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Silver Linings on Metro Manila's Traffic Miseries

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SILVER LININGS ON METRO MANILA'S TRAFFIC MISERIES (CAN METRO MANILA'S TRAFFIC WOES EVER DISAPPEAR?)

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Abstract

Traffic congestion is often associated with megacities, of which the Greater Metro Manila is 5th largest in the world. Its traffic problem, however, is bruited about as "world class". This distinction is the by-product of an inability to address infrastructure gaps, a disregard of well-studied plans over the last (three) decades, and piece-meal efforts at adopting scientific solutions. This paper re-visits the root causes of the problem and redefines the changing objective function – from maximizing vehicular to people flows.

Lessons from other cities have demonstrated a multitude of congestion antidotes that have gained the status of best practices. Some of these have been called Transportation Systems Management (TSM) and Transportation Demand Management (TDM). More roadways and more rail transit lines have been the traditional response to traffic congestion. TSM/TDM has expanded the menu of solutions – to include actions to reduce the use of single-occupant vehicles, regulate travel demand in time and space, designation of exclusive lanes for higher occupancy vehicles. In Metro Manila, this strand has taken the form of vehicle number coding, flirtations with staggered working hours, one-way schemes, reversible lanes, computer-coordinated traffic signaling system, and widespread adoption of retrograde U-Turn schemes.

The limits to road building dictate that more people should share rides by taking public transport and minimizing car use. That would necessitate a radical re-invention of the public transport system that has been caught – with consent - on a low performance equilibrium trap in the last 40 years. It is a low-cost measure with high pay-offs, but one that is most difficult to execute. No one would dare confront the elephant on the roads: the jeepneys (>60,000) and the metro buses (>5,300) with their atomized operating structure. Very little is being done on land use controls which has long-term impacts, while road pricing is talked about but avoided like a plague.

There is no silver bullet in solving traffic congestion; it requires a comprehensive set of measures implemented over several years. In terms of master plans, Metro Manila has not been lacking. There was the MMETROPLAN of 1975 which brought about the LRT 1 and the now-forgotten bus ways on Magsaysay Boulevard. This was followed by MMUTSTRAPP in 1984 and the MMUTIS in 1998. Some components of these plans were implemented – but they were Sisyphean in character. All of the three plans from 1975 to 2011 were constrained by small budget envelopes of recent vintage is the Transport Roadmap for the Greater Capital Region, which included a bold 'dream plan' to vanish traffic congestion by year 2030. It requires massive investments in infrastructure: 137 km of new roads, 78 km of urban expressway, and more than 200 km rail transit lines – elevated and underground. It also calls for a radical restructuring of the current surface public transport system comprising the jeepney and bus modes. The dream plan is estimated to require Php2,600 billion to fix traffic congestion that is costing the economy Php2.4 billion a day. Unlike the previous three plans, this one can fit into the projected budget envelope to year 2030. The prospect of relief, however, is clouded by institutional arthritis – an inability to execute projects of the transport kind. It is hard to imagine 200 km of rail lines being built in 15 years, when 4 km could not even break ground in 5 years.

A black swan event – such as a massive earthquake - could finesse institutional rigidities. Rapid diffusion of new technologies, like autonomous cars and smart roads, as well as increasing global pressure towards green transport offer more sanguine prospects to end traffic woes. Growing discontents with traffic jams may just be the *deus ex machina* that would shake up lethargic public sector agencies and put an end to the jeepney mentality.

Introduction

Traffic congestion is common in many capital cities of the developing world because of rapid and concentrated urbanization that exceeds capacities – both financial and technical – to respond. But Metro Manila's problem is uncommon: it has the reputation of the 10 worst traffic jams in the world, of which three are from Asia, viz.: Bangkok, Jakarta and Manila. One metric that cities used to measure their traffic condition is the number of extra hours spent on the roads while commuting. In the 10 most congested cities in the USA, 42 hours spent on traffic jams a year was deemed unacceptable. That would be heaven for Metro Manila, accustomed as it is with more 300 hours a year wasted on traffic jams. Lack of planning is often cited as the culprit, but four master plans in the last four decades belie this argument. In truth, none of these plans were taken seriously as to produce sustained efforts over the long run. The sporadic short-term efforts were Sisyphean rituals.

Recent developments offer a glimmer of hope that the legendary traffic woes of Metro Manila can be licked.

Anatomy of the Problem

The National Capital Region with 17 cities and municipalities is home to 12.7 million people. It accounts for nearly 36% of the country's economic output expressed in Gross Regional Domestic Product. The urban area has spilled over to adjoining regions of Central and Southern Luzon. By all indicators, this tri-region is a primate metropolitan region – more than 37% of the country's population living on 11.5% of its land area; accounting for 62.5% of the economic output. The concentrated economic activities beget massive traffic congestion.

Nearly 56% of the country's 7.2 million motor vehicles run on 14% of the nation's total supply of roads. Metro Manila has nearly 2 times more vehicles per km of roads than Singapore; its population density of 19,126 persons/square km in 2010 is even higher than Tokyo metropolis (14,390) or Singapore's 7,100. Whereas Singapore has five MRT lines spanning more than 153-km, Metro Manila only has three with a combined length of 50 km. Tokyo's rail network is the most extensive in the world – 130 lines more than 2,000 km and 130 rail lines. Not surprisingly, Tokyo commuters use their cars less (estimated at 12% modal share vs Metro Manila's 30%).

Traffic and highway engineers usually define the problem in terms of Volume-to-Capacity (V/C) ratio. On this yardstick, Metro Manila's road network of 4,755 km is already 80% on average. Thus, operating speed is generally below 20kph whilst 40kph is deemed free flowing.

Objective Function

What is the objective function in solving the traffic congestion problem?

To an ordinary motorist, the objective is to make the Sunday traffic an everyday experience. On a typical Sunday, both work and home trips (which comprised more than 2/3 of total trips on a working-day) disappear. The road network is more than enough for the reduced demand of Sundays (and holidays).

Traditional transport planning followed the 'predict-and-provide' paradigm. Hence, its objective function was to build more roads to accommodate a predicted volume of motor vehicles. This approach became untenable, as the price of urban lands skyrocketed and right-of-way acquisition became nightmarish. Case in point was the 7.5-km road to connect SLEX with R-1 Coastal Road; land acquisition was abandoned

in 2003 after spending $65million. Besides, more roads invite more traffic in seeming compliance with Parkinson's Law.

Counter-intuitive as it may seem, less roads is becoming an accepted prescription to traffic congestion. Seoul, for example, demolished a highway that used to carry 160,000 cars a day. Portland, Oregon removed in 1974 a 4-lane highway and transformed it into a Park. In 1991, the city of San Francisco in California tore down the Embarcadero Freeway that carried about 70 thousand vehicles a day.

A new objective function emerged sometime in the 1990s: reduce demand to fill up supply. This TDM approach manifested itself in Metro Manila in the form of "odd-even" and later "number-coding" schemes. Vehicles are prohibited from using the roads at some part of the day or some days in a week. Like an expired medicine, when applied too long, this palliative measure loses its efficacy and create the perverse "Cobra Effect". It induced more cars. This phenomenon was observed in Mexico City, which pioneered the carless day to reduce air pollution. The optimal solution to this objective function, of course, is the absurd case of banning all cars to achieve zero traffic.

A broader version of TDM is to reduce the need to travel through urban design. In simple terms, locate destination places (e.g., employment and school sites) as near as possible to origins (e.g., residences) and make the city walkable. Shorten average trip distance. This was meant to counteract a trend of increasing trip lengths as a city expands. In a conurbation like Metro Manila, where land use regulations are paper tigers and where the poor could not afford lands, such a solution finds favor among the wealthy who can afford a condominium nearer their places of work.

A more generic objective is to maximize the productivity of existing transport assets. For roads, this means accommodating more people (rather than vehicles) per hour; while for rail, it means more trains at shorter headways. Mobility for urban residents means multiple options to get from one place to another within predictable and short times. It equates into reliance on mass transport, rather than on private cars.

Conventional Prescriptions

1. Traffic engineering and management

The most basic and beneficial prescription is maximize the throughput from available roads. In Metro Manila, car travel accounts for 30% of person-trips but constitutes 72% of road traffic in terms of pcu-km. A lane of road could achieve a maximum throughput of 2,000 cars per hour under optimal conditions, such as in limited-access expressways. That capacity is unachievable in urban areas – due to the constraints of roadside frictions, such as at-grade intersections, loading and unloading, street parking, wave effects of stop-and-go flow, road obstructions, and driver misbehavior. Thus, 220 (local road) to 660 (primary road) vehicles per hour would be reasonable target. Hence, the goal of conventional traffic management is to maximize vehicular flow capacity. Measures belonging to this category have been tried, in varying degrees, in Metro Manila (see Table 1).

Table 1. Traffic Management Measures Tried in Metro Manila

Year	Traffic System Management Measures	Related Events
1976		Traffic Control Center established.
1977-1982	Implementation of TEAM project, phase 1	
1982-1987	Implementation of TEAM project, phase 2	
1983	Introduction of the Yellow Box	
1986	Implementation of One-Way System in Makati CBD	Re-organization of Metro Manila Commission (MMC)
1989-1995	Implementation of TEAM project, phase 3	
1990	Pook Batayan, EDSA Bus yellow lane	
1993	Bus Stop Segregation Scheme	
1995	Odd-Even Scheme for private cars	Renaming of MMC into MMDA
1996	Change from Odd-Even to Number Coding (UVVRP)	
1997	TEAM, phase 4	Responsibility for TEAM transferred to MMDA, from DPWH
2003-2010	Replacement of about 50% of TEAM signals with mid-block U-Turn schemes	
2005	Organized Bus Route scheme, of MMDA	
2008-present	Bicycle Lanes	
2014	More Severe Truck Ban in the City of Manila	

Source: Technical Report No. 8, MMUTIS (March 1999) and author's recollections of events since 2000.

Smart signaling, where a network of traffic signals are controlled by a computer system, is the most efficient method of achieving higher road throughput in a sustained manner. The more intersections get signalized and tied to the system, the more effective computer optimization becomes. The signaling program – TEAM 1 - was started by DPWH in 1977; by end of TEAM 4, the system covered 435 intersections. From 2003 to 2010, however, many intersections were de-signalized in favor of the U-turn schemes that converted competition for road space into a game of chicken for

drivers. Presently, there are about 51 U-turn slots, 71 signalized intersections under central control, and nearly 400 signalized intersections that are stand alone.

2. Efficient public transport system

The second prescription is to improve the public transport system – consisting of tricycles (at the bottom) to jeepneys, buses, and trains (at the top). At an average load of 1.5 passengers, an ordinary car could deliver about 1,500 people/hour per lane of urban roads. If replaced with 400 standard buses per hour, the flow capacity jumps to 20,000 people/hour. The LRT-1 on Taft and Rizal Avenues is currently configured to carry 37,000 passenger per hour per direction (pphd). Thus, the simple mathematical logic: efficient traffic flow is nice (for roads) but nothing beats mass transit (running on exclusive tracks) in moving more people at shorter and predictable times.

Without good public transport, car-riders will hold on to their preferred chariots. Nearly 70% of daily person-trips in Metro Manila are borne by buses and jeepneys – already a good start. But this modal share is eroding as higher incomes encourage more car ownership. There has been no serious and sustained program to improve public transport system of Metro Manila. The last attempt was in the mid-1970s when the "Love Bus" pioneered air-conditioned scheduled service. This was followed by an effort to reform the atomized delivery of bus services under Letter of Instruction No. 532 (s.1976). Both were abandoned by subsequent administrations.

The pre-occupation of the current administration is to build 3 or 4 bus terminals for provincial buses. Shepherding about 8,000 provincial buses would hardly make a dent on overall traffic flow – and may even make commuting worse for those living outside the National Capital Region as they would then incur an extra transfer. Besides, several of these so-called provincial buses have outgrown their classification due to wider urbanization.

An honest-to-goodness effort to improve public transport is to start with the railways and the buses. The former is controlled by the government, while the latter are fewer (approximately 5,331 and 600 operators).These intra-urban buses have very poor productivity – 2 round trips and 160-km runs per day, due to traffic congestion. A 50% improvement in productivity would cut their number by half, enable a substantial fare reduction, and relieve traffic especially on EDSA. The situation for jeepneys is no less atrocious: an average of 96-km runs and 13 working hours for drivers per day. While traffic congestion constrains the productivity of public transport assets, there is another culprit: the archaic, fragmented and free-for-all manner in which they compete on the streets.

Government reticence, if not fear, of confronting the buses and jeepneys sector may be understandable. Such is not the case for the rail mode of transport. Instead of

improving through the years, it has deteriorated. Of the 139 rail-cars on Line 1, only 104 are operational in 2013; while only 4 of the 18 4-car trains are operational on Line 2. Less than 50% of the ticket vending machines are in working order. Notwithstanding the bad PPP design of the MRT 3 deal, its operating efficiency from the start proved better than the other two rail lines – well, until 2012 when DOTC took away the maintenance responsibilities. Over the last 3 years, the MRT has exhibited more glitches than the other two.

3. Corridor Management (Or a Bad Joke)?

Bereft of a credible game plan, the agency responsible for traffic management concocted its own version of traffic corridor management. Comes December time, the MMDA christens some roads as Christmas Lanes. No supporting engineering or traffic measures, other than a signage, are introduced. And yet, it brags about its success. If indeed there was some improvement as claimed, then the logical extension is to declare all roads as Christmas lanes throughout the year.

The buses on EDSA were the brunt of many traffic experiments of MMDA. In the early 1990s, it introduced the "yellow lanes" – which was actually a repeat of the same bus-priority measure implemented on Aurora Boulevard in the 1970s. Elsewhere in the world, this scheme was intended to keep out private cars from the yellow lanes – not unlike the currently fashionable BRT System. In Metro Manila, however, enforcers and commentators understood the lanes as a line to keep buses out of the inner lanes. To its credit, however, MMDA managed to enforce its busway-only lanes on EDSA for a while – until enforcement fatigue sat in. Its impact on bus productivity, however, was diluted by the uncontrolled dispatching of bus fleets.

To address the latter problem, the MMDA introduced its Organized Bus Route (OBR) scheme in October 2005. Its objective was laudable – control the frequency of buses deployed on EDSA at any time of the day according to demand. This is what a good bus manager is expected to do, except that MMDA was neither a bus operator or competent in bus dispatching. Other than additional stickers on buses, it had no effect on bus deployment or on traffic flow on EDSA. Another parallel measure - bus segregation - often misunderstood but not the same as OBR, grouped buses on EDSA into 3 sets of bus stops. The objective was to avoid crowding at loading/unloading bays by dispersing the more than 3,000 buses on EDSA into their designated bus stops. A study concluded that there was noticeable improvement in bus travel times (as it should be, with less number of bus stops to dwell on), but failed to evaluate its impact on commuters who could not embark/dis-embark on their preferred bus stops.

At the start of 2013, MMDA announced the implementation of what it labelled as a Bus Management and Dispatch System. Its stated objective was to reduce the number of buses on EDSA. In reality, it is nothing more than an online system for screening

out drivers with unclaimed traffic violation tickets, rather than about scheduling or controlling fleet headways. Misunderstanding or mislabeling, intentional or not, do not augur relief.

4. Reviving an old mode of transport

During the Spanish era and up to the advent of World War 2, the ferry on the Pasig River was a popular mode of transport. Increasing motorization and changing urban patterns led to its demise. For more than 30 years, the Pasig River was forgotten as a channel for urban commuting; whilst it remained a vital artery for freight movement despite the navigational hazards.

Nostalgic about the good old days, proponents of water transport tried to revive the Pasig River ferry. A shipping company, Magsaysay Lines, introduced a river ferry service in the early 1990s from Guadalupe (in Makati) to Escolta (in Manila), or a route of 15 km. After one year, it folded for lack of patronage – aside from the difficulties of navigating through water lilies, garbage and other detritus clogging the waters. In 1996, a second attempt was launched. The Starcraft Ferry deployed 30 units of catamaran-type boats with a seating capacity of 30 people (and air-conditioned to shield passengers from the foul smell of the river). It was complemented by a River Taxi that offers a seating of 12.The route stretched from Bambang in Pasig City down to Escolta in Manila (a total of 16.2 km). Like its predecessor, the Starcraft Ferry only lasted for a year and called it quits in 1997.

The 3rd attempt was inaugurated on 14-February 2007, this time with government financing the asset build up and a private firm operating the service. Unlike the previous two attempts, the 3rd re-incarnation used 10 boats of bigger capacity (~150pax) and had stations with passenger amenities such as toilets, ticketing system, waiting seats and security guards. At its peak, the ferry had 17 stations and 2 lines. The first line was the Pasig River Line which stretched from Plaza Mexico in Intramuros to Nagpayong station in Pasig City. The second line was the Marikina River Line which served the Guadalupe station in Makati City up to Santa Elena station in Marikina City. Despite government funding support, the service was a losing proposition. The private operator quit in January 2011, leaving the government with debts (PHP180.87 million for a loan provided by ADB).

In April 2014, MMDA re-opened the Pasig Ferry with much fanfare. Given the record of past failures, there is no reason why the outcome for the latest one will be any different. As intimated in a study about modal preferences, and experiences from other cities, the river ferry has lost the daily urban commuting market.

5. Truck bans

The truck ban is one of the most enduring decongestion measure in Metro Manila, dating back to the 1970s. It is another form of TDM, where the numbers of vehicles on the roads are reduced – except that the object is the freight haulers, rather than commuters.

In Metro Manila, trucks are provided a window of time during the day to be on the roads, aside from banning them altogether on some streets. A designated truck route provided an open channel to the ports. The two-decade old modus vivendi got broken when the City of Manila issued its City Ordinance No.8336 on February 2014. The ordinance prohibited trucks from any roads between 5:00AM to 9:00PM, and imposed a hefty penalty of Php5,000 for violation. It disrupted the operations at the North and South Harbors and wreaked havoc on the supply chain of manufacturers and traders. Trucking cost shot up – from Php18,000 to Php34,000.[i] While the ban got relaxed for a period of six months (by allowing trucks between 10AM-3PM), the prohibition remained against trucks laden with empty containers.

Efficient movement of freights make a city competitive. Yet, this vital aspect is not on the agenda of the government. On the contrary, trucks are often demonized and subjected to more constraints than any other mode.

6. Staggered hours

Sometime in the mid-1990s, staggered working hours was also proposed and tried – by ordering offices to split their respective time-ins. It even merited a Congressional

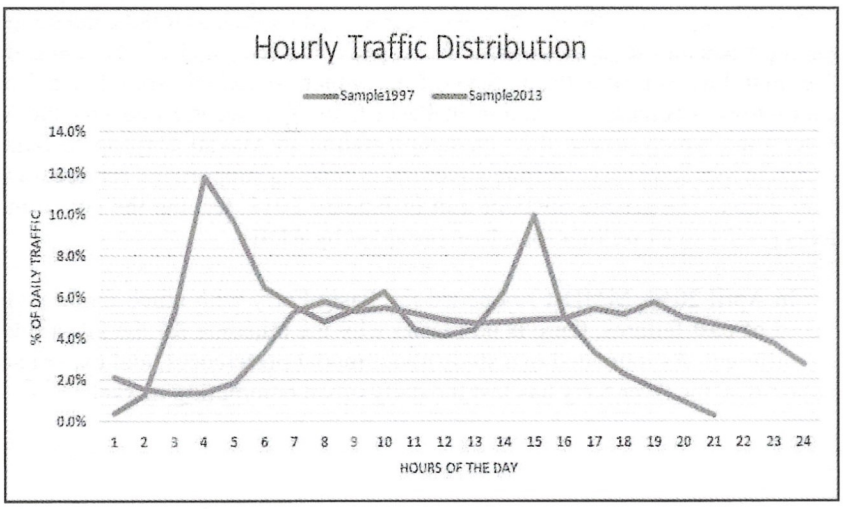

Figure 1. Hourly Traffic in 2013 vs 1997

Bill from legislators in search of headlines. This got recycled by a Presidential Order in December 2004 ordering the executive departments to stagger working hours - during the Christmas season. This measure would have had some beneficial effects in the early years, when traffic congestion was confined to the so-called rush hours. It is no longer the case. As shown on Figure 1, the hourly distribution has flattened - meaning congestion has become common throughout the day. Traffic congestion has made flextime the new normal for employees.

Akin to staggered working hours is reduced school days in a week and temporal shift in academic timetables for adjoining schools. If coordinated properly so that the off-days are also staggered among them, it promised relief, albeit short-term and localized.

7. Good Intentions from DOST

For the first time, the Department of Science and Technology is paying attention to the urban transport problems of the country. It has allocated hundreds of millions of pesos of R&D funds into developing local prototypes of AGT and Tramways. About 500-m elevated tracks for AGT got built in the UP Diliman campus and had a test run in December 2012, with no less than the President in attendance. There are news reports that AGT would be expanded into a 6.9-kilometer intra-campus loop. Its promoters see the AGT as a feeder to LRT or a replacement of jeepneys.

Another project is the so-called Road Train to be tested in Cebu City. From data made available to the author, it could be the Filipino version of the street car of Europe, a modern incarnation of Manila's pre-war tranvia, or an alternative to the Bus Rapid Transit (BRT) system. The latter has become a popular straw man among DOTC's planners after it has been studied and approved for Cebu City.

What DOST is currently doing is reminiscent of Indonesia's attempt more than 2 decades ago. Indonesia managed to build its own aircraft (the N-250 Gatokaca, in 1995) and a pneumatic sky-train on Taman Indonesia in Jakarta. By all indications, the Philippines efforts would suffer the same fate.

Unconventional Solutions

1. Regional Development

A long-term solution with a few advocate is to slow down, if not stop, the growth of Metro Manila. This is akin to holding back flood waters upstream, before they get downstream.

As early as the 1970s, regional planners have pushed for a regional growth-pole strategy. Its logic lies in the recognition that urbanization is a desirable phenomenon that should be distributed spatially – and away from the traditional capital city. The early versions of the Philippine Development Plans enshrined this concept and gave rise to 12 (now, 16) administrative regions with corresponding regional development councils. Apart from the administrative division, no concerted efforts happened that would promote urban growths outside of Metro Manila. The exception, perhaps, was the program of the short-lived Ministry of Human Settlements in the late 1970s. It declared a policy of limiting industrial development and a cap on university expansion, within a 50-km radius of Metro Manila. No one followed suit, as the agglomerative magnetism of Metro Manila proved more potent.

Of recent vintage, but on the same genre, was the tongue-in-cheek presidential order of 2008 to relocate the head offices of several national agencies to the provinces – like DOTC and DPWH to Clark, and Department of Agriculture to Isabela. Nothing came out of it – except some headlines about developing Super Regions outside of Metro Manila.

2. Move to a New Capital

A bolder application of regional development is the transfer of the national capital elsewhere in the country. It is not yet on the cards for Metro Manila, although at one time in the past it moved the capital to nearby Quezon City.

One of the earliest example of this genre is Australia, which created Canberra in 1914 to replace Melbourne. Brazil relocated to Brasilia in 1960 from Rio de Janeiro – a move that was controversial at that time. Lesser known was Myanmar, which surprised its citizens and the world when all federal offices were moved from Yangon to Nyapitaw in 2006.

At one time, the Philippines entertained a new capital city. Executive Order No. 570 was issued on 29 November 1979 "Creating a Task Force to Undertake Land Assembly and Official Development Registry Activities" on what was the ill-fated Lungsod Silangan.

A student of urbanization would not fail to notice that the most livable (and congestion-free) cities have populations below 5 million. Of the top 10 livable cities ranked by the Economist Intelligence Unit in 2013, all are mid-sized; with the exception of Melbourne with 4.1 million and Metropolitan Toronto at nearly 6 million. If not for Canberra, Melbourne would probably be larger and congested today. Same conclusion could be said about Rio de Janeiro. Average population size of the top 10 most livable cities is 2 million. All have low densities – with Vienna the highest at 4,175 persons per square km. In comparison, Metro Manila's density in 2011 topped

19,100 persons/square km. It is higher than Metropolitan Tokyo, the top-ranking megacity in the world. By any measure, the size of Metro Manila has become too large as to be unmanageable.

Table 2. Twenty Largest Urban Areas in the World

Rank	Geography (Country)	Urban Area	Population Estimate, 2012	Land Area (Km^2)	Density
1	Japan	Tokyo-Yokohama	37,126,000	8,547	4,300
2	Indonesia	Jakarta	26,063,000	2,784	9,400
3	South Korea	Seoul-Incheon	22,547,000	2,163	10,400
4	India	Delhi, DL-HR-UP	22,242,000	1,943	11,500
5	**Philippines**	**Greater Manila**	**21,951,000**	**1,425**	**15,400**
6	China	Shanghai, SHG	20,860,000	3,497	6,000
7	United States	New York, NY-NJ-CT	20,464,000	11,642	1,800
8	Brazil	Sao Paulo	20,186,000	3,173	6,400
9	Mexico	Mexico City	19,463,000	2,046	9,500
10	Egypt	Cairo	17,816,000	1,709	10,400
11	China	Beijing, BJ	17,311,000	3,497	5,000
12	Japan	Osaka-Kobe-Kyoto	17,011,000	3,212	5,300
13	India	Mumbai, MAH	16,910,000	546	30,900
14	China	Guangzhou-Foshan, GD	16,827,000	3,173	5,300
15	Russia	Moscow	15,512,000	4,403	3,500
16	Bangladesh	Dhaka	15,414,000	347	44,400
17	United States	Los Angeles, CA	14,900,000	6,299	2,400
18	India	Kolkota, WB	14,374,000	1,204	11,900
19	Pakistan	Karachi	14,198,000	777	18,300
20	Argentina	Buenos Aires	13,639,000	2,642	5,200

Source: http://www.newgeography.com/content/002808-world-urban-areas-population-and-density-a-2012-update

Numerous researchers have grappled with the idea of an 'optimum' city size. Aristotle, for one, argued that a city must not be too large to have order and strict rule of law. To this quintessential question, none has yet come up with a definitive answer. Nevertheless, it is indisputable that beyond a certain size, there is 'loss of welfare from traffic congestion, crime, polluted air, and too few agglomeration economies." A similar insight came from an unexpected source who hypothesized that good things (such as higher GDP, higher income, and more patents) and bad things (more traffic, more crime) grow super-linearly with population growth. In more explicit terms, he

posited that a doubling of city size translate to 115% increase in most of the measurable aspects of urban life.

Building a new capital, however, requires sustained efforts and long-term fidelity and commitment – key ingredients that are alien in Philippines governance.

3. Congestion Pricing: Effective, But Untried

Where and when road space is scarce, the most efficient way of rationing a scarce good is via pricing. Singapore is one of the pioneers of Area Licensing scheme. It has implemented road pricing since the 1970s. Private cars have to pay a premium for getting into the CBD during peak-hours. With progress of ICT, this scheme has been upgraded into an Electronic Road Pricing with differential pricing according to time and demand.

The City of London followed the example of Singapore, sometime in 2003. London installed hundreds of cameras throughout the congestion zone in order to charge £10 to anyone driving the zone between 7am-6pm, Monday to Friday. Inspired by the success of London's congestion charge, Stockholm introduced its own congestion pricing system in January 2006. As with London, the scheme has been a big success, but its functionality differs considerably. Whilst the goal of London's scheme was to keep people out of the city center, Stockholm's was more interested in evenly distributing the flow of traffic into the city center. To achieve this goal, Stockholm introduced a variable pricing system – no charge between 6pm and 6:29am, 10 krona (equivalent to €1 or US$1.56) starting at 6:30am, and 20 krona from 7:30 to 8:29 am and 4:00 to 5:29 pm.

Road pricing has been proposed for Metro Manila. It is technically and economically feasible, but no public official has dared to champion it.

4. Car pooling

Car-pooling can provide relief where commuters have become inured to cars. This trend is apparent in Metro Manila, where car sales are booming. Once commuter get inured to car dependency, they are unlikely to shift to public transport. Once a person gets inured to car trip, it is very hard to wring him out of a fixed travel habit. Car-pooling may have a chance; a scheme that traffic authorities in many USA cities promote. In Metro Manila, authorities frown (and may arrest) car sharers, on the legalistic argument that it needs a license. It would be interesting to find out if Tripid.ph – an online platform for car-sharing that was launched in February 2012 – could succeed.

5. Interventions of a different kind

Without wishing for one, the occurrence of a catastrophe may vanish Metro Manila's daily traffic woes overnight. The metropolis is vulnerable to flooding and earthquakes. In a worst case scenario where the West Valley Fault line triggers 7.2 magnitude earthquake, it was estimated that about 170,000 residential houses would collapse, 340,000 residential houses partly damaged, 34,000 persons fatalities, and 114,000 persons injured – aside from the possibility of splitting Metro Manila into four isolated zones. Such an event would change the traffic situation drastically.

A more cheerful (but also, disruptive) event is the advent of autonomous vehicles. Driverless vehicles are already in their prototype stages. Once perfected, it promises to move vehicles speedily at closer headways without bumping into each other. That would drastically improve the capacity of existing roads. Hopefully, this technologically would happen sooner than the apocalyptic intervention from heaven.

Plans Galore To Vanish Traffic Congestion

There is no shortage of plans to address the urban transport needs of Metro Manila.

1. Decade of the 70s

The earliest plan (titled "Urban Transport Strategy for Metro Manila") was crafted by Japanese consultants in 1972. Imitating the Tokyo radial network of railways, the study proposed 11 underground rail transit lines. At that time, it was a fantasy plan – elegant engineering-wise but very impractical. Not surprisingly, nothing came out of that plan.

Then came MMETROPLAN, in 1976. It was funded by the World Bank. Its claim to fame – aside from framing the issue of transport with land use - was the LRT Line 1. While its proposal was for at-grade tramway, what got implemented in the 1980s was an elevated LRT. Unmentioned was its twin recommendation for cordon pricing a la Singapore. The road pricing proposal never took off, fortunately perhaps, because it suffered from two basic infirmities: the CBD was already moving from Manila to Makati, and the technology was not yet there to support effective implementation.

2. The 2nd and 3rd Plans

The MMUTSTRAP studies in the mid-1980s expanded the menu of solutions, including detailed proposals for corridor traffic management, wider traffic engineering and management schemes, construction of several public transport interchanges,

flyovers or road interchanges where most of the 10 radial and 5 circumferential roads meet, as well as the early implementation of LRT Line 2. The study was funded by Australian Aid, and supported by World Bank financing in the implementation of most of the road and traffic projects. Completed at the end of the Marcos-era, the plan found itself in disfavor after 1986 but regained some footings in the mid-1990s.

With Japanese grant, a bigger study was initiated in 1997. Called MMUTIS, it attempted to craft a master plan to hold back the worsening traffic congestion via two more LRT lines and completion of primary road network. The holding-back strategy was predicated on a tight budget envelope that arose from the 1997 Asian financial crisis. Very little implementation happened from 2000 to 2014, overshadowed by a penchant for instant reliefs - like one-way, urban freeways and U-Turn schemes. In the matter of mass transit, LRT 1 extension to Cavite was marked for completion by 2004, as well as the extension of LRT 2 to Masinag. By 2014, these two mass transit projects have yet to break ground.

3. The 4th (And Most Ambitious) Plan

In early 2013, NEDA requested JICA for another crack at the traffic congestion nut. Instead of pushing for a set of realistic measures, the marching order was the formulation of a Dream Plan that would vanish traffic congestion by 2030.

Using computer simulation and various 'what-if' scenarios, the Study came out with an infrastructure program that included more than 200 km of new mass transit lines and 78 km of urban expressways, aside from the usual prescriptions to control urban developments, modernize road-based public transport, enlarge the coverage of computerized traffic signaling system, and adopt more Smart-city technologies on various aspects of metropolitan management. The study was able to portray an overly congested road network by 2030 under a "do-nothing" scenario, and what it would look like under a "do-maximum" (no fiscal constraint) scenario. Expectedly, traffic congestion disappears by 2030.

Although ambitious by design, the plan's implied investment requirement (approximately Php2,600 billion) can be covered by the projected budget envelope. A wider fiscal space was predicated on: (i) the economy would continue to grow at 6% per annum, (ii) infrastructure budget could be raised from 2% to 5% of the country's GDP, and (iii) the region would continue to get a large chunk of this budget in proportion to its economic size. Whilst all previous plans – from 1975 to 2012 – were defensive (i.e., hold back traffic congestion at current levels), this 2013 plan was aggressive in orientation (i.e., make traffic woes disappear).

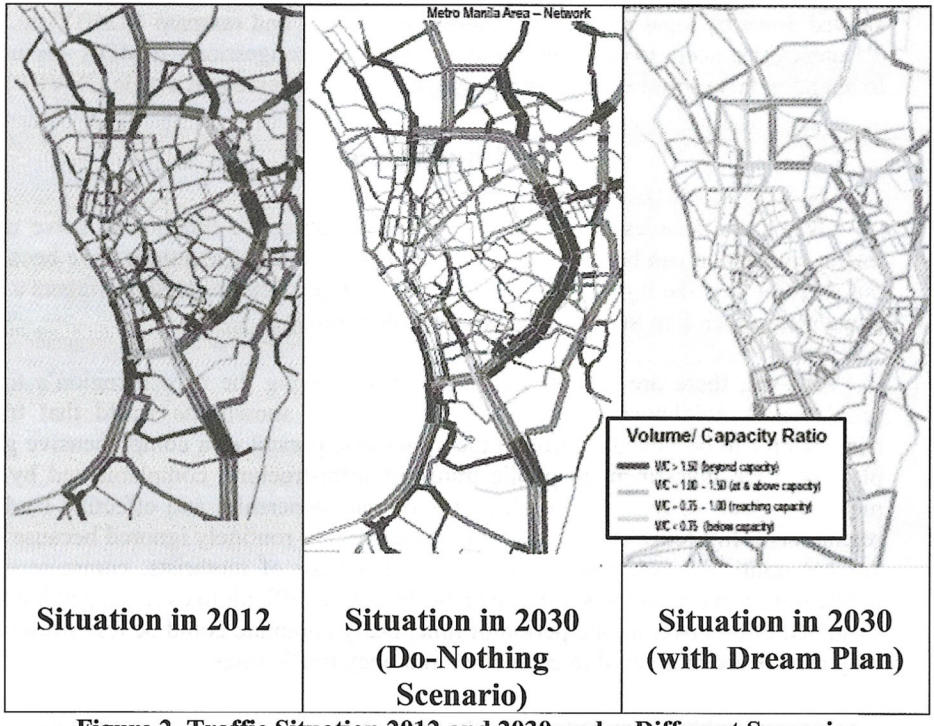

Figure 2. Traffic Situation 2012 and 2030 under Different Scenarios

Source: Transport Roadmap for Metro Manila and Surrounding Areas (August 2013)

4. Barrier to Plan Realization

The three agencies that will carry the ball are: DOTC, DPWH and MMDA. In varying degree, they suffer from institutional apraxia.

Can Metro Manila better Singapore, which has taken nearly 25 years to build 153-km of mass transit lines and 161-km of urban expressways? The dream plan requires executing a program twice the scale of Singapore's and in a shorter period of 15 years. To be sure, with a population 3 times that of Singapore, Metro Manila's problem is more complex and daunting. It is also starting with a huge back logs in transport infrastructure.

The country's rail institutions are broken and in long need of fixing; past and present DOTC officials prefer to take the easy way out by kicking the proverbial can down the road. A mere 4-km rail extension that has gotten approval in 2009 is yet to break ground. The 2nd agency, DPWH, has shown a better execution capacity, but is

slowed down by legal niceties on right-of-way issues and rampant NIMBYism. The 3rd agency that needs to carry the battle against traffic congestion – MMDA – is unable to abandon false solutions (like a retrograde U-Turn scheme and a stale UVVRP).

Conclusions

Over three decades, a noticeable shift in the objective function to solve urban traffic congestion can be discerned. A comprehensive set of solutions have been laid out, but few saw the light of day. Every change in political leadership triggers a new game plan, much like Sisyphus in the Greek mythology.

And yet, there are models to follow in addressing the capital region's traffic problems. A neighboring country (Singapore) has shown the world that traffic congestion can be licked – through the systematic pursuit of a comprehensive game plan, massive investment in public transport infrastructure, complemented by soft measures (such as road pricing, high tax on car ownership, and effective land use regulations). In Metro Manila, the 'soft' measures are routinely ignored because they are not politically palatable. Changing the behavior of motorists, commuters and public transport operators is less expensive but more difficult to execute, and it entails sustained efforts over a long period of time. Daily commute could be less stressful, if only drivers are more civil to each other and obey traffic rules.

Making public transport more attractive and convenient to commuters would require more 'soft' measures than 'hard' infrastructure. Replacing the archaic jeepneys with its modern version would be a step in the right direction. Making them behave on the streets like an organized bee colony is devoutly to be wished. That, however, is something government is unwilling, if not terrified, to do. And in a display of naïve contradiction, they are pushing for BRT Systems that would necessitate a confrontation with the elephant in the room they are most terrified with.

Yes, the traffic woes of Metro Manila can disappear - but only if the people can let go of its "Heritage of Smallness", and liberate itself from decades-old "jeepney mentality". It is akin to a bamboo ceiling that has stymied past efforts and blindsided a citizenry into accepting traffic jams an inevitable fact of urban living.

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