Traffic Solutions for Metro Manila: A Realistic Approach

Traffic congestion and traffic discipline are perennial discussions at coffee shops and in meeting rooms throughout Metro Manila. It is an accepted fact that congestion hinders the free flow of goods and services, contributes significantly to pollution, and costs billions of pesos (billions!) in wasted fuel, time and productivity. Studies have been done, solutions proposed, and money spent for years, with little real improvement to show for the expense. Those tasked with managing the problem, from one administration to the next, have all clung persistently to the same mantra – that the answer lies in more roadways and the use of the latest high-tech gadgets. I would like to offer an alternative opinion:

Traffic in Metro Manila is congested and chaotic because we **allow** it to be that way.

'*We*' in this case refers to both the road users and the road managers. We don't follow, or effectively enforce, the basic rules which are designed to ensure a safe, efficient flow of traffic. We don't respect lane markings (including turn lanes), we ignore traffic signs and signals, and we routinely drive in ways that are both dangerous and disruptive to the flow of traffic. Pedestrians cross wherever they want, and they stand in the roadway in large numbers while waiting for public transportation. Public buses and jeepneys operate aggressively and dangerously. Each of these behaviors, repeated at thousands of points across Metro Manila roadways every day, disrupt the free flow of traffic and cause the congestion and chaos that we have come to accept as normal.

For decades, Metro Manila traffic managers have focused almost exclusively on volume control and engineering-based solutions to congestion. I believe this is simply the wrong approach. Although the number of vehicles on the roadway is the major contributor to congestion, it is also the one factor that cannot be countered significantly. It is not realistically possible to either reduce the number of vehicles in the city or to increase the amount of road space (i.e. wider roads, elevated roads, etc) enough to have any lasting impact on congestion. In the science of traffic management there is a phenomenon called '*triple convergence*', which essentially means that the volume of traffic will always expand to meet the available capacity. Additional road capacity will produce temporary improvement in flow rate, but congestion will always return to the previous levels, usually within only a few years.

Focusing on capacity should not be the priority, because congestion in Metro Manila is not, first and foremost, a problem of capacity. It is a problem of efficiency.

Los Angeles, New York, London; these cities all experience congestion. But there is one big difference between the way traffic moves in those places and the way it moves in Manila. In those cities, discipline (both self-imposed and enforced) keeps the system orderly. Intersections function effectively, and lines of traffic, although heavy, criss-cross through them relatively smoothly. In other words, while there is congestion in those cities, it is a congestion which results entirely from volume. The behavior of individual vehicles does not significantly compound that congestion. In those cities, volume-reduction and capacity-building are the appropriate solutions.

Metro Manila traffic, on the other hand, is chaotic. The average driver is not disciplined, and, as a result of '*the way it's always been*', he does not feel bound by the rules of the road. Those rules exist, in the form of laws and regulations, but enforcement is extremely weak. Enforcers loosely manage the general flow of traffic, but ignore most violations. As a result of this weak enforcement, drivers believe they have the freedom to disregard regulations and drive aggressively, which in turn creates a competitive environment where drivers feel they need to disregard regulations and drive

aggressively. It's a '*law of the jungle*' environment which, in the absence of effective enforcement, leaves each driver both fending for himself and deciding for himself how to interact with the network. All drivers (private car owners, public transportation drivers, and even law enforcement officers) operate within this paradigm.

In such a free-for-all environment, with each driver looking out only for himself, disorder-based congestion naturally occurs. Imagine a crowd of people trying to pass through a small doorway. Without order, the doorway quickly becomes jammed. There is a lot of pushing and shoving, tempers flare, and people get hurt. The flow rate is quite low, and the accident rate is quite high. But when those same people move through the doorway in an organized fashion, several positive things happen. Most importantly, the flow rate increases significantly. There is also a general air of civility among those waiting in line, and the number of injuries (both minor and major) is reduced. In other words, even though it may still take time for each individual to pass through, the overall process is more efficient, and the experience is more tolerable. This is the effect of order.

Metro Manila traffic is not uncontrollable – It's just uncontrolled

Order simply does not exist on Metro Manila roadways, and it does not exist for one clear reason: because it is not enforced. And that lack of order translates into a level of inefficiency that would be unacceptable in any other type of network. In contrast with the foreign cities mentioned above, the volume-based congestion in Metro Manila is compounded significantly by the behavior of individual vehicles. Therein lies the solution:

Imposing order, through the aggressive enforcement of traffic rules and procedures, will result in significant improvement in travel time, safety, and general civility on Metro Manila roadways.

In terms of sheer cost effectiveness, the first-stage solution to Manila traffic congestion lies, not in increased capacity, but in behavior control. This is the lowest hanging fruit of all, but for some reason, we just don't want to take advantage of it. In my opinion, there are only two alternatives – spend billions to construct additional road capacity, the benefit of which will likely be lost in a few short years, or, within the current budget, start enforcing the laws that are already supposed to be enforced.

The idea that the situation cannot be changed quickly, and that the only hope lies in training the next generation of drivers, is misguided. The next generation will acquire their driving habits by observing their parents. All the classes in the world will not override what they learn from watching their fathers at the wheel.

Good old-fashioned law enforcement is the answer

'I*mposing order*' actually means '*imposing discipline*'. In any cooperative system, such as a traffic system, self-discipline is preferred. Self-disciplined drivers generally follow the rules on their own, freeing enforcers to focus their attention on a smaller number of violators. But in an environment as aggressive as the Metro Manila traffic system, where discipline has never truly existed, it will not impose itself. No amount of pleading, prodding or motivational videos will cause drivers to start following rules which, in their minds, offer no competitive advantage. Self-discipline may be preferred, but it will take enforced discipline to get us there.

Not all Metro Manila drivers **want** to drive this way. This is supported by the oft-quoted observation that, when outside the Philippines, most Filipinos are model drivers and have no

trouble complying with traffic laws. In contrast, many foreign drivers in Metro Manila quickly pick up the local driving style, exhibiting behavior here that they would be embarrassed to show in their home countries. This reinforces the idea that this is not a '*hard-headed Filipino*' problem. It is nothing more than a simple lack of enforcement.

The current traffic management mind-set in Metro Manila places absolutely no responsibility on drivers to self-comply with traffic rules. Enforcers use a '*cattle-herding*' approach (focusing almost exclusively on public buses), resulting in a semblance of order **only** when an enforcer is present and actively engaging with drivers. This '*catch me if you can*' approach simply cannot effectively control the behavior of more than a million aggressively-driven vehicles.

To create a disciplined, ordered traffic environment, it is necessary to place the primary responsibility for compliance squarely on the shoulders of the drivers (both public and private). Drivers simply must be forced to obey traffic regulations on their own. The most effective method for encouraging compliance is deterrence, which can only be achieved through aggressive enforcement. Enforcers must actively work to detect violations of all types, and then take corrective action. If a certain behavior consistently results in a negative consequence, that behavior will change.

The first step in this process is to assert the Rule of Law on Metro Manila roadways. Traffic enforcers and managers, assigned to a variety of agencies and local government units, are the front-line soldiers in this phase. Herein lies another problem. As with many government agencies, senior management relies on front-line supervisors to handle traffic on a day-to-day basis. And those front-line supervisors tend to leave it in the hands of the actual enforcers. The enforcers, with little training and less motivation, do only what is necessary to keep the flow moving. As long as traffic is not in gridlock, everyone seems to think that nothing more can or should be done.

The average traffic enforcer seems to see himself as a kind of shepherd, loosely managing the general flow of traffic, but not concerning himself with the minutiae of individual driver behavior. Operating under the same '*this is how it's always been*' paradigm as most drivers, traffic enforcers simply do not notice, or act on, most violations. There seems to be a short list of preferred violations that do attract their attention, including driving through a red light, number coding violations, and public bus loading/unloading violations, but most other behaviors do not even warrant a stern look. Turning from a non-turn lane, driving without headlights, and pedestrians standing (in crowds) in the roadway are simply *'the way it works'.* Traffic management authorities also operate under this mind-set. Things have been this way for so long that even those in position to change it don't see it as a problem. There is *'the law'* and then there is *'the way it's always been'.*

Ironically, and as stated above, it is exactly these minor behaviors, occurring repeatedly throughout the network, that cause congestion in the first place. Modifying our approach to enforcement is the first step toward reducing that congestion.

Once enforcers have been motivated to notice and act on violations, their standard course of action in most cases should be to issue a traffic ticket. The seemingly mundane traffic ticket is, in fact, a very effective tool for deterrence. It's not necessary, or even desirable, to catch and cite all violators. What is more important is to create an environment wherein non-compliance results in the certainty of penalty. It is this certainty that will change driver behavior relatively quickly. Through consistent, aggressive enforcement, drivers can be made to believe (and to a certain extent, to fear) that violating a traffic law, no matter how minor, will result in a ticket and a fine.

Of course, traffic tickets must be managed administratively, and they must backed by effective fines, but that system is already in place. In fact, the entire traffic enforcement system is already in

place. It's just not being managed properly. The idea that a violator can just throw a ticket away, and get a replacement drivers license by claiming he lost the original, should be unacceptable. And the fact that a properly issued traffic ticket can disappear in that process should be equally unacceptable. This is a simple administration issue.

ACTION PLAN – PHASE I

Although it is important for enforcers to act on all types of violations, it makes sense to focus first on the most disruptive of congestion-causing behaviors. The Pareto Principle, or “80/20 Rule”, tells us that 80% of effects are usually generated by 20% of the causes, and in the case of Metro Manila traffic, most of the congestion is caused by only a few types of disruptive behavior:

- Public bus/jeepney behavior
- Turn-lane behavior
- Intersection behavior
- Pedestrian behavior

Managing these behaviors should be the initial focus of any effort to impose order on Metro Manila roadways. In this paper, I will discuss the problems associated with each, and offer strategies to manage them.

Congestion factor 1: Public utility bus/jeepney behavior

Without a doubt, the aggressive driving behavior of public bus and jeepney drivers is a major contributor to congestion on Metro Manila roadways. Within that group, public buses have the greater impact. Operating in competition, public buses race each other from one loading point to the next, each trying to capture the largest share of passengers. As the biggest vehicles on the road, bus drivers routinely operate with utter disregard for the presence of other, smaller vehicles.

Public bus drivers operate with two or more of the following goals in mind:

- Complete the loading/unloading process, and move to the next stop, as quickly as possible. Strategies for this include stopping (or only slowing down) to load/unload while still in the flow of traffic; cutting into the line of other buses waiting at a stop; and maneuvering out of a line of stopped buses ahead of turn. Each of these behaviors creates a chokepoint that disrupts the free flow of traffic.

- Alternatively, linger at a stop, waiting for additional passengers. Again, this behavior creates chokepoints, as other vehicles are forced to move around the waiting bus. Although this behavior seems contrary to the “load/unload as quickly as possible” strategy mentioned above, drivers do employ both strategies depending on a variety of factors.

- Block other buses at loading points. In an attempt to prevent the competition from moving ahead to the next stop, buses routinely obstruct the flow of traffic by positioning themselves to block other buses. It must be clearly stated that this is intentional behavior. Of course, this also blocks the lanes for all other vehicles, and it is not uncommon to see a multi-lane road reduced to a single free lane in the vicinity of bus loading points, causing congestion.

It is often mentioned that this type of competitive behavior is a result of the commission-based salary scheme for bus drivers, and that a fixed-salary system would eliminate the problem. To address this specific concern, government has now implemented a fixed-salary requirement, which will go into effect in mid-2012. While this is an important step, it's unlikely to produce the desired result. Competition for passengers is driven by the bus companies, rather than the drivers alone. And the fixed-salary scheme, as described in initial reports, includes a “performance” element,

partially based on number of passengers carried. In the end, drivers will continue to compete for passengers to increase their earnings. Bus companies see competition for passengers as being in their best interest.

I have ridden public buses on several occasions, and it is easy to see that they simply do not recognize the official 'bus-stop' system. This is reinforced by listening to the conversation between the driver and the conductor. Their strategy is to watch for potential passengers along the route, regardless of location. Drivers slow down as they approach pedestrians, looking for any sign that the person might want to board. This is a hit and miss process, and the drivers seem totally unconcerned about the affect on traffic behind them. When they do stop at designated bus stops, drivers often watch approaching pedestrians, again in the hope of loading a few more passengers. In addition, drivers will stop on request at almost any point to offload passengers, again regardless of location. Essentially, and despite the law, buses operate exactly in the same casual manner as public jeepneys.

In big cities around the world, a public bus system is a convenience, carrying a relatively small percentage of the commuting public. But in Metro Manila, with several million people depending on public transportation, a robust, efficient bus system is vital. Government has chosen to allow multiple private companies to provide this service, in free-market business competition with each other. But those companies, and their buses, must not be allowed to operate in a manner that obstructs the free flow of traffic, which, along with the safe, efficient movement of the riding public, must take priority over profit. The public bus system must operate in conjunction with, rather than in opposition to, other vehicular traffic.

The following procedures, if enforced, will result in significant improvement in traffic safety and efficiency:

1. Bus lanes

   The current scheme on major thoroughfares (EDSA, Commonwealth Ave, etc) designates two lanes exclusively for public bus use. This is supposed to allow buses to service stops along the route, and to provide a passing lane for buses choosing not to stop at a particular loading area. In practice though, buses commonly operate in all lanes, and private vehicles operate within bus lanes. Enforcement, as usual, is extremely weak. The fact that this system is not effectively enforced negates the purpose and value of a bus-only lane.

   By their nature, buses operate in a stop-and-go manner, and must be able to do so without obstructing the main flow of traffic. There is no need, however, to allot two lanes for this purpose. A single (far right side) lane should be reserved for buses (and jeepneys) assigned to service stops along the major thoroughfares, and those vehicles must be required to operate in single-file within that lane. As part of an organized public transportation system, with all buses being required to service all stops along their routes, there should be no reason for buses to overtake one another. Buses should essentially operate like unlinked cars on the Metro Rail system. In the event of an obstruction in the bus lane, it is acceptable for a bus to briefly move into the regular traffic lane, as long as it returns to the bus lane immediately after the obstruction. Aggressive, consistent enforcement is key to the success of this system.

   Given the stop-and-go nature of public bus service, a passenger cannot expect the same rapid transit as one might experience in a private vehicle. But, if buses operate within a truly protected lane, there is no reason that trip should not be relatively fast, comfortable and safe.

   Allotting a single lane for buses will also make one more lane available to regular traffic. If the bus-only lane system is effectively enforced, the congestion which currently results from their competitive behavior will be eliminated entirely.

As an added benefit, a truly protected bus lane should also be open to emergency vehicles (fire, ambulance, police) responding to actual emergencies. Currently, congestion makes it impossible for these vehicles to effectively bypass traffic.

2. Bus loading/unloading points (bus stops)

As described above, public utility buses compete for passengers in an extremely aggressive, often unsafe manner, and nowhere is this more visible than at bus stops. This loading point behavior is likely the single most congestion-causing factor on Metro Manila's main thoroughfares. It is critical that bus companies be made to accept the idea that the safe, efficient movement of passengers, performed in a non-disruptive manner, must take priority over business competition.

Queuing discipline must be enforced at bus stops. Buses angling into the front of a line, or those maneuvering to depart from the middle of a line, create chokepoints which block regular traffic. In keeping with the single-file strategy, buses arriving at a loading point must fall in line, and remain in line, behind those already present. No bus may depart ahead of the bus in front.

At smaller loading points, drivers routinely stop in the actual traffic lane, or position the bus at an angle, to load/unload passengers, bringing all traffic in that lane (and sometimes other lanes) to a halt. This practice must be abolished. To load/unload passengers, a bus must be aligned with, and as near to the road edge as possible. Properly enforcing the bus-only lane system will eliminate these loading point problems.

The practice of waiting for passengers must be abolished. Each bus must stop only long enough to discharge passengers and to load those passengers currently waiting at the stop. Current enforcement practice at bus stops entails traffic enforcers berating drivers, in an attempt to prod them, cattle-like, into movement. This may produce temporary, on-the-spot results, but it does nothing to permanently change driver behavior. Bus company owners are even less affected by these methods, since there is no impact on their business. The better, and more effective method is as follows:

• Any bus, observed to be violating the guidelines outlined here, (or, in fact, committing any violation), should be directed to the side of the road and issued a traffic ticket without a second thought. During the traffic stop procedure, the driver's license, along with the vehicle's registration and insurance documents, should be examined, and, if warranted, the vehicle should be inspected for safety equipment violations. After issuing the ticket, the bus should then be allowed to proceed. This will not be a quick process for the driver, and the risk of a lengthy delay may serve to motivate driver compliance with the rules outlined here.

• For violations involving driver behavior, the driver should be the subject of the ticket, but a procedure must be devised to hold employers accountable as well. For violations involving equipment or documentation, the bus owner should be fined. For tickets to be effective in motivating compliance, accumulated violations must result in loss of driving privileges for drivers, and must be cause to deny a bus owner's application for renewal of operating permit. The point system has been debated in the past, with drivers claiming that it unfairly threatens their livelihood. This is a nonsense argument which cannot be allowed to influence traffic enforcement policy. Accumulated violations are an indication of a continuing disregard for law. Such behavior must be penalized if we want that behavior to change.

Although this section primarily talked about buses, public jeepneys must be integrated into this system. Essentially, any vehicle that operates in a stop-and-go manner, making regular stops to load and unload passengers, must operate exclusively within the bus lane, and must be prohibited from lingering during those stops. Procedures can be devised to allow all of these vehicles to

support the public transportation system safely, effectively, and profitably.

Congestion factor 2: Turn-lane behavior

Turning from one road onto another requires vehicles to stop and wait for an opening in cross traffic. This of course has the potential to block other vehicles traveling in the same direction. To counter this, some lanes are designated, and marked, as turn-lanes. Sometimes the turn-lane is an additional physical lane, extending only a few hundred meters from an intersection, and sometimes it is nothing more than turn-arrows painted on a regular straightaway lane. In either case, the basic idea is to create separate paths for vehicles waiting to turn and vehicles going straight. Vehicles intending to turn must maneuver into one of these designated lanes early enough to fall into the line of other waiting vehicles. Vehicles which do not maneuver early enough to fall into line must proceed to the next intersection. This is anti-congestion at it's simplest, ensuring that a pathway is kept free for straight-moving traffic. In the absence of flyovers or other infrastructure solutions, this is the best way to prevent congestion at turn-points.

On Metro Manila roadways, however, turn-lane discipline is spotty at best. It is common to see all (or most) straightaway lanes blocked by vehicles waiting to turn. The chokepoints created by this behavior cause considerable congestion as straight-moving vehicles try to squeeze through a reduced number of straightaway lanes. Turn-lane chokepoints occur for one of two reasons:

- Poor driver planning. Some drivers simply fail to anticipate the turn early enough. Unwilling to proceed to the next intersection, these drivers typically slow down and try to cut into the line wherever possible.

- Simple lack of discipline. As a result of the aggressively competitive nature of Manila traffic, many drivers make a conscious decision to cut into the front of the line, oblivious to (or unconcerned about) the congestion they are causing.

Under current enforcement practice, traffic enforcers try to decongest these chokepoints by directing violators to continue the turn, often ahead of those waiting in proper turn-lanes. In effect, violators are rewarded by being allowed to bypass the line. This is a counter-productive enforcement strategy.

To create a change in behavior, enforcers must do two things. Most importantly, they must never allow violators to complete the turn. All vehicles attempting to turn from a non-turn lane must be directed to proceed to the next intersection. This is the driver-training element. In addition, many, if not all, of those violators should be pulled over and issued a traffic ticket. This is the deterrence element. For many drivers, the fear (and certainty) of being ordered back into straightaway traffic, and the added travel time that will entail, will be enough to change their driving behavior after only one or two interventions. The likelihood of receiving a ticket and fine will reinforce the motivation to comply.

Note: In Metro Manila, many of the secondary roads, which receive vehicles turning from main arteries, are not able to absorb traffic fast enough to prevent long lines in the main road turn-lanes. Although frustrating to waiting drivers, this cannot be allowed to serve as an excuse for turn-lane violations. Regardless of how long the turn line becomes, it is critical that it remain single-file. The number of lines waiting to turn must never exceed the number of receiving lanes, and an adequate pathway must be kept free for straight-moving traffic. Straight-moving traffic must take priority over turning traffic.

Enforcing turn-lane discipline is another very simple measure that will result in a near-instant reduction in congestion on Metro Manila roadways.

Congestion factor 3: Intersection behavior

Intersections are the points in a traffic network where vehicles traveling in different directions cross (or intersect with) one another in alternating turn. Intersections can be quite complex or very simple, but they all use a system of signals to tell drivers when to stop, when to proceed, and when to turn. These signals might be automated, in the form of standard traffic lights, or they might be manual, in the form of a live traffic policeman. Regardless of the form, it is essential that drivers follow these instructions without question and without hesitation.

For purposes of this discussion, I will assume that the signal-lights are timed and functioning properly, and that the traffic enforcers are properly trained. In reality, both elements need urgent attention.

At a typical intersection, traffic in one direction is held, while cross-traffic is allowed to proceed. At regular intervals, the moving traffic is directed to stop, and the waiting traffic is allowed to proceed. It is at this transition point where congestion is most likely to occur.

Naturally frustrated by a long wait, drivers at the head of the line often attempt to cross through the intersection even after being directed to stop. Unable to cross completely, they find themselves sitting in the middle of the intersection, blocking the path of the newly crossing traffic. Cross-traffic must now navigate around this chokepoint, forcing many drivers to wait an additional cycle (or more) before crossing through the intersection themselves.

It is this failure to stop when instructed to do so, or simply when it is not possible to cross the intersection completely, that causes cascading congestion on the roads leading to intersections. And as with other behaviors previously described, this particular problem results from the simple fact that intersection discipline has never been truly enforced on Metro Manila roadways.

The solution, again, is quite simple. First of course, signal-lights must be properly timed and maintained, and enforcers must be properly trained in traffic control techniques.

Next comes the Rule of Law phase. In Metro Manila, using enforcers to control traffic, even at intersections with working signal-lights, has become necessary because drivers simply do not obey the signal-light instructions. And even then, it is common to see as many as 4 or 5 enforcers manning a large intersection, with each enforcer handling the flow from a single direction. This is the same '*cattle-herding*' strategy used in managing buses at loading points. And, as with buses, it places no responsibility on the drivers for self-discipline. It also wastes resources (enforcers) that could be used elsewhere.

Although there are certainly times when human intervention is needed at an intersection, it should not be common practice. Drivers must be trained to comply with automated traffic signals (as well as with the instructions of live enforcers), and again, the best way to do this is through consistent ticket-based enforcement. This will initially require teams of enforcers, performing two distinct tasks. One group should direct traffic in the intersection, while the second group detects and cites violators. Acting with zero-tolerance, the citation team should stop drivers and issue tickets for any and all intersection violations. As explained earlier, the idea is to shift the responsibility for order and compliance onto the shoulders of the drivers.

Once the compliance mindset has taken hold, most intersections should be able to function efficiently with properly-timed traffic lights alone, requiring only spot-monitoring by enforcers. At peak traffic periods, when manual control becomes necessary, there is no reason a single properly-trained enforcer should not be able to manage even the most complex intersection. This will not be an overnight transformation, and ticket-based enforcement must continue aggressively. In fact, it may take years of zero-tolerance enforcement before these behavioral changes become permanent, but the practical results will be seen much sooner than that.

Congestion factor 4: Pedestrian behavior

Pedestrians are the only element of traffic that naturally operate across, rather than with, the vehicular flow. As such, they have the potential to disrupt traffic significantly, by crossing at non-designated places or through moving traffic, and by standing in the roadway while waiting for public transportation.

Although they make up a substantial percentage of the overall traffic system, pedestrians are largely ignored by enforcers. When manually controlling an intersection, enforcers do not stop traffic to allow pedestrians to cross safely, and it is not uncommon for enforcers to signal for traffic to start moving even though crossing pedestrians are directly in the path of those vehicles. Pedestrians crossing against a red crossing light, or through moving traffic, are never stopped by enforcers. In fact, enforcers seem to consider pedestrians a non-traffic element, no different than dogs or cats crossing the roadway.

In addition to being essentially invisible to traffic enforcers, pedestrians are also ignored by drivers. Crossing in a marked cross-walk is no safer for a pedestrian than jaywalking. Whether on a major roadway or in a suburban neighborhood, vehicles simply do not yield to pedestrians. In fact, it is not uncommon to see pedestrians, who are already inside a marked cross-walk, being forced to stop in mid-crossing for passing vehicles.

In those intersections equipped with automated pedestrian-crossing lights, the design itself is faulty. When a pedestrian light turns green, indicating that it is safe to cross, the flow of straightaway traffic is stopped, but turning traffic continues to turn through the cross-walk. Some of those intersections use a green arrow to indicate when turning is allowed, but there is no red arrow to show when it is not. In practical terms, although it looks like a working system on the surface, there is really no safe-passage window for pedestrians.

Not denying the fact that pedestrians are generally undisciplined with regard to traffic, this lack of protection must also be recognized as part of the reason for their non-compliance. It's a case of "*What's the point of following the rules*"? Pleas from authorities for discipline, and even the inherent risks associated with crossing at non-designated points, will not change the behavior of pedestrians who feel they have no safe alternative.

Enforcers must manage pedestrians as part of the overall traffic scheme, providing safe passage for crossing, but also enforcing rules on improper crossing. At intersections, this may mean stopping the vehicular flow in all directions periodically, to allow safe crossing on all sides. Drivers who fail to yield to a pedestrian in a cross-walk, or who stop inside a cross-walk, must be issued a traffic ticket. But a pedestrian crossing improperly must also be dealt with. In most cases, a sharp whistle blast and direct verbal instruction may be enough to control pedestrian behavior, but punitive action may also be necessary. Pedestrians simply cannot be ignored by enforcers.

Passengers waiting in large numbers for public transportation constitute another congestion-causing problem. It is very common to see these crowds standing in the actual roadway, blocking one or more lanes, at bus and jeepney loading points throughout Metro Manila. In some areas, these points are spaced closely enough to each other along the roadway to cause drivers to avoid using one or more lanes altogether, reducing the overall traffic-carrying capacity of the roadway in those areas.

One of the main causes of this behavior is the fact that buses and jeepneys do not move to the edge of the roadway when stopping to load and unload passengers. As mentioned above, it is common practice for public transportation vehicles to stop in the actual traffic lane, in order to expedite the loading/unloading process. This, in turn, encourages passengers to stand farther out in the roadway while waiting for those vehicles.

The solution to the problem of passengers blocking traffic is simple: To control the waiting passengers, we must control the buses and jeepneys. These vehicles must be required to position themselves parallel to, and near, the edge of the roadway when loading or unloading passengers. Enforcing the single-lane bus-lane will significantly reduce this problem. In addition, enforcers must not allow buses or jeepneys to stop at locations where pedestrians are standing in the roadway. Keeping pedestrians out of the roadway will result in a substantial reduction in congestion.

SUMMARY

It is important to recognize that there are two types of congestion in Metro Manila: volume-based and behavior-based. Volume-based congestion can and should be addressed through capacity-management measures (reducing the number of vehicles on the roadway, or constructing additional road space), but it must be understood that most people on Metro Manila roadways are there because they need to be there. Volume can be reduced to a certain extent, but for the most part, the same number of people will need to travel to the same places, and at the same times, each day. And, as mentioned above, it is a well-established fact that traffic volume will always expand to meet the available capacity, which means that building more roads is only part of the solution.

Behavior-based congestion, on the other hand, can be significantly reduced much more quickly and at a much, much lower cost. Enforcers are already employed and equipped, but they are not being utilized effectively. Active enforcement, in which a traffic policeman looks a driver directly in the eye and says "*You cannot do that*", backed by a properly managed system of tickets and penalties, will result in order. And that order will result in improved efficiency, safety and civility. Improving the efficiency of the flow, through the simple act of enforcing traffic laws and procedures, is the logical first step.

This plan is, in effect, Phase I, and it does not, by any means, address all aspects of the Metro Manila traffic environment. Traffic will always be a problem, simply because of the size of the population and the sheer number of vehicles on the road. Money will still have to be spent, and infrastructure will still have to be added to meet the ever-growing demands of this ever-growing metropolis. But I stress again, that we should focus efforts first on decongesting the roadways by improving efficiency before spending billions of pesos on construction projects that may have little permanent effect on the problem they are intended to solve. Lack of discipline will continue to cause congestion, regardless of how many elevated roadways we build.

This paper intentionally avoids the phrase '*restore order*', opting instead to use '*impose order*'. The vehicular traffic system in Metro Manila has grown from the early *calesa* stage into today's million vehicle network without ever having evolved the necessary paradigms of discipline and enforcement. As a result, it has become both culturally and logistically difficult to change driving behavior, despite the fact that this change would benefit all. Many different solutions have been tried, and a considerable amount of money spent, with little or no real effect on congestion. The one method that has never been tried, at least not with whole-hearted effort, is the one that is most sure to bring about the greatest improvement. By enforcing the plan I just outlined, I am confident that congestion can be reduced significantly in a matter of months.

The choice is painfully simple: Either we allow third-world traffic behavior to continue, and to cause the kind of costly congestion we now have, or we choose to impose order, and improve our traffic system, our economy, and our reputation.

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