Principles of cycle planning for Gloucestershire

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Introduction

It's a widely held view among cyclists that the outcomes from planning for cycling in recent years leave a lot to be desired. Very often it's because of an apparent unawareness of some fundamental principles about cycling. For cycling to be not only possible, but practical, pleasant and popular, there are many things to be considered that may not be intuitive.

This paper will therefore go through some of the basic principles about cycles and cycling that should be known and applied by anyone engaged in cycle planning, or in transport planning more generally. It will also make reference to the latest Government guidance, *Cycle Infrastructure Design* [1]. This guidance is useful and you should read it, but some of its standards have been criticised for being insufficiently robust.

Conservation of momentum

The bicycle is the most efficient form of transport known to man and one of the most versatile. But a weakness is that the energy for propulsion comes entirely from muscle power, which is limited. If moving the bicycle demands more energy than the body can comfortably provide, cycling becomes hard work, tiring and unpleasant.

Every time a cyclist has to stop and then re-start, it uses up as much energy as is required to ride an additional 100m. So routes that repeatedly require cyclists to give way are never going to create popular cycling environments. Similarly, one-way systems can increase the energy demands and make cycling less attractive.

The strong personal desire to minimise effort is why direct, energy-efficient and speedy routes are needed if cycling is to be popular, and why some people will cycle where they shouldn't if the legal alternative is too long or stressful.

Table 1 shows some typical cycling speeds. Very few people cycle at less than 10 mph. Below this speed, balance is more difficult and cycling is less comfortable. Above about 10 mph, however, a bicycle becomes largely self-steering, requiring only slight body movement to maintain stability.

Table 1
TYPICAL CYCLING SPEEDS
on the level

Sports cyclist	20 - 30+ mph
Confident commuter	15 - 20 mph
General utility/commuter	10 - 15 mph
Children	10 - 20 mph
Leisure rider	10 - 15 mph

People automatically ride in the way that is most energy-efficient for them, and each cyclist has his or her own optimum rate of pedalling, known as cadence. We would all recognise that making someone ride faster than they prefer will be tiring for them, but obliging someone to ride slower than their preferred speed for any significant time can be just as uncomfortable.

The road network accommodates the range of cycling speeds very easily. If other infrastructure does not do likewise, people will either shun it, or are likely to ride at speeds that are unsafe for the circumstances.

[1] *Cycle Infrastructure Design*, Department for Transport Local Transport Note 2/08, 2008.
The Stationery Office, ISBN 978 0 11 553024 1
Downloadable from http://www.dft.gov.uk/pgr/roads/tpm/ltnotes/ltn208.pdf.

Surface quality

Rough or uneven surfaces destroy momentum, making cycling harder work, and they also impair comfort and safety. Cycle tyres are narrow, pressures may be twice or more those of cars and bikes have minimal suspension.

Good surface quality is more important for cyclists than for any other road user, but often the routes that cyclists use receive little maintenance.

Upstands are a real problem. Cycle paths should *not* meet roads with dropped kerbs, but the road surface should be continued into the path to a tapered, flush join back from the junction itself. This is normal practice in road building and used to be normal for cycle paths too, as shown here on the right.

Upstands crossed obliquely are a common cause of injuries to cyclists. Just 3mm is sufficient to deflect a cycle wheel and throw its rider. But such upstands are often designed into many cycle facilities.

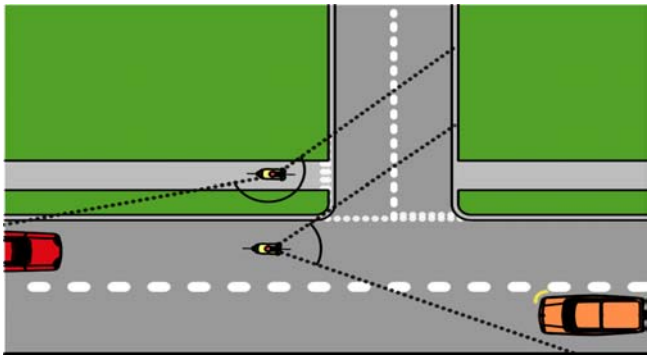
Observation and visibility

The ability to see clearly around you is essential for safe cycling, and in particular to be able to see others with whom you might conflict. Looking ahead is easy and most of the information that a cyclist needs about traffic conditions ahead can be gained through eye movement alone, which is quick and has no effect on the stability of the bicycle.

Looking wider than this, however, requires head movement, which is slower and affects stability. It is more difficult to balance and control a bicycle when not looking ahead, and many people when cycling are not good at seeing what is going on behind them.

They are vulnerable when circumstances require them to move to the right, perhaps simply to go ahead where there is a left-turn lane.

The difficulty of looking behind on a bike has important consequences for road-side paths and explains their poor safety record. The image below shows how the road cyclist can use positioning to emphasise his presence and may then concentrate his attention ahead. The path cyclist, however, cannot exert any influence on drivers behind, and needs to look through a very wide arc for possible conflict. This is very difficult to do, even when stopped. Many people simply give a cursory glance and take the chance.



When planning for cycling, be careful not to assume that cyclists have eyes in the back of their heads.

The situation is even more difficult on a shared footway adjacent to the road, especially when it has been designed as below and deflects the cyclist away from the direction in which he most needs to look. It is almost impossible to use paths such as this safely.

Personal space

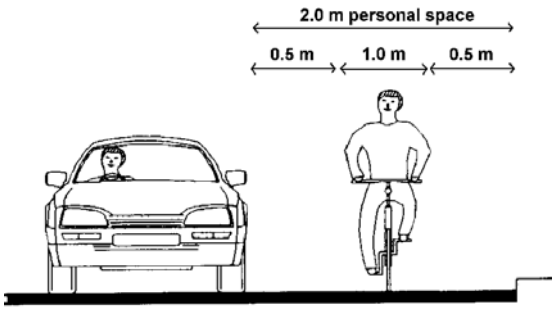
The amount of lateral space available to a cyclist is very important for comfort and safety. For less confident cyclists in particular, traffic passing too close is unpleasant and stressful.

Riding along, a cyclist takes up about 0.75m of lateral space at any time. However, bicycles move from side to side in the process of maintaining balance. The overall envelope of space needed by a cyclist under optimum conditions is about 1m.

When a cyclist moves off from a standing start, or stops and dismounts, or travels slowly, more room is needed. Cyclists also have to move sideways where there are surface defects, and the weather, particularly a strong wind, can make it more difficult to keep to a straight line. Extra space is needed for all these things and to provide a margin for error and natural 'drift'.

On a free-flowing road with traffic but no parking, a confident cyclist will ride with his front wheel about 0.75m from the road edge, or 0.5m from the edge at elbow height.

It's a pretty good rule of thumb that other drivers give a cyclist as much room as the cyclist gives to the kerb; hence they pass about 0.5m from the off-side of the cyclist's personal envelope.



Adding it all up, the cyclist gets about 2m of personal space to accommodate the physical requirements of the bicycle and personal comfort. and that meets most people's requirements on a 30 mph road.

If anything you do when planning for cyclists results in a cyclist getting less space than this, then you will most probably make cycling more difficult, less comfortable and perhaps less safe.

This is one reason why many cyclists do not like cycle lanes, in the presence of which motorists often drive up to the lane line when otherwise they might keep further out. Unless cycle lanes provide within themselves all the personal space that a cyclist needs – that is, they are at least 2m wide – cyclists will often be passed more closely than would otherwise be the case and research shows that motorists often overtake faster too. Just as important, lanes narrower than 2m give misleading messages to motorists about the amount of space that a cyclist needs, not only where there are cycle

lanes but where there aren't. In this way they can be detrimental to the wider co-operation on the roads that is so important.

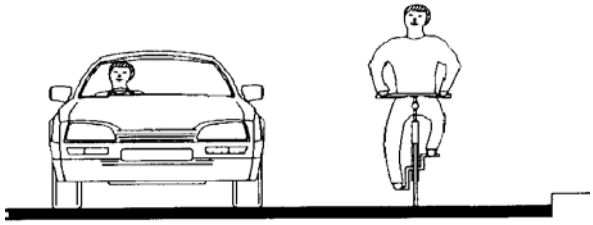
Cycle Infrastructure Design supports the need for 2m lanes with an absolute minimum width on 30 mph roads of 1.5m. The latter concession is contested by many people as it inherently results in too little personal space.

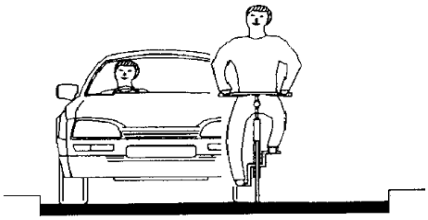
At traffic speeds above 30 mph, or where there are high-sided vehicles, a cyclist needs additional space to take account of the more pronounced slipstream and suction effects of traffic that affect steering. Personal space for cycling needs to be related to both traffic and weather conditions. Narrow, inflexible cycle lanes can increase hazards considerably on busy roads or in bad weather.

Road profiles

Road profiles relate the space available along a road to the requirements needed for safe and comfortable overtaking. Profiles are usually classified as spacious, narrow and critical.

A spacious profile is one where there is plenty of room for motor vehicles to pass a cyclist leaving as much personal space for the cyclist as is appropriate for conditions. Spacious profiles can still lead to problems for cyclists turning right if traffic speeds are high, but in most cases they result in a comfortable cycling environment.





Tight road profiles are where there is insufficient space for a motorist to pass a cyclist to such a degree that this is obvious to everyone. Other traffic is obliged to wait behind until more space is available. Tight profiles lead to lower traffic speeds and may be safe, but cyclists can find them intimidating, being under pressure to move out of the way.

Critical profiles, which lie between spacious and tight, are the most problematic. There is insufficient space for a cyclist to be passed safely, but drivers do not always recognise this. They try to get past by driving close to the cyclist. Sometimes a confident cyclist can use positioning to deter this, but this may result in aggression if the driver perceives the cyclist's behaviour as unreasonable. It is important to avoid critical profiles at all times if cycling is to be pleasant and popular.

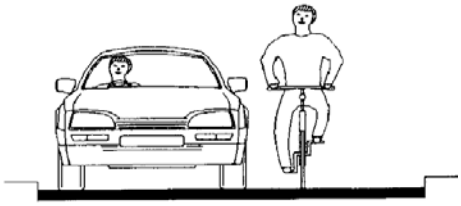


Table 2
Minimum widths at 30 mph

Minimum passing distance of cycle	1.5 m
Car + cycle	4.3 m
Bus/HGV + cycle	5.05 m
Critical profile	**2.75 m to 4.25 m**

Cycle Infrastructure Design gives the space requirements shown in Table 2, from which follow that the critical profiles to avoid are between 2.75m and 4.25m at 30 mph. More space is required at higher speeds.

Risk and vulnerability

Risk when cycling is much misunderstood. Cycling is actually a very safe mode of transport, and one that becomes safer the more people who cycle (a phenomenon known as 'safety in numbers'). The fact that people who cycle regularly live longer and healthier lives than those who don't says it all.

Therefore, please don't get hung up about cycling safety and go for an over-protective approach to cycle planning – try to keep the risk in perspective.

Of course, many people have come to believe that cycling is anything but safe, and there is undoubtedly a great deal that could be done to make cycling safer. It is very important to address perceptions about safety if we are to get more people to cycle, but as professionals it is imperative that, in dealing with the perceptions, you understand the facts and you do not inadvertently make reality worse.

It is not traffic per-se that causes conflicts for cyclists, but crossing, turning and weaving movements especially in situations where people have many distractions of their attention. Controlling speed through junctions and ensuring that crossing distances are short are important ways of minimising the vulnerability of cyclists. So, too, is encouraging co-operation and involving all road users in sharing responsibility. When road users share space, are aware of each other's presence and can predict behaviour, problems seldom arise. On the other hand, segregation usually increases the frequency of crossing and turning movements and makes cyclists less easy to see.

However, the main cause of cycling casualties is not motor traffic but bad surfaces, probably accounting for more than 80% of injuries. In places such as Cheltenham, the most important thing needed to improve safety is to mend the roads.

Another common type of crash involves the opening of a vehicle door into the path of a cyclist. This is a problem made worse by many cycle lanes. Lanes such as that shown on the left in Gloucester direct cyclists into the very area that they should be avoiding. *Cycle Infrastructure Design* notes that *"A buffer zone between [parking] and a cycle lane of 0.5m to 1.0m is recommended"*.

In queues of traffic, cyclists are also vulnerable to the opening of a nearside door; passengers often taking less care than drivers.

Most cycling casualties, especially those that are not on the carriageway, are not recorded by Stats 19. In my work as an Expert Witness to the courts on cycling, around three-quarters of the cases I have dealt with have involved cycle facilities, a proportion grossly disproportionate to where most cycling takes place even when one takes account of the greater complexity of facility claims and thus the need for expert evidence. The greatest error to make in planning for cycling is to assume that cycle facilities are inherently safer than cycling on the roads, for while the hazards may sometimes be different, they are often less predictable and can be just as life threatening.

Table 3 shows the top five causes of facility injuries in cases that I have dealt in recent years. These are not just bumps and scratches; each of these categories includes at least one fatality.

It is for good reason that so many cyclists rebelled at the suggestion, when the latest Highway Code was in draft, that cyclists should use facilities where provided and why they are so often ignored. It is important to respect the judgement of users and to understand the fundamental limitations of planning for cyclists apart from motor traffic.

Table 3
CYCLE FACILITY CASUALTIES

- Surface defects (33%)
- Visibility (22%)
- Cycle lanes (22%)
- Collisions with pedestrians (14%)
- Collisions with hardware and other obstructions (11%)

Cyclists and pedestrians

Cyclists and pedestrians are often considered together. Both are vulnerable road users, but that is as far as the similarity goes.

Table 1 showed the range of typical cycling speeds. Notice how much greater are all these speeds compared with the 3 - 4 mph at which pedestrians walk. The minimum speed for cycling is 2.5 times that of a pedestrian, while faster cyclists travel at 5 times the speed, much closer to the speed of motor traffic.

The energy 'cost' to a cyclist of stopping and re-starting is 80 times that for a pedestrian. The rolling wheel of a cycle is much less tolerant of poor surfaces and cannot simply 'step up' when a change of level is encountered. Cyclists cannot turn on the spot, move sideways or stop suddenly – 3 characteristics on which a great deal of pedestrian safety critically depends.

In fact, cyclists have very little in common with pedestrians and facilities designed for pedestrians are rarely suitable for cycling.

In 1986, the Department of Transport stated clearly that: *"It must be emphasised that there are no circumstances in which a general or widespread opening up of footways and footpaths to use by cyclists would be acceptable."* [2]

Cycle Infrastructure Design notes that: *"Creating space for cyclists by taking footway space is generally the least acceptable course of action."* Also: *"Off-road cycle routes in urban areas tend to be the least desired option, and it is usually better to cater for urban cyclists on-road."*

In Gloucestershire, shared footways have been introduced extensively. Indeed, it seems to be almost a default action when highway changes are made. In many cases these facilities are little used, but they have led to an increase in harassment towards cyclists on the roads and, most likely, the huge increase in pavement cycling that now causes many people to resent the activity.

The most fundamental shortcoming of cycling policy in Gloucestershire, in my view, is that planning for cycling seems to have been considered as something much more analogous to planning for pedestrians than to planning for vehicles.

[2] *Shared use by cyclists and pedestrians*. Department of Transport Local Transport Note 2/86, 1986.

The consequences of this approach are:

- Facilities that are unsafe at normal cycling speeds yet usually slower and more tiring than roads;
- Facilities which are dependent for their safety on pedestrian characteristics not shared by cyclists: *e.g.* being able to turn on the spot to see traffic and to move sideways to dodge conflict.
- Upstands wherever footways meet roads; sign and lampposts in the path of travel.
- A change of level from footway to road and back again at every road crossing. This is uncomfortable and tiring for cycling and has safety consequences by distracting attention from traffic. Cycling should take place at road level all the time.

Footways such as this in Tewkesbury – finished as recently at December 2008 – are the ultimate in cycle-unfriendly design: dreadful rearward visibility, even when stopped; a full kerb across the cycle path for half its width; an oblique 20mm upstand at its lowest point with a high potential for throwing a cyclist who crosses it.

Please consider just how design like this can be justified and how could it ever pass a safety audit?

If Gloucestershire is to be serious about assisting cycling, then this is a key area for some reflection.

Cycle networks

There is often emphasis on building 'networks' of cycle routes. Except for the special case of leisure routes – which may be important in the rural areas of Gloucestershire – cycle networks are much less important for cycling than is sometimes thought.

Most people will not go out of their way to use cycle routes and there is usually a poor mismatch between cycle networks and the places where most people cycle. The fact that a particular road or path is part of a long-distance network is of no importance whatever at the local level, and in most cases nor is the fact that it continues to the other side of town. For the most part, people need the ability to make local journeys easily.

For reasons explained earlier, cyclists have a strong inherent desire to minimise energy, and that means that they will take the most direct route they can. Cyclists and pedestrians are the least 'routeable' of all the transport modes: their need is not for distinct networks, but fully permeable towns, where every road is a cycle route and there are no unreasonable barriers to free and safe movement.

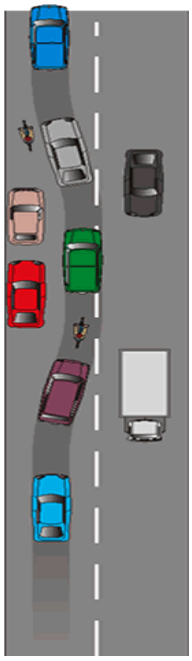
It can be frustrating when schemes are sometimes driven by the desire to 'complete a link in a network', particularly when this results in the acceptance of low standards, just to get something in. Schemes should only be implemented where there is a need, a clear benefit to cyclists as a whole and the ability to produce a high quality result.

Cycle training

A success in recent years has been the growth of cycle training in Gloucestershire as elsewhere. Modern cycle training is based on the principles of vehicular cycling and teaches cycling in a similar way to teaching someone to drive a car: how to integrate with traffic rather than to keep away from it. It teaches people to respond dynamically to the changing traffic situation around them, rather than to follow a rigid set of rules, for this is the safest and most efficient way to cycle.

It is very important that cycle planning does not undermine or inhibit safe cycling technique by requiring cyclists to ride in a non-vehicular manner.

The single most important skill taught is positioning, for it is through this that cyclists can exert the greatest influence over their safety. The aims of positioning are to ride where you can best see and be seen; where you may deter others from putting you at risk; and where bike control is easiest.



In practice, good positioning means riding relative to – and often within – the moving traffic lane, *not* relative to the kerb, and to keep away from the places of greatest risk such as by the give-way lines at side roads and roundabouts. This practice has important consequences when planning for cycling, and in particular the provision of facilities such as cycle lanes which restrict the ability of cyclists to manoeuvre safely.

Cycle Infrastructure Design notes: *"Cycle lanes are not always suitable and may encourage cyclists to adopt inappropriate positioning if the lanes are poorly designed. Designers need to decide whether a cycle lane is going to help or not. If so, its alignment should ideally reflect guidance and training on safe techniques (Franklin 2007) for manoeuvres undertaken by cyclists"*.

The reference to which you are referred for that guidance is *Cyclecraft* [3], my book, so I can assure you that there are few instances in urban areas when cycle lanes allow cyclists to position properly.

It is also very important for safe cycling that cyclists follow the same rules as everyone else. That way there is no ambiguity as to how a cyclist should behave and how others interpret his or her actions. If special infrastructure requires cyclists to behave differently to when cycling on the roads, it will undermine cycling standards and safety. This is another important reason why cycling infrastructure must be vehicular in design and not based on pedestrian practice.

The road network

The overwhelming majority of cycling takes place on the general road network and it is unlikely that any alternative could be provided that would better meet the needs of cyclists in terms of access, ease of use or safety. Planners and engineers have far more potential to encourage (or discourage) cycling when designing ordinary roads than by implementing cycle-specific infrastructure.

Cycle Infrastructure Design notes: *"The road network is the most basic (and important) cycling facility available, and the preferred way of providing for cyclists is to create conditions on the carriageway where cyclists are content to use it, particularly in urban areas"*.

So what are the main problems?

I've already mentioned that cyclists need sufficient space to operate. One of the greatest space-related hazards today is the centre island which results in a critical profile for cycling. They are a considerable deterrent to cycle use, even when traffic speeds are not high. Where pedestrians need to cross, use of a zebra or controlled crossing would better meet the needs of both pedestrians and cyclists.

[3] *Cyclecraft*, John Franklin. The Stationery Office, 1997. ISBN 978-0-11-703740-3

Lane widths have an important impact on the perception of safety, and narrow lanes can be very stressful. Conversely, widening the nearside lane on multi-lane roads

can be a very useful way of giving cyclists extra space without imposing the constraints of a cycle lane or disadvantaging anyone, and at zero cost if done when roads are re-striped.

Sometimes there is too much space around. Large radii at junctions can encourage higher speeds while making it more difficult for drivers to see cyclists. At the same time there is more 'unprotected space' for cyclists to cross where they may feel vulnerable.

Large roundabouts are an example of this problem. *Cycle Infrastructure* Design recommends that: *"Continental-style roundabouts have tighter geometry that is more cycle-friendly"*. Or use some other form of traffic control.

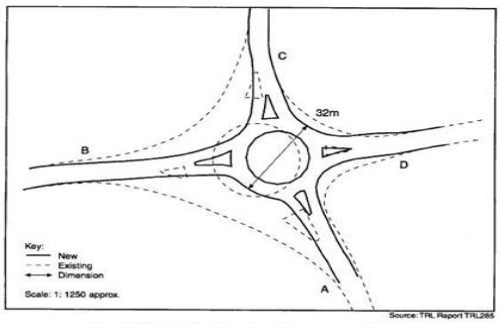


Figure 11 Continental redesign of roundabout geometry, Abingdon

A general reduction in vehicle speeds would be the best action to allow more people to cycle and there is increasing pressure from communities for area-wide 20 mph zones. But it is not just absolute speed that is important but also the way that vehicles are driven. Places where drivers continually brake and accelerate to minimise the effect of traffic calming on their progress are sometimes more intimidating for cycling than free-flowing roads with higher speeds.

A common hazard is the overtaking of cyclists by drivers who then cut in to turn left. Sometimes road design, as shown in this photo from Cheltenham, encourages drivers to do this by making it easy to leave the through road fast. Motorists would need to drive more carefully if their path was less direct.

I've mentioned that cyclists need direct routes. In an increasing number of countries, cyclists are being exempt from one-way restrictions to improve permeability by bike. People are pragmatic: if its easier to get somewhere by bike than by car, many will switch mode.

Hierarchy of provision

Consider first ↓ Consider last	Traffic volume reduction Traffic speed reduction Junction treatment, hazard site treatment, traffic management Reallocation of carriageway space Cycle tracks away from roads Conversion of fooways/footpaths to shared use for pedestrians and cyclists

"The underpinning principle is that measures for cyclists should offer positive provision that reduces delay or diversion and improves safety"

Cycle Infrastructure Design

Cycle Infrastructure Design repeats, upfront, the Hierarchy of Provision when planning for cyclists. What you should consider first – traffic volume and speed reduction, junction treatment and traffic management measures – have much more potential for wider benefit than options lower down. However, please don't assume that if you can't do something higher up, then you *should* do something lower down. In many cases a 'do nothing' option is preferable to inappropriate cycle facilities which may make cycling more difficult and lead to hostility and aggression towards the many people who will not be prepared to use them.

Although cyclists vary, *Cycle Infrastructure Design* notes that for most utility cyclists, convenience (in terms of journey time or distance) is the most important consideration, though traffic safety and personal security must be acceptable.

Cycle facilities

The most useful facilities are those that enable shorter or quicker journeys, or open up access not available to other traffic. Exemptions from traffic management restrictions, links between estates and, of course, cycle parking are all examples of things that help cycling. Routes away from traffic can sometimes provide useful shortcuts or pleasant places for leisure trips.

Much more controversial are facilities alongside roads. I explained earlier how much more difficult it is to see turning traffic from a cycle track than from the road. And I have described how cycle lanes often result in cyclists being passed closer and faster than where a lane is not present.

Research shows that where there is separate infrastructure: *"Most bicycle accident victims are older people and children. They are put at risk by the complexity of cycle paths on the one hand and on the other hand by their over-confidence that their safety on cycle paths is substantially greater than on the road."* [4]

That is not to say that cycling infrastructure is never appropriate. However, there are probably few aspects of traffic engineering where getting the context and detail right are so important.

[4] Office of the Viennese Federal State Government 2004

Every two-way cycle track should have a centre line as you would expect on a road, for cyclists are poor at keeping left without one and head-on collisions are invariably serious. Forward visibility should always reflect typical cycling speeds and be no less than a cyclist would expect on a road. Centre and edge lining are important for safety at bends after dark. Vegetation should be kept well back, not only to contain seasonal growth, but so that the track is not dark and threatening at night. Reflective signs are needed to warn of bends, junctions and all other potential hazards. In short, a cyclist should expect to receive a similar level of service to that on a road.

Alongside the A40 out towards Highnam a shared-use footway has recently been installed immediately adjacent to the road. This is the sort of place – alongside a fast road with lots of HGVs and a long distance between junctions – where a segregated cycle track could be useful, but not if implemented like this!

It is essential that cycle tracks have a verge to catch anyone riding off course. Riding against the flow of traffic, even dipped headlights can cause dazzle at night and a dazzled cyclist is likely to steer towards the source of light. Without a verge, cyclists ride closer to fast, oncoming traffic than in almost any on-road situation. Along the A40 track there isn't even an edge line, unlike on the carriageway.

There are other problems, too, along this path such as oblique upstands and obstructions in the path. It is another example of pedestrian design that is inappropriate and unsafe for cycling.

The Dutch example on the right shows how cycle tracks should be. A decent verge, centre lines, a good and unobstructed surface and a separate footway for pedestrians. The cycling surface is also at road level so there are no changes in level at road junctions.

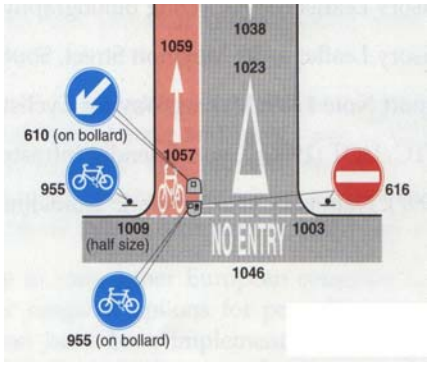
Along off-road routes, barriers are widely disliked and often lead to injuries. *Cycle Infrastructure Design* recommends that they are not used unless and until a persistent need is proven that cannot be addressed in any other way.

Very few of the cycle lanes in Gloucestershire meet the recommended 2m minimum width discussed earlier. However, along the A38 south of Tewkesbury is probably the best cycle lane in the county. The lane itself is only 1.5m wide but there is a 0.5m hatched area between the lane and the main carriageway, giving 2m overall. If Gloucestershire wants to use cycle lanes, they need to be like this.

Here in Gloucester, on the other hand, there are two very narrow cycle lanes where cyclists have no room at all to manoeuvre, and a large area of hatching that keeps motorists very close to cyclists – a very unpleasant situation. There is plenty of space for 2m cycle lanes, but even better for the circumstances would be wider traffic lanes that cyclists and motorists could share comfortably. This would be an example of a better solution at less cost.

One benefit of cycle lanes is the bypassing of stationary traffic but only if they are wide enough to ride clear of opening car doors and where there is good sight of pedestrians crossing between vehicles. Again, 2m is the minimum width necessary. Cycle lanes leading to junctions need special care, for they encourage cyclists to ride up the inside of left-turning vehicles, one of the principal causes of cycling fatalities. Where left turns are common or junctions are regularly used by long vehicles, it is safer not to use kerbside lanes and perhaps not advanced stop lines either.

Cycle lanes across junctions are not a good idea, as they direct cyclists into the very place where risk is greatest. Cyclists should never be encouraged to ride where their safety depends critically upon others obeying the rules. This cycle lane was added recently in Cheltenham and has made it more difficult to use the junction.



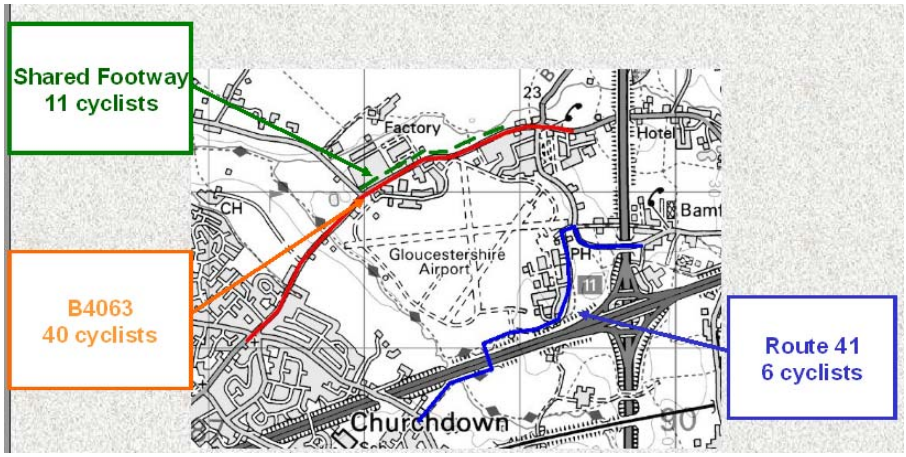
It is important to react to feedback when cycle facilities are introduced or modified as cyclists are very sensitive to new hazards and other problems. For example, since the divider island (recommended by the DfT) was removed from this contra-flow lane in Cheltenham, numerous people have told of cars turning across their path because they can now cut the corner.The comfort level of cycling here has gone down markedly.

Signal changes at Westal Green have greatly reduced the capacity of the cycle and pedestrian crossing and exposed both groups to new risks. People have genuine concerns about this.

At some time existing cycle facilities in Gloucestershire should be reassessed. A high proportion could be lost without any real hardship to anyone, and sometimes to benefit. Here and there, though, there are facilities of inadequate design which nevertheless are of some value, such as the shared footway across the motorway junction in Ashchurch. These schemes need to be brought up to a better standard.

Enabling more people to cycle

For this presentation, I carried out some surveys of journeys in the area of the airport, where there are three infrastructure choices for cyclists: the B4063, a shared footway alongside the B4063, and the NCN route 41 via Churchdown. In recent years, Gloucestershire has spent a great deal of time and money on route 41 and on providing shared footways and cycle lanes on the B4063. On the other hand, many would say that conditions have got worse on the road itself as the surface has deteriorated and the adjacent facilities have resulted in some hostility from motorists towards cyclists who don't use them.



Over 2 hours in the afternoon peak, 6 cyclists used route 41. None of these were riding any great distance; most were making short journeys from the airfield itself to Churchdown. 3 of these people, without any prompting by me, were very critical of the route.

The shared footway alongside the B4063 was used by 11 people, some for only a short distance and in ways that put them at risk.

40 cyclists used the B4063 itself.

Apart from providing a useful (but much criticised) shortcut for a few people working at the airport, it is unlikely that Gloucestershire's investment in cycle facilities in this area has achieved much of a payback, and arguably much less than if the money had been used to resurface parts of the B4063.

Generally, longer distance cyclists are experienced and competent and do not need or want cycling-specific infrastructure. They are best assisted, where necessary, by site-specific improvements to the roads as opportunities arise.

Similarly, it is a mistake to think that in order to get more people to cycle we particularly need to target people at the lowest end of the skills range, and that this means enabling them to avoid traffic as much as possible. In places where cycle use has increased significantly in recent years, such as GCHQ in Cheltenham, London or Paris, although there is a range of abilities among those who cycle, on average the level of competence is high. The growth in cycling is predominantly in social classes A and B, where people do not *need* to cycle, but want to do so for its practical benefits. They will not be encouraged to cycle by low standards, but will respond to the kind of support that maximises the benefits.

Where people lack cycling skills, cycle training is the most effective short-term answer, but as more cyclists take to the roads so 'safety in numbers' will more effectively broaden the base for cycling.

Conclusions

So what are the priorities for a cycle-friendly Gloucestershire?

- Stop treating cyclists as pedestrians. Pedestrian infrastructure has no place in creating a popular cycling environment and will always deliver poor value for money.
- Focus on short journeys and make the overall urban environment work for cycling rather than against it. This is the priority. It means following the Hierarchy of Solutions, lower speeds, cyclist compatible junction design, good permeability and direct access. In most cases it should not mean cycle-specific infrastructure.
- Adopt an evidence based approach to cycle planning. Implement schemes because there is good evidence of likely benefit and it is wanted by cyclists, not just to 'do something' or complete a network. Do what you do to a high standard – always use vehicular design.
- Develop good audit procedures to identify the main barriers to cycling, to assess all road and development schemes for their impact on cyclists, and to discover what has actually happened after implementation.
- Work together to support cycling in Gloucestershire with your colleagues in health and education and with cyclists' representatives.

Cycling needs to be safe, comfortable and speedy. All three are priorities and all three need to be met.

Quotations

"Cyclists fare best when they act and are treated as drivers of vehicles
– same roads, same rights, same rules"

John Forester, California
but with roots in his experiences as a youth cycling in the south of Gloucestershire.

"If you make conditions right, there's a great future for cycling.
If you make them wrong, there's none."

Ernest Marples
Minister of Transport in the 1960s and himself a cyclist

Biography

John Franklin has been involved in cycle planning and safety issues for about 30 years. For over half of that time he's been an Expert Witness to the courts, giving him a good insight into the causes of cycling casualties and the perspectives of all concerned. He is the author of *Cyclecraft*, which is the basis for the UK National Cycle Training Standard and also training schemes in a number of other countries. He is currently a member of an advisory group that is steering a Department for Transport 2-year research project into cycling safety.