

# The Science and Politics of Bicycle Driving

## *The Problem of Bikeways*

Many Americans believe that segregated bike lanes and bike sidepaths - we'll call these facilities bikeways - were invented to make cycling safe by reducing crashes and injuries to cyclists. This belief is incorrect. American bikeway designs are mostly inferior copies of rather dangerous bikeways in Holland, which were originally created to clear dense bicycle traffic from Dutch roadways for the convenience of motorists. Dutch cities are very compact, with flat topography, making bicycle travel very convenient. When automobiles first became popular in Europe, it was virtually impossible to drive them at speed in the Dutch cities due to the high numbers of bicyclists on the roads. To allow higher motor vehicle speeds, bicyclists were prohibited from certain roads or lanes, and bicycle-only paths and lanes were built alongside those roads to provide bicycle access to the same places. Unfortunately, this segregation caused dangerous conflicts at driveways and intersections. To mitigate the problem, special traffic signal phases were added at intersections to allow bike path traffic to proceed when motor vehicle traffic was stopped, and vice versa. These signal phases reduce traffic throughput because they reduce green time in half for every direction, and therefore reduce convenience for both motorists and cyclists. However, these tradeoffs were acceptable to the Dutch in order to allow greater motor vehicle speeds than would be possible with the prevalent speeds set by large numbers of bicyclists.

In the United States, traffic engineers first proposed the use of Dutch-style segregated bikeways in the early 1970s in response to concerns that the recent surge in the popularity of roadway bicycling might grow to cause congestion problems and inconvenience for motorists. The proposals of this era skipped the separate signal phases at intersections to save money and avoid delaying motorists, but as a result the designs were far too dangerous to pursue. The few sidewalk-style bike paths that were built parallel to streets generated much higher cyclist crash rates than use of the original streets, as one might predict given the data for sidewalk crashes given earlier in Table 1. In the decades that followed, traffic engineers worked to reduce the dangers of the segregated facilities until some designs were found to be almost as safe for pedestrian-style cyclists as normal roads. On-street bike lanes were determined to be the least dangerous, but problems still occurred at intersections because the bike lanes often placed straight-traveling cyclists to the right of right-turning motorists, and encouraged cyclists to turn left from the right side of the street. Bike lanes increased the likelihood of left-hook and drive-out collisions because they placed cyclists outside the normal traffic stream. Bike lanes generated build-up of debris, were not designed or maintained to the same standard as normal travel lanes, and were often blocked by parked cars or pedestrians. Some bike lanes forced cyclists to ride next to parked cars, inviting injury when doors opened. When cyclists rode outside the bike lanes for any reason, police would ticket them and motorists would harass them. The root of the

problem was the way the white line indicated segregation by vehicle type, despite the safety requirements for destination positioning at intersections and speed positioning between intersections. Without such segregation, these problems do not occur and motorists can still pass reasonably well. The best approach is to simply treat cyclists as drivers who follow the normal rules of the road and merge with other traffic where conditions require. Thus wide outside lanes are the preferable facility design for important roadways shared by cyclists and motorists.

Some advocates for greater volumes of bicycle transportation advocate construction of segregated bikeways because these facilities conform to the taboo held by those who rarely travel by bicycle. It is also incorrectly believed by some that segregated bikeways are what created the high volumes of bicycle transportation in Holland, when history shows otherwise. But transportation facility design should be based on sound science and not on a taboo. Off-street shortcuts and rail-trail bike paths are popular among novice and child cyclists and are pleasant slow-speed routes used by some commuting cyclists. The crash rate for such facilities is higher than roads, as shown in Table 1, but not unreasonably so. Construction of recreational and short-cut bike paths in some places is probably a good idea, but these routes must never be designed to run alongside streets and cross driveways and intersections like sidewalks do. Such configurations are much more hazardous and much less convenient for cyclists than using the roadway. Unfortunately, there are few places such paths can be built affordably outside highway rights-of-way. Furthermore, off-street bike paths do not promote (and in fact may retard development of) the bicycle driving skills required to negotiate vehicular traffic on ordinary roads. Bike paths and bike lane stripes are therefore unlikely to make significant improvements in the safety and convenience of bicycle transportation for the majority of miles of bicycle travel.