

PUTTING CYCLING ON THE TRANSPORT MAP ... A "COLLISION" BETWEEN FAST TRAFFIC AND URBAN DESIGN? [presented at Velo-city Conference Scotland September 2001]

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Governments and their agencies increasingly promote cycling as a healthy alternative to car travel. There are of course many other equally justifiable reasons for promoting cycling. They include reductions in noise and air pollution, cost of roads, parking and road crashes, and, perhaps increasingly importantly, equality and equity among community members and across ages and abilities.

The benefits of cycling have been demonstrated through local projects such as "Safe Routes to Schools" and integrated national policies such as those in the Netherlands. However, implementation often appears constrained by concerns about safety. Preference tends to be given to off-road paths and tracks (1) or to on-road routes in quiet streets where safety is assumed. Where safety is most problematic, on major roads and especially, at crossings and intersections, concern about safety is frequently the dominant reason for not implementing cycle friendly infrastructure or conditions. The reason for the concern is rarely addressed but instead, is avoided. In so doing, the reason for the concern remains and arguably is endorsed for example when expensive overbridges are built across urban main roads to ensure the traffic is not constrained by cheaper and perhaps more suitable means such as traffic lights. One of these reasons, "fast traffic", does indeed "collide" with urban design under such conditions.

In urban areas including remote settlements, where people of all ages move, the street and road system should be both safe and convenient for all road users. Hence cyclists and pedestrians are as important as motorised traffic. They are perhaps even more important than motorised traffic if the reasons governments promote cycling and walking are valid. This reflects in priority. We argue the street and road system should be "safe+ convenient" for all road users (2) because people walking or cycling are, or ought to be, ubiquitous (3) that is, present everywhere in urban areas and especially where walking and cycling are both promoted and valued, as in the Netherlands for example.

To be safe, the design, management and enforcement of urban roads and streets should ensure the road toll is zero. The idea of "acceptable" road death targets above zero can no longer be tolerated. It is not accepted by most industries such as those involved in service provision eg miners, builders, pilots or by those who benefit from these services. It seems road management is one of the few areas where it is acceptable to set a target for fatalities ... in Australia, some 1500 deaths per year. It increasingly appears the reason why such deaths are acceptable is the relatively simple concept of quality control or management being applied, not by outside agencies, but by those who set the standards. It is both common and normal that those responsible for road safety are located within the agencies that design, control and manage the streets and roads rather than, for example, being located in the insurance (4) or health care areas, where the costs of failure to provide a "safe" road system are met. By moving responsibility for safety from the road agency to health or insurance, there is at least an incentive to "integrate" safety and health through road safety (5) with an aim to eliminate road deaths, especially in urban areas, and to accept the idea of a zero road toll as a realistic vision and challenge to road managers (6) rather than as idealistic and unachievable.

In the UK for example, the failure of road agencies to successfully address the issue of young

children and the elderly as pedestrians involved in crashes with cars has resulted in some of those in the medical profession who treat the victims now claiming that vehicle speeds on high risk roads must be reduced to below 20mph (30km/h) to reduce the impact speed because fatalities are inevitable with children and the elderly with traffic speeds above 25mph (40km/h) (7). However as argued by others (8), there are inevitably a number of different, often competing needs and responses which despite the rhetoric of concern for road safety that includes pedestrians and cyclists, inevitably result in more debate or research but little if any action. This appears to be justified by the acceptance of roads being dangerous and therefore deaths acceptable, rather than the view that roads, at least in urban areas, can and should be safe.

It is therefore not surprising that rather than improve the safety of the high risk roads for the young and the elderly, school buses (8) and other strategies are suggested ... almost anything to avoid addressing the issue of a zero road toll as a requirement for a safe road system (9). Perhaps the most prevalent of these avoidance strategies are those that promote the idea that separation is the solution. As a "common sense" solution, it is hardly refutable but in practice, is separation possible let alone achievable everywhere even in urban areas? Is it achievable for all possible or desirable trips by walking or cycling? As studies of the results of projects based on separation show, often the solution is not only not necessarily useful, but may also result in new problems such as the problem of cyclists sharing paths with pedestrians as an outcome of not trying to address the needs of cyclists crossing or sharing the road with motorised traffic (1). Similarly, separation lends itself to creating barriers for those for whom it is designed. This is increasingly made obvious as the needs of people with access disabilities are included by design (10) when for example, fences are erected to prevent dangerous behaviour or long bypasses (eg overpasses, underpasses) are proposed for the very people for whom any increase in trip length and/or gradient increases difficulty.

It is therefore essential to assess convenience, not just for the target group, for example those at risk or viewed as miscreants, but all road users (2). Convenience in this sense is an assessment which embodies the users needs and preferences from first principles, an example of which for cyclists is the Dutch design manual for a "cycle-friendly infrastructure" (11). The result must however be a "user-friendly" infrastructure for all potential users (2) if conflicts, dangers, risky behaviour etc are to be reduced if not eliminated along with deaths and serious and long term injury. The concept of "safety+ convenience" therefore aims to ensure that the relative service levels, that is, user-friendly solutions, for all potential user modes can be assessed both before and after policy or project implementation to ensure equity for the various modes is more closely linked to the policy statements, which while promoting and encouraging more walking or cycling, have failed to influence those who design, manage and enforce road and transport systems. The aim is to achieve facilities or conditions that suit all the users and thereby result in increased use of those modes where increases are sought ... because the road and transport system or solution is both safe and convenient for those users.

So, if cycling is to be put on the transport map, both safety and convenience must be assessed, not just for people walking or cycling but for all modes relatively. The function "safety+convenience" then becomes a tool for assessing mobility, accessibility and safety. Urban areas can be assessed for their relative "safety+convenience", and policy and supportive funding allocated, to ensure that the appropriate modes have sufficient "safety+convenience" to ensure those using them and those considering doing so are encouraged to do so and find the experience rewarding, convenient and safe.

It follows therefore that the design, planning, management and funding of urban areas, urban design, should ensure fast traffic does not "collide" with urban design and that where there is a risk of such "collisions", those at risk are provided with a level of service equivalent to that of

the fast traffic. To illustrate this concept by example, it has been suggested that all road users should have to press a button to change the traffic lights unless all have automatic access through intelligent systems. It is however, unacceptable if the fast traffic has automatic access while everybody else has to press the button. Similarly, from a "safety+convenience" assessment framework, it may be more appropriate for motor traffic to travel slower, have reduced priority, take the longer route and/or climb the extra gradient to achieve equity and safety ... a strategy which has worked extremely well in Houten in the Netherlands to reduce road injuries and fatalities while providing high quality, safe and convenient access for all road users (9).

However, it increasingly appears possible in most urban areas to achieve the desired level of service for all road users without major infrastructure as provided for example in Houten. The increasing use of low speed road management with supportive enforcement and design to achieve it, and the extension of such schemes across wider areas and uses, confirms that whole precincts can achieve the goals of "safety+convenience" for all road users by lowering traffic speed. Perhaps the outstanding example is Graz in Austria, the first city in the world with a 30km/h speed limit with roads with higher speed subject to audit. Although not perfect, Graz has shown how its low traffic speed policy makes more obvious the fact that urban design and traffic do not have to "collide". Not only can appropriate speed management save lives and reduce serious injury if it values the "safety+convenience" of people walking or cycling, it can be, and now importantly, has been, supported successfully by urban design as in many low speed precincts worldwide.

International success and expansion of projects such as "Safe Routes to School", 20mph (30kph) home and mixed use speed zones and increasing use of lower general urban (default) speed limits confirms that, rather than consider fast traffic as a safety concern constraining implementation of cycling provisions, slower speed traffic is inevitable and, in the interests of urban motorists, as well as cyclists and pedestrians, is an essential of urban design (9). The characteristics of maintaining increased traffic speed apply to both motor vehicle traffic and to public transport as well as freight and have been dealt with elsewhere. The most important appears to be the tendency to travel faster for a longer distance rather than shorter time. Thus from local urban to regional scale, provision for "fast traffic" encourages car use including longer trips by discouraging and threatening even short walking and cycling trips. In this sense, rather than faster and/or longer distance public transport, it is better if public transport provides increased level of service (eg frequency, more stopping points etc) and slower travel speed to reduce the threat of large vehicles travelling too fast while increasing the safety and comfort of passengers. Hence to encourage fewer long trips and less trips by motorised traffic and by public transport, local areas should be designed and managed for the modes most suitable for those trips, the healthy modes ... walking and cycling (12).

Seemingly in support of cycling and to a lesser extent walking, many agencies and authorities promote sharing the road although this excludes use of bike lanes as they provide separation. The challenge to road and road safety agencies is therefore increasingly, to show how to share the road. A concept from the USA (13) showing the likely travel corridor of cyclists on the road led to use of "bicycle" symbols painted on the road but without lane constraints, described as a *Bicycle Friendly Zone* (14). Despite rhetoric promoting "sharing the road" and the apparent concern for the road safety of cyclists, this approach apparently requires legal sanction because it is not a recognised facility, despite it apparently being effective. Interestingly, as with lower speed limits, it is not the "safety+convenience" benefits which form the basis for approval or use but compliance with previously accepted design and management standards which establish the priority of "fast traffic" and may contribute to not only the lack of convenience but also the lack of safety for people walking or cycling.

Completed projects and work in progress show walking and cycling can be included in urban areas. However to achieve the increases in use of these modes sought, the "safety+convenience" for these users must be increased relative to that of motorists and public transport. The facilities and conditions that suit people walking or cycling must increasingly meet the needs of people with access disabilities. While sharing the road appears increasingly as rhetoric, it, like the idea of complete separation, too frequently results in exclusion, not inclusion, of people of all ages and abilities walking or cycling, including those with access disabilities usually because the road system is viewed as too dangerous yet the danger can be reduced by those responsible. While urban design "off road" increasingly provides equity for all potential users, managers of road systems appear to prefer the tolerance of acceptable road toll targets rather than a requirement to achieve a zero road toll, at least in urban areas, and therefore are apparently reluctant, despite exemplary experience elsewhere, to accept the challenge and responsibility for a zero road toll achieved by providing conditions and facilities that suit walking and cycling. Accordingly, to audit urban access and mobility, the assessment of relative "safety+convenience" for all road users is essential. To achieve substantive increases in people walking and cycling, the urban road network must be made "cycle-friendly" for people of all ages and abilities by safely sharing the road including by reducing traffic speed.

- (1) Cyclists Touring Club (2000) *Cyclists and Pedestrians: Attitudes towards Shared Use* CTC, Godalming
- (2) Yeates, M (2000) Road safety : for all road users? pp87-92 of *Proceedings of Road Safety, Policing and Education Conference* Brisbane in *Safe Cycling 2000* (revised edition), 26 November 2000 Brisbane, Queensland Transport [see www.transport.qld.gov.au/cycling]
- (3) Brindle, R. (1984) *Town Planning and Road Safety : A review of literature and practice* Office of Road Safety Report CR33, Australian Road Research Board, Melbourne
- (4) Weatherston, N. (1999) Highlights of British Columbia's "Drive to Save Lives" presented at *Third National Conference on Injury Prevention and Control* Brisbane
- (5) Yeates, M. (1999) Integrating safety and transport : a healthy suggestion? presented at *Third National Conference on Injury Prevention and Control* Brisbane
- (6) Yeates, M. (2001) Zero Road Toll ... a dream, a realistic vision ... or a challenge? in *Proceedings of 24th Australasian Transport Research Forum*, Hobart [see www.transport.tas.gov.au/atrf]
- (7) Automobile Association (2001) *New Routes to Safety: Delivering Britain's aggressive casualty reduction target* Proceedings of Conference, 30 November 2000, London, AA Foundation for Road Safety Research (see for example Sheriff p45)
- (8) Automobile Association (2001) *New Routes to Safety: Delivering Britain's aggressive casualty reduction target* Proceedings of Conference, 30 November 2000, London, AA Foundation for Road Safety Research (see for example Kimber p32 and 41)
- (9) Yeates, M. (forthcoming) Can urban roads be safe for motorists ... if they are not safe for people walking or cycling? in *Proceedings of The National Speed and Road Safety Conference*, Adelaide August 2001
- (10) Yeates, M (1999) Integrating urban design: meeting the needs of people with access disabilities ... and cyclists, *Proceedings of Velo-City Conference 1999* Graz
- (11) CROW (1994) *Sign up for the bike : Design manual for cycle-friendly infrastructure* The Centre for Research and Standardization in Civil Engineering, Ede (See Section 2)
- (12) Hillman, M. (1995) Cycling as the realistic substitute for the car : burying the conventional myth about public transport, *Proceedings of the 8th Velo-City Conference* Basel
- (13) Mackay, J. (1995) Bicycle facility signs and pavement markings in the USA, *Proceedings of the 8th Velo-City Conference* Basel
- (14) Cyclists Urban Speedlimit Taskforce (2000) "Making space for cyclists by sharing the road ... Brisbane City Council's *Bicycle Friendly Zones*" in *Safe Cycling 2000: Proceedings of the Safe Cycling Symposium* (revised edition), 26 November 2000 Brisbane, Queensland Transport [see www.transport.qld.gov.au/cycling]

Overheads used during the presentation: Velo-city 2001 (Scotland)

Introduction (Velo Mondial 2000)

Trial of Traffic Complaints Database (bottom half of above0)

Smog link to heart attacks

8 out of 10 peds die at 50km/h (graph page frm Vision Zero)

There is a human explanation ... (cover of Vision Zero)

Cyclists blast plans to axe 40km/h limit

Unley 40 Safe (front cover)

Bike in a house symbol with car

Factsheet 20 Access to and in the main street

CROW graph of vehicles v speed and bicycle separation/integration

BURG Symbols 3 Technical guidance for BFZ

#22 Integrating urban design, speed management and cycling provision

#21 Provision of space for cyclists on urban roads ...

#23 Does the white edge line ...

All the dfferent speed zones and limits from Graz 30 to Australia's 60

#20 Use of facilities which are technically correct and safe

Gee that's funny ...

Cycling space #15

Cycling space #16

Play fair ... Share the road

Cycling space #8

LTT letter from John Franklin re substandard facilities

#24 Use of BFZ without a white edge line (reserve but did not use)