

How Varied Modes of Transport can Share Roadways Safely

*(How do we ensure that “Cyclists are Seen &
Not Hurt” on our roads?)*



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The conundrum?

- 🚲 Cycling is defined as a form of non-motorised transport, its other relatives being pedestrians, roller bladers, donkey carts and Pick n Pay trolleys, yet it can travel at speeds of 25 to 40 km/h on the flat and can easily traverse distances in excess of 10 km. At these speeds, bicycles are incompatible with other forms of NMT.
- 🚲 Yet we allow bicycles to share our roadways, at least those roads with speeds limits of up to 60 km/h. We have often not taken the space requirements of cyclist into consideration in our road design, and at intersections have made very little provision for safe bicycle turning movements. Under these circumstances, bicycles are incompatible with motorised traffic.
- 🚲 As a result we have a sad legacy of severe and even fatal bicycle accidents in this city.....
- 🚲 How do we adjust our road design philosophy to better accommodate this mode?



Overview of the Presentation

- 🚲 SA Road Traffic Act
- 🚲 What do cyclist's require?
- 🚲 Can we fault current cycle facility design practice?
- 🚲 Safety Considerations
 - 🚲 Transport Authorities
 - 🚲 Traffic Engineers
 - 🚲 Cyclists
 - 🚲 Cycling Advocacy Groups
 - 🚲 Traffic Law Enforcers
 - 🚲 Motorists
- 🚲 The Way Forward To Safer Cycling



SA Road Traffic Act Pertaining to Pedal Cycles

- 🚲 A driver - a person who drives a vehicle or who attempts to ride any pedal cycle
- 🚲 A vehicle – a device designed for or adapted principally to travel on wheels
- 🚲 A pedal cycle – any bicycle or tricycle designed for propulsion solely by means of human power



SA Road Traffic Act Pertaining to Pedal Cycles

- 🚲 A cyclist should be seated astride the bicycle
- 🚲 Cyclist should cycle in single file
- 🚲 No cyclist shall take hold of another vehicle
- 🚲 No cyclist shall cause the bicycle to swerve from side to side
- 🚲 No cyclist shall carry anything that will obstruct their view
- 🚲 Cyclists should have at least one hand in contact with the handlebars
- 🚲 Cyclists should stay in their lane if a cycle lane is demarcated within the roadway
- 🚲 Cyclists should ensure that they keep both of their wheels in contact with the road
- 🚲 No bicycle shall operate on a freeway

Road Traffic Act 29 of 1989

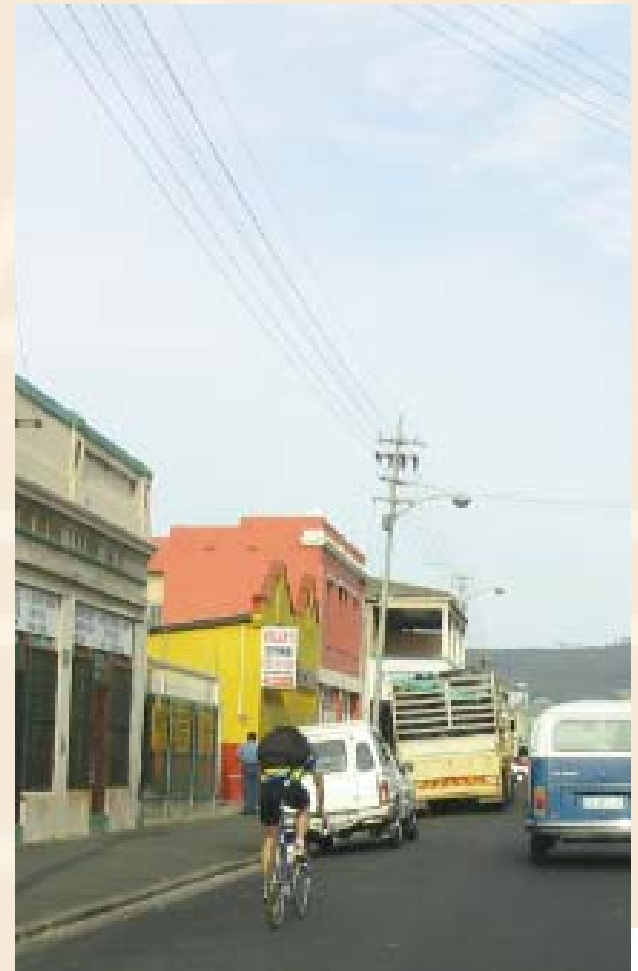
What's missing from the SA Road Traffic Act Pertaining to Pedal Cycles?

- The bicycle driver requires no license to operate within the roadway
- There is no minimum age for cyclists to operate within the roadway
- The act does not require that bicycles are roadworthy i.e. have lights (reflectors) and brakes.
- The act does not require cyclists to utilise hand signals to communicate to other drivers intentions to turn, stop or overtake.



What's missing from the SA Road Traffic Act pertaining to Pedal Cycles?

- There are no guidelines regarding where cyclists should position themselves in the traffic stream
 - does it require bicycles to keep to the left of the kerbside traffic lane
 - in congested traffic may cyclists overtake on the left or right
 - at intersections may cyclists move out of their bicycle lanes (if provided) or kerbside lane to make right turns or avoid exclusive left turn lanes.
- Helmets are not mandatory (possibly due to poverty levels) and their use is not even encouraged.
- There is no minimum lateral clearance specified for motorists overtaking bicycles, leading to unsafe (too close) overtaking maneuvers by motorists, rather than waiting behind a cyclists till it's safe to overtake.



Cyclist Needs by Cyclist Grouping

Part 14
Austroads

Cyclist Grouping	Skill Levels	Specific Requirements
Primary School Children (<14)	<ul style="list-style-type: none"> 🚲 Cognitive skills not fully developed 🚲 Have little knowledge of traffic laws 	<ul style="list-style-type: none"> 🚲 Off road paths or “quiet” residential streets
Secondary School Children	<ul style="list-style-type: none"> 🚲 Great variety of skill levels 	<ul style="list-style-type: none"> 🚲 Majority of cycling takes place on-road – direct & fast 🚲 Off road paths are underutilised by this group
Recreational Cyclists	<ul style="list-style-type: none"> 🚲 Great variety of skill levels 	<ul style="list-style-type: none"> 🚲 Desire pleasant recreational experience – off road paths and quiet residential streets 🚲 Experienced recreational cyclists will prefer to use road system for long journeys
Commuter Cyclists	<ul style="list-style-type: none"> 🚲 Usually highly skilled & able to handle a variety of traffic conditions 	<ul style="list-style-type: none"> 🚲 Space on road to operate i.e. wide kerbside lane or bicycle lane 🚲 Smooth & even surface
Utility Cyclists	<ul style="list-style-type: none"> 🚲 Great variety of skill levels 	<ul style="list-style-type: none"> 🚲 Comprehensive network of low stress routes i.e. on and off road
Touring Cyclists	<ul style="list-style-type: none"> 🚲 Great variety of skill levels 	<ul style="list-style-type: none"> 🚲 Network of low stress routes around areas of tourist significance
Sports Cyclists	<ul style="list-style-type: none"> 🚲 Usually highly skilled & able to handle a variety of traffic conditions 	<ul style="list-style-type: none"> 🚲 Space on road to operate i.e. wide kerbside lane or bicycle lane 🚲 Smooth & even surface 🚲 Off road paths are not suitable for this group

Current Cycle Network Design

Class 1 Routes



Class 2 Routes



Current Cycle Network Design

Class 3 Routes



Class 4 Routes



Summary of Current Practice

- Pilot projects eg. Rondebosch bicycle network
- Cape Town Bicycle Masterplan
- DOT Pedestrian and Bicycle Design Guidelines
- International expertise
- We have the tools and the precedent, now we need the roll out...

Why are we not getting the roll out of bicycling facilities?



Cycling perceived as unsafe and dangerous hence cycle flows are low



Lack of strong political motivation for the allocation of scarce infrastructure funds to be spent on “low use” mode



Extremely limited funds – limited roll out



Incomplete & sparse network

Transport Authority Considerations

- Revise road traffic act in terms of elevating pedal cycles to a status similar to that of the vehicle in terms of the following:
 - Need for basic roadworthiness of pedal cycles
 - Need for basic knowledge of the rules of the road by cyclists and a minimum age for unsupervised cycling in a public roadway
 - Provide greater clarity on the expected orderly behaviour of cyclists within the roadway, that will make their actions predictable to other drivers (of motor vehicles)
 - Provide greater clarity on the expected behaviour of motor vehicles when overtaking cyclists
- Ensure all conceptual planning of roads and intersections incorporate the provision of adequate facilities for bicycles as an essential requirement and not as a nice to have.
- Investigate and implement a lower speed limit for residential streets of 40km/h.

- Speed vs fatality relationship
 - At 30 km/h only 5% of pedestrians struck by vehicles are killed
 - At 50 km/h, the death rate is 45%
 - At 65 km/h, the death rate is 85%

Transport Authority Considerations

- Promote motor car driver awareness campaigns aimed at elevating the status and rights of cyclists i.e. if you knock over a cyclist you will be charged for culpable homicide
- Instigate more detailed recording and analysis of bicycle related accidents in order to better understand the causes of the various types of bicycle accidents and to identify high accident locations.
- Elevate the status (politically) of cycling as a sustainable mode of transport, so that motivation of the allocation of sufficient funds for a roll out of cycling facilities can occur (although current usage is low)

**Take the
bike,
seriously
!!**

Traffic Engineering Considerations

- All roads (excluding freeway and high speed arterials) should be cycle safe, design roads with this paradigm shift in mind
- Redefine minimum kerb side lane width, to safely accommodate a vehicle passing a cyclist
- Intersection design considerations eg.
 - Elevate the needs of a cyclist to that of a driver in terms of evaluating capacity improvements at intersections.
 - Consider allowing space for cyclists to wait ahead of the traffic stream at intersections, where they can be seen.
 - Avoid the use of left turn filter arrows on shared through and left turn lanes at signalised intersections
 - Avoid the use of left turn slip lanes developed over a long distance, as this endangers the through cyclist for an extended period



Traffic Engineering Considerations

- Utilise traffic calming to reduce both the speed of traffic & traffic volume on residential streets
- Explore the use of enhanced signage & road markings to alert drivers to cyclist activity
- Undertake a “cycle safety” audit on all conceptual and TSM designs
- Examine international best practice & be prepared to adapt to sustainable design philosophies

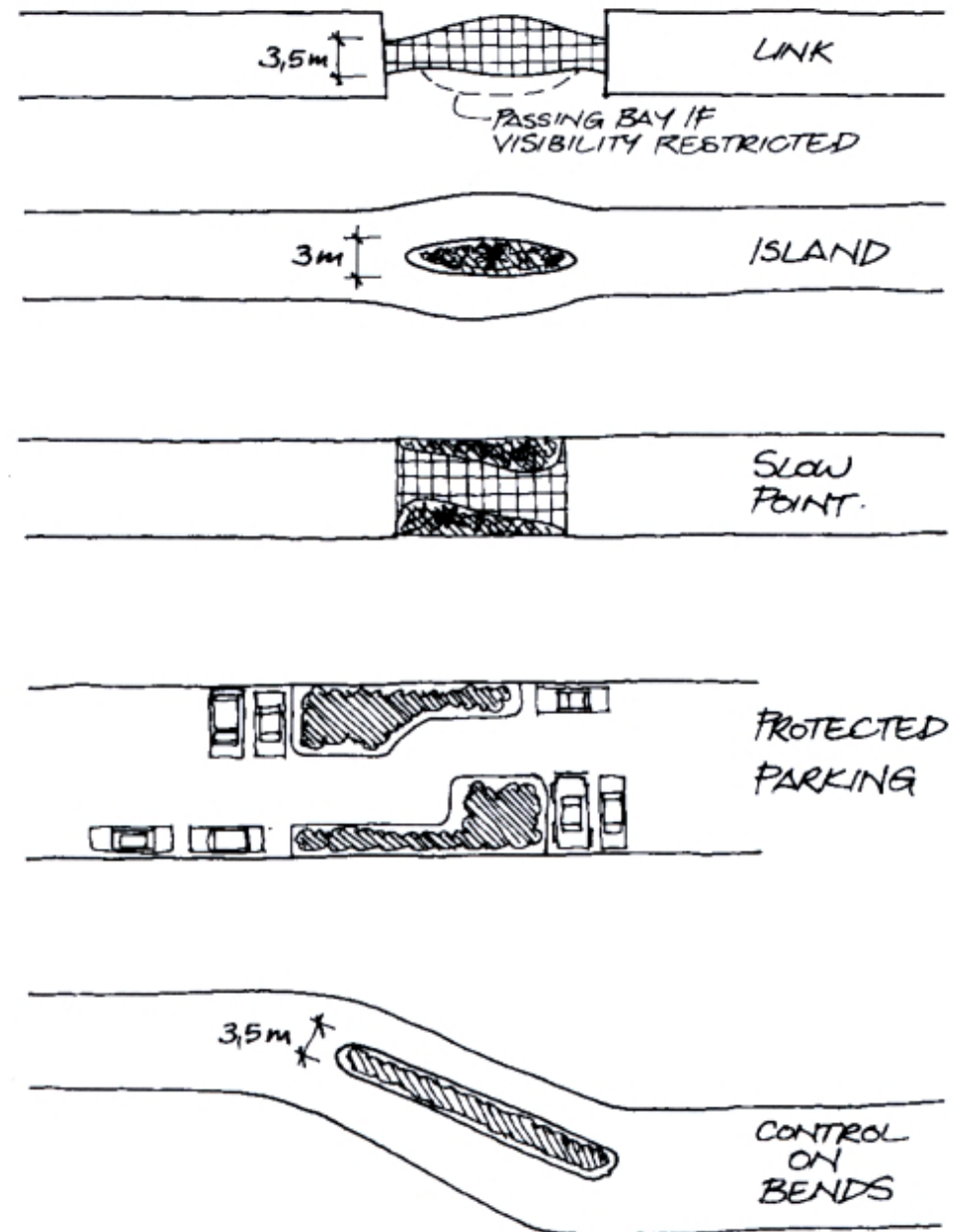


Figure 13: Example of in-street traffic calming devices.

Cyclist Considerations

- Pedal Power Suggest the Following Behaviour for Cyclists (Bicycling March 2006)
 - Be courteous
 - Always wear a helmet
 - Watch out for drivers of parked cars opening car doors
 - Slow down in crowded areas
 - Signal all turns and stops with an outstretched arm to the left or right
 - Be verbal. Say “on your right” or “on your left” when passing other cyclists
 - Ride predictably. Don’t stop suddenly
 - Obey traffic lights and stop signs and always ride with traffic
 - Be especially alert when approaching intersections



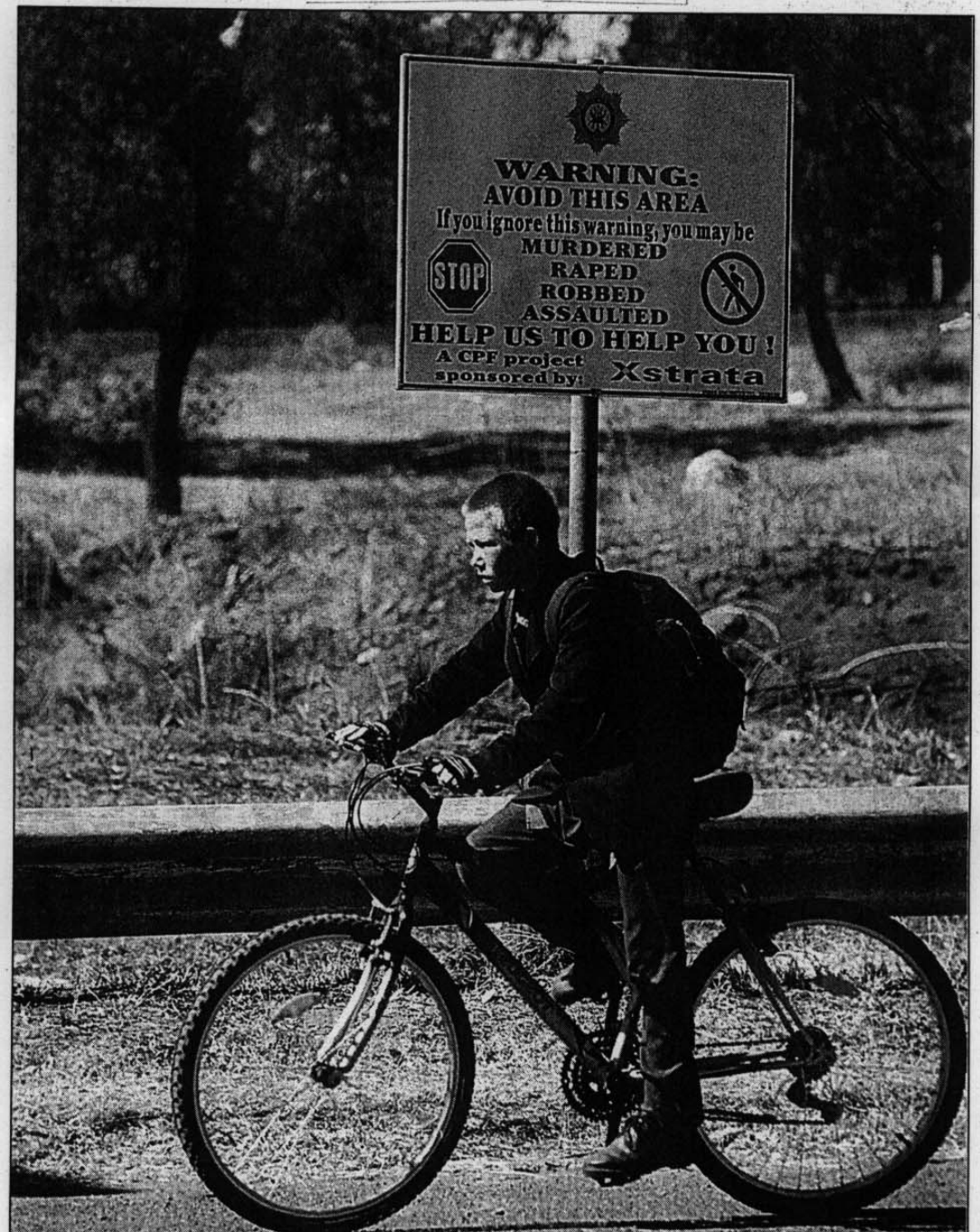
Cyclist Considerations

- 🚲 A few more considerations could be
 - 🚲 Learn and obey the rules of the road, as you would if you were driving a motor vehicle.
 - 🚲 Make yourself visible by wearing highly reflective and bright clothing and by having at least a rear and a front light (high intensity flashing lights if possible).
 - 🚲 Attempt to ride as far to the left of your lane as is safe
 - 🚲 Be courteous when cycling – cycle in single file when motor vehicles are attempting to overtake
 - 🚲 Supervise under age children cycling in public roadways
 - 🚲 Ensure basic bicycle roadworthiness eg brakes, lights, adequate tread on tyres to cope with wet weather



Cyclist Considerations

- 🚲 Plan your cycle routes better by trying to avoid
 - 🚲 routes where inadequate lane widths are provided
 - 🚲 routes where buses and taxis continuously move through or stop within the “cyclist zone”
 - 🚲 routes where speed differential between cyclist and vehicles will be too high (>40 km/h) – this may include steep climbs
 - 🚲 routes exposed to high cross-winds
 - 🚲 very dark areas (at night)



Cycling Advocacy Groups

- Promote safe cycle to school routes and safe cycle routes to public transport stops interchanges
- Encourage cyclist compliance with the road traffic act
- Encourage the education department to incorporate basic road traffic law as part of the primary school curriculum
 - Pedal Power has initiated a Safe Cycling Training Course aimed at school children
- Comment on development applications & conceptual road designs, in particular the impact that the road network improvements will have on cycle safety.



Traffic Law Enforcement Considerations

- Begin to enforce traffic violations eg. red light running by cyclists
- Begin to actively prosecute motorists for knocking into cyclists
- Legislate and begin to enforce basic roadworthiness of bicycles
- Run media campaigns aimed at increasing cyclist and driver awareness eg. Arrive Alive campaigns, especially around Argus Cycle Tour buildup.
- Place advisory signage on high risk cycle routes to alert motorists to be aware of cyclists



Motorist Considerations

- Educate motorists to treat cyclists as legitimate road users.
- Educate motorists to value cyclists who by cycling are contributing to reduced congestion levels & zero emissions
- Educate motorists that should they kill a cyclist in an accident, they will be charged for culpable homicide
- Educate motorist that one day they too will become a cyclist once fossil fuels run out!!



In Conclusion

- During peak periods, its becoming faster to get around our cities on a bicycle than in a car.
- In general, we need to accommodate bicycles on most of our urban roads (& not on the sidewalks)
- We have reached the post modern era, where motor vehicles no longer dominate in terms of importance wrt road space allocation
- We need to re-evaluate how we incorporate cycling safely into our design of current & future roads
- We need to lobby more strongly with politicians to elevate the importance of cycling as a sustainable transport mode
- We need a combined effort by all parties discussed, possibly facilitated and overseen by a bicycle advisory council made up of role-players from all parties
- Possibly then and only then will “cyclists be seen and not hurt” on our roads.

