

Influencing factors on safety-enhancing interaction processes between cyclists and car drivers

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Project objectives

Overall aim of the PhD: **Developing a theory on the interaction processes between cyclists and car drivers, which includes:**

Strategies: Identification and collection of different forms of interaction processes between cyclists and car drivers and the understanding of their intentions. Influencing factors on safety-enhancing interaction behaviours are identified.

Interrelations: Identification of key factors that influence interaction processes. Working hypotheses: age, gender, driving experience and attitudes towards their own role in traffic have an influence on interaction processes.

Value of cyclists and car drivers as road users: Analysing power relations in road traffic in terms of respect between road user groups, access to public space and perception of conflicts.

Background

Austrian cyclists face a high risk at intersections as 45% of all cycle accidents occur at such junctions. Accidents involving motorists account for 57% of all accidents resulting in cyclist injury. [1] The improvement of traffic safety can be considered as a combination of various elements:

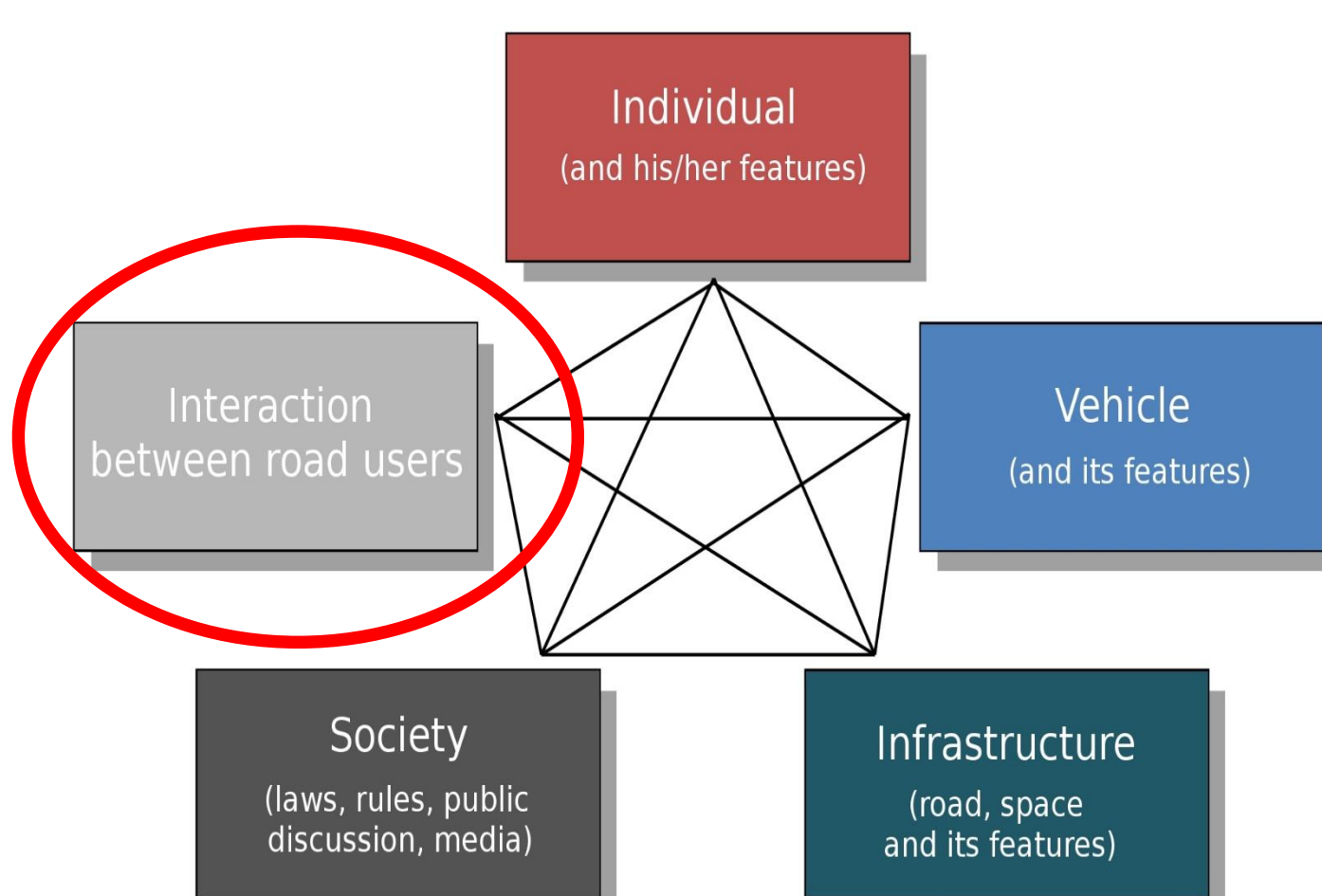


Figure 1: Diamond model (Risser 2002) [3]

The current study focuses on the element '**interaction**': Accidents can be considered as the effect of failed interaction processes and traffic conflicts are indicators of the risk of such a breakdown. Interaction processes are highly influenced by attitudes, motives, lifestyle aspects etc. [2]

Routine is also an important aspect as a considerable part of the driving task is carried out automatically. [4] The project will focus on these interrelations and their effects on interaction processes.

Methodology

A **Grounded Theory approach, using a mixed methods strategy for data collection** is adopted as follows:

In-depth interviews & focus group interviews with cyclists and car drivers in order to gather data regarding:

- different interaction forms
- perceptions of own role in road traffic
- goals and skills for living [2]

...and to deepen the understanding of the intentions of interaction processes.

On-site observation in Vienna: 4 intersections were selected according to the following criteria:

- intersections with high volumes of cycle & car traffic
- critical intersections for car-cyclist accidents [5]
- different types of cyclist infrastructure (e.g. cycle lanes)

Over a period of 6 months, 100 test-cyclists varying in age, gender & cycling experience will cross the 4 intersections. Their actions will be recorded and analysed in terms of the following:

- qualitative analysis (broader observational factors, such as friendly gestures)
- quantitative analysis (standardised criteria, such as giving right of way)
- distances & speed
- seriousness of potential conflicts (e.g. TTC)
- qualitative assessment of "good" (= conflict avoiding) or risky (= conflict causing) interaction behaviours

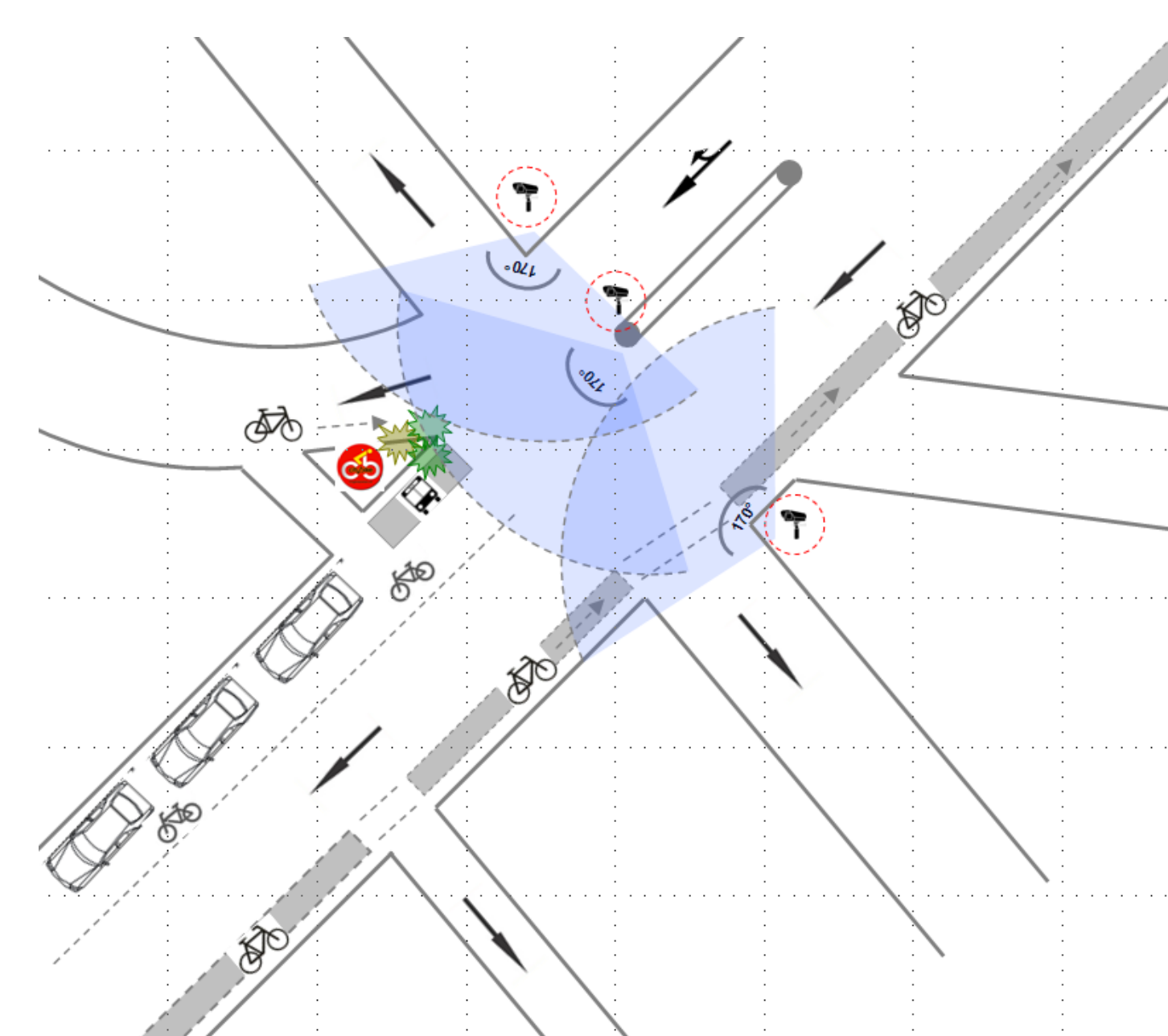


Figure 4: Intersection Margarethenstraße, positioning of cameras

E.g. Margarethenstraße:

- cyclists approach intersection, where it is possible to cycle in the opposite direction of a one-way street
- cyclist path abruptly ends at intersection
- 3 cameras used: 2 for a full shot of the intersection and 1 for close up

Observation sites

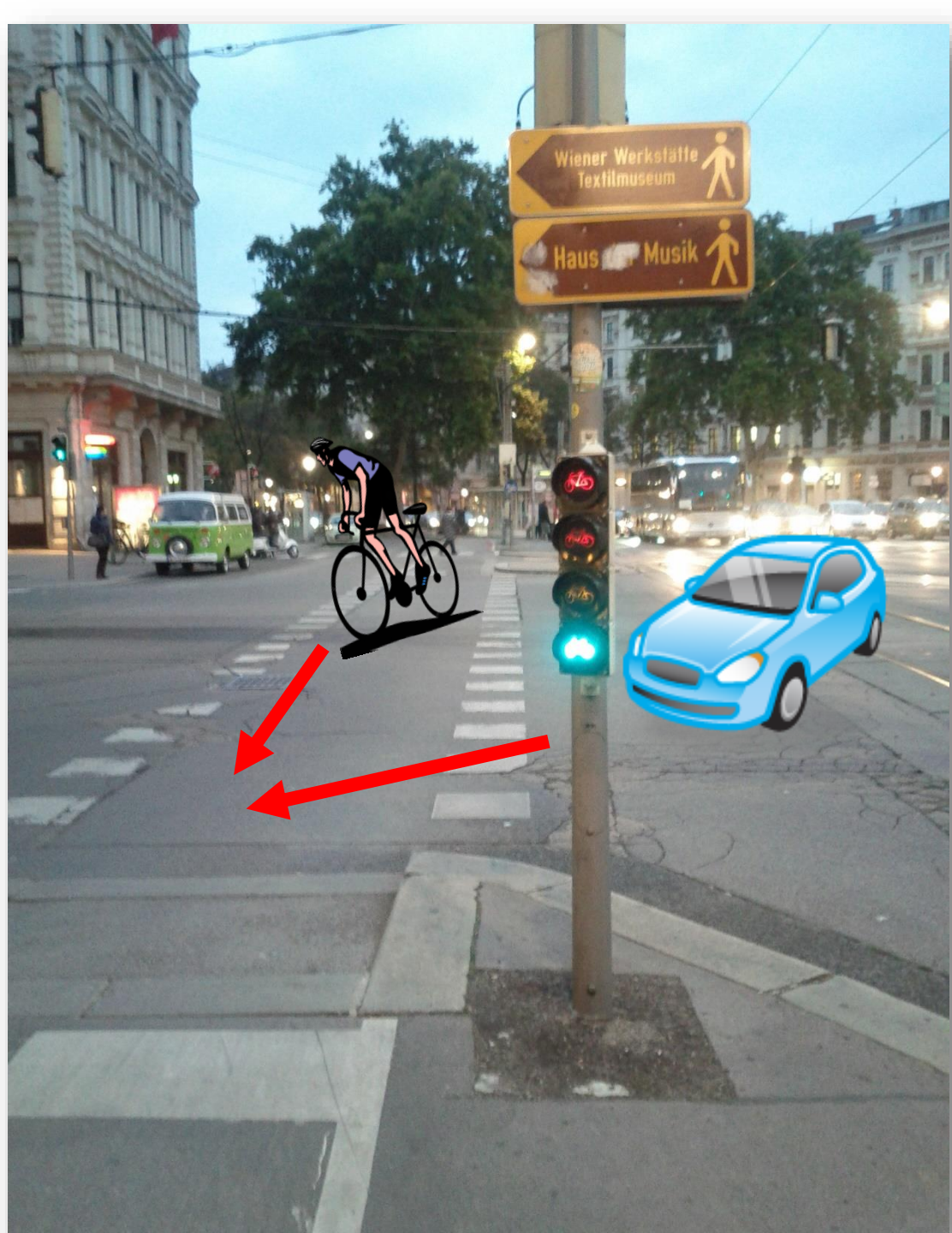


Figure 2: Frequent right-turn accidents resulting in cyclist injury (Schwarzenbergplatz)

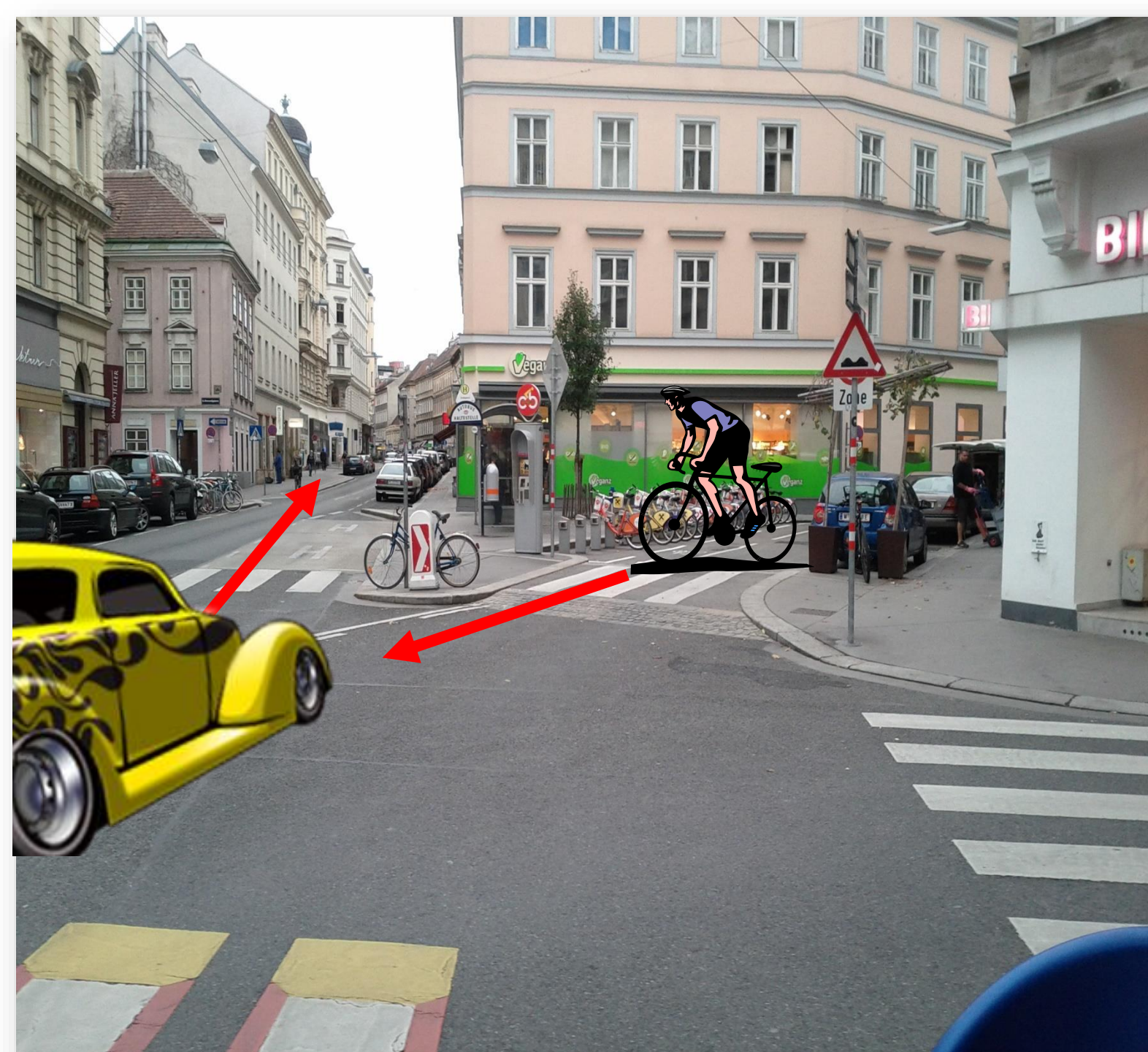


Figure 3: Accidents with oncoming traffic are a frequent type of accident resulting in cyclist injury (Margarethenstraße)

Standardised questionnaire on: subjective perception of the crossing situation in order to draw conclusions about the interrelations between: 1) interactions 2) intentions and 3) the goals & skills for living. Further hypotheses about applied strategies and perceived respect in road traffic will be tested.

References and acknowledgements

- [1] Bundesministerium für Verkehr, Innovation und Technologie (2013). "Der Radverkehr in Zahlen", Wien, 2. Auflage
- [2] Bartl, G. et al. (2002). "Description and Analysis of Post-licence Driver and Rider Training", EU ADVANCED Project, FINAL REPORT
- [3] Risser, R. (2002). "Gut zu Fuß. Fußgänger als Verkehrsteilnehmer 2. Klasse", Wien: Mandelbaum
- [4] Towlat, M. (2001). "Experiments regarding safety measures for pedestrian & cyclist in interactions with cars on main roads in built-up areas" (=Dissertation) Lund University, Sweden
- [5] see Accident statistics of Municipal Department Vienna MA 46, period 2007-2011

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