

FROM ZERO VISION TO VISION ZERO: Eliminating traffic violence in Kenya is possible

The just-concluded holiday season saw people take to the roads en masse. Like in every holiday season, there were several road crashes that led to the death of people. Perhaps this a good time to reflect on why we seem to have made so little progress in addressing this form of deadly violence.

Across the globe, vehicles kill great numbers of people - about one person every 24 seconds. Road crashes are now the number one killer of young people over five years of age. The idea that this massive amount of death can be captured by the term "accidents" needs challenging. What we are talking about is *traffic violence* caused by deliberate action or inaction in the face of knowledge about how to prevent these deaths.

In African countries with relatively low motorisation rates, citizens primarily use non-motorised means of transport or public service vehicles. This presents an opportunity to build particularly safe streets. Instead the number of deaths per vehicle is sadly very high. The Nigerian trauma doctor, [Ola Orekunrin](#), notes that this is much neglected by the public health community.

Kenya is no exception. The World Health Organization (WHO) [estimates](#) that every year between 3,000 and 13,000 people (mostly pedestrians, cyclists and boda boda riders) die in road crashes. The National Transport and Safety Authority (NTSA), which to its credit is now trying harder to report "accidents", tells us that 3,146 people [were killed](#) on Kenyan roads last year; most of them were pedestrians. The actual number of deaths is likely to be much larger as many are not reported, especially in remotes areas, and in many cases [police do not follow through](#) to discover the fate of victims who pass away in hospitals.

Many more people, including many children, are maimed, left with disabilities or [traumatised](#). Road crashes impose enormous burdens on individuals, their families and communities, the health care system, and the country. Victims must deal with medical bills, legal and insurance wrangles, loss of work and abilities, great emotional distress and grief. As economically productive people die or

become disabled or impoverished, the country as a whole takes an enormous economic hit. Some estimates suggest that over 5.6 per cent of Kenya's GDP [is lost to crashes](#).

A new approach: Vision Zero

The sheer magnitude of this carnage and suffering should prod us towards some new thinking based on a deeper analysis of what causes this form of violence. Indeed, understanding road deaths *as a form of violence* is the first critical step.

People make deliberate choices at an individual level (to drive while drunk, for example) and also at a policy level (to build streets without safe pedestrian facilities) that result in violence. We should also learn from places where real declines have occurred in road fatalities. In these places, this violence is not accepted as a normal price to pay for mobility, and the goal is, in fact, set for zero deaths or "Vision Zero".

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Vision Zero interventions start with the premises that humans are flawed and likely to make mistakes in judgement and also that vehicles are very dangerous and get more so with speed. As one of the architects of this approach, Dr. Claus Tingvall, [emphasises](#), "In every situation a person might fail. The road system should not." Based on this premise, people have to take a more systems-based approach and get to work by designing streets and rules on streets that reflect these realities.

Evidence exists that the "Vision Zero" approach works. In 1997, Sweden's parliament [made it law](#), giving it force, prominence and legitimacy. The main policy innovation was to place responsibility for road safety squarely on the system's designers and also to shift the paradigm from acceptance of a certain number of road deaths to the idea that this violence should be eliminated entirely. This meant promoting a collection of measures, including using research and data, to actively redesign streets and to create incentives to reduce crashes.

In Sweden this approach seems to have worked. Official statistics suggest the number of road deaths halved and that the number of deaths among car users decreased by 60 per cent between 2000 and 2010. [One scholarly study](#) notes that “while the decrease has stagnated somewhat after 2010, Sweden’s roads are still among the world’s safest, with only 3 of every 100,000 Swedes dying on the roads each year, compared to 10 in the USA.” (In Kenya, WHO estimates that this figure is 34.4 per 100,000 people.) Since the Swedish experiment, “Vision Zero” programmes have been adopted by cities like [New York](#) and Los Angeles, working better in the former than in car-dominated Los Angeles in part because New York was more aggressive about redesigning dangerous intersections and reducing speeds.

To illustrate how a Vision Zero approach works, Dr Tingvall gives an example of an intervention in a rural area where people drink a lot. It was discovered that people were dying while trying to pass each other on a two-lane road. To address this specific problem, one intervention that worked was to turn the two-lane road into a narrower single lane, slowing everyone down and making passing impossible. Along with other measures, such as discouraging drinking and driving (also critical in Kenya), this led to a decline in crashes and deaths. Narrowing street space for cars appears to have a psychological impact on drivers and to cause them to slow down.

Another example is keeping roundabouts in place instead of lights at four-way intersections, because even though the crashes might be reduced by lights, the higher speeds involved in collisions in a four-way intersection are deadlier. Human life rather than speed should take the priority in design.

Vision Zero for Kenya?

Could Kenya take such a “Vision Zero” approach and adapt it to its situation? Would it work? I will argue that advocating, adopting and adapting some aspects of this approach seem critical to addressing traffic violence in Kenya. A systems approach would, in fact, mean facing some of the entrenched problems on Kenyan roads (and a health care system that [needs more resources](#) to cater to the scale of the problem but we will focus on prevention).

Some of these problems include: 1) “failure” of police enforcement which, as we all know, is a system of extraction from road users; 2) failure of the government

(especially the engineers who choose for Kenyans what kinds of roads to build) to take responsibility for systems problems such as design that kills; and 3) car-dominant and elitist investment decisions with a self-interested focus on rapid highways for a minority of car users.

We know that the police enforcement system in Kenya is broken and needs repair. In 2009, [the Ransley Report on Police Reform](#) argued that the traffic police need revamping. This includes building traffic management systems that do not require their direct involvement. The police also need better training and ICT systems, including for keeping track of crashes. The NTSA is working on some of these reforms. While this is a step in the right direction, it does not address some of the deep problems that undermine enforcement.

It is well known that some senior police officers and politicians who are supposed to play an oversight role over traffic police and public service vehicles have serious interests in the sector. The 2009 Ransley Report noted the profound conflict of interest and breach of ethics when traffic police own public service and breakdown vehicles and emphasised that “the problem of conflict of interest has become so widespread that it has undermined the capacity of police to impartially enforce regulations”. We skirt this issue every time there is an outcry after yet another horrific crash. The reaction is always to blame and crack down on matatus as if public service vehicles are the only problem rather than the broader institutional context in which they operate.

The Ransley Report also suggests harsher fines that can be tied to all offenders, including private vehicle owners. Ideally, those who consistently get into crashes should be made to pay higher insurance rates and should eventually lose their licences. However, this approach, especially with the current enforcement problems, is unlikely to work in the near term under present conditions. Instead of only looking at punishment as a means of penalising irresponsible road users, a Vision Zero approach would push us to ask what kind of positive incentives and design changes we can use to address traffic violence.

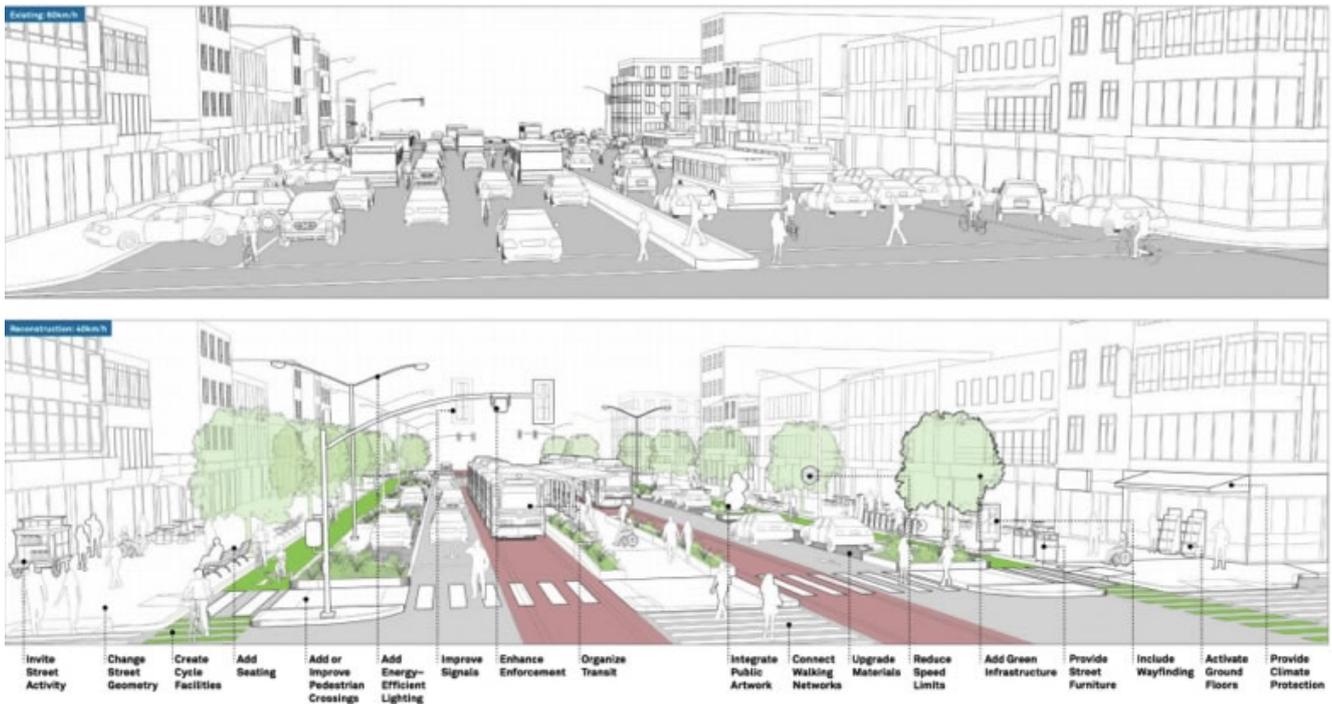
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interest has become so widespread that it has undermined the capacity of police to impartially enforce regulations”.

In the matatu sector, one of the potentially largest but most neglected factors in road crashes is the poor labour conditions of drivers. This includes working very long hours in difficult conditions and a target system (instead of a fixed salary) that encourages speeding and reckless driving. [Emerging evidence](#) from experiments in Nairobi suggest that drivers will slow down and improve driving if they are monitored with devices and paid more. eThekweni Municipality in South Africa is experimenting with [Moja Cruise](#), a programme to give service contracts to minibus operators so that they get paid for better service, including reduced speed, and this can be monitored with tracking devices.

Rather than looking at positive incentives for change, the reaction of the Kenyan government always appears to be punitive, avoiding to take responsibility for its own failure to design a safer public transport system. Instead, it persists in blaming the matatus by imposing new costs and fines without putting resources into the system to reduce the incentives for drivers to speed and drive recklessly. An increase in punishment and requirements under the current poor enforcement system tend [to raise revenues](#) and feed the police extraction system, which ironically can mean that drivers will need to try to make up any lost revenue, probably by driving faster.

Secondly, we know, and the Vision Zero experiments have proven, that road design is also a big factor in crashes. A standard “safety audit” is available to test for many of these flaws. Kenyans know this: they talk about “black spots” - places that are well known for having an inordinate number of flaws that cause crashes and death. To my knowledge few of these black spots have been analysed and redesigned as a Vision Zero approach would demand. Mandatory safety audits by independent parties with real power to enforce safe design is also key and not yet required by law in Kenya.



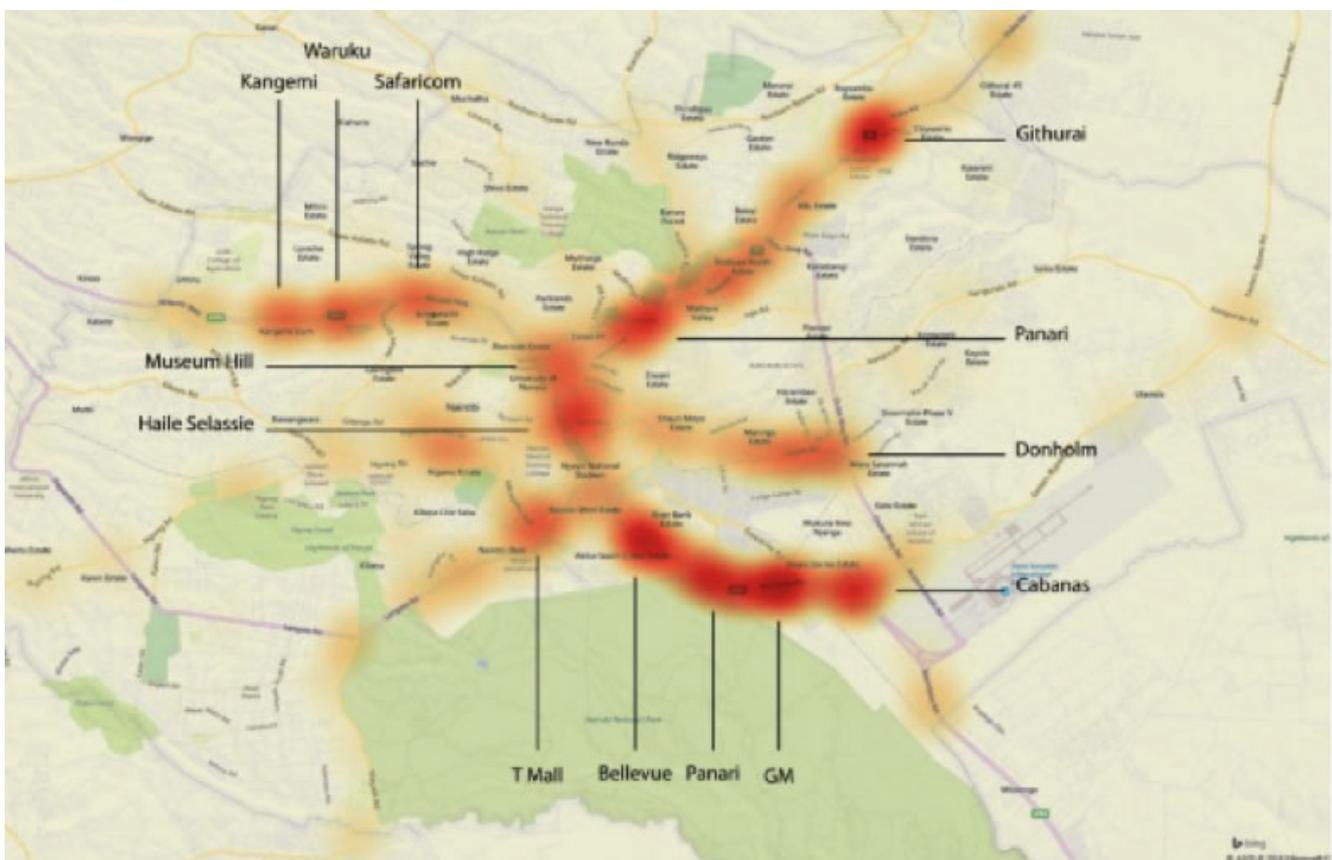
Street guideline-but adapted to local conditions- are critically important to develop. This is an idea of what redesign can do for a street from the Global Street Guidelines developed by NACTO.

Despite international encouragement and available funding, the government has actively resisted improved standards for road designs. Advocates, including many road engineers, have been asking for these new standards, especially for urban roads where conflicts between pedestrians, cyclists, bodaboda, personal and freight vehicles as well as matatus are strong and need urgent addressing. Out of these conflicts emerge fatal encounters. When road designs prioritise rapid vehicles instead of a complete streets approach to creating a safe and orderly flow of people, including proper sidewalks, matatu stops and crossings for safe passage of pedestrians, the results are deadly. Indeed, the essential insight is that road designers must plan for the flow of *people not vehicles*.

Finally, it is hard to avoid the conclusion that some decision-makers in the Kenyan government are willing to accept the horrific price of traffic violence (even as it risks their own lives and the lives of those they love) for narrow material gain through road contracts built with [minimal transparency and proper safety standards](#). They continue to distract attention with increasingly hollow refrains about personal responsibility (see [this video](#) of a public forum in 2012 on Thika Highway) while adamantly refusing to accept the kind of responsibility for safe systems design that Vision Zero demands.

Even with the increased rhetoric around bus rapid transit (BRT), we see the continued prioritisation of car-oriented investment projects without proper design and safety standards in place. When justifying these projects, proponents always cite a figure for time lost in traffic (ignoring pedestrians) but not the number of road deaths that seem to follow in the wake of these highways, which have long been discredited in most of the world as a means for addressing congestion. As one example, consider the absurd plan in Nairobi for yet another very expensive elevated highway from the airport to the CBD instead of a street and network redesign to improve existing flows of people.

This is all being done even as we have data to show that highway “improvements” have helped create massive numbers of death. The diagram below comes from a superb [project](#) by Elisabeth Resor and Ma3Route that mapped crashes over a 6-month period from May to October 2015. It is clear that the upgraded highways are where the most crashes and deaths happen. More data from the NTSA and a new soon-to-be-released study by the World Bank show that these highways are profoundly dangerous and need addressing immediately if we care about traffic violence.



This is heat map of crashes from Nairobiaccidents.com. It shows major black

spots (areas with higher than average accident concentrations) in Nairobi; the darker the area the greater the number of crashes.

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Yet, instead of looking this systems failure squarely in the face an (elevated) highway for rapid vehicle travel [is being planned](#) instead of a redesign and improvement of existing problematic highways, which, in turn, could actually address some of the congestion issues as well. For example, why not first focus on improved matatu and bus service on the Mombasa highway, including some form of BRT or dedicated service vehicle lanes, as well as better and safer pedestrian crossings and traffic management, and then see what else might be needed?

Given what we know about traffic violence and some of the best approaches to reducing it, it is hard to escape the conclusion that the Kenyan authorities are deliberately failing to address road violence. New approaches and ideas are available, but perhaps some in charge may be distracted by money that can be made through continuing to build expensive, deadly roads. Instead of Vision Zero, it appears we have zero vision on moving forward.

This will continue if proponents of combatting traffic violence do not find ways to hold those designing the road systems to account. Adopting a Vision Zero approach may be a powerful step forward and way to do this. It reorients the responsibility to where it belongs and promotes some proven tools for going from roads for cars to safer, complete streets for people. It may also bring in new allies from cities and countries like Sweden that have proven methods for taming the violence on roads.

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This approach could build on some of the positive work the NTSA has been doing along with some of the counties. Nairobi, for example, has [a strong Non-Motorised Transport Policy](#) that includes as a key action item, new road design guidelines and prioritising walking along with traffic calming in the city centre.

[A survey my centre conducted in 2015](#) showed that an overwhelming number of Nairobians want lower speed limits, especially in the vicinity of schools. Activists managed to pass a yet to be fully implemented [Traffic Amendment Act 2017](#), which mandates actions for safer school travel including redesign and calming in streets around schools. A growing number of activists from the [heroic “Lollipop Man”](#) to civil society organisations are working to improve streets and safety. Vision Zero might just help give a new frame to push for badly needed change. Given the scale of the everyday terror and carnage of traffic violence in Kenya, it is at least worth a try.

Safari njema!

For further reading see the recent report [At the Crossroads: The Politics of Road Safety in Nairobi](#) by ODI and the latest [WHO Global Status Report on Road Safety](#)

Michuki Rules!



THE WALKING POOR: Nairobi Privileges the Motor Vehicle, Not the People

The return of the “Michuki Rules” (the stringent rules established by John Michuki, the former Transport Minister in Mwai Kibaki’s government) that targeted public transport operators has precipitated days of traffic chaos as matatus, the backbone of what passes for the city’s public transport system, declared a strike in protest. Newspaper headlines bemoaned the agony visited on drivers and commuters, with some decrying the traffic gridlock that ensued as private cars flooded the roads. The *Daily Nation* describing it as a “day of walking”.

It is a telling description and speaks to the low regard with which pedestrians in Nairobi are held. This despite the fact that even when matatus are on the roads, most Nairobians leg it to wherever they are going. According to the World Bank, more than 8 out of every 10 commutes involve walking as the primary or secondary mode of travel. Half of those trips are made completely on foot. The 2010 draft Sessional Paper on Integrated National Transport Policy states that nearly two-thirds of the city’s residents meet their daily travel needs by walking or cycling.

Despite this, the focus on motorised transport is understandable given the truly terrible state of transport infrastructure and traffic congestion. The Traffic Index 2018, a composite index published by the Serbia-based website numbeo.com (which claims to be “the world’s largest database of user contributed data about cities and countries”) rates Nairobi as having the 12th worst traffic in the world, with one-way journeys averaging just under an hour. The World Bank [says](#) that Nairobi has “one of the world’s longest average journey-to-work times” with commuting speeds of just 14 kilometers per hour.

Since 2013, city authorities have embarked on an ambitious road expansion scheme to tackle the congestion, but it seems that the roads are filling up faster than they can build them. Dorothy McCormick, a researcher at the University of Nairobi, told the *Guardian* in 2016 that Nairobi’s vehicle population had grown

16-fold in under 30 years and the former Nairobi County Governor, Evans Kidero, once observed that at the current rate of registration, Nairobi's vehicle population was likely to surpass 1.35 million by 2030.

In such circumstances, it is perhaps not surprising that the needs of pedestrians are mostly kicked to the kerb. In fact, as New York-based CityLab [notes](#), "The ongoing battle for the roads of Nairobi is an extension of the city's broader class segregation: Cars, a transit option for the city's upper classes, command the road with superiority. Pedestrians, many of whom belong to Nairobi's lower class of informal laborers, are funneled into dangerous and uncomfortable walking environments".

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Nairobi's love affair with the automobile and the classist segregation of public spaces it represents has a long history. The article "[Politics, policy and paratransit](#)" by Jacqueline Klopp of Columbia University and Winnie Mitullah of the University of Nairobi states that "European settlers and officials 'planned' the city of Nairobi around personalised transport which facilitated physical segregation in terms of mobility". By 1928, just over two decades after it became the official capital of Kenya, the city had 5,000 cars "making it the city with the highest per capita private automobile ownership in the world". Thus traffic was a major concern even then. But it was still a city more concerned with the problems of a wealthy motoring few rather than those of the majority of its citizens. Europeans and Asians drove. Poor Africans have always walked.

Just as there was little planning in place to cater for the residential needs of the African majority (which resulted in the mushrooming of slums across the city) so there was little thought given to how they would move around. "The colonial, segregationist urban economy failed to cater for people who were not formally employed by the colonial government," Klopp and Mitullah note.

When the Nairobi Town Bus, the precursor to Kenya Bus Services, was inaugurated in the 1930s, it was largely for the benefit of Europeans and Asians, as Isaiah Gibson Aduwo [noted](#) in 1990. In the 1940s and 1950s, the Kenya Bus Services “served the Eastern parts of the city [where Africans lived] using vehicles built on lorry chassis” according to the paper “[The Metamorphosis of Kenya Bus Services Limited in the Provision of Urban Transport in Nairobi](#)” by Tom Opiyo of the Department of Civil Engineering.

In fact, the growth of the matatu industry, which is the source of so much grief nowadays, is a direct result of Africans entrepreneuring their way around the public transport problems that the city government had failed to resolve given that the bus service remained out of reach for all but a minority of city residents. Still, nearly a century after it received its charter as a city, the only major change in the character of Nairobi has been the replacement of the colour bar with one based on class.

The class “battle for the roads” is over a tiny sliver of Nairobi’s land into which motorists, commuters and pedestrians have been pushed by decades of uncontrolled land-grabbing. A study by the United Nations Human Settlements Programme (UN-Habitat) [revealed](#) that in the central part of Nairobi, the space allocated to streets and pavements is only about 12 per cent of the total land area, less than half of the [estimated 30 percent](#) required to support a functioning traffic system in a modern capital. The walking poor have to struggle daily for this constricted space on the street with the very perpetrators whose theft of public land has created this situation.

The privileging of the automobile has had a detrimental effect on the community life of the city. “Increased traffic has adverse impacts on public activities which once crowded the streets, such as markets, agoras, parades and processions, games, and community interactions. These have gradually disappeared to be replaced by automobiles,” notes the authors of the book [The Geography of Transport Systems](#). “In many cases, these activities have shifted to shopping malls while in other cases, they have been abandoned altogether.”

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allocated to streets and pavements is only about 12 per cent of the total land area, less than half of the estimated 30 percent required to support a functioning traffic system in a modern capital.

Few stop to ask about who ends up sacrificing the most at the altar of the vehicle and whether it is fair. After all, the vast majority of the walking poor do not hang out at the new swanky malls popping up across the city. Regardless, it is they who end up paying the highest price, both in lives and treasure, for Nairobi's dysfunctional system, even when they benefit least from it. According to the National Transport Safety Authority, 60 per cent of fatal accidents on the city's roads involve pedestrians. They also suffer a much higher rate of injury than other road users. Even the introduction of bodaboda (motorcycle taxis), which have brought motorised transport closer to the poor, has been quickly followed by a spike in accidents and deaths involving them.

Further, the street network is ultimately funded by public taxes, and it is the poor who contribute most of that. The rich and the middle classes may have a higher share of income tax but the poor, by sheer force of numbers, more than make up for it in the taxes they pay for accessing goods and services - the government's largest single source of tax revenue. They basically subsidise car-owning residents' travel on roads from which they themselves are actively excluded. And this has real implications for their ability to escape poverty as, according to the World Bank, for the average household, only 2 out of every 10 formal jobs are accessible within an hour of either walking or using public transport. In a car, however, that number rises to 9 out of every 10 jobs.

Today, the walking poor are mostly still treated as an after-thought when designing, building and repairing streets. The expansion of roads may be popular but it also generates huge inconveniences and dangers. Pedestrians are forced to either take long detours to find the nearest safe bridge to cross or to risk their lives trying to dash across six or eight lanes of road. The recently expanded Outer Ring Road in the poorer eastern part of the city features almost no facilities, such as bridges or pavements, for pedestrians to safely cross or even walk. However, it is interesting to note that when roads were expanded in the wealthier parts of the city, such as in Kileleshwa, most of whose residents drive to work, sidewalks and bicycle lanes were included.

But that is an exception. Even when it comes to patching up streets, pedestrians are still left with the short end of the stick. It is common to find smooth roads lined with cratered pavements, which are peppered with open manholes or have been turned into parking spaces.

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As we increase the city acreage devoted to cars, there is little corresponding increase in land devoted to people. Within the city's Central Business District, only two streets (Mama Ngina Drive and Aga Khan Walk) are devoted to pedestrian and non-motorised traffic. Hawkers are actively barred from accessing the CBD while matatus and buses can occupy streets (and pavements) for hours on end. In many city estates as well, home owners have grabbed sections of kerbs bordering their properties and converted them into parking spaces or flower gardens.

The county government has been making noises about introducing car-free days to encourage people to leave their vehicles at home but that will not happen as long as the city continues to be organised as it is. "[T]he default in Nairobi for the proper road user is the car," [notes](#) Amiel Bize, a Columbia PhD candidate who has been studying pedestrian safety in Kenya since 2010.

Undoubtedly, the capital needs a sane motorised public transport system. It also needs to take care of its congestion problem. However, none of these objectives can be achieved if it does not take care of its walkability problem. The goal of re-engineering and reinventing Nairobi as a city for people, rather than a city for vehicles, will remain elusive as long as it does not cater to the needs of the majority of its population. It is this that led to Nairobi being [ranked](#) a lowly 186 out of 231 global cities in the New York-based consultancy Mercer's 2018 quality of living survey.

Much of this will involve undoing a century of misconceptions about the desirability of walking. These misconceptions are captured in the *Business Daily* headline that read: "Traffic congestion slows down Nairobi to a walking city." Yet

the idea of “a walking city” is not a lamentable consequence of a failure of motorised transport but rather should be the desired outcome of effective policies to decongest roads. In fact, as [The Geography of Transport Systems](#) notes, “people tend to walk and cycle less when traffic is heavy”. The book emphasises that “traffic flows influence the life and interactions of residents and their usage of street space. More traffic impedes social interactions and street activities.” With the introduction of modern light rail, the Ethiopian capital, Addis Ababa, [demonstrates](#) how a combination of policies to improve public transport and a consistent commitment to investing in pedestrian infrastructure can help regenerate cities.

Rather than implementing separate policies, such as the Michuki Rules, to tame matatus and beating Kidero drums to tackle congestion, Nairobi should adopt an integrated plan whose aim should be to make the city a more humane and walkable place to live - a city where the streets are transformed from theatres of conflict and exclusion to arenas of interaction that welcome all people regardless of class.

NAIROBI: A city in which 'contempt for the resident is everywhere apparent'

“The people are the city.” - Citizens in William Shakespeare’s Coriolanus

At the crack of dawn, roughly between 5a.m and 7a.m, the “Great Trek” in Nairobi begins. Hordes of security guards, domestic workers, office cleaners, factory workers, vegetable hawkers, office messengers and *jua kali* artisans, among others, start their journey to work - on foot. It is a scene to behold. Thousands of people purposefully walking on roads meant for cars - sometimes for as long as three hours - to report to work by 8a.m., if not earlier.

These are the forgotten people, the ones the city’s urban planners have not

catered for since Nairobi came into existence more than a century ago - when the city was planned as an [apartheid city](#), built for a minority white elite that owned cars. Since then Nairobi has been characterised as a city that lacks pavements. Road builders either fail to build pavements during construction or pavements are so small or dilapidated that people have to use the road when walking.

However, even the roads meant for cars are failing the city's residents. Traffic jams have become so normal in Nairobi that people plan their days around them. Moreover, recent [proposals](#) to have "car-free" days will not have the desired impact because those who use private cars are unlikely to walk to work or use public transport. To make matters worse, the frenzied construction of apartment blocks in residential areas has not been accompanied by a commensurate increase in the number of roads and pavements. On the contrary, the construction of office blocks and apartment buildings in many neighbourhoods has led to the uprooting of precious green spaces.

A [World Bank study](#) estimates that around 40 per cent of trips in Nairobi are made on foot. Matatus and minibuses account for 30 per cent of these trips while buses account for 10 per cent. Only slightly more than 10 per cent of the city's population uses private cars. Unlike in many European cities, where walking is considered a lifestyle choice, and where pedestrian pathways and public transport is part of the transport infrastructure, in Kenya a large number of people walk because they can't afford any other means of transport. Urban transport here is, therefore, not only deeply related to poverty and inequality but also to poor or non-existent transport infrastructure, including sufficient roads and pavements.

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According to *Streets as Public Spaces and Drivers of Urban Prosperity*, a UN-Habitat report published in 2013, Nairobi has allocated just 11 per cent of land to roads, which is way below the optimum level of around 30 per cent. (About a third of the land in Manhattan, for instance, is [allocated to roads and pavements](#).) Moreover, the scarcity of roads is evident in both rich and poor neighbourhoods. For example, only 3 per cent of the land in both the up-market Muthaiga and the

low-income Kibera is made up of streets. This is worrying because roads and pavements are not just important for mobility, they are also important for the development of related infrastructure, such as water and sewerage systems, which are usually laid down along existing road networks. According to the report, fewer roads and poor road connectivity make cities less prosperous.

Build it and they will come?

But will the construction of more roads improve mobility in the city? Not necessarily. Evidence suggests that more roads in urban areas can actually make mobility more difficult. During the Mwai Kibaki administration, for example, there was a concerted effort to build more roads and highways in Nairobi, ostensibly to ease congestion and improve transport infrastructure. The irony is that despite having more roads in the city, traffic in Nairobi has reached nightmare proportions

This contradiction was predicted some years ago by Enrique Penalosa, the former mayor of the Colombian capital Bogota, when he gave a public lecture at Nairobi University a few months before the construction began. Penalosa said that expansion of the road network in many cities had shown that instead of reducing vehicular traffic, the traffic actually increased. This could be attributed partly to the “build it and they will come” logic that is based on the idea that the building of infrastructure is itself an incentive for more people to use it.

In Nairobi, there has also been a marked increase in the number of private vehicles and matatus on the roads. The construction of highways has also improved connectivity with satellite towns, which has increased traffic flow into the city. These are probably some of the reasons why, despite the construction of several bypasses on Mombasa Road, Uhuru Highway remains the most congested main artery in the city at all hours of the day. The construction of the Thika Superhighway has had a similar effect: the highway has led to urban sprawl as satellite towns have emerged along it, with the result that more commuters from peri-urban areas are now using the highway.

The former mayor of Bogota said that instead of making more room for cars, cities should make more room for pedestrians, cyclists and mass rapid transit systems. This would encourage residents to use alternative forms of transport, which would lessen traffic on the roads.

When he was mayor of the Colombian capital Bogota between 1998 and 2001, Penalosa created a bus rapid transit system featuring bus-only lanes. Penalosa will also be remembered for building an extensive network of bicycle paths and pedestrian-only streets at a time when cities such as London and Paris had not even thought of them. (Now both London and Paris are emulating the Bogota example.)

Penalosa believes that today's cities need to be totally re-designed to cater for pedestrians and cyclists. In an interview with the online *Citiscopes* magazine, he stated: "For 5000 years we designed cities for people without cars. When cars appeared, we should have begun designing totally different cities. We did not. We just made bigger roads."

When he was mayor of the Colombian capital Bogota between 1998 and 2001, Penalosa created a bus rapid transit system featuring bus-only lanes. Penalosa will also be remembered for building an extensive network of bicycle paths and pedestrian-only streets at a time when cities such as London and Paris had not even thought of them.

Streets as public spaces

In Nairobi, planners and policy makers are planning for vehicles, not pedestrians. This is in sharp contrast to trends in Europe where citizens are reclaiming their streets as "public spaces" by re-designing streets so that they are accessible only to pedestrians and cyclists. For instance, London has made parts of the famous Trafalgar Square inaccessible to cars and many European cities, including Copenhagen and Amsterdam, encourage the use of bicycles. Apart from the health and environmental benefits, the reclamation of streets as public spaces has immense social benefits. Streets become the great levellers where people from all walks of life meet and interact. This promotes social inclusion.

The idea that streets should be public spaces gained momentum in the mid to late 20th century when American urbanists, such as Jane Jacobs, suggested that "you need to walk a city's streets to see its soul". More recently, the American economist Edward Glaeser suggested that the most successful cities in the world are those that "enable us to work and play together" in close proximity and through physical interaction. These interactions are only possible when people

mingle on streets and public spaces.

Penalosa is also a great advocate of public spaces, such as parks and playing fields. He notes that New York City created Central Park in 1860 when the city was much poorer than it is today, and that London, a heavily built-up city, has 1,500 public football fields that are open and free to all residents. (In contrast, Nairobi County Governor Mike Sonko had at one time suggested that Uhuru Park - Nairobi's largest public park - be turned into a matatu stage. Neither under Sonko nor under any of the city's former leaders have there been plans to build more public parks in the city. What's worse, in recent years land grabbers have even attempted to [steal playgrounds](#) in Nairobi's public schools.)

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Nairobi, like many African and Asian cities, seems not to have learnt lessons from European and other cities where there is a growing “liveable cities” movement that emphasises reduced dependence on motorised transport by making streets more accessible to cyclists and pedestrians. Nairobi's streets are clogged with cars, matatus and private vehicles, and pavements are fast disappearing or are in a dilapidated state. Many streets do not even have pavements, and those that do are often encroached upon by hawkers and even by motorists. As one Kenyan commented on Twitter, “If there were pavements in Nairobi, motorists would drive on them.” The lack of adequate pavements and bicycle paths has also resulted in unnecessary deaths of pedestrians and cyclists; in fact, cycling and walking are considered among the most dangerous forms of transport in Kenya.

Penalosa is also against the new trend of shopping malls (which has become a rage in Nairobi), which he says deprives city dwellers of walking in and enjoying their city. Local corner shops disappear as the rich flock to enclosed malls. In Nairobi social apartheid that separates the urban rich from the urban poor is now becoming increasingly apparent in these up-market malls and gated communities.

[Kenya Urbanization Review](#), a World Bank report published in February 2016, says that Nairobi is at a particular crossroad and can go down one of two main routes: It can either build its way out of congestion by building more roads to

serve the increasing motorisation rate, or it can invest in public transport networks to promote a more compact and environmentally friendly city. “Either way,” says the report, “the fundamental priority is to avoid a trade-off between access and sustainability” that will lock Nairobi into highly land-consuming and car-dependant development patterns.

Devolution: Challenges and opportunities

Like most African cities, Nairobi did not grow as a result of a grand master plan – much of the city has grown spontaneously and haphazardly. Even when there were plans, they were largely ineffective because they did not reflect the reality on the ground and did not anticipate the rapid urban growth rate (driven largely by rural-to-urban migration) after independence in 1963.

For instance, if urban planners and policy makers understood that a large proportion of the city’s 4 million or so residents walk to work (because they cannot afford public transport), they would be ensuring that there would be more and wider pavements in the city and more affordable mass public transport. Urban planners are also in short supply. According to the [World Bank report](#), in 2011 there were only 194 accredited urban planners in the whole of Kenya, compared to 1,690 in South Africa.

Nairobi has ambitions to become a “world class city”, but these ambitions are being hampered by the city’s delusional sense of its own importance that fails to recognise that more than half of the city’s population lives in overcrowded slums with few amenities, such as piped water or electricity. It is estimated that only 36 per cent of households in the city’s informal settlements have direct access to piped water. The urban poor in the city also pay more for water than rich households, as water has to be purchased from water vendors who sell them by the litre. Slum dwellers in Nairobi do not even have access to sanitation and are forced to use makeshift pit latrines. It is estimated that only 18 per cent of Kenya’s total urban population has access to a sewer system; 70 per cent of urban dwellers rely on septic tanks or pit latrines.

Tunku Varadarajan, writing in [Forbes](#) in September 2009, described Nairobi (along with Lagos, Karachi, Lima, Cairo, Jakarta, Dhaka, Caracas and Manila) as “an utterly charmless city” – “edgy, aggressive and inhospitable”, a city in which “contempt for the resident is everywhere apparent” and where there are “few

parks and sidewalks, and scarcely any of the amenities that comprise the core of urban civilization". Varadarajan's assessment of the city may appear harsh, as other observers have commended the city for its vibrant culture and cosmopolitan nature. (*Lonely Planet*, for example, has described Nairobi as one of the best cities in the world, and has praised it for its "excellent nightspots and good music scene"). However, it is clear that Nairobi lacks the one thing world class cities have - a safe, affordable, reliable and well-regulated public transport system.

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Poor leadership and corruption have further contributed to creating an urban culture that lacks vision. If Nairobi was a place that catered for the majority of its residents' needs, there would be more pavements, bicycle paths, public parks, public toilets and playing fields in the city. But a land grabbing frenzy has ensured that even the few green spaces (and even public toilets) in the city have now become concrete blocks.

The fundamental reason why Nairobi is so dysfunctional is because its dysfunction is self-perpetuating. Urban dwellers do not demand better infrastructure and services and expect little from the authorities, which leads of a vicious cycle of low expectations, little infrastructure investment and low productivity. When the city fails to provide services, such as garbage collection, those residents who can afford it hire private garbage collectors. The same applies to security, water provision and other essential services. This has resulted in widening the gap between the haves and the have-nots.

Devolution may have actually contributed to the city's woes as there is no longer a City Council or Ministry of Local Government to blame. The 1963 Local Government Act created 175 local authorities in Kenya, which were abolished under the new constitution that was promulgated in 2010. As required by Article 184 of the constitution, national legislation should provide for the governance and management of urban areas.

The Urban Areas and Cities Act (Revised 2015 edition) does provide for a system of city and municipal boards and town committees that are tasked with adopting

urban policies and strategies, including on service delivery and land use. However, the criteria for the creation of these boards are rather restrictive, and could serve as a deterrent to the formation of such boards, especially in poor and largely rural counties.

One of the conditions for the creation of a city or municipal board is that the city or town should have the capacity to generate sufficient revenue to sustain its operations, which is difficult for many of the poorer counties that rely on the national government to carry out operations, including the building of roads that are not part of the national highway network. Nairobi, Kenya's largest and wealthiest city, collected Sh11.7 billion in revenue in 2015/16, but it is the exception in a country where the majority of towns have populations of less than 250,000 and where urban-based activities are not the mainstay of largely rural economies. Another condition is to have the capacity to effectively and efficiently deliver services, which is a tall order for most smaller towns in Kenya.

One of the pitfalls of devolution is that urban areas may suffer under a system where devolved funds are being used to cater mostly for rural populations in the counties, rather than to the needs of urban dwellers. While this is understandable, given that the majority of counties are predominantly rural and considering the marginalisation of several regions under the previous centralised system, neglecting urban areas may come to haunt counties in the future.

As the World Bank's [Kenya Urbanization Review](#) report concluded, Kenya's ambitious experiment in devolution holds great promise and comes at an important period but aspects of the process may weaken urban centres at a time when they need to be strengthened. "On balance," says the report, "Kenya still has an opportunity to leverage urbanization to drive economic growth. It is in the early stages of urbanization, and evidence suggests that cities can drive economic development - especially when they are developed through a 'system-of-cities' approach and where devolution empowers counties...to develop strong urban centers."

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centralised system, neglecting urban areas may come to haunt counties in the future.

Urbanisation and economic growth

The 2009 Kenya census shows that nearly one-third of the country's population is now urban, but urbanisation levels are still way below those of other African countries. In fact, along with Burundi, Rwanda and Uganda, Kenya has among the lowest urbanisation levels in the world. This has implications for the country's economic prospects.

Nairobi, and Kenya as a whole, need an urban strategy that increases productivity and promotes inclusion. Studies have shown that there is a direct correlation between levels of urbanisation and economic growth - in general, most countries do not attain middle income status until they are at least 50 per cent urban. In 2009, the World Bank published a report by the Commission on Growth and Development that showed that there is a clear and robust relationship between urbanisation and per capita income in nearly all countries. The report stated that to achieve middle-income status, countries need to have at least half their populations living in urban areas and that "in all known cases of high and sustained growth, urban manufacturing and services led the process".

The first challenge, of course, is to make cities and towns sites of high-productivity industries. The second challenge is managing the negative consequences of growth on urban areas, including congestion, pollution, inequality and slum formation. Both challenges require investments in infrastructure - but only if that infrastructure does not contribute to other problems (like pollution and congestion) and if it contributes to making productivity more efficient.

In its current state, the transport infrastructure in cities like Nairobi has proved to be an impediment to productivity as most workers spend more time commuting than engaging in productive activities. Over-dependence of private mini-buses (matatus) has also led to a situation where other forms of public transport have been crowded out, leading to increasing congestion and air pollution.

Building more roads has not helped either because the roads fail to cater for the majority of residents who walk, cycle or use public transport. As Edward Glaeser

reminds us in his book, [*Triumph of the City: How our greatest invention makes us richer, smarter, greener, healthier and happier*](#), “The folly of building-centric urban renewal reminds us that cities aren’t structures; cities are people.”

To Make Our Roads Safer, We Need to Make Them Feel Less Safe

“There are no signs beyond this point. You are on your own.”

The stretch of road from Homa Bay to Mbita and Rusinga Island is probably the best road I’ve seen in Kenya. Not only is it properly marked, it has clear signage, reflectors and proper distances between rumble strips and bumps. It weaves down a scenic view if you are heading to Rusinga, and for about 40 minutes, you feel like you are cruising on a piece of heaven.

Yet there are makeshift bumps in at least three towns midway. This happens a lot in rural areas because of high pedestrian casualties on roads that cut through urban centers.

Is the problem regulation, design, or people?

In its entire lifetime, the Salgaa stretch on the Nakuru-Eldoret road has been one of the most dangerous roads to drive on. It is a smooth straight downhill stretch, which then curves towards Sanchang’wan, and beyond. Thousands of lives have been lost on it, with the tallies each year running into the hundreds. Salgaa itself is quiet, and muddy. It is a transit town so it is full of brothels and bars, often offering the same pleasures. One theory offers that it has so much carnage because the deities are angry. There are multiple theories of brake failures and other mechanical problems because it seems truck drivers tend to lose control as they descend. That was how the Sanchang’wan fire disaster began, with an oil truck losing control and leaking fuel. Design-wise, the Salgaa stretch is clearly marked and has sufficient signage. Bumps didn’t help, and attempts to regulate how trucks approach that downhill stretch have done nothing to stop multiple car

crashes. People keep dying.

Is the problem regulation, design, or people?

Our solutions from the last century of our highway code don't seem to be working. We are big on collective punishment and punitive measures, increasing fines and deregistering driving schools and saccos. Once in a while we will haul traffic officers before judges on corruption charges. But road accidents keep happening because we have forgotten the most important safety aspect on the road: people.

Our traffic statistics show that more than 80 percent of accidents happen because of "driver error". It is a reductive phrase that tries to bundle the entirety of human psychology into the simplicity of right and wrong. It also helps traffic engineers and regulators to sleep at night knowing that they have done their part with safety features, believing that if drivers obey the rules, then everyone should be safe. This could not be further from the truth.

There is a behavioural concept called risk compensation that explains one of several reasons why engineering interventions don't work at black spots. We tend to adjust how we behave to how safe we feel; the more protected we are, the more risks we are willing to take. It is how human beings are wired. The solution then for reducing risky behaviour on the roads is to make people feel less safe, both individually and collectively.

The result of safety interventions on roads so far has been that they have separated us from each other. They lie to us that as long as we follow the rules, we will be fine. We forget that old driving school advice: "Assume everyone else on the road is crazy." It's simple: the road is a shared space, and should be designed as one.

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The idea of roads as shared spaces emerged from the radical ideas of Dutch traffic engineer Hans Monderman who argued that less regulation makes roads safer, not the other way round. A stringent regulatory mechanism requires an extensive implementing force, which becomes the symbol of those regulations,

and in their absence (and sometimes presence), a license to break or stretch them. A good example here is speed guns - we only watch our speed when we know, or suspect, that National Transport and Safety Authority (NTSA) officials are lurking somewhere in the bushes or there is a road block up ahead.

Since cars took over roads from pedestrians, traffic engineers have approached more regulation as the way to enhance safety. Solutions such as bumps, speed bumps and alcoblow stops are in plenty. Monderman hated this, saying, "Traffic engineers have this boring habit of always trying to resolve traffic issues by adding more of everything. But I feel the better approach is to ask yourself what can be removed."

In December last year, a fuel truck rammed into eleven cars that had slowed down at a bump near Naivasha. That accident killed 39 people, most of whom might have lived had the bump not been present. But there was an argument for the bump: pedestrians had been dying while crossing the road. Monderman believed that if you regulate the extreme risk-takers in traffic (high speeders, for example), you encourage low risk-takers to aim for that limit. If you are comfortable driving at 80KpH, but the speed limit is 100KpH, you might feel the need to accelerate. It is risk compensation in action. In *Traffic: Why do we drive the way we do*, Tom Vanderbilt says "Safety features meant to reduce the consequences of driver error encourage drivers to drive in a way requiring those generous provisions."

In some of his real-life experiments, Monderman stripped roads of non-essential safety signs and at times even traffic lights. On one road he put a sign saying: "There are no more traffic signs beyond." It may seem permissive, but it is also a warning. When a road is heavily regulated, we drive mechanically, which is dangerous because we need to be both alert and using our muscles to adapt to the road. To be told that there are no more signs is to be told you are virtually alone. You become more aware of yourself and others, and presence of mind has saved many lives.

If you have never noticed, some of the roads with the least signage and regulation are actually the least dangerous. Take the Mai Mahiu escarpment road, for example, with its extreme drop to the left as you descend, and heavy lorries everywhere. The road is barely marked, and there are few traffic signs, if any. Long stretches of it don't have a yellow line and you have to subconsciously

determine if you are in your lane. Most of the accidents that happen there involve lorries experiencing mechanical failure. This is why there is a thick line of pillars on the side of the small Italian church because lorries rolling down the hill keep using its walls to stop after their brakes fail.

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But how many of these accidents, on a road with little or no railings, have involved cars flying off into the forest below? Or have resulted in road carnage as serious as that which is witnessed in Ntulele up ahead? Ntulele has a massive concrete railing behind the beaten-up metal one because that wasn't working, just like the Black Spot signs before and after. Ntulele is a short stretch in an otherwise scenic but uneventful road, while Mai Mahiu feels like you are teetering on the edge of the world. One wrong move and you fly off into oblivion, and this goes on for kilometre upon kilometre. So you stay alert throughout the whole ordeal and watch out for stalled or slow trucks, other drivers, boda bodas and the edge of the road.

The crux of Monderman's traffic philosophy is that each additional traffic sign, lane marking, roadblock, speed gun and traffic light increasingly detaches us from the fact that roads are shared spaces. Other traffic engineers missed the fact that he wasn't asking for all safety measures to be stripped; he was calling for a new paradigm to road design that focused on people - one that recognises that more regulation does not mean safer roads, and that people need to constantly remember they are sharing a public utility with other human beings, and sometimes animals.

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This is more applicable, and visible, in urban areas than on high-volume highways. Most of the accidents that occur in downtown Nairobi, despite the high-volume in people and cars, are fender-benders. You can't drive fast in downtown Nairobi because you are sharing the road with other drivers, pedestrians, mkokotenis and hawkers. The idea of a yellow triangle at junctions

was brilliant because it places the responsibility of clearing the junction to each driver, and encourages cooperation. You make eye contact, you use other tools of communication, like the horn and occasionally, the finger. It might not be perfect, but it works. It reminds you that the road is no different from a busy staircase or street, for example, in that everyone occupies some space, and is moving.

One constant question whenever I bring this idea up is “Are we mature enough for that?” Another is, “Had Monderman seen how matatu drivers drive?” My response to the former is yes, but realising that it takes time and a collective social effort, not just one led by regulators. We have to change the way we drive, and while at it demand less corruption so that we have more roadworthy vehicles on the road. The maturity question is an indication of our paternalistic relationship with the state. We expect it to curb our perceived immaturity, even when doing so might end up taking lives and maiming people.

They drive like that because they epitomise another important concept in traffic philosophy: how people drive in a society is related to how corrupt that society is.

To the second question I would say matatu drivers epitomise driving in Kenya. They are our social extreme - the lengths we are willing to go when no one is looking or when we are paying someone to look away. It's why we coyly wait for matatu drivers to overlap and then follow them, all the while smiling at our ingenuity. They drive like that because they epitomise another important concept in traffic philosophy: how people drive in a society is related to how corrupt that society is.