

Bikes on Dikes: a Dutch plan for (almost) free wheeling

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Summary

Inner cities are becoming more and more congested. City dwellers and visitors are subjected to air pollution and noise. Access to and travel within the city centres is problematic. In order to maintain a reasonable environment within inner cities it is vital to connect established traffic styles with alternative methods of transport.

To make cycling more accessible, the city of Amsterdam supported by a group of companies (KPN Telecom, Chipper Nederland, The Amsterdam municipal Transport Company GVB, the Postbank and Y-Tech innovation centre) are introducing an individual public transport system that will put 750 white public bikes at some 45 depositories across town. GVB, the municipal Transport Company will act as operator, because they think of it as individual public transport.

The public bicycle (White Bike) is clearly distinguishable from private bikes by its special design. The White bike has no lock because it is not intended to be parked anywhere outside the depots. Replacing the bike in the parking rack at the destination site results in automatically locking the bike, charging the battery and ending the rent period.

The white bike transport system is a network of unmanned "parking lots" (depot) where White bikes await the passenger. The passenger inserts a chipcard, transfers payment, takes a bicycle out of the parking rack and proceeds to the White bike depot of choice. At the destination a parking space is automatically reserved.

The Telecom data lines connect the individual depot modes to central processors at the GVB. Chipper smart cards are used to identify the White biker and to transfer payments. Depot functionality separately includes Internet and Telephone access as a Telecom service to the White bike user. There also is a electric bicycle pump for normal city bikes free of charge available

1. How it started

The first suggestions for a system of public bicycles were made by H. Brandt Corstius. In 1958, he wrote in the Amsterdam student publication *Propria Cures*: "In view of people's borrowing habits and the considerable interest in bicycle ownership, I make the following suggestion. Why not nationalise bicycle ownership for the common good? This could be accomplished by a simple Act of Parliament: 'It shall be forbidden to have in one's possession a bicycle or to make said bicycle unavailable for the use of others.' Everyone who needs a bicycle simply takes one, rides it to his or her destination, and leaves it there. They need have no concerns about return, theft, parking, storage, maintenance or whatever. The State will undertake repairs and ensure that the 'fleet' is kept up to strength. The police force can be halved immediately. It will mean an end to all the world's troubles, once the bicycle is public property to the same extent as the road itself."

2. The 'White Bike' plan

The first person to take this idea further was Luud Schimmelpennink. In the second edition of the publication *Provo* (17 August 1965), he launched the 'White Bike' plan. His article met with a warm reception from the Provo supporters and soon became a national and international talking point. In the article, Schimmelpennink lambasted the 'motoring maniacs' and called for a traffic-free city centre. He proposed that the City authority should purchase twenty thousand bicycles to supplement public transport services. The principle of the plan was 'free transport for all'. The bicycles would be painted white and would be distributed - unlocked - throughout the city. Anybody needing to get from one place to another would be able to do so using the 'white bike'. Having arrived at his or her destination, the cyclist would simply lean the bicycle against the nearest wall or place it in a convenient rack to await its next user. The white bikes would thus belong to everybody and nobody. Within a few years, this scheme would solve the traffic problems of the city centre. Provo called upon volunteers to take the first step towards achieving twenty thousand white bikes per year by having their own bicycles painted white. The paintbrushes were at the ready on Spui each Saturday night at midnight. This White Bike plan simmered along for a while; it was talked about, it was written about. Occasionally, one might even see the odd bicycle which had indeed been painted white.

The original White Bike plan of the sixties never really got off the ground. The reasons may be summed up as follows. Many people were sceptical about the plan, partly because the idea had come from the militant Provo organisation. People who did use the white bicycles often failed to do so according to the 'rules'. Respect for communal property is not a generally-held virtue. There were people who regarded the 'public' bicycle as their own personal property, thus defeating the object of the scheme. They would fit their own lock, or would keep the white bike on their balcony until they needed it again. Some people failed to take proper care of the bicycles, so that they quickly became unusable. There were no fixed collection or assembly points, whereby little or no control was possible. No one could state with any certainty how the bicycles were being used. Furthermore, Amsterdam and in particular its administrators, was not ready for such a progressive scheme. The police impounded the bicycles because they were not properly locked. They were removed under the pretext of their being a 'threat to public order'.

Schimmelpennink accepts that the plan of the time did not work well. It was indeed 'provocative'. There were few supporters and there was absolutely no co-operation from the local authorities.

The Royal Dutch Touring Organisation (ANWB) saw the virtue of the plan and adopted it in earnest by donating White Bikes to the 'Hoge Veluwe' national park. Since 1980, some eight hundred bicycles have been available here, to the immense satisfaction of many visitors.

In Amsterdam, a trial was conducted with a similar scheme, the 'White Car'. Again, this was a form of individual public transport, but this time using electric cars. A small-scale system with four depots (recharging stations) and 25 vehicles was in place for just over ten years. A similar system for bicycles, with fixed pick-up and return points, central administration and payment using magnetic keys, was worked out in detail in 1982, with financial support from the Ministry of Transport and Public Works, the City of Amsterdam and the Dutch national railway company. Although this scheme appeared very promising, the City of Amsterdam chose not to pursue it further.

The thread was not picked up again until the early nineties. The time now seemed ripe for reintroduction

of the idea. The car was no longer the object of affection it had previously been. Indeed, in the city itself it was seen as something of a nuisance. The car was often cited as the cause of traffic problems such as congestion and poor accessibility. Environmental factors such as air pollution and noise nuisance, as well as the constant threat to personal safety, led to the car becoming a less welcome feature of many European inner cities. The encroachment upon public space by parked vehicles also came to be tolerated to a lesser degree. Solutions were sought through limiting private car use and improving public transport. Far-reaching measures were sought whereby pedestrians could be given more space to themselves. If the European inner city were to become an area with its own conditions, there would be ample space for a form of transport directly linked to the inner city itself, to be used by everyone to travel the relatively small distances involved. An old concept was hauled out of the cupboard: the Provo White Bike plan was once again under consideration.

3. The DEPO transport system

The White Bike plan would henceforth be known as the 'DEPO transport system'. Clearly, this would have to be a system of bicycles which are publicly-available but under some form of control in order to avoid the pitfalls of the original Provo plan, relying as it did on people's good nature. The basic principle of the new system would be a returnable deposit, encouraging the user to return the bicycle to the appropriate rack in order to get his or her money back. In 1991, the concept of a Depo transport system including user identification was broached. This would involve the identity of the user being known, without the exact method of identification being revealed.

The DEPO transport system went on to be developed as supplementary individual public transport. The system comprises a network of fixed storage places (depots, abbreviated to 'Depo') at which public bicycles (the 'White Bikes') are available for general use. A trip is reserved using an automatic machine at the depot, and paid for using an electronic debit card, or 'chip card'. The entire system is administered by a central computer.

3.1 The DEPO bicycle

The DEPO bicycle has a special design to distinguish it from a privately-owned bicycle. It can be easily identified by its robust frame of thick white tubing and its solid, spoke-less wheels. This design contributes to the social control aspect. The various components are unique to the DEPO bike and are not easily interchangeable with parts from other bicycles. The DEPO bicycle is equally suited to be used by men and women, and can be used by tall people and short people alike. Above all, it is a sturdy piece of equipment which will not be readily damaged. The tyres are foam-filled and leak-proof. The DEPO bicycle has a parcel rack and is equipped with automatic lighting (for which the battery is recharged at the depot). It also has an identification system. The DEPO bicycle does not have a lock, since it is not meant to be parked anywhere but in the depot itself.

3.2 The depots

The depots are unmanned parking and storage sites, at roughly three hundred metre intervals. This is where the DEPO bicycles are stored when not actually in use. Each depot will have at least two racks, with room for ten bicycles in each. Alongside the racks will be a 'control post' - a column incorporating a computer monitor and directly connected to the City Transport Authority's computer on which the programme controlling release of the bicycles runs. The release system has touch-screen control on the column's monitor. The bicycles are locked to the racks by a remote-control bolt holding the front-wheel hub. They will only be released by the computer if the user books a journey using his chip card. As the

depot is unmanned, it is vulnerable to acts of vandalism such as damage to the control post or attempts to remove a bicycle without paying. The locking system has therefore been subject to extensive testing.

3.3 The system

The DEPO transport system is intended as a supplementary individual transport system for short distances. Individual transport does not have a network of fixed routes, but rather a network of fixed points at which the vehicles are ready and waiting for the user. The user determines the departure time, the route and the speed. The user of the DEPO bicycle feeds his chip card into the control post, on the screen of which will appear a map of the city showing all other depots. The user selects a destination depot, whereupon a trip to that depot is booked. A parking place is reserved at the destination depot, and the user may then remove his card. A bicycle is released from the rack for use. When placed in the rack at the destination, the bicycle will automatically be locked into place. The system will not accept trips to depots that are already full, whereby the user would not be able to leave the bicycle there. An alternative destination will be offered, i.e. the closest depot with space in its racks.

3.4 Redistribution

To prevent certain depots becoming full (or entirely empty) during the course of the day, redistribution of the bicycles is necessary. Rather than using a special service to redistribute the bicycles using a motor vehicle, it will be possible and less expensive to regulate the system using a system of reservations and variable payment. Variable payment (whereby a trip might cost two guilders, be free of charge or even attract a one guilder 'reward') will encourage users to travel from full depots to empty depots and discourage trips from empty depots to full ones. When selecting a destination depot, the user will be told whether room is available at his 'first choice' destination. If the depot is almost full, the trip will cost two guilders. However, if the user wishes to cycle to a depot that is empty, he will be paid one guilder for doing so. A reservation applies for half an hour. The reserved parking place at the destination will not be available if the user does not arrive within that thirty minutes. A new reservation must then be made at another random depot. When the user's chip card (now on the system's 'overdue' list) is entered, an excess time 'fine' is charged before the card is removed from the overdue list. The amount of this excess charge will accumulate in proportion to the overdue time, up to a maximum amount which has yet to be determined. No further reservations can be made using a card which is on the 'overdue' list.

3.5 Chip card

The DEPO system as described above is only possible through the rapid developments in chip card technology since 1994. Chip cards are now issued by Dutch banks and are a form of 'electronic purse' enabling small payments to be made without requiring a pincode. (Only the 'topping-up' of the card requires a pincode to access the user's bank account).

Originally, the basic idea of DEPO was that the user should pay a returnable deposit for the use of the bicycle. Although the deposit principle is in itself simple and attractive, protecting coin-operated machines against vandalism and theft is rather less simple. The banks' announcement that they were to issue chip cards prompted the decision to abandon coins in favour of the much safer cash-free cards.

Another advantage of the chip card is that it enables the system to identify the DEPO bicycle user. If the bicycle is not returned or is badly damaged, it becomes possible to trace the last user. On the first occasion that he uses the system, the user must enter his pincode and agree to the condition that the operators may request his name and address from the issuing organisation. The system has thus been rendered controllable.

4. The policy effectiveness of DEPO

To what extent will the policy objectives of the DEPO project be realised?

- a. the substitution of short-distance car journeys by Depo trips
- b. promotion of public transport use through supplementary Depo use
- c. promotion of pedestrian traffic through supplementary Depo use
- d. the opening-up of areas which have poor accessibility by public transport
- e. increased amenity in the Amsterdam city centre
- f. reduction in bicycle theft.

Every day, 2,000,000 journeys are made by bicycle within the Amsterdam built-up area. Of these, 50,000 are made in the city centre (the area bounded by the Singelgracht.)

A cautious estimate suggests that the DEPO scheme will account for a 10% increase in bicycle journeys within the city centre.

The Depo bicycle scheme can be regarded as complementary to the public transport system. Because stations and other public transport interchanges are brought within easier reach, the scheme is likely to encourage public transport use.

DEPO is a pleasant and flexible means of transport to and from various locations, such as stations and tram/bus stops, especially those in the city centre and its immediate vicinity.

Given 45 depots with 750 bicycles, a cautious estimate of the number of journeys made by bicycle each day can be made as follows:

630 bicycles (16% out of service at any one time) * 8 journeys per day each = 5040
5040 * 360 days = 1,814,400 journeys per year.

At weekends, visitors will account for a significant proportion of the use, especially in the city centre.

Based on experiences in Copenhagen, which saw a 25% reduction in bicycle theft further to a similar scheme, we can state that there are likely to be around 15,000 fewer bicycle thefts in the Amsterdam city centre each year.

It will be possible to enter into contracts with large-scale users, such as the City Authority and organisations which already issue (magnetic) cards, whereby the DEPO bicycles become available to all their staff or members.

A further option will be to offer the bicycles to hotels and conferences as a supplementary (or even substitute) means of transport. The city transport authority (GVB) and the local tourist board (VVV) will be able to promote and offer the DEPO bicycle as an alternative means of transport.

As an extra service to users, an electric bicycle pump will be made available round the clock and free of charge at various locations in the city.

(Witfiets Amsterdam (the DEPO bicycle scheme) is a joint enterprise of the City of Amsterdam Department of Infrastructure Traffic and Transport, Gemeentevervoerbedrijf Amsterdam, Y-tech Innovatiecentrum, Postbank, KPN Telecom and Chipper Nederland.)