

Alternatives to the Automobile in the Indian City

*By Henrik Valeur, 2013**

For the past century, the automobile has captured the imagination of people around the globe and for many, it still constitutes the ultimate symbol of having achieved middle-class status. According to a rapidly-growing number of academic studies, however, the automobile may have detrimental effects on human health and life quality, especially in cities, where the concentration of automobiles contributes significantly to pollution, environmental degradation, social isolation, stress and physical inactivity.¹

The following two cases from Bangalore and Chandigarh may not only provide inspiration for the creation of car-free environments in cities but may also cast light on some of the difficulties in creating those environments.

1. IISc Campus

Bangalore is one of the biggest and fastest-growing cities in India. It is also home to the Indian Institute of Science (IISc), which was founded by Jamsetji Tata in the early 20th century. Tata also founded what would later become India's largest industrial conglomerate, the Tata Group, which includes Tata Motors, the manufacturer of Tata buses and Tata trucks, both of which are major contributors to road accidents and traffic-related noise and air pollution in Indian cities.

Ironically enough, one of the few places in Bangalore where you will *not* find these vehicles is on the campus of the IISc. This is a very green campus with a healthy, honk-free environment. But as with the rest of the city, the number of cars and two-wheelers is rapidly increasing. To reverse this trend, two different projects have been initiated.

1.1 Bicycle Sharing

In August 2012, the Namma Cycle service was launched at the IISc campus. The idea was conceived 3-4 years earlier by an informal group of bicycle enthusiasts, headed up by Murali Ramanath, who had been to Paris, where he had seen what was then the newly launched *Vélib'* (short for “bicycle freedom” in French) – a highly advanced bicycle sharing system with about 16,000 bicycles and 1,200 bicycle stands scattered across the city.

Initially, Murali and his friends had thought of launching such a service at the Electronic City in Bangalore. But due to the chaotic traffic situation and the lack of proper infrastructure, it was deemed unsafe there. Instead, it was launched at the IISc, with a donation of 150 bicycles from the BSA bicycle manufacturer and with the Center for Infrastructure, Sustainable Transportation and Urban Planning acting as the local anchor.

The IISc had previously tried to implement a similar system, using bicycles that students would leave behind after they graduated. However, without proper management and maintenance, people were simply abandoning these bicycles because of a flat tire or other technical problems and in no time, the campus was veritably littered with defunct bicycles. Today, there are 75 Namma bicycles operating from five stands located at the busiest points on campus (the dormitories, the canteen and the clusters of department buildings).

As a user, you only start to pay for using the bicycle after half an hour of use. When asked about this, Murali says that the idea of bicycle sharing is “*sharing, not owning*”. The intention is to encourage people to *return* the bicycle as soon as they are no longer using it.

In the local Kannada language, *Namma* means “ours”.

Lavanya Keshavamurthy, another member of the Namma Cycle team, says, “*the*

idea behind getting people to use and return a cycle within 30 minutes at zero cost has its roots in our philosophy of holding onto resources only for the duration that we really need, thus, having enough for everyone with minimal resources”.

“Cycling” may thus refer to both bicycling and recycling.

There are about 3,000 students, faculty members and staff at the IISc. Just before summer vacation this year (2013), there were 300 registered users of the Namma Cycle service. The statistics show an upward trend over the past year in terms of the number of daily trips (from 2-3 trips per bicycle per day in December 2012 to around seven trips per bicycle per day in May 2013). By July 2013, more than 7,000 trips had been made, by both registered and non-registered users, and 65 percent of those trips were of less than half an hour’s duration.

It is hoped that the number of users and bicycles will steadily increase in a positive self-reinforcing cycle. However, with fees and subscriptions accounting for only 5 percent of the total revenue, the service, like similar services elsewhere, is heavily dependent on grants and sponsorships from both private and public sources.

The software used for registration and by station managers to keep track of the bicycles has been developed by Gubbi Labs and is intended as an open-source software that can be used free of charge by similar services in other places. In fact, the initiative at the IISc can be seen as a pilot project, which could also be implemented on other campuses and/or on a larger city-scale. But in order for such a service to work citywide, the authorities need to provide safe spaces for bicycling.

Bangalore city recently launched another bicycle sharing service with a few small stands located at the new metro stations but since there are no safe bicycle lanes around the metro stations and since there are very few bicycle stands in the city, this service is hardly used at all. Implementing such a service without properly integrating it in the city may result in the opposite of what was originally intended.

1.2 E-vehicles

In addition to the Namma Cycle service, the Center for Infrastructure, Sustainable Transportation and Urban Planning has also made a proposal for an “e-mobility” service based on extra-large electric golf carts that would shuttle along designated routes on campus.

According to Gururaja Acharya, a member of the design group, the inspiration came from similar services in the historical city of Hampi and at the Infosys’ hi-tech campus in Mysore. The proposal was made in response to growing concerns over the increasing numbers of motor vehicles entering the campus of the Indian Institute of Science every single day. Today, motor vehicles account for about 50 percent of all trips on campus while walking and bicycling make up the other 50 percent.

Surveys indicate that even though a significant number of campus trips (one-third) are made by non-campus residents, who enter through one of the four main gates of the campus, most trips (2 out of 3) are made by campus residents, between the areas where students’ dormitories and staff quarters are located and certain clusters of department buildings and common facilities, like the canteen and library. Peak hours are identified as being in the morning, around lunch and in the afternoon/ evening.

The fact that demand is not equally distributed over space or time constitutes a classic dilemma of transport planning and solutions will often result in either insufficient or excessive capacity. More complex operational schedules with differentiated frequency for different time slots and different routes and with a concomitant integration of the bicycle-sharing service could help to solve this dilemma.

Switching from (private) vehicles running on gasoline or diesel to (public) vehicles running on electricity would reduce both air and noise pollution on campus, which would be beneficial, if for no other reason than that it would have a positive effect on the students’ learning abilities. It would, however, not reduce overall greenhouse gas

emissions if the electricity were to come from the national grid, because most of the electricity in India is produced by coal, which makes electrical vehicles potentially even more harmful to the global environment than traditional motor vehicles! Therefore, there has been a hope that solar panels would be installed on the roofs of the e-vehicles in order to make them self-sufficient with low emission electricity.

The aim of the E-Mobility project was to make the campus free of polluting vehicles within the next few years.² To achieve this, the E-Mobility and the Namma Cycle services would have to be seen as complementary rather than as competing services and should ideally be planned and managed by the same entities. This could yield considerable operational benefits and could make the services more user-friendly while expanding reach and increasing connectivity. It could also help solve the capacity dilemma. Bicycles could, for instance, provide an alternative to e-vehicles during peak hours and could be used to reach locations that are not served by E-Mobility while the e-vehicles may offer a convenient alternative to the bicycle when it's raining or when one happens to be feeling lazy.

Surveys indicate that the majority of potential users are willing to pay the proposed fare of Rs. 5 per trip, which should be enough to cover operational costs. Capital costs, of which the investment in e-vehicles is by far the largest, may be (partly) recuperated through sponsoring and income generated from advertising.

Parking facilities for motor vehicles would have to be constructed at the four main gates of campus, but this would transpire in a later phase. In the first phase, a single e-vehicle would be operated to test the system and provide user feedback.

The planning of the e-mobility routes would obviously have to be adapted to the existing situation but how these routes were planned would play an important role in how the campus develops in the future, seeing as new facilities and activities will probably try to align themselves closely with this service. E-Mobility – if well planned – could therefore not only help make the campus “greener” but could also

help preserve actual green spaces!

Namma Cycle stations and E-Mobility stops would have to be strategically placed around campus and parking lots should be situated in the immediate vicinity of the four main gates of campus. E-vehicles should be solar-powered and a pollution-free system for deliveries and garbage collection on campus would also have to be devised.

With such an integrated solution that would be implemented in phases, as an ongoing learning process (how appropriate this would be for a university!), the IISc campus could become a paradigmatic example of how to create healthy urban environments for human development!

Unfortunately, the plans for E-Mobility, which were developed by the institute's own experts, have been trashed by the authorities of that same institute.

2. Car-free Sector 19

Like Bangalore, Chandigarh used to be called a garden city. The city consists of about 60 sectors, most of which have been planned according to one and the same principle of organization: a market street and a green belt laid out perpendicular to each other, thus dividing the sector into four equally large parts. Commercial activities are located around the market street while public institutions and facilities are located around the green belt. Dwellings are divided into four subcategories located in each of the four "corners" of the sector and served by secondary streets.

Most of the sectors also have the same dimensions, namely 800 by 1200 meters, which is ideal for walking and cycling, while the "rational" grid of roads running between the sectors is ideal for driving cars, although it would also be ideal for trams or a bus-rapid-transit system. However, as things stand, the bus system is malfunctioning, cyclists have to navigate some rather dangerous roundabouts at

every intersection of the roads and pedestrians are, in many places, prevented from crossing between sectors. Thus, with no other viable alternative to provide transportation between the sectors, cars have proliferated, not only on the grid roads, where they have created congestion, but also within the sectors, where the environments are deteriorating and where the public spaces are being converted into parking places.

The late Indian architect, Aditya Prakash, who had been a member of the original design team for Chandigarh and later became the first principal of Chandigarh College of Architecture, said: *“When I was young... we could still use the street for anything that we wanted including sleeping at night. We did not realise while planning urban space that the automobile would be the greatest devastator of a city.”*

While Chandigarh was designed in the image of the “modern” European city, without much consideration for the qualities of the traditional Indian city, many European cities are now adopting the image of the traditional Indian city that Aditya was talking about, i.e., fewer cars and more human activities. And maybe this is one of the great tragedies of our time: *despite all the available means and opportunities, we know so little about each other.*

While I was in Chandigarh, I worked with some of the students from Chandigarh College of Architecture on a number of proposals for the new master plan of the city. One of these proposals was to make Sector 19 car-free. Sector 19 was one of the first sectors to be developed and it was chosen because of its generic layout, which would presumably make the solutions developed here more easily applicable to other sectors.

The idea was quite simple. The sector has four entrance points and we proposed to construct parking lots at each of these, two above the ground and two below the ground. Because the entrance points are diametrically positioned, two at either end of

the market street and another two at either end of the green belt, the maximum walking distance from the parking lot to any one home would be about 300 meters. For the transportation of physically disabled people, deliveries, garbage collection, etc., we proposed to have a mix of cycle rickshaws and solar-powered rickshaws.

We also proposed to make bicycle lanes in the market street and through the green belt. These lanes would connect to the four entrance points, where there would be safe crossings for pedestrians and bicycles to the market street or to the green belt of the adjoining sector. The crossings would be equipped with traffic lights, which would also make it possible to control traffic in the notoriously chaotic roundabouts (respectively, 400 and 600 meters away). At the crossings, there could be stops for trams or rapid buses, where people could conveniently get on and get off.

By removing all cars from the sector, a lot of space is liberated. It is estimated that about 25 percent of the total surface area of the sector is currently used by cars, either for driving or parking, and much of it is covered with asphalt. All of this asphalt, which contributes significantly to the overheating of the city, could be removed, and instead, eco-friendly pathways for pedestrians, bicycles, and cycle- and solar-powered rickshaws could be constructed. These would be much narrower, though, still providing sufficient space for emergency vehicles.

The liberated space could be used for communal activities, such as playgrounds, sports fields and community kitchen gardens. Some of this space could also be used to accommodate the people who work in the sector but live in villages, slum areas and rehabilitation colonies on the outskirts of the city. When the cars are not parked right in front of the houses but rather a few hundred meters away, in a parking lot, much more shopping, in fact, and many more activities could take place locally. This would help to reinvigorate the decaying market street, which could be made much more bazaar-like. In fact, a lot of space that is currently used for parking on the market street could be leased out to commercial activities. This could, in turn, pay for the new parking facilities at the sector's four entrance points.

Our proposal to make Sector 19 car-free was undoubtedly going to be met with opposition from some of the citizens, maybe not so much because they would have to walk a bit more but because they would “lose” an important – perhaps *the* most important – status symbol. Or, as one of the students put it: “*If the car is no longer parked in front of your house, why have a car at all?*”

We submitted the proposal to the Master Plan Commission in December 2010 and nothing happened, not at least until September 2011, when the High Court of Punjab and Haryana, while hearing a petition to introduce so-called “eco-cabs” and discussing the issues of traffic congestion and pollution in the city, directed the Union Territory Administration of Chandigarh to declare, as a test project, one of its sectors vehicle-free – suggesting that the right choice could be Sector 17.³ This is the commercial center of the city, and may therefore be the most obvious sector to start with, since there are many successful examples of making shopping areas car-free from all around the world, including, of course, the traditional north Indian bazaar. However, because the organizational principle of this sector differs markedly from that of all the other sectors, it may be difficult to make use of solutions from here in other sectors of the city.

However, in a strange gesture of rebellion, the Union Territory Administration, in March 2012, decided to chop down 60 grand old trees in Sector 17 to facilitate the construction of an overpass for motor transport in the middle of the sector!⁴ This occurred only days after the very same administration had told the High Court that it had decided to make Sector 17 a vehicle-free zone – in phases (!) – and asked for more time to prepare plans for working this.⁵ Then, in July 2012, the Union Territory Administration told the High Court that it would not be feasible to convert Sector 17 into a vehicle-free zone.⁶ A year later, in July 2013, a draft for the new master plan of Chandigarh 2031 was released. It does not make a single mention about making Sector 17 – or any other sector, for that matter – car-free. However, it does adopt our notion of having bicycle lanes set up through the green belts, but *not* running across and through the market streets. So, in effect, the cyclists will presumably only be

traveling in one direction.⁷ As for Sector 19, the Municipal Corporation decided to construct a small jogging path in the park there.⁸

3. Conclusions

The distinguished British architect Lord Rogers recently predicted that: “*There will be a widespread ban on cars in London within the next 20 years*”.⁹ Over the past hundred years, more and more cars have been added to the streets of European cities, but because this “progress” has been happening over such a relatively long span of time, drivers, planners and authorities have had time to adapt and adjust.

In contrast to this, many Chinese cities have witnessed an explosive growth of private motorized transportation over a much shorter period of time, which has forced authorities to react in a kind of emergency mode. Thus, a growing number of Chinese cities are now introducing a vehicles quota, “*as public anger grows over worsening congestion and air pollution*”.¹⁰

In both Europe and China, regardless of the widely divergent political systems found in these respective regions, it is the concerned citizens, activists and experts who are pushing the authorities to act. In many Indian cities, private motorized transportation is growing even faster than in China and the problems are in no way less severe. Several initiatives are being taken to reverse this trend but in too many cases, they are met with resistance rather than with support from the relevant authorities.

As the cases here demonstrate, if the authorities do not want to play ball, the activists and the experts, and even high court judges, cannot really do anything to change the situation. The lessons from both the East and the West are that citizens have to actively *push* the authorities to act. For citizens to react, however, against something that most of them see as an important symbol of status, they first have to understand the gravity and the urgency of the problem. They have to understand what the alternatives are and understand how these can be implemented. In this respect, what

activists, experts and others are doing is extremely important, even if the immediate effects appear to be limited.

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Notes

¹ Source: *The horrendous costs of motorized transportation in (Indian) cities*; Henrik Valeur; 2013

² Source: *IISc E-Mobility Project: Preliminary Service & Operations Plan*; CiSTUP and EMBARQ; 2012

³ Source: *Declare a sector vehicle-free: HC*; Times of India; September 24, 2011:

http://articles.timesofindia.indiatimes.com/2011-09-24/chandigarh/30197843_1_vehicle-free-ut-bench

⁴ Source: *Protests held after MC chops 60 trees at Sec 17*; The Indian Express; March 12, 2012:

<http://www.indianexpress.com/news/protests-held-after-mc-chops-60-trees-at-sec-17/922619/>

⁵ Source: *UT to make Sector 17 vehicle-free*; The Indian Express; March 8, 2012:

[http://m.indianexpress.com/news/"22ut-to-make-sector-17-vehiclefree"22/921535/](http://m.indianexpress.com/news/)

⁶ Source: *Not feasible to turn Sector 17 into vehicle-free zone: UT to HC*; The Indian Express; July 7,

2012: [http://m.indianexpress.com/news/"22notfeasible-to-turn-sector-17-into-vehiclefree-zoneut-%20to-hc"22/971310/](http://m.indianexpress.com/news/)

⁷ Source: *Chandigarh Master Plan 2031*; Chandigarh Administration:

http://chandigarh.gov.in/cmp_2031.htm (accessed December 17, 2013)

⁸ Source: *Sector 19 to get jogging track soon*; Times of India; April 28, 2013:

<http://timesofindia.indiatimes.com/city/chandigarh/Sector-19-to-get-jogging-track-soon/articleshow/19762205.cms>

⁹ Quoted from: *'No place for cars' in cities of the future*; The Times; July 15, 2013:

<http://www.thetimes.co.uk/tto/public/cyclesafety/article3816510.ece>

¹⁰ Quoted from: *China Seen Widening Car-Purchase Limits to Fight Pollution*; Bloomberg; July 10,

2013: <http://www.bloomberg.com/news/2013-07-10/china-to-widen-car-purchase-curbs-to-fight-pollution-group-says.html>