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RESEARCH ARTICLE

Cycle Highways as a 'Liquid' Policy Concept. The Proliferation of an 'Active' Mobility Policy Concept in the Netherlands

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One way to support active mobility is by the successful articulation and diffusion of new bike-infrastructure concepts. This paper studies the journey of one such concept in the Netherlands, namely the cycle highway, which nowadays is often referred to as a 'fast cycleway'. These routes provide high-quality and spacious cycling facilities connecting (sub)urban residential sites to nodes of work and study. They are built with the aim to induce a substantive modal shift in regional commuting from car and transit to cycling. Currently, there are nearly 300 fast cycleway initiatives in the Netherlands of which 52 have already been constructed. Based on 27 interviews with planners, engineers and lobbyists, this paper traces the success of the fast cyclepath concept through the perspectives of "articulation" and "liquidity". We find that fast cycleroutes emerge as whole, coherent entities through six separate vocabularies, namely of demonstration, quality framing, policy rule and contract, planning diplomacy, financial wizardry and design negotiation. Each vocabulary gives rise to a "global form" fuelling the "currency" and performativity of the fast cycleroute concept. Different contexts also induce considerable differentiation, raising the question how far the concept may be stretched.

Keywords: cycling; cycling highways; policy concepts; policy diffusion

Introduction

Many cities and regions across the world consider or are already building cycle highways to encourage a transition towards more sustainable and active mobility. Supported by the development and popularity of the e-bike, these new infrastructure facilities are designed to enable longer distance trips and, consequently, promote a substantive shift in transit mobility from cars to cycling. To achieve this, cycle highways provide high-quality and spacious cycling facilities that connect (sub)urban residential sites to nodes of work and study (Bruno and Nikolaeva, 2020; Cabral Dias and Gomes Ribeiro, 2021; Liu et al., 2019). Cycle highways are part of a broader suite of policy experiments with new bicycle facilities such as dedicated lanes, tracks and streets (Buehler and Dill, 2016; Krizek, Handy and Forsyth, 2009). There is increasing scientific interest in these new bike-infrastructure concepts and experiments. So

far, most work has set out to evaluate the extent to which new infrastructure facilities promote a shift towards more active mobility, as reviewed by Mölenberg (2019). Some studies have specifically looked into the effects of cycle highways, resulting in generally favourable assessments (Heesch et al., 2016; Skov-Petersen et al., 2017).

For cycle highways—and other new forms of new bicycle infrastructure—to make a real contribution to the transition towards more sustainable and active modes of transport it is not enough to show that they work. We also need to understand the process through which such initiatives and experiments can become more strongly embedded in, and diffused through, policy systems. Historical studies (Oldenziel and de la Bruhèze, 2011; Stoffers, 2012) have documented the embeddedness of bicycle infrastructure in broader cycling cultures, images and politics over *time*. However, the processes through which new bicycle infrastructure concepts move and diffuse across *space* to different sites and locations has received much less consideration. In this paper, we will study the journey of the cycle highway concept in The Netherlands. This initially took place under the heading of "cycle highways," but nowadays the concept is more often referred to as "fast cycleroutes" (in Dutch, *snelle fietsroute* or SFR). The number of SFR initiatives has expanded greatly over time—from about 20 projects in 2010 to currently nearly 300 SFR initiatives of which 52 projects are fully completed.[1]

We focus on how practices expressing SFRs bring both coherence and flexibility and study how this coherence and flexibility stems from the way SFRs are articulated from site-to-site, and how these articulations build '*local*' and '*global*' connections (see Prince, 2010, for a similar approach). In this local-global distinction, on the one hand, the "local form" stems from the particular way a policy concept is expressed and enacted through site-specific conditions of possibility. On the other hand, any local expressive practice *enacts* the global. That is, local practices adopt and shape connectivities with other sites, stories, scripts, standards, resources, stakeholders, and so on. Each site thus gives rise to a locally specific global form. Such a global form indicates how the local is "globally situated" (Blok, 2010) and also construes the global as a network of local enactment (Latour, 2005). A "global" policy concept, in other words, is nothing more than a diffusion held together by continual local enactments of global forms. Such processes are always localized, whether it is the Ministers' office, a provincial planning department, the neighbourhood consultation meeting at a municipality or a project's engineering meeting for designing a single junction. In each site, a concept's articulation plays a role in its local and global performativity.

This paper will follow the journey of fast cycleroutes zooming in on six sites of practice, labelled as *naming and framing, standardisation, rule and contract, planning diplomacy, financial ingenuity* and *design negotiation*. Before that, the next section introduces our basic concept to understand the co-expression of local and global forms, namely *liquidity*. After explaining our main theoretical concepts, articulation and liquidity, a section will be devoted to each site, after which the paper concludes. The paper draws on four sources: first, interviews held with 27 spokespersons, including policy makers, engineers and lobbyists[2]; second, our active engagement within Tour de Force, the policy network supporting SFR development in which governments, interest groups and knowledge institutes collaborate, thirdly, a detailed survey of 65 SFR projects drawn from a database enumerating all initiatives in the Netherlands maintained on an annual basis by the same organisation; fourth, a review of relevant documents, including policies and strategies published by governments, articles in professional outlets and cycling blogs. Interviews have been meticulously transcribed and coded with the help of text-coding software. The latter has helped, in particular, to find the

[1] The source of this inventory is explained below.

[2] Details on the position and organisation of participants are provided in Appendix A.

most apt quotes. The main mode of analysis has been careful interpretation through many sessions of debate, with the authors as well as colleagues and experts in the field.

Research approach: Articulation and liquidity

This paper will draw on actor-network theory (ANT) and especially work within this tradition that has sought to understand the development and diffusion of innovations (Akrich et al., 2002a, 2002b; Callon, 1998, 2016). Starting from ANT's emphasis on heterogeneous associations (Latour, 2005) this literature stresses that practices of product innovation take place in and are enabled by diverse arrangements consisting of rules and conventions, technical devices, texts and narratives, practical and scientific knowledge and, finally, the competencies and skills of the human agents involved. Throughout the innovation trajectory, different investments in these arrangements are required: to differentiate and qualify new products (or services), to organize encounters with potential users, to capture their attention and secure their willingness to acquire these products. Research has explored the specific investments and operations—"framing activities" in Callon's terminology—that are necessary for successful conception, production and circulation of goods and services.

We see several reasons why such "framing activities" are equally relevant for new policy concepts. First, a new policy concept should be qualified by detailing how it differs from existing solutions and why it is a necessary and appropriate solution to a certain problem. Second, the concept should trigger and orchestrate encounters with politicians and other stakeholders that might have a stake in it, for example through demonstration projects. Third, proponents of the concept have to find the right moment and venue to bring their solution to the attention of these audiences and need to have the capacity to sell and market their solutions (Jordan and Huitema, 2014; Verduijn et al., 2015). The resemblance with activities around innovation in markets for products and services has already been recognized in the policy sciences. Following Kingdon (1984), the advocates of new policy solutions are often referred to as 'policy entrepreneurs'.

Conceptually, our study draws on Lépinay's (2007) study on the role of language in the qualification of new (financial) products. In this work, he explores the "technologies of expression" necessary to describe and collectively make sense of new financial products issued by banks. The term *expressing* is borrowed from Deleuze and should not be understood as merely representing or portraying, but more as *pressing out*. Expressing entails both a material and discursive process through which various elements are brought together to bring to presence new entities (Didier, 2007). Technologies of expression relate to all kinds of resources, such as definitions and narratives, mathematical functions, programming language and legal codes, through which the qualities of new items take shape and are written down. Crucial here is the way Lépinay (2007, p94) identifies a tension between ever more detailed, context-specific descriptions through which an item is developed (local forms) and broader descriptions become accepted by different stakeholders and circulate more widely (global forms). A trade-off, thus, emerges between how "differentiation increases the grip on the product" and broader organisational unity.

In practical terms, this local-global tension gives rise to *articulation* and *liquidity*. Articulation refers to "the adjustment of all sorts of linguistic codes to express a novel, not-yet-described product" (Lépinay, 2007, p87). In our case, through articulation, the SFR concept gains presence and becomes enacted locally. Articulation thus prompts variations in descriptions and inscriptions. Articulation can also change the name and meaning of the concept itself, giving rise to a family of linked policy concepts. The latter is manifested in the change from "cycle highways" into "fast cycleroutes", while also other names are used locally (e.g., cycle-through routes) and abroad (e.g., cycle superhighways) (Liu et al., 2019). Liquidity, on the other hand,

stems from practices of naming, categorising and standardising contributing to the policy concept's wider reach, persuasion and coherence (Allen, 2016). Lépinay (2007) thus marks liquidity as achieving a description that renders the concept unproblematic, yielding, using an apt financial analogy, "currency". The replication and adoption of certain definitions, standards, resources and scripts ties local practices to "immutable" parts of an assemblage. In our case, for instance, design details and subsidies play an important role in constituting connectivity, coherence and performativity. Importantly, such parts are "expressed" (in the sense of ex-pressed as discussed above) in *each* locally articulated global form. Hence, policy concepts, while popping up in many places, should not be seen as making a journey and spawning local variants. Rather, mobility underpins liquidity, which in turn, defines the reach, coherence and performativity of a policy concept.

Accordingly, through expression, a policy concept like SFR (and "active mobility" more widely) shifts its borders to new sites and arenas, to new (prospective) regional users, new sites of policy making (adding the concept to their planning), and new political arenas (attaching political significance to a concept). If we would see a policy concept as a kind of mobile, travelling concept (McCann and Ward, 2012; Page, 2000; Peck and Theodore, 2010; Prince, 2017), then this is more the *result*, rather than the *means*, of how new ideas are expressed and diffused in the form of information, resources, routines, data, and even "human devices" (Savage, 2020). As Lépinay (2007) explains so well, this inquiry shifts the focus from a sole emphasis on social interaction and functionality to how the grasping of *contents* shapes sociomaterial connectivities, and through that, social orientations and patterns.

Site One. Naming and framing

Where to start the story of SFRs? We could commence with some observations on the construction of two demonstration routes in the 1970s in the cities of Tilburg and the Hague (Wagenbuur, 2018a, 2018b). Although created within a single city, these infrastructure projects already entailed many of the elements associated with a cycle highway: separate paths from roads for motorised traffic, with priority crossings and underpasses. A more apt starting point, embracing the intermunicipal dimension, is the story that appeared two decades later in 'Verkeerskunde', a professional outlet for transport planners (Das, Sluijter, & Ten Avest, 2002). The paper identifies four types of connections: (1) within a large city, (2) between large-scale urban expansion areas and the city centre, (3) between separate cities in urban agglomerations, and (4) finally between village(s) and city. Building on types 2–4, the idea came up to create cycle connections between cities and their surroundings along existing rail tracks. This was labelled *fietsspoor* ("cycle track"). One of the authors explains: "At the time we called it 'fietsspoor' (...). So, if you make a cycle highway along the rail, it's good for the people who take the train for a larger distance; also, you are immediately in the city centres because all city centres are more or less projected next to the train stations. And there are a lot of opportunities, not in all the cities, but in the middle-sized cities there is space next to the rail" (17).[3]

The idea developed out of discussions of one of the local chapters of the Dutch Cycling Federation: "We had a creative group and we said: 'Why not make a non-stop [track] along the rail to go to the city centre because this road is a big problem, we have to wait every 300 metres for stopping lights'" (17). They subsequently found a student to elaborate the *fietsspoor* idea through a Master internship project. Outcomes and ideas were subsequently published in 'Verkeerskunde' (Das et al., 2002), already outlining many of the elements that were to become defining features of a cycle highway (see **Table 1**). The article pictures what

[3] Quotations in the text are cited with a unique identifier number. Appendix A provides details on the interview participants to which these identifiers refer.

Table 1: Fietsspoor's preferential features.

criterium	building block	details
coherence and directness	main carrier of the bicycle network	continuous quality
traffic safety	non-level crossings	bicycle bridge attached to railway viaduct
comfort and speed	wide asphalt lane in two directions	in between 3 and 4.5 metres, depending on function and use
social safety/attractiveness	lighting and social surveillance	railway housing or facilities focused on the route

Source: Das et al. (2002), our translation.

would later become an iconic cycle-route along a railway track, the cycle bridge along the Nijmegen railway bridge, which is now part of a well-known SFR (the 'Rijnwaalpad'). When asked about the importance of this piece of work the author is a bit reluctant to consider his role: "I don't know. I'm not the hero or the—I don't know, maybe it inspires each other" (17). However, it would take five more years before these ideas would be moved from paper to the street.

The story now takes us to the headquarters of the Dutch Cycling Federation. In the 2000s, road congestion was high on the political agenda. Peijs and Eurlings, the then ministers of Transport and Water Management initiated a programme of around 40 small-scale projects that would combat traffic congestion in collaboration with major stakeholders including regional authorities, knowledge centres, business associations, transit and cycling organisations (Molenkamp and Jong, 2006). The Dutch Cyclists' Union recognized that this so-called 'FileProof' programme offered an opportunity to have new cycling measures funded. The former director recalls: "They were talking about towing cars away more quickly in the event of an accident, that sort of thing, and possibly squeezing in a third lane, and then we said, 'Why don't you think about the bicycle? A lot of journeys are short distances' 'Okay' 'Well, then by God's grace, we were allowed to do a project to reduce traffic congestion by bicycle'" (20).

The Ministry initially labelled the routes as "utilitarian cycle highways" (*utilitaire fietssnelwegen*): "By improving the quality of existing through bicycle routes, the aim is to reduce car traffic over short distances. This concerns in particular routes parallel to daily traffic jams. In cooperation with the Dutch Cyclists' Union (*Fietsersbond*) and the governmental Cycling Council (*Fietsberaad*), the Ministry of Transport, encourages road managers (often different regional authorities for each route) to take joint action, such as eliminating maintenance backlogs, improving layouts or increasing priority at intersections" (Molenkamp and Jong, 2006, p15). The Dutch Cyclists' Union subsequently commissioned its local chapters to come up with promising routes along the Top-50 of congestion-prone motorways. Five routes were selected as pilot projects in the end, which became known as the 'Met de Fiets Minder File' projects ("With the Bicycle Less Congestion").[4] Interestingly, there was only funding available for project management and not for infrastructure development. As a result, only parts of the routes were upgraded and the work became delayed. In fact,

[4] Apeldoorn – Deventer; Delft – Rotterdam; Den Haag – Zoetermeer; Amsterdam – Zaandam; Utrecht – Breukelen.

one of the routes was only completed in 2018—more than 10 years after the first measures were taken.

The Dutch Cyclists' Union expressed the story further. The former Chairman repeats the narrative they told at the time: "Really a great alternative to traffic jams […] you should actually have express cycle-routes everywhere. You should actually have a network of cycle superhighways. […] And everyone began to imagine it. Those cycle highways with very fast e-bikes on them and so on. Everyone started drawing pictures of the future" (20). At this moment in time, the concept was not articulated or elaborated at all. It existed primarily as a narrative, featuring a single label: *fietssnelweg* (literally: "cycle motorway"). One pilot coordinator vividly remembers a conference session where the moderator introduced the label. He saw that it struck a chord with the Minister (Eurlings) also attending the session: "he is a born politician, just someone who knows very well that this is something, and I saw it clicked […] He became enthusiastic immediately, because he probably felt intuitively that this is a catch-all term: 'I can do something with it, you know, cycle highways, oh my'. I saw it happen" (14).

The association with highways and motorways, and the promise of abating congestion contributed to the initial success of the lobby. Successful it was: the principal lobbyist of the Dutch Cyclists' Union summarizes the amount of funding he secured for SFRs from the national government: "I was able to get 5 million in euros from parliament. So, that was a direct result of my lobby, or our lobby. And then also later 21 million for 16 routes and then 18,5 million for some routes" (8). Here the lobbyist refers to three rounds of national funding for the construction of SFRs. Regional governments had to submit project proposals in order to qualify for a grant. In addition, the Dutch Cyclists' Union was asked to set up a project-based organization with national and regional policy officials, experts and consultants. The result was the Platform Fiets Filevrij ("Cycle Congestion-free", later converted into "Tour de Force"), which organized several rounds on various themes, engaged in agenda-setting and gaining support for SFRs. The lobbyist and project manager of 'Fiets Filevrij' reflects on its added value: "I think it's almost the most important thing to get the best people around the table, people who trust each other and understand each other and are willing to work in an open way. So, I think that was a very positive aspect of 'Fiets Filevrij', that we had a lot of the best people around the table" (8).

In sum, this first phase yielded the most basic global form, a name. *Fietsspoor*, cycle highway, *snelle fietsroute*—articulated through a national professional journal and other settings. Local forms, in these settings, primarily consisted of imaginary physical connections and advocacy, articulated through stories, sketches, and first drawings. What was missing still, was a description of what a cycle highway actually is. That takes us to the next site.

Site Two. Standardisation (national road design organisation)

With several pilot routes completed and other routes nearing completion, it became possible to detail and elaborate what a cycle highway ought to be. In the Dutch context, an important part of such technical framing takes place at CROW (no abbreviation), a public-private venture providing technical advice on design, construction and management of roads and other traffic and transport facilities. By engaging in pilots and research, and providing well-supported guidelines, standards and tools, CROW plays a key role in assisting road designers to implement an optimal and safe road design. The organisation is an "obligatory passage point" for the development of new cycling facilities. CROW's involvement resulted in the "Inspiration Book Fast Cycle Routes" published in 2014.

In January 2021, we joined a presentation by a CROW staff member who had overseen the process of drafting the Inspiration Book. He described that when CROW accepts a new infrastructure idea as matching its portfolio and priorities, it defines a project structure and milestones including state-of-the-art reviews and pilot results, together with a group of experts.[5] The milestones feed into the final product, the design guidelines, notably the so-called 'facility sheets' (in Dutch: *voorzieningenbladen*), detailing the design and location aspects of different types of infrastructure (tracks, crossings, surfaces) in technical vocabulary. As argued during his presentation, the staff member sees a change in how the guidelines function. The guidelines are becoming instructive rather than prescriptive: "guidelines should contain more 'shades of grey' and [argue] whether reasoned deviation should be the norm." One attendant explained that the facility sheets hardly ever meet anonymous approval, and that the detailed rules and standards always raise doubt and discussion. Some guidelines contain over 100 facility sheets. Another participant stressed that the underlying narrative and motivation is much more important than the physical measures prescribed in the tables. The presenter backed the view that guidelines primarily present an aid. He would prefer a well-argued deviation from the guidelines to a blind copying of the rules, although less-equipped (smaller) municipalities find that difficult.

One of the members of the expert group preparing the Inspiration Book recalls that this tension was also subject of heated debate in drafting this book. "I'm a strong adversary of rigid and strict standards. I have been really fierce in discussions [for the book]" (3). He explains his stance in the debates of the expert group: "A cycle highway is actually not a single, technical project. The strength of a cycle highway is that a number of projects are realised in series. The added value of the cycle highway is not that the individual project has a very high standard, but that the routes are of average quality—or good quality—over long distances; not of excellent quality. If you go for excellence, you make the realisation impossible. It's really about connecting things. So, the added value is mainly in doing things right everywhere. And then the whole becomes better. And if you do things somewhere a bit average, it won't be noticeable at all, because the rest is so good" (3).

In the end, the Inspiration Book adopts a predominantly instructive tone: "As the phenomenon of ' fast cycling routes' is still in its infancy, it is not possible to create a design guideline yet. It has been decided to combine the existing knowledge in an inspiration book. Together with the members of the 'Fiets Filevrij' platform, all available knowledge and experience from the pilot projects has been collected and made accessible" (CROW, 2014, p3). The Book presents an elaborate Table, listing 15 SFR criteria, divided over five main categories: coherence, directness, appeal, safety and comfort (Appendix B). Importantly, besides "ambitions" and "minimum requirements," the table lists compensating measures, allowing for logical adaptations and variations. An example of such variation is that the preferred width of 3.5 to 4 metres can be reduced if circumstances like the landscape demand so. One interviewee referred to an apt case where a path had to be narrowed due to "holy" trees (13). For similar reasons, the surface can be different from "flat and non-slip" asphalt or concrete. Margins are also provided for "nuisance" (preferably absent, minimally largely free from car traffic), stops (preferably zero, maximum 0.4 stop/km) and slopes (preferably $Z < 333$, max $Z < 750$, see Appendix B). To support its instructive scope, the Book also outlined the basic steps in the planning and implementation process of cycle highways, peppered with many vignettes and illustrations of practical design examples and success stories. The Book also makes reference

[5] The group of experts preparing the Inspiration Book consisted mainly of government officials involved in the planning and implementation of (pilot) SFR projects.

to an important Dutch invention, the *fietsstraat* ("cycle street"). In quiet areas (specified as less than 500 vehicles per day), where there is no space or need for traffic separation, the local road is converted into a "red carpet" also accessible for cars invited as "guests." The *fietsstraat* presents a very handy tool for the concrete weaving of routes in existing road infrastructures. The *fietsstraat* comes with limited costs, provides priority, and is likely to meet less resistance, because other traffic remains permitted.

As exemplified by these steps, CROW turns an infrastructure concept into a guideline and standard through an extensive process of consultation and deliberation, with a broad spectrum of experts, stakeholders, and representatives of users. The aim is to develop a standard which meets basic requirements of utility and safety, as well as of flexibility and adaptability. Through its role as an "obligatory passage point", CROW's work converts a local form into a global book through scripting the hard local work of consultation, deliberation and making of the instructive guidelines. In the end, the global form was completed by inclusion of the SFR standard in CROW's bible of designing cycle infrastructure (CROW, 2017). As our interviews show, the way experts and stakeholders act as advocates for the concept and guidelines is their own business. Not surprisingly, many take a kind of ambassador role, voluntarily advocating the concept and seeking to assist (and benefit from) its diffusion. Others are generally supportive but with less direct involvement. What is important for our story here, is that CROW's guidelines, while ex-pressing a formidable, biblical standard, come with neither targets nor legal obligations. The political process of setting ambitions and goals regarding actual investments remain fully in the hands of authorities dealing with local transport, to which we turn now.

Site Three. Rule and contract (provinces)

We now move to another site keenly committed to further ex-press SFRs, namely the province. The main agents here are the policy officers in charge of cycling policy. Although the provinces are primarily responsible for out-of-town roads and infrastructure, they have assumed a leading role in the planning and construction of SFRs, since they normally span different municipal jurisdictions and require substantial investments. First, we revisit the intense process of deliberation held in Noord-Brabant, one of the most active provinces from the start. Together with two other provinces and three regional interjurisdictional organisations,[6] Noord-Brabant expressed a commitment in the final publication prepared by the Platform 'Fiets Filevrij' to take the charge in building SFRs. They would jointly develop between 170 and 225 kilometres of SFRs (Fiets Filevrij, 2013). In 2009, the province of Noord-Brabant had introduced a vision and action programme entitled "Bicycle in Gear" ('Fiets in de Versnelling'). This plan explicitly referred to the SFR that would be developed as part of the second national grant scheme between the cities of Den Bosch and Oss. It also announced a study for the construction of additional routes in Noord-Brabant. In 2015 this study was carried out and the results were presented in the 2016 implementation agenda "Bicycle in Gear."

The implementation agenda announced the construction of five SFRs which had to be completed by 2020 and identified four additional routes where construction works had to start at that time. To facilitate the development of the routes, the province introduced a grant programme funding engineering and building costs (between 50% and 80%). In order

[6] These are formal arrangements mandated by national law that had been established to facilitate regional cooperation across municipal boundaries in selected fields of policy-making (housing, business parks, transport, etc.). From the beginning, these organisations were strongly involved in the planning and construction of SFRs. For example, they coordinated 10 out of 16 projects funded by the 2009 national grant programme.

to become eligible for a grant, municipalities had to draft a collaborative agreement to be signed by the province and the alderman of all the municipalities through which the route would pass. The manager of the programme in Noord-Brabant concisely summarizes the subsidy rule: "Thou shall have a governance agreement" (4). For that purpose, a template agreement (model agreement) had been created that municipalities had to follow strictly as part of the project application. The manager stated: "If they say: nice template, but we make our own, we will not sign it in any case. And in that collaborative agreement, we include all kinds of agreements about quality, etc. In particular in the appendices" (4).

Here, the manager refers to Appendix 2 of the model agreement stipulating the quality label of the cycle route. Municipalities need to provide a description of each measure for constructing the route—i.e., a logical part of the route such as a road section ('*wegvak*'), crossing or engineering work. The quality is operationalized in terms of width, pavement type, and number of stops. The quality level needs to be articulated with references to the requirements in the "Subsidy scheme for traffic and transport Noord-Brabant 2016" (Gedeputeerde Staten van Noord-Brabant, 2018). Here, we stumble on yet another language used to articulate and define SFRs. It is the contract language of the legal department of the province. This is how it looks like in the May 2018 version of the document (our translation):

a. The fast cycle route, the fast cycle route section or the engineering work will be provided with effective lighting, unless:
   1. nature is disturbed; or
   2. the route is outside built-up areas and edge marking provides sufficient safety;

b. the fast cycle route or the fast cycle route section gives priority to cyclists as much as possible or contains flyovers;
c. the fast cycle route, the fast cycle route section or the engineering work contains as few obstacles as possible on or directly next to the cycle path; any obstacles are constructed in such a way that the safety risk for cyclists is as low as possible;
d. the bike path of the fast route, the fast route section or engineering works will be freely positioned, unless it is a cycle street
e. the width of the cycle path of the fast cycle route, the fast cycle route section or the engineering work will be
   1. at least 3.0 metres if the cycle path is one-way
   2. at least 4.0 metres for a two-way cycle path;

f. the bike path of the fast cycle route, the fast cycle route section or the engineering work will have a closed and comfortable hard surface

The manager recognized and embraced the need for flexibility: "In the preparatory process we have to make sure that we achieve the highest possible quality and adding extra rules only puts you in a tight spot if you want to deviate once in a while […]. Look, if we can deal with it in the collaborative agreement as in 'we're going to do this and that' it doesn't have to lead to an explicit subsidy rule. There must be some room for mutual trust; […] municipalities want to achieve the best as well. So, making a watertight agreement will not get you any further" (4).

The province of Gelderland, another forerunner, opted for a different approach. Gelderland was home to two of the pilot routes[7] and was also well represented in the second round of national grant funding with three projects. Initially, the province provided funds to all these routes but was not in charge. The coordinating agency was the *Stadsregio* ("city region") Arnhem-Nijmegen, one of the interjurisdictional organisations committed to take the lead in the construction of SFRs. As of 2015 the law that mandated this organisation was changed and traffic responsibilities were handed over to the province of Gelderland.[8] The way that the province financed these projects did not change. Funding became accessible through the provincial Transport Budget ("Long-range Transport Investment Agenda") provided there is an agreement between the cooperating municipalities. The municipalities then submit grant proposals for individual projects within their boundaries. They have to adhere to general grant rules for infrastructure projects. The provincial programme manager recognized that this introduces considerable complexity—especially for the province's own financial department. While she considered a dedicated project grant, she was keen to find the right balance between specifications with respect to performance and compliance, and the need for flexibility: "Things always shift in the course of time. You think: oh, this cycle lane is more convenient if it becomes a separate cycle lane, but then it becomes more expensive; where are we going to get that money from? And now I can concur with my administrator and say: we still have some money left here or there, or windfalls within the project" (6). The intention, therefore, was to move to an intermediary solution in which funding would be granted on the basis of a joint project plan with one municipal coordinator responsible for the distribution, allowing for some internal reallocation of funds.

This does not mean that Gelderland has not formulated requirements with respect to the quality of SFRs. These have been laid down in a 2016 memo and later in the so-called "Definition framework" for the provincial SFR-network. Both policy documents refer frequently to the CROW guidelines, sometimes with explicit reference to the amount of deviation that is allowed ("minimal design criteria"): one non-priority crossing per kilometre, one bend per kilometre that does not meet the standards, a minimum of 80% of the road sections in conformance with the guidelines. This begs the question of the legal status of these guidelines. The answer is provided by two lawyers providing a legal analysis of the CROW guidelines. They conclude that only when regulations or policy documents of a road authority refer to CROW publications, they become binding. However, their overview of case law demonstrates that it is still possible to deviate from the guidelines, provided there is proper motivation and weighing of different interests. Their final verdict reads as follows: "Although the CROW guidelines offer the much-desired concreteness and have a solid status in road administration practice, it comes down to the appreciation of all the circumstances of the concrete case" (Oskam and Overes, 2015, p219).

A recent survey among provincial officials reveals that 9 out of 12 provinces provide co-funding for SFRs, ranging from 50 to 90% of construction costs (APPM, 2021). One of the three remaining provinces takes responsibility for the entire project, from plan development to implementation, including all the funding. In other cases, municipalities are responsible. In most provinces, municipalities are required to conclude an official agreement. But the nature and timing of these agreements differ substantially, ranging from a declaration of intent to the administrative requirement requested by the province of Noord-Brabant. The

[7] One of the two routes—the 'Rijnwaalpad'—was not officially part of the five projects initiated under the 'Met de Fiets minder file' project but was added one year later as a result of successful lobbying by the Fietsersbond.

[8] In the metropolitan areas of Amsterdam and Rotterdam, municipalities still voluntarily cooperate in the planning and construction of SFRs.

role of the provinces in the articulation and dissemination of new mobility concepts stems from their double role as regional planner and financing body. In sum, different from CROW's technical-supportive articulation, this step in the articulation combines the setting of aims and enforceable standards and financial control with acts of persuasion and negotiation. The provincial articulation is one of ordering and frameworking, on steering, conditions, collaboration, and finance, through which its local form transpires through a collection of detailed documents and rules, and its global form through a purposeful, reputed ("forerunning"), somewhat cohesive and malleable policy. The next agent set to work is the project coordinator, to which we turn now.

Site Four. Planning diplomacy (regions)

In most situations, municipalities in the Netherlands are the relevant authority for the management and construction of cycle infrastructure. As a result, municipalities are normally responsible for the implementation of SFRs.[9] These efforts have to be coordinated and for most SFR projects an overarching coordinator is appointed. An inventory conducted by us of 65 SFR projects that were in the planning phase or beyond shows that the majority of projects are coordinated by an official working for a regional or provincial government. A quarter of projects were overseen by a person hired by one of the collaborating municipalities and five projects had no overarching coordinator at all. Coordinators face the difficult task of facilitating the process of meeting the demands and conditions of the funders at the provincial and national level. They also need to build social acceptance and collaboration with residents and other stakeholders, such as managers and users of places through which routes are intended to pass, such as parks, woods, town centres, schools, and so on. More than the previous agents, coordinators are wedged between the wish to fulfil the SFR ambition and standards as framed by CROW and provinces, and the need for local adaptation. Two practices stand out for the regional project coordinators, routing and finance, to be discussed in turn.

Regional coordinators are confronted with the fact that SFRs' "red carpets" need to be weaved through existing physical structures, in harmony with their physical and social dimensions. Unlike motorways and railways, cycle highways do not come with the technical, financial and institutional means of separation and insulation through intensive use of land-use redesignation, expropriation, viaducts, tunnels, barriers, and the like. SFRs' spatial insertion and integration presents a more subtle puzzle of meeting manifold conditions regarding planning, budgets, resources, political backing, stakeholder support, community acceptance, and so on (the local form) and making a description of that route as an SFR (global form). What comes in handy is that CROW's articulation of SFR's global form provides standards as well as flexibility and suggestions for compensation. Yet, as explained above, coordinators also have to deal with the (sometimes) stricter definitions of the provinces. Against this background, our interviews showed how coordinators employed a lot of diplomacy to solve these complex puzzles.

So, how do we find the arguments, resources, support and acceptance for rolling out a four-metre-wide "red carpet" with priority status? Coordinators face many situations in which such a surface is resisted, and priority is difficult to achieve. A good example is a route where the red carpet is interrupted passing through the village centre of Geffen (Noord-Brabant). Here, villagers used an image of cycles speeding through their village to oppose the route, labelling the route as Flop59 ("Failure 59") a local variant of the official name of the route: F59 (Wagenbuur, 2016). The coordinator tried to counter the view of cyclists speeding by on a red

[9] There are exceptions of the rule. The province of Groningen takes responsibility for both the planning and construction of SFRs (APPM, 2021).

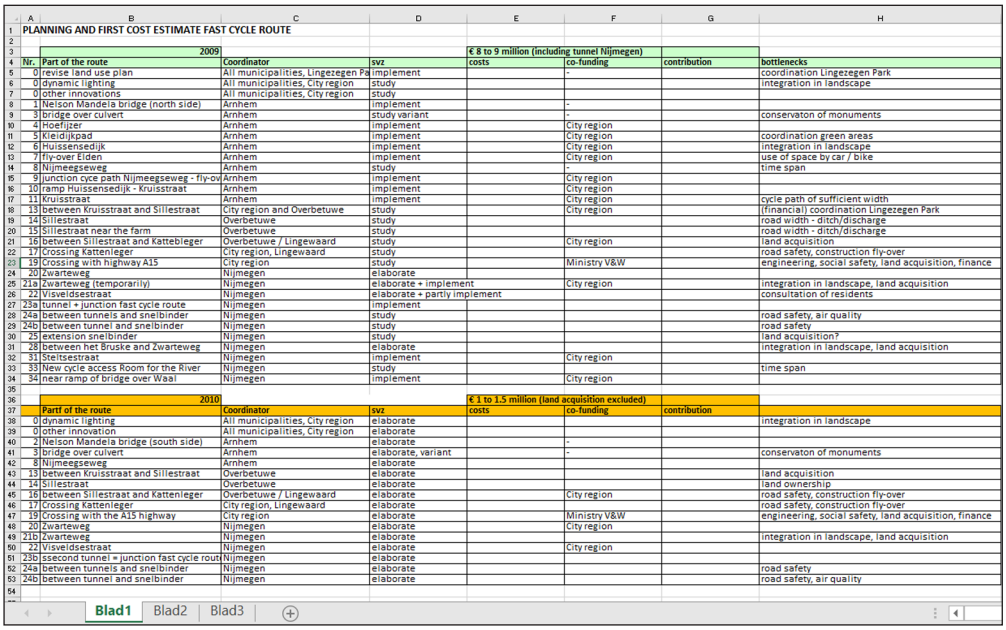
carpet arguing that many cyclists on the route are recreational, eager to stop and contribute to the local economy. While this helped to get the route through the village centre, it did not gain support for a change of road surface. So, F59 cyclists have to endure 900 metres of cobblestone pavement while passing through Geffen.

Another example comes from the Nijmegen area., where coordinators of two routes opted not to use a red-coloured surface, mainly in response to local objections. The first of these routes traverses Nijmegen's city park De Goffert. As the coordinator explains, residents objected to the use of red asphalt in the park; local consultation resulted in the adoption of yellow instead of red, because that was considered to be more in harmony with the environment. Laying green asphalt presents a better solution than leading cyclists around the park (1). The second route passes through the woods south of Nijmegen (Malden), where the black surface remained unchanged for similar reasons. Both cases bring home the importance of involving the community in an early process of conception and designing. However difficult that may be, a cycle highway warrants commitment from the "non-user" part of the community.

Site five. Financial ingenuity (the accountant's office)

When there is general agreement that the route should be constructed, the next step is to jointly explore which measures are necessary and above all feasible. We have to discuss finance now. The manual "Method Cycle Congestion-Free" (an important result of the expert sessions within the 'Fiets Filevrij' Platform) informs us that firstly a rough estimate of the costs has to be provided for each measure on the basis of unit prices (i.e., square metre of cycle path, for engineering works use of reference project is recommended) (Fiets Filevrij, 2009). These cost estimates are based on standards provided by CROW, the so-called Standard System for Cost Estimates (SSK) (CROW, 2018). This is a system for cost management using cost estimates of construction measures including life cycle management calculations. In doing so, SSK yields unambiguous estimates of project investment costs. As a result, estimates are transparent and easier to compare and to follow over time. So, the main goal is to facilitate *communication* on financial project management. The estimates are produced through different excel sheets for different measures along the routes (**Figure 1**).

However, as one of the project coordinators revealed, when this financial estimate was submitted to the financial controllers of a granting authority, they noticed that the financial standards did not facilitate communication with all stakeholders. The application of the standard had resulted in a preliminary estimate with 5% budgeted for contingencies. However, the controllers wanted the budget to be based on a final estimate, implying that financial setbacks could no longer be accounted for. The coordinator stated: "So, the game is that you produce your drawing and your estimate in such a way that you still arrive at this figure. It never will be this figure, because before payments can be made, accountants will assess the estimates down to the penny" (19). In this case, they found a solution in the grant ruling. This stated that if the quality level of a road section was above the standard the funding authority would fund a higher percentage of the costs. In order to claim this funding, it was decided to develop a road section of four and a half metres wide instead of four. Although it proved difficult to have the contractor produce the extra charges, in the end they claimed "every half metre of sand, gullies and stones." This was a double-edged sword: on the one hand, the building costs were higher, and on the other hand the funding authority had to finance a larger percentage of total costs. This came as a bit of a shock to the funding authority. The project coordinator paraphrases: "If only we had known this, we would have dealt with it differently." And his response: "You should be happy that we are all moving towards higher quality, rather than lower quality" (19).



PLANNING AND FIRST COST ESTIMATE FAST CYCLE ROUTE

	2009			€ 8 to 9 million (including tunnel Nijmegen)			
Nr.	Part of the route	Coordinator	svz	costs	co-funding	contribution	bottlenecks
0	revise land use plan	All municipalities, Lingezegen Pa	implement		-		coordination Lingezegen Park
0	dynamic lighting	All municipalities, City region	study				integration in landscape
0	other innovations	All municipalities, City region	study				
1	Nelson Mandela bridge (north side)	Arnhem	implement		-		
3	bridge over culvert	Arnhem	study variant		-		conservaton of monuments
4	Hoefijzer	Arnhem	implement		City region		
5	Kleidijkpad	Arnhem	implement		City region		coordination green areas
6	Huissensedijk	Arnhem	implement		City region		integration in landscape
7	fly-over Elden	Arnhem	implement		City region		use of space by car / bike
8	Nijmeegseweg	Arnhem	study		-		time span
9	junction cyce path Nijmeegseweg - fly-ov	Arnhem	implement		City region		
10	ramp Huissensedijk - Kruisstraat	Arnhem	implement		City region		
11	Kruisstraat	Arnhem	implement		City region		cycle path of sufficient width
13	between Kruisstraat and Sillestraat	City region and Overbetuwe	study		City region		(financial) coordination Lingezegen Park
14	Sillestraat	Overbetuwe	study				road width - ditch/discharge
15	Sillestraat near the farm	Overbetuwe	study				road width - ditch/discharge
16	between Sillestraat and Kattebleger	Overbetuwe / Lingewaard	study		City region		land acquisition
17	Crossing Kattenleger	City region, Lingewaard	study				road safety, construction fly-over
19	Crossing with highway A15	City region	study		Ministry V&W		engineering, social safety, land acquisition, finance
20	Zwarteweg	Nijmegen	elaborate				
21a	Zwarteweg (temporarily)	Nijmegen	elaborate + implement		City region		integration in landscape, land acquisition
22	Visveldsestraat	Nijmegen	elaborate + partly implement				consultation of residents
23a	tunnel + junction fast cycle route	Nijmegen	implement				
24a	between tunnels and snelbinder	Nijmegen	study				road safety, air quality
24b	between tunnel and snelbinder	Nijmegen	study				road safety
25	extension snelbinder	Nijmegen	study				land acquisition?
28	between het Bruske and Zwarteweg	Nijmegen	elaborate				integration in landscape, land acquisition
31	Steltsestraat	Nijmegen	implement		City region		
33	New cycle access Room for the River	Nijmegen	study				time span
34	near ramp of bridge over Waal	Nijmegen	implement		City region		

	2010			€ 1 to 1.5 million (land acquisition excluded)			
	Partf of the route	Coordinator	svz	costs	co-funding	contribution	
0	dynamic lighting	All municipalities, City region	elaborate				integration in landscape
0	other innovation	All municipalities, City region	elaborate				
2	Nelson Mandela bridge (south side)	Arnhem	elaborate		-		
3	bridge over culvert	Arnhem	elaborate, variant		-		conservaton of monuments
8	Nijmeegseweg	Arnhem	elaborate				
13	between Kruisstraat and Sillestraat	Overbetuwe	elaborate				land acquisition
14	Sillestraat	Overbetuwe	elaborate				land ownership
16	between Sillestraat and Kattenleger	Overbetuwe / Lingewaard	elaborate		City region		road safety, construction fly-over
17	Crossing Kattenleger	City region, Lingewaard	elaborate				road safety, construction fly-over
19	Crossing with the A15 highway	City region	elaborate		Ministry V&W		engineering, social safety, land acquisition, finance
20	Zwarteweg	Nijmegen	elaborate		City region		
21b	Zwarteweg	Nijmegen	elaborate				integration in landscape, land acquisition
22	Visveldsestraat	Nijmegen	elaborate		City region		
23b	ssecond tunnel + junction fast cycle rout	Nijmegen	elaborate				
24a	between tunnels and snelbinder	Nijmegen	elaborate				road safety
24b	between tunnel and snelbinder	Nijmegen	elaborate				road safety, air quality

Blad1 Blad2 Blad3

Figure 1: Exemplary SFR Budget spreadsheet.
Source: Fiets Filevrij (2009), own translation.

Another aspect concerns aggregation. Accounting practices do not only produce different expressions with respect to SFR's constitutive elements (single measures and facilities); they also facilitate financial ingenuity. Standing in front of a whiteboard, a project coordinator explains this by drawing a kind of sandglass. The sandglass stands for a financial strategy through which a variety of funds, all with their own scope, areas and conditions, can be used to finance a whole route. In the words of the coordinator, the sandglass provided a "really strong framework […] to work with because the whole framework consisted of about 21 different projects all with the wrong funding […]. What we did as a project team […] is to put all the regional funding in one basket. And we continuously talked about how it should be divided. So, if Project 1 gets a bit bigger we just would change the flow a bit [and make] Project 2 cheaper […]. We had 21 projects: some get more, some get cheaper" (1). This financial engineering and (re)balancing started with the allocation of all earmarked funds to the dedicated areas and investment. Each municipality thus received the appropriate budget for its leg of the route: "And the interesting thing is all the projects were developed and engineered by the municipalities. So, if they would run out of budget it would be their own doing. They would already feel responsible for the cost overrun. And we agreed at an early stage that if they would overrun the costs of that risk are covered by the municipality, nobody else, because we use a subsidy. We're not a project partner on the bottom line" (1).

In this sandglass practice, the cycle highway is only expressed in an aggregate form in one, brief moment. Here, expression again comes in the form of a single label, specifically a certain amount of money, representing the total cost of the project. Our survey reveals that for the majority of projects, these figures will lie somewhere between one and twenty million euros. Before this moment of aggregation, we are talking of various grants with different earmarks. After the moment, we are looking at separate projects, each with their own financial estimate and funding streams. As a coherent global form, the route has moved out of sight once again. In its local form, the route is a bundle of individual projects. Hence, the local-global tension

here is not so much about flexibility, but about cohering different local realities of infrastructure building around one SFR object.

The sandglass approach helped to bring all municipalities in line and on steam in the same period: "that setup really helped us to get support from the municipalities, support also within the municipalities to get the right persons in the projects teams to start designing and building the projects" (1). It is not unusual for different funds to be used to finance the construction of SFRs. Our inventory indicates that almost 90% of all projects make use of some form of co-financing that might come from either the regional, provincial or national government, and that more than half use three or more different funding opportunities.

Site Six. Design negotiation (municipalities)

Once route and finance are in order, it is time to make specification drawings, so that the building of the route can actually be tendered out. Now, we have entered the realm of the traffic engineer, who has to work with standards as agreed for implementation. Spatial "insertion," "interweaving" and "integration" now take very concrete, local-physical shapes. Every transport modality already has its own claim on scarce space and now the cyclist is thrown in. Occasionally, other users really have to make way for cyclists. An example is the route from Nijmegen to Cuijk, where, after due deliberation, the lack of one metre space resulted in the purchase and demolition of a house. However, generally such costly measures are out of range.

We continue with another case, East of Arnhem, where an engineer set out to design a route of four metres wide, with priority crossings or overpass junctions, red asphalt, and shallow turns. In the engineer's view, not an easy job, posing a huge challenge of spatial integration. For large sections of the route, he had to deal with existing infrastructure and this is where the major hurdles (literally: bumps) are. He illustrates it by outlining a concrete dilemma of priority crossing: "Suppose 10,000 people live here and 8,000 here, I'm just saying, you can imagine that there are a lot of movements back and forth of cars here. And then all at once it's said: here and here a section of fast cyclists will cross and all those cars coming from here will have to wait for them" (9). In this case, the municipality initially agreed with this priority crossing, but there was a lot of opposition from (local) residents that were afraid of more accidents.

Unfortunately, serious accidents happened. In three months, four accidents occurred and when the last one happened, the engineer was ordered to restore priority to its original state. He called the contractor and in one afternoon the situation was reversed. The same happened in a nearby village, and also in other cases where accidents had fatal consequences. In doing so, it poses a boundary dilemma. How far can one go reversing priority and lowering cycling comfort before the route loses its dignity as a cycle highway? Given the difficulties associated with spatial integration he thinks it is better to define quality at a more abstract level and be more realistic in implementation. "It is better to have one bike route than no bike route" (9). The thorny question is to what extent global forms should adapt to such pressures, in local implementation practices, as well as other settings.

Finally, of a more trivial nature, but still seen as a breach of standard, is a deviation in the shade of red. On the F59, one of the involved municipalities adopted a somewhat different colour type than agreed in the design specification because that was the one they normally used. "You can see the difference in colour on the municipal boundary. Yes, and that [decision] really pisses me off" (13). This demonstrates that during implementation SFRs are not only framed by the physical lay-out, but also by jurisdictional borders. Many other examples of such encounters and puzzles could be added, on —curbs, surface, width, lines, and so on— but space limitations compel to come to a conclusion.

Conclusion

For a policy concept to perform, inciting and guiding an aspired transition, it needs to work in and across many sites. By examining policy practice in detail, this paper has investigated the workings of a novel concept promoting active mobility, namely fast cycleroutes. Besides detailing policy practice in a particular case, the Netherlands, our aim has also been to contribute to a practice-oriented syntax of policy diffusion. This syntax, as explained at the start of the paper, is built around two terms, *liquidity* and *articulation*. Liquidity refers to the overall alignment of actors and stabilisation around one concept; articulation enables variations in descriptions and inscriptions in local concept expressions. Accordingly, policy concepts simultaneously take on a global and local form, sustaining, *in tandem*, differentiated policy practices, as well as general policy mobility and currency. We thus argue that the crux of policy mobility is not a travelling concept. Rather, the crux is how a policy concept takes shape and is expressed (also in the sense of "pressed out"), within expanding sites of practices, through local and global forms evolving simultaneously. More succinctly, the crux is how *practices cohere*, while articulations differ. As we have illustrated in our examination of policy practices, this presents a pressing and persistent trade-off between differentiation and unity.

In more detail, this paper probed six sites articulating fast cycleroutes (SFRs), as part of an ambition to promote active transit mobility. Each site co-articulated local and global forms, in their own vocabularies and expressions. On the one hand, more central sites such as CROW and the provinces proved keen to articulate transferable global forms (standards and rules). On the other hand, project sites at the (inter)municipal level proved deeply immersed in the hard work of assembling local forms (accepted route, adequate budget, safe design). In doing so, each site spoke its own language, of respectively demonstration (naming and framing), quality specification (standardisation), rule and contract (provincial policy making), planning diplomacy and financial ingenuity (coordination) and design negotiation (engineering). In line with Lépinay (2007), our work also supports the idea that such languages are highly persistent and hard to adapt, connect or merge. Liquidity and coherence work *through* these languages and different realities they sustain, rather than by shaping a common language or shared reality. Yet, as we have seen in our examination, this does not prevent them from meeting considerable success.

So, this takes us back to our central question, how does an "active mobility" concept become successful? How does it diffuse and perform? In our view, it is not very helpful to see diffusion literally as the travelling of policy ideas and practices. Diffusion results from the mushrooming and connecting of essentially *different* policy practices through processes of articulation and liquidity. Accordingly, we see less in a view distinguishing between original (global) policy concepts, which, through diffusion, land in local sites and are translated into local policy concepts. That also means that we should be very cautious in understanding policy concepts in terms of broader, structural forces or trends. Rather, what is crucial is how global forms emanate from local contexts through practices of expression. In our case, fast cycleroutes emerged, often just momentarily and fleetingly, through defining labels, flexible standards, definition frameworks, ingenious budgeting practices (sandglass), "whole route" descriptions, and negotiated designs. In their combination, these practices yielded liquidity, currency, diplomacy, and hence performativity.

In their co-incidence and differentiation, however, these practices also present fragility and the risk of dissolution of SFRs as a new policy concept of active mobility. We already noticed shifting boundaries, allowing quality standards to lower. It is interesting, in this respect, to look at the latest articulation by the "Tour de Force" network: "These bicycle routes are aimed at connecting (residential) areas in the region with nearby (large) cities and work locations. The aim is to lead cyclists easily, safely and comfortably to these destinations. This is expressed

in the quality and design of the route, for instance cyclists on these routes have priority more often and cycling distances of up to 15–25 km are encouraged" (APPM, 2021, p4). This definition is the result of intensive debate among the governments involved and is deliberately kept broad to accommodate as many local initiatives as possible. So far, we saw that quality was represented by a list of criteria that, admittedly, may be deviated from. In this new expression, any reference to a list has disappeared and quality is conveyed by design examples only. We can also notice another name-change, namely into "high-quality regional bicycle routes". This top segment of bicycle routes might comprise "fast cycle routes, express cycle routes, through-traffic routes or star routes" (idem). It is the quality specification that makes SFRs stand out from other (regional) cycle routes and facilities. The question is whether this new naming and framing still allows them to do so. The liquidity of the rearticulated concept, and how it will contribute to an ambition of promoting a further shift to active mobility, remains to be seen.

Additional File

The additional file for this article can be found as follows:

- **Appendix.** Tables 1 and 2. DOI: https://doi.org/10.16997/ats.1067.s1

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Competing Interests

The authors have no competing interests to declare.

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