

## TOWARDS CYCLE FRIENDLY INFRASTRUCTURE

### - a look at bad infrastructure -

based on a lecture by John Franklin, adapted for South Africa by Gerhard van Wyngaardt

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### The first requirement

In a single word : **Dignity**. Cyclist should be accommodated as a recognised mode of transport, with as much right as anyone else on a journey of high standards. To provide for cycling on what space may be left after the needs of all other vehicles have been met, from the little funds that remains, and then expect cyclists to be grateful for what they get, is simply not acceptable.

### Current practice

Over the past decades, providing for cyclists has simply not been a priority. A couple of demonstration schemes, cycle lanes here and there, that's about the extent. Now, the drive seems to be on, but this fledgling policy is dominated by the provision of bicycle facilities.

Let us look at a definition of "facility". A facility is something that facilitates, or makes easier. Something that makes cycling harder is not a bicycle facility. Amongst cyclists there is a view that what has in the past been provided falls more into the category of *difficulties* than something that assists cycling. And a concern exists that what is proposed will also fall in this category.

Let us take a look at the cycle facilities that have been provided, and hope that these mistakes will not be repeated :

### Off the road, a.k.a. Road side paths

#### Shared path

The lowest level of accommodation for cycling is the shared path, of which the following is an example. These are widely unpopular with cyclists and pedestrians alike.

Why direct cyclists from a road onto a rickety footway along garden walls, obstructed by parked cars, rubbish bins and building materials?





Not to mention pedestrians.

It is unfortunate that so much cycle planning assumes that cyclists are some form of “rolling pedestrian”. This is simply not the case. Bicycles travel around five times as fast as pedestrians, and in urban traffic often at the speed of motor traffic.

Cyclists can not turn on the spot, move sideways, or stop suddenly. All three are characteristics which pedestrian safety depends upon.

In fact, cyclists have very little in common with pedestrians and deserve not to be treated as such.



### **Road side cycle track**

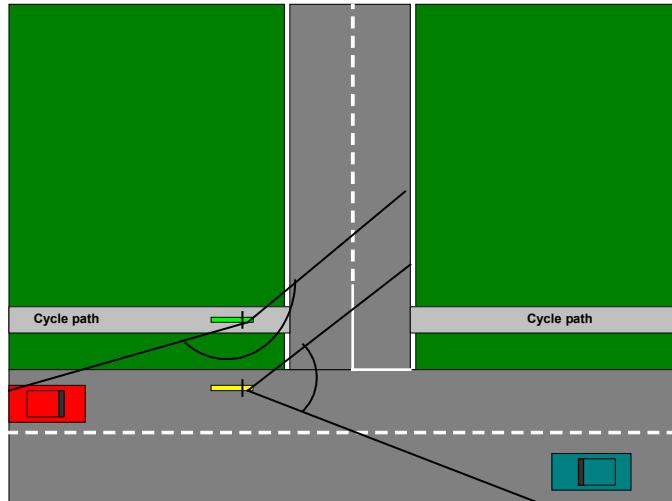


Only one step up from the shared path, is the road side cycle track. This is some people’s ideal way to accommodate cycling. Many advocacy campaigns make this their focus, believing that this will make cycling safer and hence more popular.

But they too have long been unpopular with many cyclists, for good reason. They, and shared footways, introduce more dangers than they remove.

Let us eliminate myth number 1. It is not traffic in itself that causes conflicts for cyclists, but crossing and turning movements.

A cyclist using a roadside path experiences crossing and turning movements much more often than a cyclist on the road.



The road side path puts cyclists on the periphery of the traffic system, far away from where most drivers focus their attention. The full onus for taking care is then on the cyclist, but exercising that care is very difficult. The illustration shows the greater angle that the cyclist has to look through to scan for conflict. This requires much head movement and is more than what most people can manage. The only way to be safe is to stop at every junction. The reality is that most people don't, and simply take the chance.

Also, if a crash does occur, it is likely to be at 90 degrees, leading to serious injuries and death, as the cyclist takes the full force of the vehicle.

On the road, cyclists can use road position to reduce the angle through which concentration is needed to much less than 90 degrees. This can be done through eye movement alone and is much easier. Positioning is also used to good effect to ensure that the cyclist is seen. This ensures the necessary co-operation with other road users on which so much of road safety depends.

The relative risk of a road side path is much greater than that of a road, as shown by research in a number of countries. Yet it seems this is not widely known.

Relative Risk	
Road	1
Cycle track, with traffic	2 – 3
Cycle track, against traffic	3 – 11
Shared Footway	7 – 11

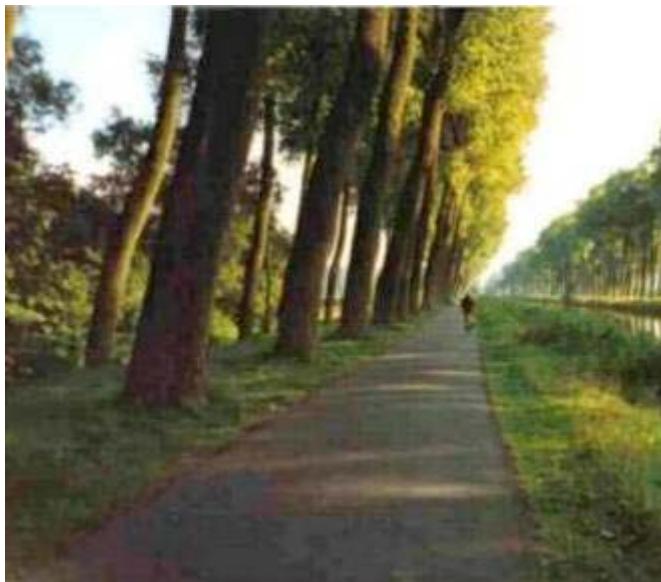
Several European countries have changed their policies on these kinds of facilities in recent years, simply because of their bad safety records. An example is in Germany, where the police led campaigns to allow cyclists to avoid urban cycle tracks. It is therefore of particular concern that it would appear that in South Africa we are going in the opposite direction. The Road Traffic Act already requires cyclists to use facilities where they are provided, and more are likely to be built.

Also, away from junctions, low standards abound. No one would build a road without adequate clearances, but somehow this is acceptable on bicycle facilities. Here is an illustration of structures, dark ones at that, which are placed within a path.



Secondly, the often narrow lane widths, and inadequate sight distance for safe operation.

## Separate alignment paths



Cycle paths away from roads can be more useful, especially for leisure, or where they open up new routes. Sadly, design limitations abound.

Bad visibility is a common feature of paths, sightlines that would be unacceptable on roads.



Cycle paths generally require more frequent maintenance and cleansing than roads, but they rarely get it.



The South African reality is that bicycle infrastructure even doubles as shelter for the homeless.

A uniquely South African disadvantage of South African paths is crime. Paths that are away from passing traffic removes the vital surveillance offered by the presence of other humans, and cyclists become easy prey for criminal elements.

A common complaint with cyclists is poor surfaces, including parallel cracks, drain grates, and upstands. Cycle paths should have a perfectly flush joint.



Another common complaint is barriers. These, installed to prevent access by other vehicles, are often a hazard to cyclists.

A feature that is essential is the centre line. Discipline on cycle paths is poor and head on collision situations are frequent. Centre lines are every bit as much needed on cycle paths as on roads (and reminders to keep left). It is most important that cyclists ride according to a consistent set of rules, wherever they ride. All parts of a cycle

route should expect and teach those rules. Sadly, the opposite is true.

## Cycle Lanes

Cycle lanes are proliferating in South Africa.



One of the most important needs of cyclists is personal space, from the point of view of both comfort and safety. The violation of this space, or lack thereof, is the driving force behind the clamour for separate facilities.

The width of a cyclist is approximately 1,0m at elbow height. On a free flowing road, an astute cyclist will ride 0,5m from the kerb. It is a rule of thumb that the drivers of other vehicles give cyclists as much clearance as the cyclist rides from the kerb. It should therefore be obvious why cyclists should never hug the gutter; this simply invites unsafe passing by motorised vehicles on narrow roads / lanes.



Adding these up, a cyclist normally commands approximately 2,0m of personal road space.

Put in a cycle lane and the situation changes. There are now two traffic lanes, where otherwise there would be only one and lane discipline would be required. Many drivers will drive up to the lane marking, believing that they are giving the cyclist all the space required. It also becomes their limit of concentration.

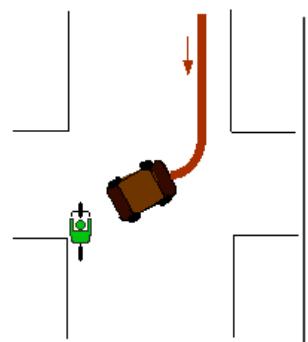


For a cyclist to receive as much personal space as without a cycle lane, the lane itself must be at least 2,0m wide. In South Africa anyway, lanes of 2,0m are unknown. It actually appears as if municipalities are competing for a prize to build the narrowest lanes!

Lanes of this kind have no positive benefit for cyclists and lead to numerous problems :

- Narrow lanes encourage drivers to overtake cyclists where it is not safe to do so.
- At times of adverse weather, such as strong wind and rain, cyclists need more space for safety, but the lane markings do not allow this and overtaking drivers tend to be blissfully unaware.
- At any time, the suction from high-sided vehicles such as trucks and buses is a problem. This is especially problematic when a vehicle passes as close as the narrow lane encourages.
- Most disturbing are the reports of aggression from motorists towards cyclists who, reasonably in their judgement, do not want to compromise their safety by riding so close to the kerb. Narrow cycle lanes therefore cause increased risk even for those cyclists who normally face few difficulties on busy roads, due to the expectation created in drivers' minds that cyclists belong at the edge of the road.

Position on the road is the most important influence the cyclist has over his/her own safety. Adding a cycle lane stripe restricts the cyclist's freedom of movement.



Nowhere is good positioning as important as at intersections. Two of the most common crashes are the driver that overtakes a cyclists and then cuts in front to turn left, and the driver who turns right across the path of the cyclists. Both of these hazards are exacerbated by cycle lanes, by directing cyclists into the very place where risk is greatest.



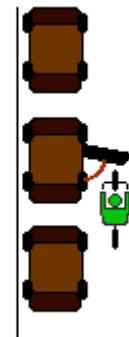
Similarly, continuing a cycle lane up to a roundabout,

or even around the outside edge of it, encourages bad practice in lane positioning and puts a cyclist more at risk.



The main benefit of cycle lanes is as a means of passing traffic in congested conditions. Yet, this is never a risk free benefit. The dangers can be less obvious with a cycle lanes than without.

Since the dawn of motoring, cyclists have been well advised to heed the opening car door. A term even exists for this type of accident; "doored". This hasn't stopped the marking of cycle lanes immediately adjacent to parking bays. This combination is an accident waiting to happen. In the Netherlands, a 1,0m protection zone is required before the cycle lane even starts.



### In summary

A few key points :

- Cyclists needs have little in common with those of pedestrians.
- Cycle lanes and other segregated facilities are often advocated by the wish to attract new cyclists, but the majority of cycle facilities require more skill and more experience to be used, not less!
- Low standard facilities invariably require more skill than high standard ones
- I have no doubt that bad facilities are worse than none!

Yet it is valid that we don't have the space on our crowded urban roads for 2,0m wide cycle lanes. Fortunately most cyclists don't want cycle facilities as such, but routes fit for cycling. And cyclists believe that these already exist : the roads we have.

Given the constraints of space and money in urban areas, we need measures that will assist road sharing. This is very important, since our recent history as a country has taught us that separate is never equal. Sharing is the best way forward, treating all road users as equal; it is also the most pragmatic and most likely to achieve high standards.

It is of great concern to cyclists that so little is being done to make it easier for cyclists to share the roads, but the introduction of features that make cycling more and more difficult continues unabated. These are amongst others, roundabouts, free flow left turn lanes, and centre islands. No amount of separate facilities removes the need to provide roads of high standards.

It is a recommendation that the following hierarchy should be followed to achieve cycle friendly infrastructure

1. Traffic reduction
2. Traffic calming / speed reductions
3. Intersection treatments and traffic management
4. Redistribution of the carriageway width, without segregation
5. Cycle lanes and cycle tracks

If proper attention is given to the needs of cyclists, then the resort to the last option will be very rare. Unfortunately it seems we in South Africa are embarked on a route to follow this hierarchy in reverse.

To conclude:

- Follow the hierarchy of solutions
- Use special facilities sparingly, and then only when they bring genuine benefits that cannot be obtained without
- Give priority to assisting cyclists to use the principle cycling network that we already have – the roads
- Please don't add new problems to those that already exist

- Appendix : Sharing the roads

Some general principles :

Increase personal space for cycling, but without segregation. Lane width is particularly crucial; not so wide as to encourage high speeds, but not so narrow as to squeeze cyclists. Where there is more than one lane per direction, the kerbside lane can be made wider than the others. Unfortunately, the opposite is happening and lanes are being made narrower to squeeze more in.

Parking controls can be used to give cyclists more room. Passing long lines of parked cars, fearing for the moment when a car door is going to be flung open in front of you, is disconcerting to most cyclists

Simplify intersection design, and minimise the speed differentials between bicycles and motorised vehicles. Reduce conflicting movements. Of course this has capacity constraining consequences, but the best way to maximise people moving capacity is by getting more people on bicycles.

Design to discourage fast and aggressive driving. Reinforce the message that roads are a shared resource. The most helpful action would be for Government to tame the ferocity of modern cars, to make them more suited to sharing roads.

There are some types of facilities that are very useful in assisting cyclists. The best are those that enable shorter and quicker journeys, or bypass difficult junctions.