



## BICYCLE RESEARCH REPORT NO. 7

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### **CASE STUDIES ON SAFETY FOR CYCLE TRAFFIC**

**including a wide variety of traffic measurement schemes**

**By Dankmar Alrutz, Hans W. Fechtel and Juliane Krause**

#### The Key Facts

According to an extensive set of case studies from the Cologne Highways Institute, cycling can be made safe and attractive in contraflow lanes on one-way streets on shared bus lanes, in pedestrian zones and at cycleway junctions with signals which give priority to cyclists.

#### Contents

The research undertaken for the Institute is probably the most comprehensive survey of planning for cycle traffic up to 1987. Its 632 pages draw on the experiences of the Netherlands, Denmark, Sweden, Switzerland, Austria, England and the USA as well as including a detailed section on the progress made in the Federal Republic.

There are examples from Denmark, England, the Netherlands, Austria and Switzerland of straightforward solutions which allow cyclists to use one-way streets in contra-flow. None of these involve any expensive structural work (see Fig 1).

Examples of bus lanes or cycle-streets used jointly by buses and cyclists are given from England, Denmark, the USA and the German towns of Hildesheim, Siegen, Hanau, Hannover and Erlangen. The recommended road width for such shared lanes is more than 3.50 metres. Bus frequency should not exceed 20 buses per peak period hour (see Fig 2).

In the Netherlands, the number of accidents involving motorists turning left or right and cyclists riding straight ahead has been significantly reduced by installing an extra traffic light phase for cyclists; this does not conflict with the signals for motorists. However, this reduction is in part offset by serious accidents caused by going through the lights on red. This resulted from the extra phase which led to longer waiting periods, which some cyclists found unacceptable.

Two schemes show that it is possible to reverse the trend towards priority for motor vehicles - a cycleway junction with priority in Hanover, and a traffic light with an extra-long green phase, in Ludwigsburg. In the latter case, motorists crossing an important cycle route normally have an extra-long red signal which changes to green only on request.



Source "Case studies on Safety for Cycle Traffic" by D. Alrutz, H.W. Fechtel und J. Krause. Hg. Bundesanstalt für Straßenwesen, Reihe Unfall und Sicherheitsforschung Straßenverkehr Bd. 74. Bergisch-Gladbach 1989, ISBN 3-883114-892-X (Preis 70,50 DM).

Addresses Dipl.-Ing. Dankmar Alrutz, Planungsgemeinschaft Verkehr, Große Barlinge 72a, 3000 Hannover 1, Tel. 0511/880537; Dipl.-Ing. Hans W. Fechtel, Dipl.-Ing. Juliane Krause, PLAN + RAT, Parkstraße 7, 3300 Braunschweig, Tel. 0531/335120; Wirtschaftsverlag NW Verlag Neue Wissenschaften, Postfach 101110, D-2850 Bremerhaven 1 (Bezugsquelle).

Fig 1: Standard values for track widths required by one-way cycle traffic leaving Basel

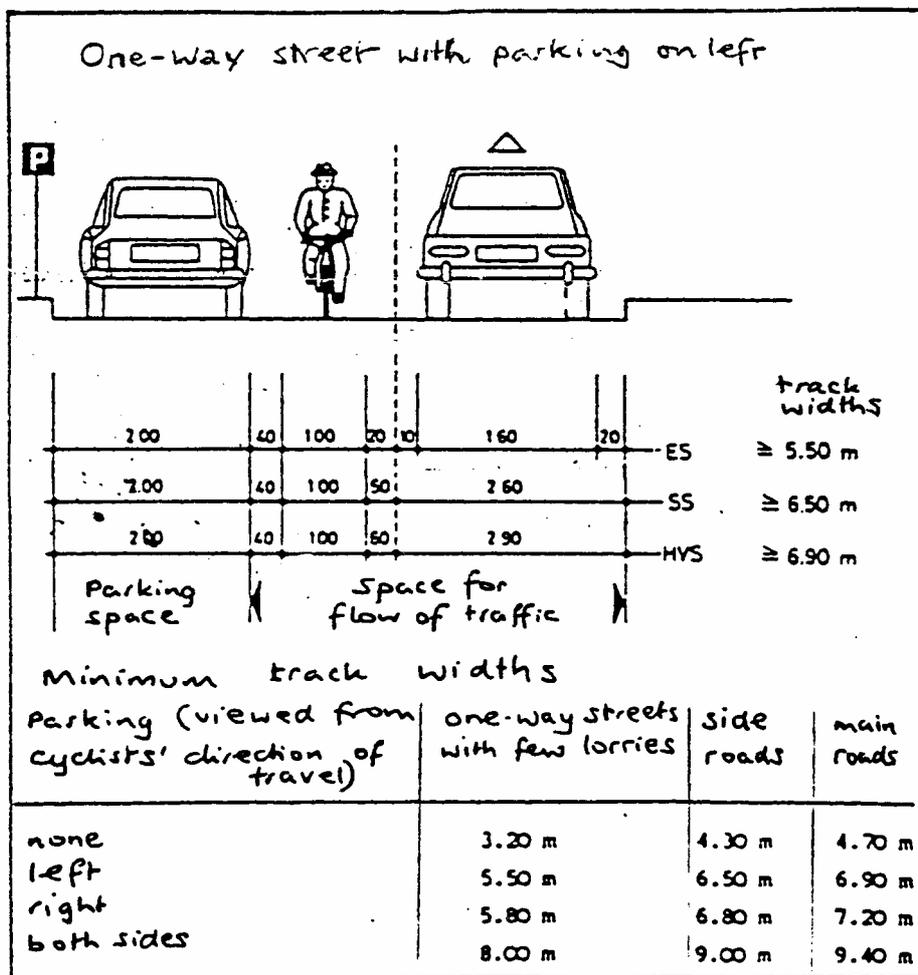




Fig 2: Shared cycle/bus lane in Hanau, Germany

Nürnbergger Straße, Hanau

### Function of road:

Residential and commercial highway in city centre, also serving as feeder route for cars entering multi-storey car park; important east-west connecting route for cyclists travelling to and through city centre; also used by several local bus routes.

Traffic density 615 vehicles per hour, 60 cycles per hour (westbound)

### Requirement and aims:

To create a short and direct route across the city centre using a one-way street, thereby closing a gap in the network of routes; promotion of cycle use and of speedier bus services.

### Description:

- A special contra-flow bus lane, to be marked 'BUS' on the road surface, width 3.5m, signposted according to 245 of the Road Traffic Act.

- Extra pictogram signs allowing access to taxis and cyclists.

- Motor vehicles to be allowed on certain sections, these to be signposted, 'For access to car park only.'

- Unrestricted access to road to be allowed to all traffic travelling with the flow of the one-way street, including motor vehicles, buses and cycles.

### How it was achieved:

- Bus/cycle lane built as part of city centre traffic management scheme, 1 82.

- Admission to cyclists included in city cycleways plan, 1984.

- Use of bus lane by cyclists opposed for some time by the bus company, on safety grounds.

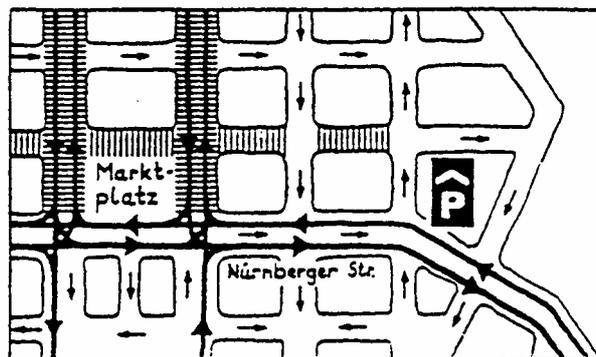
- Total cost DM3000.

### Progress and results to date:

- No accidents involving cyclists for two years since completion of scheme. (No figures available for preceding period.)

- City Council estimates that vehicle speeds have dropped (no precise data available).

- No recorded conflicts with buses or taxis.



### Conclusions:

Whilst acknowledging the success of the shared bus lane, the Council regards it as a temporary solution pending more comprehensive traffic-calming measures in the Nürnbergger Straße. It provides a low-cost means of guiding cycle traffic through narrow streets subject to a wide range of uses.

Sources: interviews, visits to location, city council papers.



Fig 3: Extra red light phase for motor vehicles,  
Fuchshofstraße, Ludwigsburg, Germany

Function of road:

General-purpose route outside built-up area, serving as feeder route for various sports facilities, including stadium and ice rink. Important cycle route link with separate junction for cycleway/footpath.

Requirement and aims:

To make the road safer for cyclists, who previously had to cross a busy road unprotected from fast traffic; also to lower car speeds and stop use of illegal short cuts.

Description:

A push-button crossing activated by pedestrians was adapted to form a combined signal for cyclists and pedestrians. This is operated by means of a traffic-light sensor in the road surface.

How it was achieved:

The signal was part of a wider plan for an important link route for children cycling to and from school. It is occasionally switched off (at night and at weekends) although from time to time this has not been carried out.

There are plans to alter the signal program so that motor vehicles travelling at moderate speeds could pass through without stopping. Completed 1985 at a cost of approx. DM20 000.

Progress and results to date:

No accidents recorded since start of scheme. (No figures available for preceding period.) Initial protests from motorists - "It's like an obstacle race" - have since subsided.

Acceptance of the new signal by motorists is not satisfactory, especially at times of sparse traffic when there is only the occasional cyclist or pedestrian.

Conclusions:

The Council has acknowledged the success of the scheme. It combines better crossing facilities for cyclists with a traffic-calming effect. The change in signal program which has been planned would 'reward' motorists travelling at moderate speeds, and would probably make it more acceptable to them.

