B-cycle, as a non-profit and fairly new entity has a limited budget for expansion. Thus, it receives far more requests for more station locations than it is currently able to accommodate. Yet, it is illustrative of the strength of striving for improvement of community quality of life that this new concept has already been identified as a desirable, aspirational element.

CONCLUSIONS

That the first bike sharing system in the United States began as a tactical urbanism intervention is quite remarkable and illustrative of the potential of this strategy. What was initially designed as a temporary green transportation solution for the Democratic National Convention in Denver, Colorado, 2008 is now among the most successful U.S. bike sharing systems in a city historically known for its high dependence on automobiles. Consistent with the key characteristics of tactical urbanism described by Lydon et al. (2012), the DNC served as a strong catalyst for bringing together public and private partnerships and local citizens to organize, plan, and promote bicycles as transportation. The city gained considerable local and national acclaim for its temporary Freewheelin' program and was able to leverage its learning, success, and capital (political, economic and social) in developing a permanent bike sharing system, Denver B-Cycle, just over two years later.

Bike sharing in the U.S. is still in nascent stages but is likely to spread to numerous cities in the coming years. Not every city in which a bike sharing system is implemented will have a high profile event in which the community is galvanized to support bicycling, but if such opportunities arise, they can be of great benefit. Plus, lessons such as those learned in Denver can advance urban policy transfer across other cities (Sutcliffe 1981; Masser and Williams 1986; Nasr and Volait 2003; King 2004; McCann and Ward 2010). Nevertheless, Denver would probably not have accomplished the same level of achievements it has experienced during a four-year timeframe without the cooperative efforts leading up to the 2008 DNC. A tactical urbanism approach inspired by the pursuit of temporary bike sharing has led to long-term positive impacts in transportation bicycling in Denver, and contributed to desirable outcomes for the community at the present, and for years to come.

REFERENCES

ACS (2012). American Community Survey. Washington, D.C., U.S. Census.

Callon, M., P. Lascoumes, et al. (2009). Acting in an Uncertain World: An Essay in Technical Democracy. Cambridge, MA, MIT Press.

City and County of Denver (2011). Denver Moves: Making Bicycle and Multi-Use Connections. Denver, CO, City and County of Denver: 45.

DeMaio, P. J. (2003). "Smart bikes: Public transportation for the 21st century." Transportation Quarterly 57(1): 9-11.

DeMaio, P. J. and J. Gifford (2004). "Will smart bikes succeed as public transportation in the United States?" Journal of Public Transportation 7(2): 1-15.

DeMaio, P. J. and R. Meddin. (2012). "The Bike-sharing Blog." Retrieved December 13, 2012, 2012, from http://bike-sharing.blogspot.com.

Denver B-Cycle. (2012). "Denver B-cycle Pedals Past Half-Million Rides." Retrieved December 10, 2012, from http://denver.bcycle.com/News.aspx?itemid=313.

Denver B-Cycle. (2012). "The Denver Bike Sharing Story." Retrieved December 10, 2012, from http://denver.bcycle.com/About/OurStory.aspx.

Duvall, A. (2008). Democratic National Convention in Denver Freewheelin Bike Sharing System: Summary Report. Denver, CO, Office of the Mayor, City and County of Denver: 3.

Duvall, A. (2008). Meeting Minutes for the Bike-Sharing Subcommittee of the Denver 2008 Host Planning Committee.

Duvall, A. (2012). Public Bicycle Sharing as a Population-Scale Health Intervention for Active Transportation in Denver, Colorado. Health and Behavioral Sciences. Denver, Co, Unviersity of Colorado Denver. PhD Dissertation.

Frank, L. D., M. A. Andresen, et al. (2004). "Obesity relationships with community design, physical activity, and time spent in cars." Am J Prev Med 27(2): 87-96.

King, A. D. (2004). Spaces of global cultures: architecture, urbanism, identity London, Routledge.

League of American Bicyclists. (2009). "Bicycle Commuting In the 70 Largest U.S. Cities." Retrieved December 10, 2009, from http://public.sheet.zoho.com/public/bikeleague/70largest-cities-1.

Lucas, K. (2009). "Actual and Perceived Car Dependence." Transportation Research Record 2118(2009): 8-15.

Lydon, M., D. Bartman, et al. (2012). Tactical Urbanism 2. New York, The Street Plans Collaborative.

Lydon, M., D. Bartman, et al. (2011). Tactical Urbanism: Beta. New York, The Street Plans Collaborative.

Masser, I. and R. H. Williams (1986). Learning from Other Countries: The Cross-national Dimension in Urban Policy-making. Norwich, Geobooks/Elsevier.

McCann, E. and K. Ward (2010). "Relationality／Territoriality: Toward a Conceptualization of Cities in the World " Geoforum 41: 175-184.

McFarlane, C. (2011). "The city as a machine for learning." Transactions of the Institute of British Geographers 36: 360-376.

Meyer, J. P. (2012). Denver B-Cycle program faces criticism that it skirts poor, minorities. The Denver Post. Denver, Colorado.

Nasr, J. and M. Volait (2003). Urbanism: Imported or Exported? . Oxford, Wiley-Blackwell.

Rojas-Rueda, D., A. d. Nazelle, et al. (2011). "The health risks and benefits of cycling in urban environments compared with car use: health impact assessment study." British Medical Journal 2011(343).

Shaheen, S. A., S. Guzman, et al. (2010). "Bikesharing in Europe, the Americas, and Asia: Past, Present, and Future " Transportation Research Record 2143(2010): 159-167.

Shaheen, S. A., H. Zhang, et al. (2011). "Hangzhou Public Bicycle: Understanding Early Adoption and Behavioral Response to Bikesharing in Hangzhou, China." Transportation Research Record 2247: 34-41.

Sutcliffe, A. (1981). Towards the planned city, Germany, Britain, the United States , and France, 1780–1914. Oxford, Basil Blackwell.

The Denver Post (2012). Denver City Council passes Denver B-Cycle expansion. The Denver Post. Denver, Colorado.