I have been following the ‘Sparkling Brand New’ slogan of High Tech Smart Cities being the saviour of mankind. I have come to the firm conclusion that I would rather live in a dumb humane City of people with all its lack of glamour and glitz than a machine-run city which is slick and efficient but lacks the heart and soul of being humane. The more I read about Smart Cities as the only way ahead, the more I am convinced that a Smart City is for FOOLS.

ANIL LAUL
"smart" — what you know and can recall

Resource is the tool for Application of Knowledge

Smartness comes across more easily impressive than intelligence, but intelligence allows for more flexibility.
How smarter are we, than our ancestors?
Go any where in India, you will see a monument in tears.

CHINTALA VENKATA RAMANA TEMPLE
TADIPATRI, ANANTAPUR, ANDHRA PRADESH, INDIA
STONE CHARIOT 10' X 10'
with 1"x4" slots in the stone panel

DIETY @ GARBHAGRIHA

GOPURAM

BALIPEETHAM

OBLISK
Being 'smart' was a sense of awareness of what's around you & the situation you're in, and how to act/respond which is something which can be learnt - _common sense_ would come under this.

Intelligent as, being something innate to a person, an ability to comprehend things.

Christopher Huang, Mar 23, 2012
Is a smart city technology-driven or people driven?
Human MOBILITY Design?
vs
Human ‘e’ MOBILITY Design?
During our visits to rural places or old towns; we come across Hanuman Temples along the arterial and sub arterial roads. The best examples to showcase our ancient road infrastructure, incorporating colour theory, primary needs of a traveler etc.

The Saffron colour visible from distance, easy to recognize a place, Refers, beginning of village for newcomer, Best shelters for the travelers, a fresh water well for quenching the thirst, oil lamp lit by individuals as offering to God. Sugar as prasadam ideal to balance sugar levels for long distance travelers - pedestrians & cyclists of those days. Villages’ unique identity

Even today we find huge HANUMAN statues @ MAJOR JUNCTIONS representing the immediate village/town, culture etc.

Lord Hanuman __ Lord of strength, power against evil & anti-social elements to most of us during our childhood. RAAVI – PEEPAL (Ficus religiosa) trees which emit Oxygen all the time.

The infrastructure from our traditional practices
Indian

Road Network 2nd largest in the world

Automobile Density 23rd dense in world

Inspite of the above healthy ranks..

Road Accidents 8th top in the world
PRIME CONCERNS with ROAD TRAVEL

ACCIDENTS

Rs 53000 Cr/Annum
3% of GDP

CONGESTION DELAYS

POLLUTION
POPULATION - INDIA

HUMAN - 134 Crore

VEHICULAR - 20 Crore

@14.92% of Indians

- India’s vehicle population - 1% of world
- the accidents - 6%
- & fatalities - 10%
- due to road injuries

- 100 aboard airplane - 0.16 deaths
- Million in a car - 1.40 deaths
- Miles walking - 50.00 deaths

Pedestrians being ..... simply ignored

Walking is far more dangerous than flying or driving, per mile traveled
The Pedestrians

Non-motorized

Motorized
PEDESTRIANS
all the way,
in Transition

BUS to
HMV to
BIKE to
LMV to

Pedestrian

Pedestrian

Bike to

Pedestrian

to AUTO to Metro
to LMV to Metro
to BUS to Metro
to HMV to Metro

35% of Trips are Walk Only!

Delhi Modal Share

Walk 35%
WALK 35%
CYCLE 2%
AUTO RICKSHAW 5%
BUS 27%
TRAIN (DMU) 14%
2W 12%
GW 14%
CAB/TAXI 6%
Private modes 27%

Public modes 58%

In addition, all Public Transport Trips include WALK

ALL ROAD TRIPS INCLUDE
PEDESTRIANS BOTH
@ BEGINNING & @ END OF JOURNEY
One of the observations under study is about the extent of road utilized by several drivers, due to frequent converging, weaving and diverging even along the straight roads (due to missing lane management, communication among the drivers) is that the length of travel is actually increasing by approximately 32% (documentation in progress), which Automobile manufacturers also missed in arriving at the mileage calculations .. in comparison to a straight travel in the specified lane.

15 to 50% additional width availed by violators
i.e. about 0.15 to 0.5 times the width of the vehicle
ROAD TAX

ALL MODES OF TRAVEL by road usage

Road being the public & primary infrastructure, the taxation module shall be based on the size of the vehicle, lane used, and not in relation to cost of the Vehicle.

Revise the tax by length, width, height & weight of which actually influence the usage pattern of the road.

SIGNAL/INDICATOR System needs to be modernized & appropriately located for the present day context of road design & speeds of vehicles.

Modern air-conditioned Vehicles with comforts do not favour the option of HAND SIGNALS in today’s context.

Hence appropriate indicators/signals are to be established for the Bicycles, Rickshaws, Pedestrian modules.

ORDER is the first principle of BEAUTY.
Being in the age of communications, we shall develop/cultivate methods of communication among all road users synchronizing the present modern version of Automobiles & their limit / capacity of speeds.

Modern air-conditioned Vehicles with comforts do not favour the option of HAND SIGNALS in today’s context.

Hence appropriate indicators/signals are to be established for the Bicycles, Rickshaws, Pedestrian modules.

SIGNAL/INDICATOR SYSTEM need to be modernized & appropriately located for the present day context of road design & speeds of vehicles.
Under populated
Multiple Lanes, High Speeds to cross
Pedestrian movement

Miserable in both situations
Over-crowded
Long irregular Queues, No clear route
Even when traffic is standstill, pedestrian crossings are not left free!

Hence, appropriate placement of Pedestrian ...

leads the Rest to fall in place
IN-EFFICIENT DESIGN / USE OF ROAD INFRASTRUCTURE

**GREATER Share** of ROAD dedicated for **lesser Volume & lower Speed**

**UNDER-UTILIZATION OF ROAD INFRASTRUCTURE**

**EQUAL** or **LESSER Share** of ROAD for **major Volume & Higher Speed**

towards the Pedestrian zone **forcing**

People to cross Multiple Lanes,

Bringing buses to the middle of the road

Forcing the Passengers to cross the roads to reach their next mode of transport to reach place of work or home
The illustrations - 50% utilization of roads.
(Please refer the empty roads)
The study on 7 Lakh vehicles maintained by 300 PUC in 2010 conducted by Transportation Research & Injury Prevention Program at IIT and Desert Research Institute, Reno reveals that ..... cars run at less than 4 KMpH for 24% of their travel time which not only leads to wastage of fuel but also causes increased air pollution.

a million cars in such a situation every day, total wastage of fuel could be in the range of 2.5 lakh litres every day = Rs 175 Lakhs

The amount of fuel burnt in just idling of vehicles at erratic traffic bottlenecks, Traffic intersections in Delhi amounts to 39,806 kilo-litres (diesel, petrol & CNG vehicles combined) and the quantity of CO₂ produced equals 1,16,609 kg, that is 115 tons of the unhealthy black soot, everyday.

Saving in Fuel Consumption ..................
Avg. idling time = 5-10 min/vehicle/day
Idling 60 min. = 3.79 litres of gas

Idling/1vehicle = 170.55 gallons of gas/year
20 Cr vehicles across country
@ 170.55 Litres = 3411 Cr Litres / year

Rs 70/- Litre gas > Rs 2.39 Lakh Crore a year for the Country

For 10 Min., idle engine yields 90.00 gm of gases
& consumes 0.14 Lts of fuel

For 60 Min., per annum
20 Cr. idle engines yield
1.19 Lakh Tons of gases
PRESENT ADAPTATION @ JUNCTIONS - GRADE SEPARATORS

FLYOVERS primarily solve the traffic in 1 Axis

FLYOVERS combine all modes of Transport in one 1 Axis
Pedestrians, Light Motor & Heavy Motor Vehicles together
Leading to drop in flow speeds causing jams even over Flyovers

The Design parameter for a Flyover is the dynamic load of a fully loaded trucks which are less than 7% of total traffic

In Delhi, out of 3 Million vehicles on Road, only 100000 are buses & trucks

Clear height required below a Flyover – 7.5 to 9.0 Mt.
To allow the movement of all possible fabricated members below, on other axis
Present scenario
Scenario under flyover

UNUSED & MISUSED PEDESTRIAN SUBWAYS
Major Rape cases in the recent past happened on the large roads ignoring Pedestrian movement, built to facilitate fast car movement.....

vast inhumane, people-less, un-watched places
For efficient use of roads

Key factors... for the people & not just automobiles only

Indian Roads

Engineering...

Management...

Enforcement...

To be resolved...

Of the roads & not just traffic only

For all the citizens, to be judged by their performance & not by their appearance
INDIAN ROADS

Typ. FLY-OVER

Typ. RMS

COMPARISON of a FLY-OVER & RMS
PLAN OF A STREET – ideal distribution

- Truck / Bus Way
- Car Way
- Pedestrian Way (Also Cyclists, Rickshaws, Handicapped)
Can a city be **signal-free**?

Can pedestrians be ignored?

Walking is far more (3150/355 times) dangerous than flying or driving, per mile traveled

"opportunity is the root cause of migration leading to rapid urbanization"

---

**An Urban Citizen cannot afford to wait at intersections**

- "Delays"
- "opportunity cost"
- "Inability to forecast travel time"

**Ill Effects of a signal controlled INTERSECTION**

- Wastage of fuel
- Carbon Emissions
- Wear & tear on vehicles
- Stressed & frustrated motorists
- Emergencies blocked
- Spillover effect leading to ('rat running')

---

**Pedestrian Subways** – Unhealthy & Unsafe – Underutilized, misused

**Foot-over Bridges** - (20’ clearance) - Under utilized

(if a young man would and an old man could, there would be nothing undone)
DESIGN CRITERIA for a safer ROAD NETWORK:

1. THE BASIC MODULE - HUMAN BEING and not the VEHICLE.

2. THE PREFERENCE - SEGREGATION by MODE OF TRANSPORT and ideal to GRADE OF TRANSPORT

3. The intensity of lighting on the Fly-over at intersections, with the roads to the adjoining villages – very bright lighting over the fly-over with no transition in the intensity of lighting leading to a situation of BLACK OUT as the driver reaches the foot of the fly-over at other end.

4. Placement of Convenient Shops & Amenities
Why the ROTARY CONCEPT?

- A rotary is a type of circular junction in which road traffic must travel in one direction around a central island. Signs usually direct traffic entering the circle to slow down and give the right of way to drivers already in the circle.

A modern rotary is a circular/oblong/triangular intersection where drivers travel clockwise around the center island. There are no traffic signals or stop signs. Drivers yield at entry to traffic, then enter the intersection and exit at their desired street.

Movement within a roundabout in a country where traffic drives on the left. Note the clockwise circulation.
CONNAUGHT PLACE:
220 Mt. dia.,
4 Lanes, 8 Radials,
One of the busiest
Commercial centers
in Lutyens Delhi
handling heavy traffic
throughout day

INDIA GATE: 600 Mt. dia.,
6 Lanes, 12 Radials –
One of the largest
rotaries in Delhi
handling app. 30000
PCU/Hr.
Studies have shown that roundabouts are safer than traditional stop sign or signal-controlled intersections.

**Roundabout benefits** improve safety as follows:

- **37% reduction in overall collisions**
- **75% reduction in injury collisions**
- **90% reduction in fatality collisions**
- **40% reduction in pedestrian collisions**
GRADE SEPARATOR A grade separator can either be a flyover or an underpass, that is any structure which separates the uniform grade of a running highway into two different grades.

ROTARY A rotary is a traffic flow system where the traffic moves around a central island which may be of any shape – circular, triangular, oblong etc.

Discover agrees: wrote in the magazine in 2001, “The roundabout,” is the single most important device ever created to help control traffic safely & smoothly.

TRAFFIC SEPARATION BY MODE
- HTV-10% OF TRAFFIC VOLUME CAUSES 50% OF TRAFFIC CHAOS
- RIGHT OF WAY, AREA IDENTICAL
- PRORITY GIVEN TO PEDESTRIANS
- DROPOFF POINTS @ ALL LEVELS INTEGRATED
- MAXIMUM CLEARANCE HT. REQUIRED 3.5 M
- COMPACT COMPRESSION STRUCTURES
- CONTINUOUS TRAFFIC FLOW
- CENTRAL GREEN SPACE-BETTER URBANSCAPE
Pedestrian Way (Ground Lvl)

Car Way (Lvl -2.0 M)

Truck / Bus Way (Lvl +3.5 M)

Pedestrian Bridge Lvl +1.0 M marginally elevated to prevent misuse by Two-Wheelers. Preferred at Ground Level for Cyclists, Physically Challenged, Hawkers, Children etc.

Car Way Lvl -2.0 M
Dr. S. Vijay Kumar
ME (Structures), PhD
Chairman, Vijay Nirman Company
Pedestrian does not intercept with the vehicular traffic
1. **SEAMLESS** Movement of Vehicles of all Modes with nil/minimum traffic signals

2. **PEDESTRIAN FRIENDLY** – Ground level connectivity with no need to cross the roads. No intersection with Automobiles
   - Improved & uniform speed of vehicles & hence no scope of traffic jams
   - Resulting in improved mileage of vehicles
   - No idling of engines at junctions as in the present system, on traffic signals) reducing emission of heat & smoke

3. Ideal & easier connectivity methods with Metros’

4. 100% utilization of the infrastructure built, unlike the case with the present Fly-overs

5. Optimum utilization of resources – use of appropriate levels resulting in compact heights/depths to reach

6. With the creation of Central Green space – minimum Heat-island effect

**IMPACT OF RMS:**
TRADITIONAL MOBILITY PRACTICES:

NON-MOTORIZED WAY

NODES/JUNCTIONS facilitating PEDESTRIANs & HUMAN NEEDs between SETTLEMENTS & AANGANS as CONGREGATION POINTS within the settlements connecting ALL LANES
URBAN SETTLEMENTS & ROADS

HIGHLAND MORE SUITABLE FOR DEVELOPMENT- MORE STABLE

TRADITIONAL SETTLEMENTS ON HIGHLANDS

ROADS require min. SLOPE, DRAINS require max. SLOPE & we put them together – A MAJOR CONTRADICTION!

THE ROAD IS ONLY CHANGE OF SURFACE FOR NON-ERODABILITY.
FOUR PLOTS BACK TO BACK

BEVELLING THE ENDS MAKES FOR VENTURI EFFECT

THE VASTU VIDYA SAYS:
<< THE OCCUPANT OF A RECTANGULAR PROPERTY WOULD SUFFER FROM ACIDITY IN THE STOMACH >>

BEVELLING THE ENDS OF PLOTS PROVIDES FOR INGRESS POINTS & OUTLETS FOR WASTE WATER DISPOSAL
CLUSTER PLANNING

[Diagrams and images related to cluster planning]
Design Standards:

For *SET* conditions
to *GET* results

It’s *ONLY* smartness of people
that can help us achieving safe
and secure cities
Busy FELLOWs

Better Flow Equals Less Congestion

ORDER is the FIRST Principle of BEAUTY

BUFFALOs
Drivers using full-beam in China made to stare at headlights

The police department in Shenzen, China has started punishing drivers who use their vehicle's headlights on full beam by making them stare at their own headlights for a minute. Offenders are also charged a fine of 300 yuan ($44). They will also lose points on their license and will be made to recite regulations on the proper use of headlights.

short by Daisy Mowke / 04 Nov, 2016
BASIC NECESSITIES
for SEAMLESS MOBILITY of CITIZENS between/among SETTLEMENTS

ROAD NETWORKS

EVEN ROAD SURFACES

SEAMLESS MOVEMENT OF ALL MODES
A PARTNERSHIP BETWEEN MAN & NATURE
BASIS OF MASTER PLAN

APPROPRIATE LAND IDENTIFICATION

WATER SUPPLY

ITS DISPOSAL

ROADS

MICRO PLAN

RESULTANT MASTER PLAN
BASIS OF MASTER PLAN

APPROPRIATE LAND IDENTIFICATION

WATER SUPPLY & ITS DISPOSAL

ROADS

MICRO PLAN

RESULTANT MASTER PLAN
SUSTAINABLE PRACTICES

GRAIN BANKS

Towards SWACHH GRAINS

for a

SWACHH BHAARATH
From 24th February 2016 No fueling station is allowed to issue fuel to a biker without Helmet. In case you happen to witness violation of the order you can message us with a picture and details. You can also use the hashtag #DriveSafeSilchar and post the complaint on our Facebook page.

Become a SMART CITIZEN. Join the #DriveSafeSilchar movement.

Issued in public interest by:
Deputy Commissioner's Office
Cachar, Assam

NO PETROL WITHOUT HELMET

NO HELMET, NO PETROL

WITH EFFECT FROM AUGUST, 2016

HELMET ACTIVATED MOTORCYCLE IGNITION
Look at present Road Networks:

Short of shaded areas in case of either
  a Bright Sunny Day
  a Rainy Day

Short of primary requirements
  Potable water to quench your thirst
  Hygienic food

How should we rate ourselves even after years of experiencing MOON LIGHT as much preferred to SUN LIGHT when we don’t realize/ recall – ‘the source is the same’ and only the medium of communication/ conveyance is different?

IN THE AGE OF COMMUNICATION ... CONTEXT