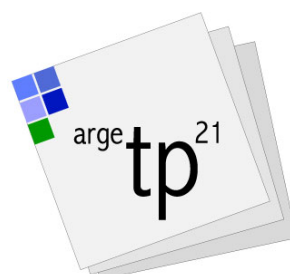




Optimisation of the Practical Driving Test

Methodical foundations and possibilities for further development

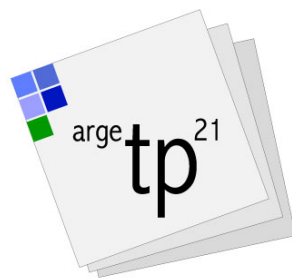
**Dietmar Sturzbecher, Jürgen Bönninger & Mathias Rüdell
(Eds.)**



Dietmar Sturzbecher, Jürgen Bönninger & Mathias Rüdell (Eds.)

Optimisation of the Practical Driving Test

Methodical foundations and possibilities for further development



TÜV | DEKRA

CREDITS

Title: **Optimisation of the Practical Driving Test**
Methodical foundations and possibilities for further development

Publishers: Sturzbecher, D., Bönninger, J. & M. Rüdell
Address: TÜV | DEKRA arge tp 21
Wintergartenstr. 4
01307 Dresden, Germany
Tel.: 0351-20789-0
Fax: 0351-20789-20
E-mail: sekretariat@argetp21.de
www.argetp21.de

Authors and contributors:

Biedinger, J.	VdTÜV / TÜV NORD Mobilität GmbH & Co. KG
Böhne, A.	TÜV Rheinland Kraftfahrt GmbH
Bönninger, J.	FSD Fahrzeugsystemdaten GmbH
von Bressendorf, G.	Bundesvereinigung der Fahrlehrerverbände e.V. (BVF)
Genschow, J.	IFK Vehlefan
Glowalla, P.	Bundesvereinigung der Fahrlehrerverbände e.V. (BVF)
Hampel, B.	
Kaup, M.	TÜV SÜD Auto Service GmbH
Kleutges, C.	TÜV Rheinland Kraftfahrt GmbH
Köhler, T.	DEKRA Automobil GmbH
Jagow, Dr. F.-J.	
Langhoyer, N.	Zentrale Militärkraftfahrstelle der Bundeswehr
Meyer, J.	TÜV SÜD Auto Service GmbH
Mörl, S.	IFK Vehlefan
Müller, G.	TÜV SÜD Auto Service GmbH
Müller, R.	VdTÜV / TÜV Hessen Auto Service
Petzholtz, Dr.-Ing., W.	DEKRA Automobil GmbH
Radermacher, R.	TÜV NORD Mobilität GmbH & Co. KG
Reiter, Dr., B.	VdTÜV
Rompe, Prof. Dr., K.	TÜV DEKRA arge tp 21
Rüdell, M.	TÜV DEKRA arge tp 21
Schmidt, Dr., A.	DEKRA Automobil GmbH
Sturzbecher, Prof. Dr., D.	University of Potsdam
Wagner, W.	TÜV DEKRA arge tp 21
Weißel, B.	TÜV DEKRA arge tp 21

The research project on which this publication is based was supported with means kindly provided by TÜV | DEKRA Arbeitsgemeinschaft Technische Prüfstellen 21 (TÜV | DEKRA arge tp 21).

Special thanks are due to Ms. Bartelt-Lehrfeld and Mr. Hoop from the Federal Ministry of Transport, Building and Urban Affairs, as well as to Mr. Willmes-Lenz and Dr. Prücher from the Federal Highway Research Institute, for their kind and competent advice and support. Responsibility for the contents of this publication remains with the authors and contributors.

All rights reserved. Use of any kind without the prior consent of the publishers is deemed to violate copyright and will result in corresponding legal action. This applies in particular but not exclusively to reproductions of any kind, translations, microfilming and the storage and further processing in electronic systems.

Citation suggestion: Sturzbecher, D., Bönninger, J. & M. Rüdell (Eds.). (2008). Optimisation of the Practical Driving Test – Methodical foundations and possibilities for further development. Dresden: TÜV | DEKRA arge tp 21.

1st edition, 2008

© TÜV | DEKRA arge tp 21

Theses of the report “Optimisation of the Practical Driving Test – Methodical foundations and possibilities for further development”

I Within the overall system of novice driver preparation, with its diverse training and testing elements, the practical driving test possesses great diagnostic potential as an instrument to determine the level of driving competence reached by a licence applicant and to recognise safety-relevant competence deficits. To enable even better exploitation of this potential in the future, the present report is to introduce proposals for further development of the practical test on the basis of a comprehensive and critical methodical and content-related reflection. To this end, the foundations of the practical test are to be analysed in the light of competence theory, the systematic basis in psychological testing and legislation is to be described, past changes in test contents and methods are to be mapped, the methodical particularities of the present-day practical test are to be identified and compared with international practice, and necessary steps for further optimisation are to be outlined.

II From the methodical perspective, the practical driving test is to be viewed as a holistic test procedure which must satisfy the usual quality criteria defined in psychological testing (objectivity, reliability, validity). The practical test is positioned within the framework of the customary diagnostic method categories as a process-oriented work sample assessed by way of systematic behaviour observation: The test candidate handles the demands of participation in motorised road traffic under essentially realistic conditions during a test drive (including elements representing the technical preparation and completion of the drive), while the driving test examiner observes the handling of these demands systematically and assesses the attained level of driving competence by way of an adaptive test strategy. The assessment process of this adaptive test strategy can be described with a circular model comprising five action elements: (1) “Planning and structuring of the observation situation”, (2) “Observation” and (3) “Assessment” of the behaviour of the test candidate, (4) “Verification of the basis for assessment and decision” and (5) “Final decision-making”. The methodical characterisation of the practical test as systematic behaviour observation determines the standards and tasks for further development of the process: The demand standards and in particular the driving tasks of the practical test are to be derived according to scientific principles from the demands of modern road traffic; observation categories and assessment criteria with a foundation in psychological testing must be provided to record the test candidate’s behaviour, and unambiguous decision criteria must be specified as a basis for an appropriate test decision in the sense of an overall judgment.

III The binding legal demand and implementation standards applicable to the practical driving test are formulated in various laws (German Road Traffic Act = Straßenverkehrsgesetz, StVG), regulations (Driving Licence Regulations = Fahrerlaubnis-Verordnung, FeV) and guidelines (Examination Guidelines = Prüfungsrichtlinie), the contents of which complement each other and even overlap in part. This legal system has evolved since the introduction of the practical test and has been developed further in line with the changing contents and methods. The legal system alone is unsuitable as an adequate methodical procedure description for implementation of the test; a holistic description of the methodical system of the practical driving test in the sense of a “user manual” is still outstanding. To promote optimisation of the practical test, the methodical and legal systems must be developed in parallel.

IV Four development phases can be identified in the history of the practical driving test: (1) From the beginning of the practical driving test through to the mid-1970s, it was above all the test contents which changed. Technical knowledge and skills were replaced at the focus of attention by a concentration on potential hazards, as vehicle handling became increasingly straightforward and road safety could not be guaranteed adequately otherwise.

Social demands gained in importance, because higher traffic densities required better coordination of the actions of individual road users and an improved traffic flow. (2) The period from 1975 to 1985 was a decade of dynamic further development of the test methods. In West Germany, the advance of psychological testing permitted the elaboration of methodical foundations for the practical driving test in a form in which they are essentially still valid today. In the GDR, the contents and methods of the practical test were further differentiated and combined with a four-stage system of training; the overall system was geared to the learning of hazard perception and hazard avoidance, as an overarching goal, and incorporated promotion-oriented intermediate tests. (3) The year 1986 marked the beginning of a phase of consolidation, during which first the practical implementation of previous developments and later – dominated by the process of German unification and the adopting of EU directives – the national and international harmonisation of driver licensing stood in the foreground. (4) Since the commencement of the present project in 2005, the methodical foundations elaborated for the practical test in the 1980s have been undergoing modernisation and further development; at the same time, they are to be embedded into an innovative system of novice driver preparation.

V Studies of the implementation of the practical driving test in other countries reveal that the necessary balance between standardisation of the test demands, as would be meaningful in terms of psychological testing, on the one hand, and the scope of judgement which must be granted to the examiner to realise an adaptive test strategy, on the other hand, can be achieved in very different ways. Alongside, innovative test elements are emerging under headings such as “independent driving” or “eco-driving”. In further cases, the test candidate is required to present a self-assessment of his driving competence before the practical test; this self-assessment is then compared with the test performance as a means to trigger corresponding self-reflection processes. Such developments are without doubt a source of inspiration; nevertheless, it can be concluded overall that the European countries with progressive licensing systems are currently facing similar methodical challenges to those on the agenda in Germany with regard to further development of the practical test, and that the search for innovative solutions concentrates not solely on the practical test, but rather on a redefinition of contents and methods across the whole system of novice driver preparation.

VI Alongside revision of the concepts pertaining to test locations and the driving task catalogue, as well as restructuring of the observation categories and assessment and decision criteria, it is necessary to elaborate and verify an evaluation model for the system of quality assurance implemented to monitor the practical driving test, based on critical methodical evaluation studies, systematic customer surveys and the traditional internal and external audits. The results of these optimisation processes are to be anchored in a manual describing all the processes and activities required for implementation, evaluation and optimisation of the driving test system, together with the correspondingly responsible institutions. One particular challenge is to determine an adequate means to take regional accident black spots and driver assistance systems into account in the test contents. The consequence will be an increase in the importance attached to technical knowledge concerning the installation of driver assistance systems and their operation, function principles, effectiveness, safety relevance and limitations.

Contents

J. Bönninger, J. Biedinger, A. Böhne, G. von Bressensdorf, P. Glowalla, M. Kaup, C. Kleutges, G. Müller, R. Müller, W. Petzholtz, R. Radermacher, A. Schmidt, W. Wagner & D. Sturzbecher

1	Objectives of the project	7
1.1	Problem definition	7
1.2	Objective.....	12

D. Sturzbecher

2	Methodical foundations of the practical driving test	16
2.1	Theoretical and practical driving test	16
2.2	Excursus: Driving competence as diagnostic subject of the practical driving test	17
2.2.1	Selected bases of the concept of competence.....	17
2.2.2	The demands of road traffic as a lifeworld domain.....	21
2.2.3	Driving skills as the core of driving competence	22
2.3	Methodical categorisation of the practical driving test.....	25
2.3.1	Practical and holistic examination methods	25
2.3.2	The practical driving test as a work sample	28
2.3.3	The practical driving test as behaviour observation.....	30
2.3.4	The practical driving test as a criterion-referenced test	34
2.4	Criteria for assessment of the methodical quality of the practical driving test.....	34
2.4.1	Overview of the principal quality criteria	34
2.4.2	Special factors affecting the assessment of practical driving test quality	36

F.-J. Jagow

3	Legislative foundations of the practical driving test.....	42
3.1	German legislation.....	42
3.1.1	General legislative foundations of driving licence testing	42
3.1.2	Special legislative foundations of the practical driving test.....	45
3.2	European legislation	47

B. Hampel & D. Sturzbecher

4	Methodical development of the practical driving test in the past	49
4.1	Starting points and overview	49
4.2	Test contents and methodology from the beginning of driving licence testing to 1975	51
4.3	New methodical departure from 1975 to 1985	57
4.3.1	Reasons for a paradigm shift in the period under review	57
4.3.2	The practical driving test in the GDR	58
4.3.3	The practical driving test in West Germany.....	62
4.4	Phase of consolidation from 1986 to 2003	74

D. Sturzbecher, J. Biedinger, A. Böhne, J. Bönninger, G. v. Bressendorf, P. Glowalla, M. Kaup, C. Kleutges, G. Müller, R. Müller, W. Petzholtz, R. Radermacher, A. Schmidt & W. Wagner

5	The practical driving test at present	81
5.1	Starting points and overview	81
5.2	Test model and test results.....	84
5.3	Test participants and test procedure.....	89
5.4	Test contents	97
5.5	Test observation, test assessment and test decision	115
5.5.1	Correlations between test observation, test assessment and test decision.....	115
5.5.2	Test observation	122
5.5.3	Test assessment	132
5.5.4	Test decision.....	139
5.6	Test documentation.....	142
5.7	Quality assurance and further development of the test.....	149
5.7.1	Selected foundations of quality management.....	149
5.7.2	Safeguarding test quality as a central concern of the Technical Examination Centres	158
5.7.3	Quality assurance in the Technical Examination Centres	162

F.-J. Jagow

6	Legal evaluation of possible methodical changes to the practical driving test	171
6.1	On the system of the driving test	171
6.2	Evaluation of the starting points for optimisation of the methodical system of the practical driving test from the legal perspective	172
6.3	Demands on amendments to the statutory provisions.....	177

D. Sturzbecher, S. Mörl & J. Genschow

7	The German practical driving test in international comparison.....	179
7.1	Objectives of the comparative analysis and approach	179
7.2	The practical driving test in Europe.....	180
7.2.1	Organisational framework.....	180
7.2.2	Test contents.....	183
7.2.3	Test assessment	187
7.2.4	Test documentation	190
7.2.5	Evaluation and further development of the test.....	190
7.3	Detailed appraisal of the practical driving test in Norway, Sweden and the Netherlands	191
7.4	The practical driving test within the framework of graduated licensing systems.....	199
7.5	Summary.....	202

J. Bönninger, D. Sturzbecher, J. Biedinger, A. Böhne, G. v. Bressendorf, P. Glowalla, M. Kaup, C. Kleutges, G. Müller, R. Müller, W. Petzholtz, R. Radermacher, M. Rüdell, A. Schmidt & W. Wagner

8	Possibilities for optimisation of the practical driving test in Germany.....	204
---	--	-----

Jürgen Bönninger, Jörg Biedinger, Arne Böhne, Gerhard von Bressendorf, Peter Glowalla, Marcellus Kaup, Christoph Kleutges, Gerhard Müller, Reinhard Müller, Wilhelm Petzholtz, Rolf Radermacher, Andreas Schmidt, Winfried Wagner & Dietmar Sturzbecher

1 Objectives of the project

1.1 Problem definition

In 2006, 58 vehicle users between the ages of 25 and 64 years were killed in road accidents per 1 million inhabitants in Germany; among 18 to 24-year-olds, the age group most frequently involved in fatal accidents, on the other hand, the corresponding figure was 149 road accident fatalities per 1 million inhabitants. A total of 1,011 young adults between 18 and 24 years of age were killed in road accidents (Federal Statistical Office, 2007). The accident risk for members of this age group thus increases sharply upon their obtaining a driving licence and with their participation in motorised road traffic as a driver. It therefore appears urgently necessary to improve novice driver safety and to reduce the numbers of young drivers killed on the roads.

The accident figures pertaining to young novice drivers acquire a particularly earnest quality against the background of the generally positive developments in road safety in Germany. In 2006, Germany recorded the lowest number of traffic fatalities since road accident statistics were first introduced in 1953. Young novice drivers, however, have benefited least from this development. The risk of a fatal road accident with a motor vehicle in the 18 to 20-year age group is still around six times higher than among 25 to 64-year-old road users; every fourth death in the 15 to 24-year age group can be attributed to road traffic (website of the European Parliament, 2005). It has thus not been possible to close the existing gap between the safety issues concerning young novice drivers and the safety standards enjoyed by experienced drivers; the relevant efforts must be intensified accordingly.

One initial step towards overcoming this discrepancy is an analysis of the causes of accidents involving young novice drivers. In this context, it is evident that there are indeed accident causes specific to inexperienced drivers. Around one in three of the accidents caused by a young driver is a so-called “single-vehicle accident”. Such accidents, which are usually serious in their consequences, occur when the driver loses control of his¹ vehicle independently of any external influences and strays off the road. An evaluation of road accidents in Saxony, furthermore, indicates that inappropriate speed is most frequently determined as the cause of accidents among novice drivers who have held their driving licence for less than three months. With an increasing time of driving licence possession, however, the significance of inappropriate speed as a cause of accidents decreases continuously (Statistical Office of the Free State of Saxony, 2004). These examples show that measures to reduce fatal road accidents involving novice drivers should be concentrated on a number of priority issues in order to raise the chances of success.

The improvement of road safety for novice drivers is dependent not only on the determination of priority issues, but also on the elaboration of suitable means of realisation. This necessity draws attention to the fact that a whole series of measures have contributed to enhanced road safety in recent years, but that younger age groups have not been able to bene-

¹ Wherever gender-specific nouns or pronouns are used, this serves solely to maximise general legibility and is in all cases to be understood to refer to persons of both genders.

fit to the same extent as older drivers. In this connection, specific mention must be made of modern vehicle safety systems, the development and introduction of which have helped to avoid many road accidents or at least to reduce the severity of their consequences. Such technical aids have greatly widened the error tolerance of our complex traffic system, despite the parallel rapid expansion of traffic volumes. But unfortunately, as novice drivers tend to own older and thus cheaper vehicle models, they relatively seldom gain advantage from such innovations, even though they are most susceptible to driving errors and most frequently the victims of accidents.

This notwithstanding, it must be added that neither improved safety systems nor more stringent traffic monitoring or other road safety measures will ever eliminate all traffic risks. That applies with regard to both road users in general and novice drivers in particular: The most error-prone element in the traffic system remains the driver himself, especially where road traffic experience deficits hinder appropriate reactions or possibly even result in overtaking of the individual. Experience deficits, moreover, influence also the novice driver's readiness to take or control risks; the combination of a lack of driving experience with self-overestimation and a pronounced readiness to take risks establish the front-line traffic risk "driver".

Given the mentioned correlation between inappropriate risk-taking and traffic-related errors of judgement arising from experience deficits, it appears inopportune to differentiate strictly between a "novice risk" and a "youth risk" when considering measures to raise driver safety, at least in respect of young novice drivers. The problems in this distinction have already been addressed elsewhere in the literature (Bönninger & Sturzbecher, 2005); furthermore, the emphasising of youth-specific risk factors, which are intended to mirror the contribution of biological and cultural behaviour determinants, leads to underestimation of the potential of driver training and road safety efforts for improving the safety of novice drivers.

A number of arguments can be put forward to question the paramount significance of "youth risks" with regard to the frequency of novice driver accidents, including not least the previously mentioned specifics in the causes of those accidents. The most common cause of accidents involving novice drivers, both within and outside built-up areas, is a "speed inappropriate to the prevailing road conditions" – as can be read in countless accident reports. Beneath the surface, this reveals an imbalance between the demands of a particular traffic situation and the currently acquired level of driving competence, which is then, through inability to properly assess the situation, manifested as inapt speed adaptation. The choice of a vehicle speed appropriate to the current situation places a new form of demand on a novice driver, who, since the beginning of his driver training, has had only a short period in which to gather the experience necessary for proper mastering and is thus often inadequately prepared to handle arising traffic situations with the essential flexibility. On the other hand, a consideration of traffic demands with which novice drivers are already familiar long before participating in motorised road traffic shows that their risk of accident is in such cases not significantly higher than that of experienced drivers. This applies, for example, to their responses at crossroads, where the correct actions have often been trained since early childhood. Why is no specific youth accident risk to be identified in this and other selected traffic situations? The answer is evident: The reasons for the often disproportionately high frequency of novice-typical accidents are to be seen above all in the still incomplete development and coordination of anticipatory, perceptive and psychomotor skills; the drivers simply lack the practical routine which with time helps to cope with the continuously changing traffic demands.

If the aim is to consistently improve novice driver safety, therefore, it is above all necessary to take up the novice-typical causes of accidents and to place them at the focus of driver training, driving tests and general road safety measures. This is not currently normal practice. Why, for example, does the theoretical driving test still stress the importance of questions concerning “right-of-way” by awarding extremely high numbers of points, while driving errors in this connection are at the same time not significantly more frequent among novice drivers than among experienced drivers? It is naturally possible that precisely this assessment particularity has led to closer attention being paid to this aspect of driver training, and consequently that it is for this reason no longer conspicuous as a cause of accidents. On the other hand, it cannot be excluded that the driving schools thus place inappropriate emphasis on this point and neglect the problems which novice drivers face in daily traffic situations with regard to speed adaptation. Furthermore, the described evidence indicating that experience deficits are appreciably more significant as the cause of accidents than youth-specific behaviour determinants also serves to derive the outstanding potential of driver training and the practical driving test as means to raise driver safety.

How can driver training and the practical driving test be utilised to enhance novice driver safety? The central problem for the novice driver is to filter and process the information relevant for an adequate choice of reaction from a given traffic situation and subsequently to implement the derived decisions as essentially automated, situation-specific action routines. It should also be noted that road traffic must be viewed as a “social occasion” (Barthelmeß, 1999); traffic thus functions in the sense of a highly regulated social system, in which the individual participants stand in constant interaction and must thus each evaluate the actions of all other participants with corresponding foresight. Such interaction demands complex socio-cognitive information-processing mechanisms, which are still to be learned by novice drivers. Following the findings of Crick und Dodge (1994), Sturzbecher, Kammler and Bönninger (2005) have described this necessity as a six-stage process, starting with recognition and interpretation of the (social) traffic situation and continuing via clarification of an action objective and the driver's reaction alternatives through to an action decision and its execution. As the traffic situation changes or hazards arise, the driver must react accordingly, must under certain circumstances also manage the above-mentioned process elements repeatedly or simultaneously, and nevertheless choose and implement the optimum action alternative, taking into account all relevant conditions. Precisely this form of flexible situation perception and dynamic behaviour regulation, parallel to the inherent motor component, is for a novice considerably more difficult to master than for an experienced driver.

Driver training, as an important element of comprehensive novice driver preparation, supplies the decisive catalytic input to facilitate acquisition, differentiation and automation of these information-processing and behaviour-regulating mechanisms. Significance must be attached especially to the establishing of routines in which targeted information searches, efficient information processing and motor actions must be coordinated and automated, because without such routines, the time requirement and the error susceptibility of action decisions in new traffic situations are immediately increased. The Danish psychologist Rasmussen assumes that the routines necessary for a qualified participation in road traffic are shaped in a three-stage process of learning and experience (Rasmussen, 1986). During the first stage of this learning process, the novice driver must still consciously evaluate and interpret the traffic situation, as a basis for decisions on the driving tasks to be executed. It is only at the second learning stage that the appropriate actions are already determined concurrently to perception of the traffic situation. This second phase of experience-building is characterised by spontaneous recognition of the decisive elements of a traffic situation, but still requires recollection of previously learned rules to be able to solve the

driving task correctly. If these processes are repeated continually, then their execution become increasingly automated, so that, by the third learning stage, the driver is in a position to assess traffic situations at a glance and reacts quasi-automatically in an adequate manner (Leutner & Brünken, 2002). Precisely this skill is imperative to be able to act strategically in any given traffic situation, such that neither one's own safety nor that of other road users is endangered, and includes also an appropriate reaction to special traffic risks. Behaviour shaping in this form during driver training thus presents the best chances to improve novice driver safety.

Accordingly, the responsibility of the driving schools for the elaboration of a pedagogically demanding training process is emphasised; it must be noted by way of limitation, however, that the time constraints imposed on preparatory measures in the driving school, and likewise the inherent impossibility of providing experience in every conceivable traffic situation (e.g. different weather conditions) during the period of driver training, naturally hamper the development of traffic-related behaviour routines, particularly with regard to the mastering of special hazard situations. Even so, the first months of driving practice after obtaining a driving licence could be rendered safer by shifting the reinforcement of processual knowledge and skills, in other words the development of traffic-related behaviour routines, back from the phase of initial independent driving experience into the phase of driver training. In this context, the focus of such endeavours must then be placed on solutions for novice-typical accident risks.

In addition, novice driver preparation should perhaps be extended to include offers of first-hand experiences of risk under controlled conditions. Such opportunities, as already realised today within the framework of a voluntary or obligatory second training phase and in connection with graduated licensing systems, could help young drivers with a high risk-taking disposition to recognise the limits of risk control and the extent of the ensuing dangers more realistically. With reference to the mountain accident statistics of the German Alpine Club, after all, Bien (2003) describes how the significant regularity of fatal accidents among young climbers during the 1970s was overcome not least by incorporating elements of controlled risk into the corresponding alpine training in the 1990s. Such training components, which also represent a certain fun factor for the young climbers, have thus contributed to a situation in which it is no longer possible to speak of a specific youth risk, at least not in conjunction with accidents involving fatalities (Sturzbecher et al., 2005).

Against the background of the originally presented accident figures and the causes of accidents involving novice drivers, it seems reasonable to plead for greater integration of training elements with a direct reference to real risk situations into the initial phases of driver training. To achieve the underlying aim, it would be expedient to consider how learner drivers can already be confronted with traffic situations known to be prone to novice-typical risks during their training, and in this way be given an opportunity to develop adequate and transferable behaviour routines for risk avoidance and accident prevention. The starting point for such considerations would be an analysis of the situations in which novice drivers are typically overtaxed and susceptible to driving errors, but at the same time also of regional accident black spots, as the young novice drivers generally spend the majority of at least their first months of independent driving practice on the roads of the more immediate surroundings, with the result that accidents frequently occur at known local black spots. If closer attention is paid to regional accident black spots during driver training and the subsequent driving test, it is thus justified to expect fewer accidents involving young novice drivers.

As the present project report is devoted to optimisation of the practical driving test in Germany, it is finally necessary to ask how the practical driving test can and should contribute to improved novice driver safety. When answering this question, it must be noted that, in

Germany, the process for obtaining a driving licence is basically defined by two independent, but nevertheless cooperating systems, though the instrument of “accompanied driving” has admitted already brought some movement into the traditional mechanisms of driver training. The first of these systems is that of the driving schools: On the basis of a state-prescribed training obligation and a Learner Driver Training Ordinance (Fahrerschüler-Ausbildungsordnung, FahrerschAusbO), in which the topics of the required training are stipulated in law, driving schools operating as private business undertakings convey the knowledge and skills necessary for participation in road traffic to the driving licence applicants. Alongside, a network of so-called “Technical Examination Centres” (Technische Prüfstelle), as state-mandated bodies employing officially recognised experts and examiners (amtlich anerkannter Sachverständiger oder Prüfer – aaSoP)², operate on behalf of the state to ensure that, on the basis of similarly state-prescribed laws (German Road Traffic Act = Straßenverkehrsgesetz, StVG), regulations (Driving Licence Regulations = Fahrerlaubnis-Verordnung, FeV) and guidelines (Examination Guidelines = Prüfungsrichtlinie, PrüfRiLi; Annex 7 on §§ 16, 17 FeV), only those persons who are considered fit and sufficiently qualified to do so and have demonstrated this qualification in theoretical and practical driving tests are approved to drive a motor vehicle. As the second pillar of the driver licensing system, these Technical Examination Centres are themselves monitored under an independent quality assurance regime supervised by an Accreditation Agency for Driving Licence Services (Akkreditierungsstelle Fahrerlaubniswesen) at the Federal Highway Research Institute (Bundesanstalt für Straßenwesen, BASt) (BASt, 2003).

For the more detailed consideration of the contribution of the practical driving test to improved novice driver safety, it is furthermore to be recognised that the aforementioned state provisions on driver training in the driving schools, as well as the specifications pertaining to driving tests, offer sufficient freedoms to be able to react creatively to arising problems, for example to the increasing traffic risks for novice drivers compared to experienced road users, through further development of the respective systems. The close interaction between the two systems naturally demands intensive coordination of such further development between the representatives of the driving school associations and the Technical Examination Centres, but each is nevertheless called upon to show independent initiative and to elaborate proposals. From the methodical viewpoint, this implies that the driving test, by exploiting the creative scope within the statutory mandate, sets markers with impact for the quality development of driver training in the driving schools. In other words: The implemented test procedures strongly influence the way in which learner drivers are trained and learn in the driving schools (Hampel, 1977).

To summarise: Given the frequency and severity of accidents involving young novice drivers, it is urgently necessary to realise further developments in driver training and assessment, as a means to improve novice driver safety. The project “Optimisation of the practical driving test” and the present study report are to be understood as efforts undertaken on the part of the Technical Examination Centres within their sphere of responsibility and in coordination with both the relevant authorities and the driving instructors to lend corresponding momentum to the discussion and to put forward practicable proposals for implementation.

² In the interest of better legibility, the term “driving test examiner” is to be used hereafter in place of the full legally correct designation “Officially recognised expert or examiner for motor vehicle traffic”.

1.2 Objective

A series of reforms has been implemented in the field of organised driver training since the mid-1980s (Bönninger & Sturzbecher, 2005), with the result that the driving school system in Germany is to be considered one of the most advanced in international comparisons (Twisk, 1996). At the level achieved, the German training system is not only to be measured against high standards, but is itself also instrumental in setting standards in the international context (Willmes-Lenz, 2004). When compared to the reform endeavours in driver training, the further development of driving licence testing, although constant, is somewhat less spectacular (Sturzbecher, Bönninger & Kammler, Eds., 2008). Up to the end of the 1990s, the conceptual framework and practical realisation of the driving test were also rarely a topic of scientific reflection and research discussion (Barthelmeß, 1999). It is perhaps for that reason that extended knowledge of the special risks for young novice drivers has to date found little expression in the scope and criteria of driving tests; the potential for improvements in driver safety has thus not yet been exploited to the full.

To promote the further development of driving licence testing, the BASt installed and financed the project “Optimisation of driving licence testing” within the framework of a traffic safety research programme in 1997. This project was expected to supply proposals for medium-term improvements for driving licence testing in Germany. The following sub-tasks were to be addressed:

- Research and analysis of the latest international developments in the field of driving licence testing, in particular with regard to the correlation between test success and the later mastering of everyday traffic situations,
- Critical appraisal of the relevant state of knowledge in test theory and didactics,
- Development of proposals for improvement of the traditional driving test,
- Discussion of the improvement proposals under cost-benefit aspects and taking into account legal issues, and
- Elaboration of recommendations on empirical verification of the improvement proposals in respect of their actual benefit (evaluation design).

In the meantime, the results of this project have been presented (Bönninger & Sturzbecher, 2005) and, alongside a brief description and theoretical-methodical categorisation of the practical driving test, contained above all recommendations and proposals for thorough reformation of the theoretical driving test. The practical implementation of these recommendations has already commenced: Since the beginning of 2008, the federal states Berlin, Brandenburg and Bremen have introduced a computer-assisted theoretical driving test for all licence applicants. This test is based more closely on scientific findings than in the past and is a subject of continuous further development; the remaining federal states are to follow. “The benefits to be gained are greater test equity, more efficient organisation of testing, fewer sources of errors, improved clarity of the test questions, user-friendliness and probably enhanced traffic safety” (Bundesrat, 2007). The theoretical driving test is to become a computer-based test throughout Germany by the end of 2010, albeit without modification of the current test question formats. A continuous evaluation of these question formats and the parallel test forms, however, is already in progress. From 2011, it is then planned to introduce innovative test question formats “with which ever better use can be made of the test medium ‘computer’ as a means to properly assess the competences important for safe participation in road traffic by a driving licence applicant” (TÜV | DEKRA arge tp 21, 2008, p. 5).

A detailed treatment of the listed subtasks for the context of the practical driving test, on the other hand, was not included in the scope of the aforementioned BASt project, and was

instead, in agreement with the BASt, reserved for discussion in subsequent independent projects, to which also the present project belongs³. This project was financed by the TÜV | DEKRA Working Group “Technical Examination Centres in the 21st Century” (TÜV | DEKRA Arbeitsgemeinschaft der Technischen Prüfstellen im 21. Jahrhundert)⁴ and was set up in early 2005 in realisation of the tasks conferred upon the Technical Examination Centres in the course of their accreditation, namely to reflect and continuously improve both the fundamental conditions for the work of the driving test examiners and the overall integrated system of driving licence testing by way of scientific analyses aimed at raising traffic safety. It is equally inherent to this task that the test demands be adapted continuously to the changing demands of actual road traffic and related to the contents of driver training (BASt, 2003, Anforderungen an Träger von Technischen Prüfstellen). Kroj (1999) identified a number of important principles and objectives for this process of adaptation:

- Preservation of driving test objectivity (examiner-independent test results),
- Guarantee of test equity (uniform realisation and assessment of the driving tests in all federal states),
- Enhanced validity of the driving test (reduced number of tests with unjustified “pass” or “fail” results),
- Constant revision of the test contents with regard to the relevance for safe and proper driving behaviour,
- Targeted further training on pedagogical psychology principles for driving test examiners,
- Improved customer-orientation, and
- Incorporation of the latest scientific knowledge and international experience with the perspective of European harmonisation.

The specified objectives serve also as a reference for the subject matter and approach of the present project “Optimisation of the practical driving test”. The project was discussed and agreed in principle at a workshop of representatives of the driving instructors and the Technical Examination Centres entrusted with driving licence testing in Munich on 18th May 2004 (TÜV | DEKRA arge tp 21, 2004a). On this basis, a project concept was subsequently elaborated and adopted by the Technical Examination Centres (TÜV | DEKRA arge tp 21, 2004b). The aims and topics of this project concept are described in detail in the “Report on the project ‘Optimisation of the practical driving test’” (Sturzbecher, Bönninger & Rüdell, 2008); they mirror the objectives of the project installed by the BASt in 1997

³ These further projects include in particular the BASt project “Optimisation of the practical driving test”, which was announced in 2008 and follows similar approaches to those of the present project report.

⁴ For the sake of better legibility, the working group is hereafter referred to as “TÜV | DEKRA arge tp 21”. The TÜV | DEKRA Working Group “Technical Examination Centres in the 21st Century” (TÜV | DEKRA Arbeitsgemeinschaft der Technischen Prüfstellen im 21. Jahrhundert), founded in 1999, is a joint venture of the operators of Technical Examination Centres (Technische Prüfstellen) in Germany, namely TÜV Rheinland Kraftfahrt GmbH, TÜV SÜD Auto Service GmbH, TÜV NORD Mobilität GmbH & Co. KG and DEKRA Automobil GmbH. The German legislator has granted an exclusive mandate to the Technical Examination Centres to perform driving licence testing and certain other tasks in the following areas on behalf of the State: 1. Homologation of vehicles; 2. Special expertises after technical modifications to vehicles; 3. Vehicle inspection.

(see above) and can be summarised as follows with regard to the subproject “Further development of the methodical foundations of the practical driving test”⁵:

1. Critical appraisal of the latest methodical and didactic knowledge pertinent to the practical driving test,
2. Description and assessment of the special circumstances applicable to the practical driving test in Germany,
3. Development of proposals for optimisation of the traditional practical driving test, and
4. Elaboration of proposals for continuous scientific evaluation of the practical driving test.

Where do the particular challenges lie in the handling of these objectives? The high demands placed on the methodical quality of the practical driving test stand in opposition to the fact that this test takes place not under laboratory conditions, but in a real traffic environment. It is true that this adds to the validity of the test result as an assessment of the candidate’s ability to cope with the demands of road traffic as a novice driver; at the same time, however, it also means that the circumstances of an individual test can only be planned and controlled in advance to a limited extent. For constructive reconciliation of this divergence between methodical aspiration and test practice, it is on the one hand necessary to specify acceptable and reliably applicable minimum methodical standards. On the other hand, the driving test examiner must be granted a sufficient scope of judgement; and this scope of judgement must be defined with objective and pedagogical-psychological expertise in accordance with the fundamental legal and methodical requirements. It is thus important for the present report to analyse the balancing of test standards and scope of judgement on the part of the examiners and to indicate how the balance between the two aspects can be preserved in everyday test practice.

To summarise: Its holistic, action-oriented character, in combination with the venue in traffic situations displaying realistic demand structures, enable the practical driving test, as was already determined in the report of the TÜV | DEKRA arge tp 21 on optimisation of the (theoretical) driving test, to recognise safety-relevant competence deficits, inadequate hazard perception or lack of driving confidence in the person of the test candidate to a high degree (Bönninger & Sturzbecher, 2005). To be able to exploit this diagnostic opportunity to the maximum extent, the test conditions and content of the practical driving test must be subjected to critical methodical reflection and optimisation. The present project report is geared to this overall objective and represents an important step towards the elaboration of a sustainable methodical foundation for driving licence testing. This also falls into line with the general goal of continuous optimisation of driving licence testing in Germany pursued by the BAST; the corresponding basis already elaborated by the TÜV | DEKRA arge tp 21 is herewith supplemented and refined. In this sense, the present report can equally be viewed as documentation of the continuing efforts of the Technical Examination

⁵ Further subprojects discussed the further development of customer surveys as a means to optimise the quality of the practical driving test and optimisation of the training and further qualification of driving test examiners. The results of these subprojects have been published in two independent research reports:

(1) Sturzbecher, D. & Mörl, S. (2008). Methodensystem zur Erfassung der Zufriedenheit mit der Fahrerlaubnisprüfung. Dresden: TÜV | DEKRA arge tp 21.

(2) Dietrich, P. & Sturzbecher, D. (2008). Weiterentwicklung der Professionalisierung der Sachverständigen auf dem Gebiet der Fahrerlaubnisprüfung. Dresden: TÜV | DEKRA arge tp 21.

Centres to contribute to further reduction of the risks for novice drivers through an optimisation of driving licence testing.

Dietmar Sturzbecher

2 Methodical foundations of the practical driving test

2.1 Theoretical and practical driving test

It is not only by way of the ultimate objective – improvement of the system of driver training and subsequently a reduced accident risk for novice drivers – and likewise the organisational anchoring in the sphere of responsibility of the Technical Examination Centres that the following discussions of the methodical foundations and special circumstances of the practical driving test can be viewed as a continuation of the previous research report on optimisation of the theoretical driving test (Bönninger & Sturzbecher, 2005). It is furthermore to be recognised that the two studies share common starting points and methodical approaches, albeit now with particular concentration on the practical test as the second element of the German driver testing model. This refers specifically to the following:

1. The scientific basis for methodical analysis and further development of the practical test, as already in the case of the theoretical test, is above all that of pedagogical psychology. The reasons for this approach were expounded in the aforementioned research report (*ibid.*, p. 16ff.); the methods chosen there have proved expedient.
2. Both the theoretical driving test and the practical driving test are to be understood as “psychological tests” in the extended methodical sense. In other words, the content and methodology of the practical test must be placed on scientific foundations, such that it can be performed routinely – i.e. under defined conditions as an evaluation of more or less objective skills – and permits determination of the currently attained level of the individual test candidate with regard to particular analytically distinguishable behavioural qualities (e.g. driving abilities and driving skills in the context of driving competence) (Lienert & Raatz, 1998).
3. The methodical quality of the practical driving test must also satisfy the usual quality criteria for tests and examinations (Lienert, 1969; Beiner, 1982); a distinction is made here between principal quality criteria (objectivity, reliability, validity) and secondary quality criteria such as economy and expediency. This does not mean, however, that the quality demands applicable to the theoretical driving test (cf. Bönninger & Sturzbecher, 2005, p. 23ff.) can be formally transferred to the practical test, or that this would even be desirable. The practical test, after all, takes place in the real traffic environment and can thus apparently be standardised only to a very limited extent, a fact which detracts from its objectivity and reliability in the sense of classic test theory. On the other hand, strict standardisation would restrict the diagnostic potential of the practical test and distort the test results, i.e. reduce the test validity. It is a central concern of this report, therefore, to discuss these questions and to contribute to adequate quality standards appropriate to the special circumstances of the practical driving test.
4. The report on optimisation of the theoretical driving test already looked in depth at fundamental concepts and explained why, in the language of driving licence testing, the terms “fitness to drive” and “qualification” are used as references to traffic law rather than in any psychological meaning, and why it appears necessary, despite the resultant difficulties for the further development of pedagogical-psychological foundation for testing, to accept this interpretation of the terminology (*ibid.*, p. 19ff.). Such difficulties are reflected immediately in a discussion of the basic

content and methodical foundations of the practical driving test.⁶ Traditional terminology usage collides firstly with an appropriate contemporary description of the training and test contents, and secondly influences the search for diagnostic methods in other test and examination fields pursuing similar objectives to those of driving licence testing.

5. With regard to the first-mentioned problem, the description of training and test contents relevant in driving licence testing, it is no longer worthwhile to continue the discussion of a valid pedagogical-psychological delimitation of “fitness to drive” and “qualification”, as the associated, rather isolated consideration of individual action regulation components has already been overcome in pedagogical psychology research through an expanded concept of competence (Weinert, 2001). There are furthermore signs that this reconstructed concept of competence will in future serve as a guiding principle for the further development of driving test content and methodology in other European countries, for example in the Netherlands and Norway. This is one reason for closer appraisal of this concept in the following and for discussion of its suitability for general description of the contents of the practical driving test. Another reason is to be seen in the fact that this concept of competence appears suitable as a basis for differentiated description of the professional demands placed on driving test examiners and thus for the elaboration of recommendations for further development of the professional training and qualification programmes offered by the Technical Examination Centres (Dietrich & Sturzbecher, 2008).

2.2 Excursus: Driving competence as diagnostic subject of the practical driving test

2.2.1 Selected bases of the concept of competence

The term “competence” is encountered ever more frequently in the economic and employment systems; historically, the driving forces behind the corresponding theory development are to be identified above all in this field. Why is that so? The transformations to be observed in the economic system, which are generally discussed under the headings “education expansion” and “globalisation”, have led to far-reaching changes in the labour world. The traditional qualifications of employees have not become (and are by no means becoming) obsolete in the course of this change, but associated overarching prerequisites nevertheless appear to be increasingly important for the mastering of individual work tasks: Competence transcending usual technical and occupation-specific boundaries in respect of work methodology and social interaction, cognitive abilities of higher complexity, or else a series of self-related characteristics such as self-motivation and self-organisation (Achatz & Tippelt, 2001). This is becoming all the more true as the competitiveness of many companies becomes more dependent on the competence of their employees and less on technological conditions, and this is naturally also applicable to the Technical Examination Centres and the driving test examiners. In the figurative sense, the growing significance of the “human factor” can also be observed in the traffic environment: The constant advances in vehicle engineering and the increasing scope of technical safety features in

⁶ Hampel (1977) describes the origin of the term “qualification” (German: “Befähigung”) in the context of traffic law, where it was already used in the first administrative decree “Fundamentals relating to motor vehicle traffic” dated 1906 (Borchers, 1976), and compares it to the narrower psychological concept “ability” (German: “Fähigkeit”). He points out that qualification as it is understood in traffic law embraces also personality traits which are not strictly abilities, for example attitudes; we will return to this comparison in the following.

motor vehicles are able to alleviate or even compensate many road traffic hazards almost unnoticed; but the risk factor “human driver” remains should he prove unable to cope adequately with the demands of particular traffic situations.

There are thus many indications that the significance of the concept of competence will grow further in the field of training and qualification. Before it can be utilised for optimisation of the practical driving test, however, it must be outlined briefly on the theoretical level and adapted to the requirements of driving licence testing. This seems important not least because the concept of competence has been defined with diverse emphases over its 40-year past, depending on the theoretical background and pursued purpose, and has remained difficult to operationalise. Nowadays, on the other hand, unifying considerations and common approaches to use of the concept of competence are becoming more and more widespread (Erpenbeck, 2004). Across most definition approaches, the concept of competence is taken to refer, for example, to the capacity of the individual to organise himself and to be creatively productive, as a means to meet the demands of variable complex tasks which require elaborated knowledge and action structures for successful performance. Consequently, it would be unreasonable to use the concept to refer to the making of a bolted joint or the like: The handling of a nut and bolt can be considered a certain skill, but it does not demonstrate competence!

From where does the concept of competence originate? Its theoretical roots are to be found in action theory in the model of “vocational action competence”, which serves to describe the demands of the vocational world. The conveying of vocational action competence has established itself as a guiding principle in original vocational training since the 1980s and has been declared the central educational task of the vocational schools. Within the concept of “learning fields”⁷ defined by the Standing Conference of the State Ministers of Education and Cultural Affairs in the Federal Republic of Germany (Kultusministerkonferenz, KMK), action competence is viewed as the readiness and ability of the individual “to act appropriately, purposefully and with individual and social responsibility in occupational, social and private situations” (Sekretariat der Ständigen Konferenz der Kultusminister, 2000, p. 9). In the field of vocational training, therefore, given the directly tangible effects of technological change and economic transformation processes, it was recognised much earlier than in the general education system, that the individual demands placed on pupils and trainees can no longer be described in isolation and as purely discipline-specific systematic dimensions. This can well be transferred to the situation of the driving schools and driving licence testing, where we find more and more representatives of the standpoint that the objective is no longer merely the conveying and testing of certain “portions” of knowledge or skills, but rather development and verification of an integrated (driving) competence, in which desired knowledge and skill elements are brought together with corresponding attitudes and social or self-reflective abilities. A Dutch draft for an optimised driving test presented in mid-2005, for example, proposed a test of “driving competence”, which would also ascertain “whether the candidate is able to assess risks, whether he or she is aware of own personal limits and displays an attitude conducive to safe participation in

⁷ Since 1995, all reorganised training occupations are no longer taught as individual subjects at German vocational schools, but instead according to so-called learning fields. This educational paradigm shift was triggered by criticism of inadequate vocational action competence (e.g. problem-solving capacity) among the earlier trained workers.

road traffic” (www.cieca.be/news_du.pp?id=54).⁸

But let us return to the concept of competence. The standard perception of competence in vocational training stems from the concept of personality described by Heinrich Roth (1971) and still today serves as a conceptual foundation for the widely practised dissection of individual knowledge and skills into three essential areas of competence in vocational pedagogy: Domain competence, personal competence and social competence (supplemented in some cases by “methodical competence” or else varied with “self-competence” in lieu of “personal competence” in more recent definitions; see Kauffeld & Grote, 2002; Bergmann, 2003). This multi-dimensional approach to action competence, however, suggests that it is possible to distinguish between subject areas and competencies. The insights of pedagogical psychology, on the other hand, appear to reject the unconditional validity of such distinctions (Breuer, 2003; Heinrich-Böll-Stiftung, 2004). The competence which is expressed in the mastering of a foreign language, for example, is difficult to reconcile with a fragmented, additive competence structure requiring separation into domain (e.g. rules of syntax and grammar), social (e.g. forms of greeting), methodical (e.g. reading of a newspaper) and personal competencies (e.g. cultivating an individual style of speech). Such reservations have been formulated more directly in recent years. Franke (2005, p. 34), for example, criticised improper use of the competence concept in vocational training in conjunction with a multitude of heterogeneous properties: Sub-functions or processes of actions stand alongside the quality attributes of action functions; action prerequisites are to be found alongside action results. A theoretically founded coherence between the named aspects, however, is generally lacking. To avoid such imprecision and the associated risk of confusion, it seems advisable for the relatively limited field of driver training, and subsequently likewise for driving licence testing, to realise a scientifically founded modernisation of the theoretical foundations, similar to that which has been implemented in school education (see below), as soon as possible. This includes also agreement on common usage of the terminology with regard to desirable driving competence, as this is at the same time, after all, the platform for description of the contents of training and testing.

Despite the above criticism, the paradigm of “vocational action competence” remains popular in competence research (see Erpenbeck & Heyse, 1999; Frey, 1999)⁹. One reason for this is given by Bernien (1997, p. 35): “...the splitting of competence into domain-specific, methodical, social and personal elements, which are then integrated as overall action competence, [offers] the most plausible and comprehensible access to a reduction of competence into individual components for the purposes of measurement and evaluation.” This may appear understandable from a pragmatic standpoint; it is to be remembered, however, that these individual dimensions of competence are based at least partially on personality traits and thus overlap.

Weinert’s (1999) influential OECD report on the definition and selection of competencies for international school performance studies represented a first systematic overview of the

⁸ It is to be noted that the mentioned traits, although not all abilities, would also be covered as test criteria in Germany by the described “qualification concept” (Hampel, 1977). In other words: An examination of “qualification” in the traditional sense display similarities to a desirable “competence test” in today’s sense.

⁹ Frey, Balzer and Reinold (2002), for example, define vocational competence as the “physical and intellectual dispositions, in the sense of potential, which a person must embody to be able to solve pending tasks or problems responsibly and purposefully, and to evaluate the determined solutions to further develop his own repertoire of action patterns. To this end, a person must integrate a series of domain-specific, methodical, social and personal dimensions.”

competence concepts in use (in the social sciences). In this report, Weinert distinguished the following conceptualisations for the notion of competence:

1. Competencies as general intellectual abilities in the sense of dispositions which enable a person to master demanding tasks in different situations (e.g. abstract knowledge, inferred thinking, reasoning or language talents);
2. Competencies as functionally determined cognitive performance dispositions which are related to particular classes of situation and demands and can be described as knowledge, skills, strategies, routines or domain-specific abilities (e.g. piano playing or mathematical problem solving);
3. Competence in the sense of the motivational orientation prerequisite for the completion of demanding tasks; in this connection, it is also possible to speak of action readiness (“want to”) as opposed to capability (“able to”);
4. Action competence as the concept which embraces the first three aforementioned competence instances and relates in each case to the demands and tasks of a particular field of activity (e.g. an occupation or a personal project);
5. Meta-competences in the form of knowledge, strategies or motivations which simplify the acquisition of competencies in different contexts; This refers especially to declarative or procedural knowledge of one's own competences and emphasises the significance of reflection processes;
6. Key competencies, as competencies in the functional sense defined in Point 2, which are applicable over a relatively broad spectrum of situations and tasks (e.g. contents of basal general education).

After weighing up different theoretical standpoints and empirical findings from cognitive and developmental psychology, Weinert (1999) formulated the recommendation that the second of the above competence concepts be selected in the context of education. This means: Competences are in this sense oriented to functional determination and cognitive theory. Furthermore, they are conceptualised for specific domains, i.e. related to a particular set of contexts and situations, but can nevertheless be generalised – at least to a limited extent – as dispositions¹⁰. Finally, interdisciplinary “key competencies” (see Point 6) can be subordinated to the described concept.

On this basis, Weinert (2001) later argues furthermore that the most robust definition of competence is that which was developed in the field of expertise research. Expertise research stresses the importance of subject-specific knowledge and practice-related experience for the acquisition of expertise. It concerns itself with studies of highly capable experts and their actions in selected subject areas, which are designated “domains” (see Chapter 2.2.2). Competencies are in this interpretation the dispositions which enable a person to solve certain categories of problems successfully, in other words to master specific demand situations of a particular type (e.g. the safe driving of a motor vehicle in traffic). Correspondingly, Weinert (2001, p. 27f.) establishes an action- and performance-oriented definition of competence as “those cognitive abilities and skills which are available to or can be learned by an individual as a means to solve certain problems, alongside the motivational, volitional and social readiness and ability to realise the problem solutions successfully and responsibly in variable situations.” If this theoretical groundwork is applied to the field of driving licence testing and road traffic, this means that the knowledge and ability

¹⁰ Dispositions are here understood as the inner prerequisites for action regulation which a person has developed up to the particular moment in which such action is required.

required to be able to participate safely in motorised road traffic is to be understood as “driving competence” and the participation itself as a problem solution process.

The individual embodiment of this perception of competence is in Weinert’s (ibid.) opinion determined by seven different components: Knowledge, skill, understanding, ability, action, experience and motivation. Transferable (“intelligent”) knowledge suitable for flexible application, also in new situations, is here to be viewed as the basis for all competence (Baumert, 1993). The acquisition of competence begins with the building of systematic intelligent knowledge in a particular domain; it is best promoted by a mix of situated (real-life situations) and systematic learning (Weinert, 1998).

According to Vogl (2001, p. 647), knowledge represents “the entirety of information which is acquired by statement, experience or learning processes and makes available a reproducible stock of thought, orientation and action alternatives”. It is thus knowledge which enables a person to think and act. Two different forms of knowledge are here distinguished: Declarative or factual knowledge and procedural or action knowledge. These two forms of knowledge stem from different memory processes, but are nevertheless indivisible with regard to their function. Firstly, procedural knowledge builds upon a foundation of declarative knowledge: A skill such as gear changing is initially performed on the basis of fact-driven decisions, before becoming automated or proceduralised. On the other hand, procedural knowledge (e.g. the ability to read) is a determinant for the acquisition of declarative knowledge. The successful processing of complex tasks demands an integrated utilisation of both declarative and procedural knowledge aspects in combination with the remaining elements of the competence model: “Qualification to perform a task means not only possessing the necessary declarative knowledge, but also prior acquisition of a cognitive system bringing together consciously accessible information, highly automated skills, intelligent strategies for knowledge application, a feel for the scope and quality of the available knowledge, positively realistic self-evaluation, and finally the action and learning motivation inherent to the individual’s competence” (Weinert, 1998, p. 111).

In addition to the component structure, a consideration of competence levels is a further central aspect of the presented competence model. Competence levels describe a hierarchical system of competencies within a given sphere of action, based on the assumption that a person who has reached a higher competence level also reliably masters any lower competence levels. Such levels offer a possibility to anchor minimum requirements.

2.2.2 The demands of road traffic as a lifeworld domain

How can the training and test demands to be placed on driving licence applicants (and subsequently also on the driving test examiners, see Dietrich & Sturzbecher, 2008) now be assimilated with the theoretical framework presented above? Following the basic assumptions of Weinert (2001) and the stipulations of the “Guidelines for the Examination of Applicants for a Licence to Drive Motor Vehicles” (Prüfungsrichtlinie, 2004), the safe, environmentally aware and energy-saving operation of a motor vehicle in public road traffic can be taken as a typical demand profile for driving licence applicants. To be able to satisfy this demand profile successfully, the driving licence applicant must in each arising traffic situation apply demand-specific problem solution strategies, which are in turn founded on corresponding (driving) competence. The applicant must naturally accomplish further tasks alongside those of his participation in road traffic, for example at school or in connection with his occupation. Such demands, and at the same time the required competences, differ in part from those connected with the driving of a motor vehicle. This fact of distinct subject areas with specific demands and associated competences is reflected in the chosen competence approach through the introduction of a matching content-structuring element, namely the “domain”.

Domains are fields of demand profile content in which similar problem solution strategies, knowledge assets and experiences can be applied and for which common normative orientation patterns exist. A distinction is made between “well-defined” and “poorly defined” domains: Well-defined domains are characterised by clear problem specifications, general knowledge of the optimum solution paths and simple determination of success criteria (Gruber & Mandl, 1996). In poorly defined domains, on the other hand, problems can only be defined with vague contours, and there are neither clear-cut solution strategies leading reliably to success, nor a priori rules with which to determine whether an attained solution status is acceptable as a target status. It is evident that the poorly defined domain type dominates in everyday life. The ability to break poorly defined problems into several well-defined problem components, by the way, is considered a property of expertise (Gruber & Ziegler, 2002).

As the term “poorly defined” is burdened with negative connotations, the characterised domain type is instead referred to with “lifeworld domain” – in accordance with the recommendations of the Education Commission of the Böll Foundation (2004). Following Gruber and Mandl (1996), lifeworld domains can be characterised as follows:

- The observable phenomena display a high level of complexity and dynamism, as they are subject to an abundance of influencing factors. Like properties may assume different meanings in different contexts.
- No rules or principles exist with validity for the responses to all possible demand situations; a certain scope of judgement is thus indispensable.

The described correlations show that the safe, environmentally aware and energy-saving operation of a motor vehicle in public road traffic is to be viewed as a demand profile in the sense of a lifeworld domain: Traffic situations are both highly complex and dynamic, and one and the same driving route can constitute a different set of demands depending on the traffic density, the time of the day or year, and even the personal state of mind or health of the driver. Although traffic rules are naturally equally applicable at all times and in all traffic situations, each traffic situation and its inherent hazards must still be analysed and judged individually. For his selection of a suitable action strategy, the driver utilises a scope of judgement dependent upon his acquired driving competence. This all applies not only to participation in road traffic in general, but also to the reactions of a test candidate during the practical driving test in particular, whereby it has far-reaching consequences both for the planning of the test and for the assessment of a candidate’s performance by the examiner: On the one hand, for example, the theoretical formulation of intellectual prerequisites for participation in motorised road traffic as “driving competence in a lifeworld domain” explains why there can be no recipes for successful driver training and why the driving schools face systematic limits with regard to their training success. At the same time, the presented theoretical conceptualisation of driving competence also accounts for the limited possibilities for standardisation of the practical driving test and the necessary scope of judgement of the driving test examiners in respect of their test assessment.

2.2.3 Driving skills as the core of driving competence

Which aspects, therefore, are to be counted the particularly important elements of “driving competence”; where is it imperative that the driving licence applicant acquires a dependable foundation during his practical driver training and subsequently demonstrates corresponding proficiency during the practical driving test?

For safe participation in road traffic, it seems urgently necessary to be able to combine cognitive and motor abilities in the solving of different traffic situations, and in doing so to automate actions as far as possible. While the applicable motor abilities relate mainly to

operation of the vehicle (e.g. pulling away or gear changing), the required cognitive abilities are manifested above all in the information recognition and processing functions which are indispensable as a basis for orientation and adequate reaction in the complex traffic environment. Such information processing comprises a diversity of perception, memory, planning and decision processes (Sturzbecher, Kammler & Bönninger, 2005). During his practical driver training, the driving licence applicant must learn to integrate the aforementioned motor and cognitive abilities and to develop them further as driving skills¹¹. The task of the examiner conducting the practical driving test is thus not least to assess the attained level of skills. When entering a discussion of assessment criteria for these fundamental driving skills and the associated test performance, it is first necessary to consider the level of skill which a driving licence applicant can actually attain in the course of driver training; and this, in turn, requires a precise awareness of the individual learning processes which are effective when learning to drive.

A valuable overview of these learning processes can be derived from the theories of cognitive skill acquisition, as outlined by Haider and Frensch (1997). Within the framework of this overview, we find both theories which describe skill acquisition as an optimisation of procedures and others which assume that there are fundamental qualitative differences between practised and unpractised activities. The opinions of representatives of the first group of theories (e.g. Anderson, 1987, 1993) can be characterised as follows (Haider & Frensch, 1997, p. 523): “An acquired skill is distinguished from an unpractised activity solely in that the former, at least in the optimum case, is based on activation of a single procedure, whereas unpractised behaviour requires a sequential activation of procedures.” The optimised procedure is the result of grouping mechanisms (“chunking”). From the point of view of memory psychology, it is also possible to speak of a proceduralisation of knowledge: While unpractised activities are performed on the basis of declarative knowledge, practice promotes the evolution of domain-specific procedures which can be applied to process demands with decreasing cognitive input.

For the representatives of the second group of theories, the faster information processing which can be observed with increased practice intensity is founded on qualitative changes in the processing mechanisms (see above), permitting the subject, for example, to gradually dispense with monitoring of the constituent processes (e.g. Shiffrin & Schneider, 1977). This waiving of explicit control could be based on the fact that practice enriches the stock of example episodes stored in long-term memory (Logan, 1988): Well-practised activities then run on the basis of memory; the processing of learned “performance rules“ is no longer necessary in demand situations similar to stored episodes. A further reason for the accelerated demand processing could be an optimisation of information selection

¹¹ Skills are understood to be partialised automated action modules which are executed without constant conscious control. They evolve through practice and on the basis of abilities as a reaction to stereotype demand sequences. Skills generally relieve the higher levels of action regulation, but may also become a hindrance where innovative or improvised problem solutions are necessary. Hampel (1977) points out that, in the context of driving licence testing, the concept of skill – in the same way as the concept of ability – is frequently used not in the psychological sense, but in accordance with traffic law intentions. In his opinion, use of the concept of ability, as opposed to the concept of skill, restricts the demands placed on the driving routine of a driving test candidate. Following Hampel (1977, p. 26), however, this appears problematical: “Moreover, it would be unreasonable to expect that a person could satisfy the prerequisites for an activity, i.e. the qualification, without acquiring a minimum of skills... A test of qualification is in our view always also a test of skills... There can only possibly be dispute over the extent of driving routine taken as the measure. An imprecise comparison of the concepts ‘qualification’ and ‘skills’, however, is unsuitable to define this threshold.”

(Haider & Frensch, 1997): With increasing practice, a person learns to distinguish between demand-relevant and irrelevant information and can thus concentrate on the relevant information for processing of the pending demand.

Beyond the sketched explanations, the information processing model put forward by Rasmussen (1986) enjoys a certain popularity in engineering psychology. This model can also be related to skill acquisition and accounts for both the transition from knowledge-based or rule-governed action to automated action and conversely for the “switchover” from unconscious to conscious information processing (Muthig, 1990). According to this model, conscious or controlled information processing comes to the fore in (traffic) situations which demand logical thought or improvisation; this form of information processing is effected by a sequential processor of limited capacity and speed. Automated information processing, by contrast, is handled by a system operating with parallel architecture and a high processing capacity, controlling behaviour on the basis of situation perception and an internal model of the world. Our (routine) interaction with the environment takes place through the system of unconscious information processing; controlled action management is only triggered if a discrepancy between perception and world model is detected, i.e. if the environment fails to match expectations. In new situations, as encountered when learning new skills, for example, there are very many perception results which no longer coincide with the internal world model and, given the limited information processing capacity of the controlled system, may lead to overloading and thus to selective processing of the information gathered from the environment. The ensuing erroneous actions can be reduced or avoided through practice and the consequently increased proportion of automated processing (Muthig, 1990).

Irrespective of the approach preferred to explain skill acquisition, one point is common to all theories, namely that learning mechanisms reduce the number of cognitive processing steps required to handle a demand. The successful acquisition of driving skills, therefore, expresses itself in a sparing application of conscious action regulation and predominantly automated behaviour control, which the individual concerned is probably not even able to describe in detail, as many people find it difficult to justify their automatically performed actions (Seiler, 2000). In exaggerated terms: One objective of (driver) training is that the learner driver “no longer thinks” when handling the demands of routine driving tasks, but still recognises special demand situations and there successfully implements a deliberate problem solution strategy. The characterisation of the two forms of behaviour lies in the quality of their mental regulation; this, however, can scarcely be observed reliably on the basis of external attributes. It is at best possible to derive indicators for the level of regulation from the speed and fluency of the individual’s reactions.

Against this background, it seems difficult to formulate standardised and reliable yardsticks for the correctness of a candidate’s actions during the practical driving test: In the lifeworld domain “road traffic”, there are various action strategies which lead to successful mastering of a particular demand situation; as a traffic situation develops over time, there may be a shift in the probabilities of success of possible action strategies; and last but not least, the appropriateness of an action strategy is also dependent on the unobservable mental effort required for realisation. It is thus more reliable to describe not the correct response to particular demand situations, but instead observable incorrect actions as test criteria (and to interpret these accordingly as overtaking, see above), especially if the evaluation is restricted to serious errors. This correlation provides the theoretical foundation for current assessment practice with regard to the practical test (see Chapter 5.5).

2.3 Methodical categorisation of the practical driving test

2.3.1 Practical and holistic examination methods

Which fundamental examination forms and which basic instrumental elements are in principle available for the development of a (practical) driving test? In seeking to answer this question, the report on optimisation of the theoretical driving test (Bönninger & Sturzbecher, 2005) already presented traditional examination methods in conformity with the systematics of Ebbinghaus and Schmidt (1999). The aforementioned authors make a fundamental distinction between oral, written, practical and holistic examination methods, which can also be combined, as appropriate. Each of these methods could be organised as an individual or group examination. While oral and written examinations are not pertinent for a methodical categorisation of the practical driving test, the practical and holistic approaches are all the more relevant.

A practical examination requires the examination candidates to demonstrate (occupational) skills and abilities. This form of examination is encountered especially in the context of vocational training in industry and the craft trades, where process-oriented (“work sample”) and result-oriented practical examinations (“examination workpiece”, e.g. a journeyman’s masterpiece) are differentiated; the latter form, however, can hardly be expected to provide ideas for optimisation of the practical driving test.

Work samples are standardised tasks requiring the execution of typical, domain-specific action sequences or elements thereof. They are realised under permanent supervision within a defined period of time. Alongside practical skills and abilities, work samples can also be used to verify aspects of mental (work) planning and organisation. If work samples are complemented with oral questions, it is at the same time possible to test domain knowledge. Ebbinghaus and Schmidt (1999) recommend a continuous assessment of work samples on the basis of observation sheets; in this way, the transparency and objectivity of the assessment would be ensured.

From our point of view of methodology, the practical driving test could be depicted as a form of work sample. Expansion of the test by way of additional oral questions while actually on the road, however, is not considered meaningful (and is in any case also not permissible under the applicable legislation¹²): The requirement to answer questions would hinder the constant observation of the traffic situation by the candidate and would thus represent a safety risk. Moreover, such questions would naturally also exert an uncontrolled influence on the course of the test, i.e. would constitute a methodical problem. An assessment of certain elements of the sought driving competence, such as driving skills, is in any case impossible in this form due to the high degree of automation (see above). Questions addressing significant perceptions or the intentions and anticipation behind particular action decisions, on the other hand, are generally possible during the driving session (Seiler, 2000) and could provide a basis for new assessment aspects and an enhanced test validity. In this situation, however, it is to be feared that, under the pressure and stress of the test drive, the test candidate is unable to recall corresponding details or else gives incorrect answers; either unconsciously, because he has in the meantime re-interpreted the action background on the basis of subsequent events, or consciously, in an attempt to ma-

¹² The Guidelines for the Examination of Applicants for a Licence to Drive Motor Vehicles (PrüfRiLi) stipulate under 5.14: “The examiner is to take into account the psychic stress bearing on the candidate; it is thus unreasonable, for example, to reproach the candidate for mistakes or to ask the meaning of traffic signs during the actual driving.”

nipulate the examiner's assessment. Questions, as a rule, are thus unsuitable as aids to meaningful assessment; but quite the reverse is true of the aforementioned observation sheets.

According to Ebbinghaus and Schmidt (1999, p. 87ff), "Practical exercises and integrated testing", "Project tasks", "Assessment Centres", "Computer-simulated scenarios" and "Simulation games" are to be counted holistic examination methods; all these approaches have been presented in detail by the above authors and were also summarised by Bönninger and Sturzbecher (2005, p. 31ff.). The construction and application of holistic examination methods, however, represents a more recent development. Consequently, the field is still lacking a clear conception, for example with precise definitions of the individual terms (Schmidt et al., 2000, p. 6). The different variants of holistic examination method permit the evaluation of complex personality structures, i.e. the interaction of knowledge, attitudes, abilities and skills from diverse fields. The objective of a holistic examination is to reveal overarching action competence and to narrow the gap between the examination situation and reality. This approach is thus generally relevant for the planned optimisation of the practical (and theoretical) driving test.

By way of qualification, it must be pointed out that both "Practical exercises and integrated testing" and "Project tasks" generally constitute a combination of a work sample with oral or practical examination elements. In the case of the practical driving test, however, this is neither planned – even though plausible arguments in favour are to be found (cf. Bönninger & Sturzbecher, 2005) and the objectivity of implementation, evaluation and interpretation could easily be ensured with binding guidelines (Ebbinghaus & Schmidt, 1999) – nor is it able to offer practicable methodical perspectives; this is the implication of both existing experience with such combinations and theoretical considerations (see above). In the end, it is the aforementioned work samples contained in almost all embodiments of these two methods which establish a basis for the high objective validity of such examinations and suggest interesting starting points for optimisation of the practical driving test.

An assessment centre is a complex, diagnostic method of behaviour observation in which (occupational) demand situations are simulated. It is realised with several participants simultaneously and through direct and systematic observations of the individuals' behaviour acquires information which would hardly have been accessible to other methods such as abstract performance tests. The assessments are made by trained observers who evaluate each candidate at least once on a rotation principle. For Kanning (2004), the difference between a work sample and an assessment centre is that, in the case of a work sample, each individual exercise is assessed according to whether the process or product appears to be satisfactory, whereas the assessment centre observes superordinate dimensions which are operationalised through at least two tasks. The organisation for an assessment centre is significantly more complex than for a work sample: The candidates usually complete a variety of exercises over a period of several days, during which they are assessed by several observers. Examples for superordinate assessment dimensions are administrative abilities, social and cognitive competence, or aspects of performance characterisation (e.g. concentration or stress resistance). Typical exercises encountered in an assessment centre are group discussions, role play and presentations.

It should be clear that the diagnostic instrument of an assessment centre, and not least its organisational complexity, is scarcely reconcilable with the objective and purpose of the practical driving test; the limited space in the test vehicle already rules out complex observation of the test candidate by several examiners. The use of cameras to record the test drive for later evaluation by several examiners, although in principle a method by which to maximise the reliability of observation methods ("inter-rater reliability"), can also be con-

sidered impracticable from a methodical point of view: Only an observer who is actually present in the vehicle can gain a realistic impression of the hazard potential of a particular traffic situation or the observability of hazards;¹³ the restricted perspective of technical recording devices and the reduction to largely visual impressions results in a distortion of perceptions and leaves a valid assessment of the test performance impossible.

Computer-simulated scenarios and computer-assisted simulation games, finally, are examination methods in which an extract from reality is mirrored in simulation on a computer. Such extracts are sophisticated demand situations which require the test candidate to demonstrate not only factual knowledge and appropriate reactions, but also action and problem-solving competencies. At the beginning of the computer simulation, written or spoken explanations and exercises acquaint the candidate with the program, in which he subsequently assumes a particular role in a variety of settings. In contrast to a computer-simulated scenario, a simulation game visualises the content of the reality model within narrower and more precise boundaries. Ebbinghaus and Schmidt (1999) note that simulation games in their current state of development could prove valuable as a teaching and learning method, but are less suitable in the context of examinations.

In summary, it can be said that the holistic and practical examination methods describe many avenues by which to promote further development of the driving test. This applies not least to the theoretical section of the test, where computer-simulated traffic situations (“virtual reality sequences” or “dynamic driving scenarios”), for example, are able to operationalise hazard perception tasks on a new methodical level and thereby answer long-standing demands for action-oriented task definitions making use of available audiovisual means (Hampel, 1977a). “Moving images” would introduce the time dimension into task representation and solution in a completely new form, for example by enabling safety-relevant information to be displayed only temporarily and thereby offering proof for the mastering of cognitive and action sequences relevant for risk management in later driving practice. Another sphere of application for dynamic driving scenarios is that of tasks in which relative speeds are to be estimated, a task which is still difficult for novice drivers, but at the same time gives rise to dangerous traffic situations in case of error. These possibilities enhance the similarity of the demands to be met during a driving test and those of real driving practice, which, in combination with further promotion of appropriate, modern teaching and learning techniques based on visualisation strategies, permits hope of a reduction in the numbers of accidents involving novice drivers. This is all the more true because computer-assisted task representation allows the complexity of the chosen traffic situation to be adapted to the current training level of the individual learners by omitting unimportant details and emphasising details relevant to the task. Computer simulations designed in accordance with such educational psychological principles are thus to be viewed as a significant transitional stage on the intellectual level, facilitating and encouraging the proceduralisation of knowledge, the acquisition of cognitive abilities and the development of their outcome into driving skills.

The described possibilities for optimisation of the theoretical driving test, however, are by no means suitable to render the practical test superfluous. The reasons have been ex-

¹³ This necessity of a holistic impression is underlined by a special aspect of the driving test in the Netherlands: One of the criteria specified there is an assessment by the driving test examiner of whether or not he felt safe during the test drive. This feeling can only be evaluated by participatory observation, not by technical means. This criterion is not mentioned explicitly in the German examination guidelines, but it can nevertheless be assumed that it contributes significantly to the assessment approach and decisions of the German driving test examiners.

pounded in detail elsewhere (Bönninger & Sturzbecher, 2005, p. 33ff.) and are furthermore self-evident: With a computer-based simulative test procedure, there is a danger that a candidate whose actual competence does not reflect an accident risk for himself or other road users could fail to handle the special test demands. In a real-life situation, traffic observation and risk management, in other words the whole sequence of socio-cognitive information processing, are executed under more complex conditions than in the computer simulation. Given this and many other distinctions between real traffic and computer-based traffic scenarios, observation of the test candidate's behaviour in real traffic remains indispensable. Even so, a computer-assisted theoretical test and a traditional practical test could complement each other on a higher methodical level, for example by incorporating simulations of hazard situations which cannot otherwise be examined in the practical test due to seasonal weather conditions (e.g. driving on icy roads when the practical test takes place in summer) into the theoretical test or into new test elements (e.g. a supplementary intermediate test after a certain number of practical driving lessons) and there observing the corresponding reactions of the driving test candidate.

The holistic and practical examination methods also suggest new methodical aspects for optimisation of the practical driving test. If the described diagnostic methods are analysed more closely, it seems that the practical driving test displays not only many fundamental characteristics of a work sample, but also numerous similarities with other methods. As in an assessment centre, for example, the practical test evaluates superordinate dimensions such as "defensive driving" or "risk awareness" across the boundaries of various (traffic) situations. More important still: Most of the described methods are based, like the practical driving test, on (systematic) behaviour observation. This permits the methods to control observation errors which are described extensively in the methodical subdisciplines of psychology and education to be applied in the sense of methodical quality assurance to the practical driving test. Consequently, the following report sections take up the characteristics of the two examination method groups, and here in particular the previously discussed concept of a work sample, and delve more deeply for fundamental methodical potential for optimisation of the practical driving test in other fields of pedagogical and psychological diagnostics.

Which fields are most appropriate? It has already been explained that the concepts "aptitude" and "ability" overlap.¹⁴ Accordingly, many methodical pointers for further development of the practical driving test, which current parlance terms a "test of abilities", are to be found in vocational aptitude assessment. Examination of the corresponding literature promises to be particularly fruitful for discussion of the practical driving test, because the driving test serves to evaluate selected (driving) competencies and reactions, in the same way that the vocational aptitude tests used in personnel management also measure competencies based on relevant patterns of behaviour; furthermore, both consider not only the behaviour itself, but also the consequences of that behaviour (Kanning, 2004).

2.3.2 The practical driving test as a work sample

In personnel or aptitude assessment, a distinction is made between construct-oriented, biographical and simulation-oriented methods (Schuler, 2001). Construct- or personality-oriented methods use tests to infer relatively stable dimensions such as the intelligence of a

¹⁴ "Aptitude" means "the entirety of the prerequisites for attainment of positively assessed results in career or schooling which are inherent in an individual" (cf. Dorsch et al., Ed., 1994, p. 161); "ability" means "the entirety of the prerequisites for completion of a particular action" (ibid., p. 200ff.).

job applicant; biographical methods, on the other hand, illuminate the biography of the applicant with the aid of interviews or questionnaires. While these two approaches are irrelevant for a theoretical description of the practical driving test, consideration of the simulation-oriented methods appears promising. This group of methods, after all, serves to reveal behaviour patterns required in similar form at the future workplace and is based on the use of work samples (*ibidem*). With its diagnostic intention, namely the gathering of representative evidence for the applicant's handling of real (occupational) tasks, this methodical approach corresponds essentially to that of the practical driving test (see above).

The work sample is one of the oldest and most effective forms of personnel assessment (Kanning, 2004). Where this method is applied, both the nature of an action process and the action result are subjected to systematic observation and evaluation by domain experts; in the case of the practical driving test, it is process-oriented observation which stands in the foreground. The realisation of a work sample permits also realistic simulation of relevant (occupational) tasks. With regard to the practical driving test, however, this is not desirable, as has already been explained (see above), because a test based on a real task, i.e. in real traffic, allows particularly valid determination of the candidate's actual ability to meet the prescribed requirements.

When considering work samples, it is necessary to differentiate (psycho-)motor tasks, individual situation-specific tasks and interactive situation-specific tasks. The practical driving test cannot be readily allocated to just one of these categories, as it examines both motor skills and situation-related reactions, and at the same time takes place in the social context of other road users. On the other hand, the categorisation aspect can probably be deemed less important than that concerning the methodical quality of work samples.

According to Kanning (2004), the great benefit of target-oriented and methodically founded work samples is their high level of validity. In a meta-analysis by Schmidt and Hunter (1998), no other aptitude assessment method achieved a comparably high validity rating ($r = .54$). On this basis, and furthermore on account of the clear insights into actual future work tasks, the work sample enjoys widespread acceptance among (job) applicants and test candidates.

Schuler (2001) emphasises that the results of work samples are a good indicator for the maximum performance potential of the candidate, who, in awareness of the observation and assessment situation, "gives his best". The predictive quality of work sample results for the typical performance in (future) everyday situations without motivation for maximum performance, however, remains uncertain. In an experiment conducted by Sackett, Zedeck and Fogli (1988), the maximum working speed of supermarket checkout operators matched their typical performance with a validity of only $r = .32$. The manager's assessment of their performance, on the other hand, displayed a greater correspondence with the maximum performance ($r = .36$) than with typical performance ($r = .18$), presumably because maximum performance is only demonstrated in certain situations subject to particular motivation, for example in the presence of the superior. Transferred to the case of the practical driving test, this result implies that, in the test situation, the candidate may drive more carefully and pay greater attention to the rules of the road than in later everyday situations; the meticulous adherence to speed limits immediately springs to mind. On the other hand, the performance-driving motivation of the test situation expresses itself as nervousness or even test anxiety for many candidates, at least at the beginning of the test, which may in turn prove detrimental for the displayed level of performance.

Following Kanning (2004), certain standards must be met for a work sample to serve as a methodically sound diagnostic instrument:

- The work sample must be based on a demand analysis and must incorporate a representative selection of important work tasks; these tasks must mirror the performance-relevant aspects of working reality as closely as possible.
- The assessment of the work sample should be based on systematic behaviour observation, and unambiguous and binding criteria must exist for judgement of the behaviour.
- The method must be evaluated (which will generally require that the method sequences and method results be documented).
- The observation should be entrusted to at least two independent observers, who must be experts for the activity to be assessed and must have been trained accordingly for this examination role.

The described standards illustrate, on the one hand, that a methodically qualified work sample, or for the present purposes a practical driving test, must be based on scientifically determined demand catalogues (see Chapter 5.4), observation categories and assessment or decision criteria (see Chapter 5.5), which must furthermore be adapted continuously to the changing demands of (traffic) practice. At first sight, this requirement appears to collide with previously expressed fundamental doubts as to the feasibility of standardisation of the practical driving test in the traditional sense, but can indeed be fulfilled as a methodical challenge with regard to objectivity assurance, as is to be demonstrated here. On the other hand, it is evident that a high test quality cannot be achieved without systematic and professional observation on the part of the driving test examiners. Consequently, we must now consider the method of behaviour observation in more detail.

2.3.3 The practical driving test as behaviour observation

Observation is understood to mean the purpose-oriented and methodically controlled perception of objects, events and processes. It is the fundamental method of data acquisition in the empirical sciences; within the observation process, several aspects are to be distinguished: (1) the observer, (2) the object of the observation, (3) the circumstances of the observation, (4) the observation means, such as sensory organs and technical aids, and (5) the theoretical knowledge with which the aspects (1) to (4) are related to each other (Dorsch et al., Ed., *Psychologisches Wörterbuch*, 1994). In addition to accurate perceptions, however, observation embraces also the monitoring of actions, incidents and modes of behaviour; within this system, behaviour can be observed directly, whereas the underlying motives, abilities and emotions can only be construed indirectly (Fisseni, 2004). It thus remains essentially unknown to the observer, for example, how the observed person experiences the observed processes and events subjectively.

In accordance with the aforementioned observation aspects, the methods of observation can be classified on the basis of different variables (Kanning, 2004), for example

- by the role of the observer (self-reporting or external observation, participatory or non-participatory observation, open or covert observation),
- by the observation environment (natural or artificial observation, everyday behaviour or artificial task definition),
- by special organisational features, such as the duration of the observation, the use of technical aids or the number of observers, and
- by the use of categories for the behaviour under observation.

Applying these classification variables, the practical driving test can be described as a form of external observation, performed without the use of technical recording aids. There are no “genuine” categories to specify the desired behaviour, but instead a set of “negatively formulated” assessment criteria in the sense of an “error list”, i.e. a catalogue of inappro-

priate actions (see above, e.g. crossing of a red light), which alone or in combination result in the candidate failing the test. The test takes place amidst natural traffic situations, but it is nevertheless necessary to speak rather of an artificial or simulative task environment from the methodical point of view, as the route taken is chosen not freely by the candidate, but by the test examiner on the basis of certain criteria. It is furthermore a case of open and participatory observation by a single observer.

Observation methods possess specific methodical virtues and disadvantages. The advantage of observation methods is the opportunity for complex acquisition and flexible assessment of a given situation. For example, it is also possible to observe unexpected behaviour, though this does also imply a danger of reduced comparability of the observation units and a certain arbitrariness in the assessment, especially in respect of non-standardised or so-called “free observations” (with no specification whatsoever of implementation and evaluation rules for the observer). Therefore, and because it is not possible to observe the full spectrum of human behaviour, it is recommended to define categories of behaviour to be observed. According to Fisseni (2004), such behaviour categories can be selected either deductively, i.e. theory-based, or else inductively or empirically. Several concrete observations from different behaviour categories can then be combined to draw more general conclusions on underlying behaviour patterns and competence qualities. If, for instance, a test candidate is observed to

- cut in front of other vehicles when changing lanes or joining a motorway,
- leave insufficient clearance to cyclists when passing on narrow roads,
- refuse other traffic an opportunity to merge ahead of lane closures and
- ignore pedestrians waiting at a zebra crossing,

this could be taken overall as an indication of inconsiderate and risky driving behaviour or inadequate anticipation. The behaviour categories to be specified must not be too “narrow” in their focus (the resulting diversity would make observation difficult), but at the same time also not too “broad” (which would hinder interpretation); moreover, they should be disjunct and fully defined.

Where are the methodical disadvantages of observation methods to be seen? Observation methods are usually time-consuming and cost-intensive. This also applies for the practical driving test, in comparison to the theoretical test, for example, and is reflected in the test fees for the candidate. Furthermore, observer and assessor effects may distort or bias observer perception. Observation errors are determined by the inevitable performance limits of the observer. Such performance limits may be attributable to special reaction factors, fluctuations in attention or fatigue. As it is scarcely possible to distinguish assessment from observation, assessment errors are usually counted also as observation errors. Important assessment errors are the “halo effect”, the “error of central tendency” and premature interpretation and evaluation (see below).

A series of dangers for the quality of observation, and in particular the above observer effects, derive from the fact that observation is based on perception processes. The structuring aspects of human perception, such as selection, fixation, organisation and accentuation, are a key source of imprecise observation results (Ingenkamp, 1997). Selection here means that a person experiences only a limited fragment of his environment at any particular moment, and at the same time actively filters the flood of incoming information, while fixation describes how we select preferably those perceptions which correspond best with our expectations. Organisation, which refers implicitly to the entirety of our perception, is similarly able to restructure information to match the observer’s own anticipation. Accentuation lends individual elements of perception particular weight in assessments or decisions. One cited outcome of such distortions is that a person of above-average attractive-

ness may be perceived as more intelligent and more capable than an averagely attractive person (“physical attractiveness stereotype”), not only by other members of the population as a whole (Dion, Berscheid & Walster, 1972), but even by psychologically trained professionals such as teachers (Clifford & Walster, 1973). Consequently, an attractive person will often also display fewer social anxieties and act with greater self-confidence and social competence, because the individual tends to exhibit the behaviour which others expect of him (Snyder, Tanke & Berscheid, 1977).

Further important observation errors relevant to driving test examiners are reference errors. Similarly attributable to the above structuring dimensions, they emanate from biased rating standards, i.e. the observer records judgements which are predominantly too stringent or too lenient, or else displays a tendency to cluster results in the mid-range of the scale. An overview of the potential distortion effects is to be found in Fisseni (2004), Fassnacht (1995) or Fittkau (1978); they include:

- the “halo effect” (one central aspect of the observation dominates the impression and assessment of the observer),
- the “serial position effect” (the first or last impression determines the judgement of the observer),
- the “error of leniency“ or “error of stringency” (subjectively appealing candidates are assessed more leniently and less appealing candidates more stringently than would otherwise be expected),
- the “error of central tendency” (the observer avoids extreme judgements),
- the “contrast effect” or “similarity effect” (observation is concentrated above all on those characteristics which the observer does not himself display or also displays),
- the “expectation effect” (the observer is guided by unverified hypotheses, e.g. “women cannot park”),
- intervention in the observed process by the observer (e.g. intermediate questions, see above) can reduce the objectivity and validity of the observation,
- an excessive number of observation categories can overtax the observer,
- imprecise observation categories leave too much room for interpretation, and
- the observer is insufficiently acquainted with the specific circumstances of the target group under observation or the applicable observation categories.

Experts in the field have advocated that the described methodical disadvantages of observations could be compensated, at least in part, through combination with self-assessment by the subject of the observation (in the case of the practical driving test, the test candidate) and the assessments of other involved parties (here meaning the driving instructor present during the test) as a basis for subsequent complex evaluation (Kötter & Nordmann, 1987). This, however, would add to the time requirements and costs for realisation and evaluation of the observation. Consequently, the proposal to counteract examiner observation errors by incorporating the assessments of the test candidate and/or driving instructor must be considered generally impracticable.

But there is also another even more important reason: Especially in significant social situations like the practical driving test, situative perception and recollection are highly dependent on the subjective interests and motivations of those involved, as well as on their individual knowledge and cognitive abilities. In the worst case, this leads to the observation and assessment errors presented above. And even otherwise, the result is divergence in the observation perspectives and assessment results, also without those involved consciously manipulating the “truth” of their assessment. This psychological principle, which is well documented in empirical studies in the educational context (Sturzbecher & Freytag, 1999),

means that, in particular in “asymmetrical interactions”, i.e. where an explicit conflict of status and interests exists, the assessment of one interaction partner cannot be consulted to validate the assessment of the other interaction partner. Precisely this form of status conflict characterises the practical driving test; it is thus to be excluded that either the test candidate or his driving instructor could verify the assessment of the test examiner.

The specified sources of error dictate that, on the one hand, observation methods can never attain the validity of qualified experimental methods; on the other hand, the possible observation and assessment errors are insufficient to devalue observation methods as a class of methods to gather information. In the case of scientifically defined observations, the error sources can be essentially minimised by the rules governing realisation and evaluation of the observation and by a corresponding system of intensive observer training. Meta-analytical findings suggest a combination of frame-of-reference or behaviour observation training and assessment error coaching for observers (Schuler, 2001). In the course of such training, the observer must be made aware of possible distortion and bias tendencies. Furthermore, he is to be shown techniques by which to control potential observation and assessment errors, for which purpose video-assisted training methods are especially valuable. Finally, it is recommended to practice the verbal presentation of observed behaviour aspects, as a means to promote a common observer language and thus also the power of their perceptions and professional exchanges. Generally speaking, the instrumental reliability of an observation method appears to increase with the precision of behaviour and observation category definitions and with the number of observation units for assessment of a particular observation category (Fisseni, 2004).

With regard to the practical driving test, the quality demands placed on observations can be summarised as follows (Kanning, 2004):

- If the objective is to assess the competencies underlying a particular behaviour, then the behaviour of an assessment candidate must be observed in several independent situations.
- The observation must be systematic, i.e. the observation environment and situation, the observation categories, the manner of the observation and the assessment of the observed behaviour must be defined in binding form for all observers and candidates.
- Observers must have received prior special training for their tasks.
- Observers should not participate actively in the observation situation.
- Several observers are to be engaged and are to work independently of each other.

The last two points can only be implemented conditionally, if at all, in the case of the practical driving test (see above): The driving test examiner can only give a valid assessment of the test performance on the basis of the same sensory perceptions as the test candidate, for which a participatory observation is crucial. Furthermore, the driving test examiner determines the course by way of his instructions; this is the only possibility to structure the hardly plannable conditions of the test drive according to corresponding didactic principles. It is thus also not feasible to forsake such instructions, especially as they represent an opportunity to repeat certain driving tasks or to incorporate additional tasks and thus to adapt the observation units for a given competence to the current performance of the test candidate (see Chapter 5.5: “Adaptive test strategy”). Finally, as the space limitations in the test vehicle effectively preclude the presence of several independent examiners, prudent training of the driving test examiners would appear to be all the more important. This training must go beyond the mentioned observation and assessment training. The idea is that driving test examiners should receive comprehensive basic training in examination didactics, addressing also the issue of test contents and flanked with offers for continuous further qualification, supervision and advice (Tinnefeld, 2002).

2.3.4 The practical driving test as a criterion-referenced test

As a final aspect, the practical driving test can be categorised as a marginally structured criterion-referenced test on the basis of its references to the stipulations of the Learner Driver Training Ordinance (FahrerschAusbO), the test content to be reflected and its task structure (Hampel, 1977). Criterion-referenced or “learning-objective-referenced” tests assess whether the candidate (e.g. school pupil, occupational trainee or learner driver) has attained the specified training goals. In other words: The methodical concept of “criterion-referenced measurement” focuses not on differential diagnostic statements or the referencing of test or observation results to those of other persons or statistically determined standards, but instead on statements regarding individual attainment of a particular training objective.

Following the principles of pedagogical psychology, assessments against the yardstick of training objectives, such as the practical driving test, require their own methods of empirical development and verification. Fricke (1974, p. 17) describes and summarises this requirement as follows: “A learning-objective-referenced test is a routine scientific procedure to determine whether and possibly to what extent a certain learning objective has been attained. The test tasks set to this end [...] serve to compare the individual level of ability of the pupil with a desired level of ability. Such comparison demands (1) quantification of the learning objective, (2) quantitative measurement of the pupil’s performance and (3) a measurement model providing for statistically sound decisions on attainment of the learning objective. A special learning-objective-referenced test analysis is necessary to establish the test quality criteria.”

The validity of the chosen methodical categorisation will only become fully transparent after illumination of the content structure of the test, as well as its history, implementation and assessment (see Chapters 4 and 5). Nevertheless, this categorisation must be brought forward to this point, because it is of fundamental significance for the selection of strategies to assess the methodical quality of the practical driving test and for the interpretation of the quality parameters. There is often little variance in the test results of a learning-objective-referenced test like the practical driving test, i.e. the majority of test candidates pass the test. In the case of the practical driving test, furthermore, the observation methodology means that it is scarcely possible to further differentiate the performances of these successful candidates (see Chapter 5.5; Acquisition of observation data); this “ceiling effect” drastically reduces the chances of discovering (statistical) correlations between the test results and external validity criteria. This is a known methodical problem when applying an assessment model based on criterion-referenced measurement and is difficult to evade without renouncing all representations of (statistical) correlations with external criteria (Guthke, 1990).

2.4 Criteria for assessment of the methodical quality of the practical driving test

2.4.1 Overview of the principal quality criteria

It was already pointed out at the beginning of the present chapter “Methodical foundations” that the methodical quality of the practical driving test, in the same way as that of the theoretical test, must satisfy the usual quality criteria for tests and examinations (Lienert & Raatz, 1998; Beiner, 1982). The principal quality criteria (1) objectivity, (2) reliability and (3) validity are to be recapitulated briefly at this point, as introduction to a discussion of the special circumstances surrounding use of these criteria in connection with the practical driving test, in which context it is to be mentioned in advance that objectivity

and reliability represent necessary, but on their own nevertheless insufficient prerequisites for the validity of a method.

(re 1) As far as the first quality criterion is concerned, three aspects relevant to the practical driving test can be distinguished:

- Objectivity in realisation is attained if the test is conducted under common conditions for all test candidates. In this respect, a set of corresponding regulations (defining issues such as test duration, the use of technical aids or interactions between the persons involved in the test) seems desirable;
- Objectivity in assessment requires that a given test performance achieves the same result with different driving test examiners. To this end, assessment categories and rules must exist as a basis on which to judge whether a task has been fulfilled correctly or incorrectly, completely or incompletely;
- Objectivity in interpretation means that different driving test examiners draw identical conclusions from given documented observation results.

Generally speaking, a high degree of method objectivity is ensured by standardising contents and application modalities for all components of the method implementation and assessment as far as possible, preferably in the form of written specifications. The measure of objectivity of an observation method is determined empirically according to Fisseni (1990) as “assessor agreement”.

(re 2) The criterion of reliability relates not only to the method contents, but also to the instrumental assessment process. The objective is to guarantee that the applied method functions reliably overall, i.e. that the observation result is not dependent on any random influences on the observation process. A reliable method can be recognised in that, for example, repeated use in equivalent circumstances produces identical results (“stability”). In practice, it is naturally not possible to repeat a driving test under identical conditions; if a test were to be recorded on video, however, it would be possible to assess the recording over and over again and in this way to investigate the reliability of the observation method. The methodical limitations which would be encountered in the case of the practical driving test have already been presented.

(re 3) The validity criterion, finally, considers the objective, content-related aspects of a method or, in our case, the practical driving test. A method is deemed valid if the dimensions which it is intended to measure are actually acquired (Lienert & Raatz, 1998). The question is thus: How precisely do the test examiner’s observations really measure the driving competence of the test candidate. The degree of objective precision is dependent on various influences (e.g. random sampling of candidates, test examiners assigned) and can be determined in numerous ways. Based on the procedure applied to gather the validity statements, a distinction is made between content validity and criterion validity.

Content validity means that the assessment criteria are by nature ostensibly suitable to reflect the dimensions to be recorded and is generally confirmed for a particular method through the judgements of panel of experts. In the case of the practical driving test, it would thus be necessary to ask recognised and independent domain experts to review the validity of the test. The criterion validity of a method, on the other hand, relates to the degree of correlation between the dimensions supplied by the method and an independently acquired external criterion. There are two kinds of criterion-related validity. “Concurrent validity” measures the method result simultaneously with the external criterion and then investigates correlations between the two, whereas “predictive validity” determines the extent to which an external criterion which lies in the future can be predicted on the basis of the method result. Thus, if the results achieved by driving test candidates in the practical

test are measured and compared with the performance assessments of their driving instructors, this represents an analysis of “concurrent validity”. On the other hand, if a correlation is sought between driving test results and the frequency of traffic offences committed later as novice drivers, then this determines the predictive validity of the practical driving test.

It has already been mentioned that the practical driving test is to be considered a marginally structured criterion-referenced test with a low degree of difficulty and that this reduces the chances of discovering statistical correlations between the test results and external validity criteria. Notwithstanding this methodical problem, Hampel (1985) emphasises that the driving test is a component of a more comprehensive safety system, and that its learning objective orientation must therefore be expanded to encompass also orientation to relevant external criteria. The most important external criterion is in his opinion the potential impact of the practical driving test on later accident statistics; therefore, he suggests that both the designing of driving tasks and the assessment of test performances, as well as the overarching assessments of test quality and efficiency, be oriented to such accident statistics: For any discussion of driving test reforms or measures to optimise driver training, the guiding principle must be that the frequency of real traffic accidents serves as a criterion for the success of such reforms. Even with today’s knowledge, there is nothing to add to this approach; if this demand is taken seriously for the further development of the practical driving test, then the traditional system of driving tasks must be brought closer into line with the presently dominant causes of accidents involving novice drivers. This should include also the specific accident causes which are encountered at certain regional black spots (see Chapters 1, 5.4 and 8).

2.4.2 Special factors affecting the assessment of practical driving test quality

Which is now the best approach to an analysis of the methodical quality of the practical driving test? An interesting hint at an answer to this question is provided by Kötter and Nordmann (1987, p. 134). On the basis of a comparative examination of published research on observation methodology, the authors elaborate a three-stage planning and control process which is supposed to secure the methodical quality of observation results where comparable results are the objective for extensive observation series. The process embraces the methodical planning and significant assessment of

- the conception and structuring of the observation situation,
- documentation of the data acquired in the observation situation, and
- the evaluation methodology.

Our aim is to develop comparable results of a high methodical quality for a practical driving test which takes place several million times a year, and thus corresponds exactly to the aforementioned intention. Consequently, the proposed three-stage process is to be used as the structuring principle both for assessment of the quality of the present driving test and for recommendations on optimisation of the test (see Chapters 5.5 and 8). First of all, however, directing attention to the three planning and control stages for a qualified observation method, it is necessary to consider certain methodical foundations for the (further) development of observation instruments. Objections could be raised to the effect that the current design of the observation situation for the practical driving test has been successful for several decades and that there is at present no obvious necessity for changes in the way observations are documented or evaluated. While it is true that such opinions mirror contemporary reality, the purpose of the present report is to place precisely this current methodology back on the test bench and to uncover potential for optimisation, even if the branch is at the moment satisfied with the status quo. To this end, knowledge of the fundamental methodical correlations and development possibilities is indispensable.

Let us now investigate the first step of the proposed planning and control process, i.e. the concept and structuring of the observation situation, more closely for the context of the practical driving test. In connection with an observation, here the practical test, it is imperative to define a starting point with regard to the nature of the observation situation, for which a distinction can be made between “naturalistic” and standardised “experimental” observation environments (Kötter & Nordmann, 1987). A random real traffic situation encountered at a random location and at a random time represents a naturalistic observation environment. An experimental observation environment, by contrast, could be established by setting up a standardised driving route effectively under laboratory conditions and then observing test candidates as they follow this route.

In the first case, i.e. recourse to a natural and unstructured traffic situation as the observation environment, it would be possible to attest the desirable high “ecological” validity of the practical driving test (Bronfenbrenner, 1981): Over the course of the test, the candidate would probably be faced with precisely those traffic demands which he must later master in everyday driving. As soon as we wish to observe the behaviour of the test candidate in a particular demand situation (e.g. in safety-relevant traffic situations), a natural observation environment reveals a major weakness compared to an experimental setting: The limited probability of occurrence of that particular demand situation. In other words: If a driving test examiner were to set off without any planning whatsoever, he would presumably need to drive around for a long time and over an extended route to be able to observe how the candidate handles a given safety-relevant situation (e.g. overtaking with the expectation of oncoming traffic). This problem would be avoided in an experimental observation environment with standardised driving routes: Provisions could be made for observation of all safety-relevant situations and the test drive could be realised very economically, as it would not be necessary to wait for a desired observation situation to occur.

Particular methodical inspiration for the possible appearance of such standardised driving routes is to be found in the test elements used in the diagnosis of medical fitness to drive. Hannen, Hartje & Skrecek (1998), for example, describe their experience with a standardised driving route comprising representative proportions of different traffic conditions and different degrees of difficulty, for which the authors considered up to 360 observation dimensions summarised into 13 driving behaviour categories. Such highly differentiated and standardised observation environments are certainly fascinating for test psychologists; after all, they appear to satisfy many of the demands placed on methodically high-quality observations. Such tests, however, are used relatively seldom in practice and, on account of the complexity arising precisely from the high degree of differentiation and standardisation, can hardly be compared to an extensively conducted conventional driving test (see Chapter 4). How are provisions to be made for a sufficient number of readily accessible and equivalent driving routes for the millions of driving test candidates each year? The outlay would be enormous; against this background, Hampel (1977, 1985) argues that standardised driving routes are impracticable for the practical driving test. A further relevant aspect is that such more or less manipulated test routes would soon become known, and a correspondingly prepared candidate could then predict the demands of a given route with a much greater probability that is possible in later real traffic situations. Expressed another way: The element of surprise in unexpected traffic situations, although it would not be eliminated completely through standardised driving routes, would be unrealistically diminished; the test would no longer be ecologically valid and would no longer mirror the real demands of the lifeworld domain of “road traffic”. This example illustrates a fundamental methodical problem of experimental observation environments: They are subject to the risk that a certain proportion of the observation results is attributable not to the actual subject of the examination, in the present case the driving competence of the test candidate in real

traffic situations, but rather to the manipulations necessary to achieve standardisation of the observation environment.

As, therefore, neither a natural nor an experimental observation environment seems properly appropriate for the practical driving test, Hampel (1977) suggests partial standardisation as a methodical compromise in the form of defined modules and driving tasks which the examiner must himself combine into a driving test route. The procedure for such partial standardisation would here initially involve a determination of demand profiles for given test locations (which elements of driving competence are to be demonstrated at these locations?), following on from a concept for specific driving tasks. After detailed logging of the driving tasks applicable to a particular test area, the route sections relevant for individual driving tasks could be isolated. According to Hampel (1977), the benefit of this complex procedure is that the practical test would thereby become more transparent, more objective, and in the end also more reliable. This opinion can be seconded unconditionally, and studies building upon these hypotheses (see Chapter 4) represent the theoretical and methodical foundation of the current practical driving test, as described in detail in Chapter 5. There is furthermore a conspicuous methodical similarity between the described procedure and the construct of work samples.

The second stage of the proposed planning and control process concerns documentation of the data obtained in the observation situation. Once general consensus has been reached on the use of an observation system for test performance measurement, it is necessary to choose between category and rating scale systems¹⁵ for documentation of the observation data.

Category systems permit a systematic determination and organisation of events according to content (event) categories. In the case of the practical driving test, such observation events could be the actions of the test candidate in particular test drive situations (e.g. “Turning right at traffic signals” or “Overtaking on a two-lane country road”). Under ideal circumstances, the system is logically closed, i.e. the individual categories are mutually exclusive (in the previous example: A driver who is turning right at traffic signals cannot also be overtaking on a country road) and an event can only be assigned to one category. Furthermore, the set of categories must be complete, in order to cover all relevant events which are related to the subject and could possibly occur. This condition is occasionally met by way of a “Miscellaneous” category. The number of categories in a category system must be limited in line with the limited scope of perception of the observer.

The determination of observation units is another feature of category systems, wherein the observation units may be determined on the basis of arising events (event sampling) or the elapsed time (time-sampling method). Returning once more to the example of the practical driving test: When applying the former method, the examiner records his observations each

¹⁵ The term “category” was already used in Chapter 2.3.3 of the present report (“The practical driving test as behaviour observation”) in connection with the “behaviour categories” to be observed. In this context, behaviour categories represented a possibility to channel and focus the attention of the observer on those special elements of behaviour (in our case, for example, serious errors on the part of the test candidate as defined in the Examination Guidelines (PrüfRiLi 5.17.2.1) which are significant for the purpose of the observation (driving test). When the concept of category is now used in connection with category systems, this relates to a more general level: The reference is now to “event categories”; it remains true, however, that the recorded events may also constitute observed behaviour. The decisive difference between the subsequently discussed category and rating scale systems is that a category system merely acquires data on behaviour in an appropriately lucid manner, whereas a rating scale system not only acquires data, but at the same time also evaluates this data against a selected standard.

time the candidate displays a new element of behaviour from the catalogue of events to be observed; in the second case, he documents the behaviour which the candidate happens to be displaying at fixed time intervals (e.g. every 3 minutes).

Category systems permit a very differentiated and relatively complete documentation of the observed behaviour; it is for the most part also possible to reconstruct the sequences of behaviour later and to obtain evaluations from several assessors. On the other hand, the use of category systems is very complex and is not practicable for the driving test examiner under the conditions of a test drive in the test vehicle (see Chapter 4). Moreover, the manner of observation organisation entailed by a category system (e.g. fixed time intervals) reduces the probability of capturing certain elements of the candidate's behaviour. Precisely this, however, is the strength of a rating scale system.

Rating scale systems assess observations (e.g. specified elements of the behaviour displayed by a driving test candidate) against a predefined standard, the rating scale. Contrary to a category system, the elements are not simply assigned to different categories and thus recorded as present or missing, but instead positioned on a rating scale immediately upon perception as a means to describe their intensity or the appropriateness in a given demand situation. An observer working with rating scale systems functions as a measuring device, so to speak, and uses his personal judgement to anchor relevant behaviour elements in a fact-based interpretation dimension. Many rating scale systems can be characterised by a high level of practicability and reduced time requirements compared to category systems. A high methodical quality can also be attained, especially if the degree of differentiation in the rating scales is matched to the objective of the diagnosis and the subject under observation at the smallest possible resolution.

That is to suffice for an initial overview of the methodical foundations at this juncture; a deeper appraisal is to follow in connection with discussion of the conditions for realisation of the practical driving test in Germany and the elaboration of recommendations for optimisation (see Chapter 5).

To conclude, it is interesting to consider two examples which offer inspiration and guidance for the process of methodical optimisation of the practical driving test. The first example relates to the relationships between the principal quality criteria and their weighting for methodical optimisation. Zuschlag (1977) devoted a comprehensive study to the reliability of practical driving exercises similar in content to the driving test. To investigate the causes for the inadequate reliability of such test exercises, he organised a series of practical driving exercises (open roads and city routes, 31 persons) and short driving experiments aside from the public roads (19 persons), and observed elements of the driving behaviour of the participants. In addition, certain actions and driver data (e.g. "actuation of the clutch"; "pulse rate") were also recorded automatically. The retest reliability was determined for all recorded variables; furthermore, the consistency was calculated.

Zuschlag (1977) reaches the conclusion that the automatically recorded elements "clutch actuation" and "pulse rate" display a higher reliability than the (subjectively) observed aspects of driving behaviour. One explanation is seen in the overburdening demands placed on the observer by the requirement to observe too many variables simultaneously. Correspondingly, he proposes that subjective methods be "replaced to the greatest possible extent by objective techniques to determine driving behaviour" (ibid., p. 202). This is exemplary illustration of how the attempt to design an ultimately reliable test can result in the test losing its validity. Even if the measurement of pulse rate appears more reliable than an observation of correct turning at a junction, the question remains: What does a driving exercise actually measure, if it supplies only automatically acquired variables for which the action context is not longer recognisable?

With regard to the practical driving test, this means: For the lifeworld domain “Road traffic”, an action-oriented test design is imperative. Technical devices or poorly trained personnel with checklists are no substitute for the traditional driving test examiner with his methodical qualifications and professional experience: Guided by this experience, an attentive and practised examiner takes in a diversity of information relevant for the assessment of the test performance before and during the test drive. On the basis of his perceptions, he concentrates attention on certain pointers to competence deficits and adapts his situative test concept according to the performance of the test candidate in order to verify the observations (“adaptive test strategy”). Both current perceptions and professional experience are integrated into these thought and planning processes (“interpretation” and “explanation”, see Chapter 5.5) and lead to results specific to the individual circumstances of the test candidate. All these processes are difficult to standardise and thus also provide for relatively low reliability values; nevertheless, they conform to the image of a professionally competent and candidate-centred method of diagnosis.

This brings us to the second example. Representatives of vocational pedagogy (e.g. Muders, 2000; Schmidt et al., 2000) and pedagogical psychology (e.g. Renkl, 2001; Mietzel, 1998) are also undertaking efforts to improve examination design on the basis of the competence concept: The intention is to be able to verify action competence or complex key competencies and behaviour patterns rather than disjunct knowledge and isolated abilities; examinations are to become more strongly integrated and action-oriented, based on observations of behaviour; and these examinations are to be governed by a system of demands specified in official training guidelines. The continuing work to achieve these demanding objectives should be followed closely as a source of ideas for further development of the practical driving test, even though a number of the mentioned targets have already been attained.

One particularly interesting aspect is the fact that the aforementioned efforts are apparently embedded in overarching endeavours to negotiate a model of interdisciplinary examination methodology, the core topic of which is appropriate didactic design (Tinnefeld, 2002). Notwithstanding the doubts which may be expressed as to the potential for success, given the development contributions of established disciplines such as the educational sciences and psychology, it is worthwhile to survey the relevant background and thereby to widen the perspective on the domain-independent demands placed on test and examination design. According to Tinnefeld (2002) these demands embrace:

- Sound preparation: Tests must be prepared according to conclusive academic (knowledge in the individual disciplines reflecting the latest research findings) and didactic principles (objective of questions, knowledge of reasonable responses, examiner perspective-taking).
- Scientific orientation: The realisation of tests must be based on justified planning actions by the examiners.
- Professional claim: The stronger the methodical foundation of a test, the more effectively it can verify domain-specific knowledge. In the ideal case, a test results in an expansion of knowledge for the candidate.
- Candidate reference: A candidate must not be confronted with tasks of a difficulty beyond his training level. The examiner must therefore be aware of the level which a candidate can reasonably have attained.
- Interactional adequacy: The examiner must allow the candidate to assume a corresponding role in the test situation: The candidate is the most important person.

- Fair realisation: Examiners must not abuse their power, for example by addressing certain topics directly or by deliberately seeking out situations in which the candidate has previously shown insecurity.¹⁶
- Appropriate assessment: Many candidates are unable to demonstrate their optimum performance capabilities in a test situation; this should be taken into account by examiners.

In his summary, the author (*ibid.*) demands that examiners be conscious of their social role and responsibility and that, when making their decisions on a candidate's performance, they remember that examinations are special situations particularly prone to errors in behaviour. It is evidence for the progressive nature of the practical driving test in Germany that this demand has long since been taken into account on the basis of binding stipulations in the Guidelines for the Examination of Applicants for a Licence to Drive Motor Vehicles (Examination Guidelines – PrüfRiLi): The driving test examiner is to consider psychic stress bearing on the test candidate (PrüfRiLi 5.14) and is not to interpret the rules pettily when evaluating the test performance; positive aspects of performance are to be honoured (PrüfRiLi 5.17).

¹⁶ It was already pointed out, with reference to Hampel (1985), that the driving test represents a component of a state-administered safety system: The test is intended to protect the public against the risks which would emanate from the participation of unqualified drivers in road traffic. Consequently, the task of the driving test examiner is to seek indications of qualification deficits, for example driving insecurity. This also means that, where such doubts arise as to the qualification arise to drive, it is necessary to seek further traffic situations similar to those in which the candidate has previously shown insecurity (see Chapter 5.5.1: "Adaptive test strategy"). In our view, abuse of the examiner's scope of judgement is not to be assumed unless the examiner additionally undermines the confidence of the candidate, for example by expressing a reduced expectation of competence in the form of critical remarks or predictions of failure.

Franz-Joachim Jagow

3 Legislative foundations of the practical driving test

3.1 German legislation

3.1.1 General legislative foundations of driving licence testing

Fundamentals

German law is based on the principle of a general freedom of circulation: Every individual is permitted to use public roads and spaces (§ 1 Driving Licence Regulations – FeV). Those wishing to drive a motor vehicle there, however, are required to hold a driving licence (§ 4 (1) sentence 1 FeV). This restriction of the freedom of circulation is justified with the dangers emanating from motorised road traffic.

A written application must be submitted for the granting of a driving licence (§ 21 (1) sentence 1 FeV). This submission of an application initiates a time-limited process, which always ends later with either granting or refusal of the requested driving licence. The legal construction is that of a so-called “prohibition with reservation of authorisation” (§ 2 (1) sentence 1 German Road Traffic Act – StVG). This means that it is forbidden to participate in road traffic by driving motor vehicle until such time that certain prerequisites defined by the legislator have been fulfilled. If these prerequisites are fulfilled, an application is to be answered positively, i.e. in the present case, a driving licence is to be granted; the citizen thus holds a legal entitlement against the State. This theoretical approach is reflected in § 22 (3) FeV: “If all prerequisites for the granting of a driving licence are fulfilled, the licensing authority is to make out and hand over the driving licence.”

The prescribed prerequisites include stipulations that the applicant must furnish various documents (e.g. an official document showing the place and date of birth) and meet a series of further requirements such as minimum age, proper place of residence in the country and fitness to drive (§ 7ff. FeV). Furthermore, the driving licence applicant must present the training certificate stipulated in the Learner Driver Training Ordinance (Fahrersch-AusbO) to the responsible examiner before each of the theoretical and practical driving tests (§ 16 (3) sentence 6, § 17 (5) sentence 5 FeV).

Finally, passing of a theoretical and practical driving test is an essential prerequisite for the granting of a driving licence. It is thereby that the licence applicant, following appropriate training for the required class of vehicle, demonstrates his qualification to participate in road traffic with a motor vehicle, in which context the practical test serves to confirm “that he possesses the technical knowledge required to operate a motor vehicle safely in traffic, where appropriate together with a corresponding trailer, sufficient knowledge of an environment-aware and energy-saving manner of driving, and the ability to apply this knowledge practically” (§ 17 (1) FeV).

In only a few exceptional circumstances is a test of qualification not necessary, for example where a foreign driving licence is to be exchanged for a domestic driving licence (§ 30, § 31, Annex 11 FeV) or an army or services driving licence exchanged for a general driving licence (§§ 26, 27 FeV), or similarly in the case of renewed granting of the driving licence after a previous suspension in accordance with § 20 (2) FeV.

The legislative foundations for driving licence testing are not summarised in a single work, but are instead spread between different sets of rules and regulations. The “Road Traffic Act” (StVG), the “Driving Licence Regulations” (FeV) and the “Guidelines for the Examination of Applicants for a Licence to Drive Motor Vehicles” (PrüfRiLi), the latter each with their corresponding annexes, in particular, may be viewed as formally independent, but their contents are nevertheless closely related to each other. In addition, the “Officially

Recognised Experts and Officially Recognised Examiners for Motor Vehicle Traffic Act” (Kraftfahrersachverständigenengesetz – KfSachvG) and the “Driving Instructor Act” (Fahrlehrergesetz – FahrlG) contain various stipulations with direct (KfSachvG) or indirect (FahrlG) influence on the practical driving test.

At national level, the federal government imposes overarching road traffic and motor vehicle regulations on the individual states by way of concurrent legislation (Article 74 (1) No. 22 Basic Law – Grundgesetz). As long as the federal government asserts this entitlement (which has been the case continuously since 1949), the governments of the federal states possess no legislative powers in respect of driving licence law and its associated fields. Their sole responsibility is thus to administer the implementation of federal legislation.

At the same time, even single details of the practical driving test are governed by the stipulation of the Examination Guidelines published by the Federal Ministry of Transport, Building and Urban Affairs in accordance with the responsible higher authorities at state level (Annex 7 FeV, 2.7). The purpose of such provisions is to guarantee as far as possible that a uniform procedure is adopted throughout the whole country. This can also be deemed logical and consistent against the background of a recognition that the safeguarding and promotion of road safety, on the one hand, and the mobility of the citizens of the Federal Republic of Germany, on the other hand, are of particular interest and should not be subject to 16 different regulations.

Examination guidelines in themselves, as an instrument below the level of legislation (laws, ordinances), are not actually legally binding, though it must be said that their effective authority is considerable: After all, they were elaborated by the federal ministry responsible for traffic in accordance with the responsible higher state authorities. Within the framework of their administrative responsibility, however, the federal states can nevertheless assign a certain binding status to the guidelines in their capacity as regulatory agency by instructing the Technical Examination Centres and their supporting organisations to observe the guidelines in question (e.g. by way of an administrative regulation or decree).

Road Traffic Act (StVG)

The Road Traffic Act (StVG) forms the basis for German driving licence law. It also stipulates the procedure for licence applications and the granting of a driving licence (§ 2). In addition, the applicable terms “fitness to drive” and “qualification” are defined, and rules are specified for licence withdrawal (§ 3) and a demerit point system (§ 4). Subsequent provisions establish a basis for the issuing of further regulatory instruments (§ 6).

The term “fitness to drive” is described in § 2 (4) StVG as follows: “(4) A person is deemed fit to drive a motor vehicle if he or she displays the necessary physical and intellectual prerequisites and has not acted seriously or repeatedly in violation of traffic regulations or criminal law. If an applicant is only conditionally fit to drive a motor vehicle on account of physical or intellectual deficiencies, then the licensing authority grants a driving licence subject to restrictions or conditions, if this is sufficient to ensure the safe operation of a motor vehicle.” Further specification of the individual aspects of fitness to drive is to be found in §§ 11 to 14 and in the Annexes 4, 5 and 6 FeV.

The term “qualification” is defined as follows (§ 2 (5) StVG): “(5) A person is deemed qualified to drive a motor vehicle if he or she

1. has acquired adequate knowledge of the legal regulations decisive for the driving of a motor vehicle,
2. is acquainted with the hazards of road traffic and with the behaviour necessary to avert such hazards,

3. possesses the technical knowledge required to operate a motor vehicle safely, where appropriate together with a corresponding trailer, and is capable of applying this knowledge in practice, and
4. possesses sufficient knowledge of an environment-aware and energy-saving manner of driving and is capable of applying this knowledge in practice.”

Motor Vehicle Traffic Experts Act (KfSachvG) and Driving Instructor Act (FahrlG)

The KfSachvG and FahrlG, together with their corresponding ordinances, specify the prerequisites and demands applicable to the work of driving test examiners and driving instructors. These specifications describe the required scope and contents of qualification and training for driving test examiners; at the same time, important framework conditions for their professionalisation are determined. This represents a significant contribution to preservation of the quality of implementation of driving licence testing in Germany. Similar relevance can be attested in respect of the qualification of driving instructors and quality of training for driving licence applicants in the driving schools on the basis of the FahrlG and its associated ordinances.

Driving Licence Regulations (FeV)

Essential formal and material requirements relevant to the theoretical and practical driving tests are stipulated in §§ 15 to 18 and in particular Annex 7 FeV. Part 2 of Annex 7 contains precise stipulations of the test subject matter, the test duration, the test vehicle and the manner of realisation and evaluation of the practical driving test.

Guidelines for the Examination of Applicants for a Licence to Drive Motor Vehicles (Examination Guidelines, PrüfRiLi)

The Examination Guidelines contain complementary stipulations to those of §§ 15 to 18 and Annex 7 FeV. With regard to the practical driving test, for example, the Examination Guidelines contain a detailed catalogue of driving errors which lead to failing of the driving test. Annexes 2 to 13 of the Examination Guidelines are also devoted to the practical test: Annexes 2 to 12 contain detailed descriptions of the basic driving manoeuvres, the test drive, the test location and the test vehicle; Annex 13 comprises a specimen report for the documentation and evaluation of the test drive and basic driving manoeuvres by the examiner.

The – legally non-binding – Examination Guidelines (see above) must be fully consistent with §§ 15 to 18 and in particular Annex 7 FeV: The two formally independent sets of rules are necessarily mutually correlated, i.e. there can be no contradictions in their contents. Any amendments and further specifications must be fully covered by the provisions of the StVG and the FeV. Furthermore, there must also be no contradictions within the individual sets of rules.

Test procedures and briefings

Finally, the Technical Examination Centres have elaborated extensive compendiums of test procedures and briefings for their driving test examiners as a foundation for realisation and further development of the driving test. These compendiums are based on the relevant legislative rules and contain detailed instructions and notes for the examiner. These instructions and notes also serve as internal quality standards for quality assurance in respect of the practical driving test (see Chapter 5.7) and are thus to be viewed as an element of the quality management implemented by the Technical Examination Centres. Such quality management is a prerequisite for the granting of accreditation by the Accreditation Agency of the Federal Highway Research Institute (BASt) in accordance with § 72 FeV.

With regard to the level of detail in the test procedures and briefings, consideration must always be given to the difficulty that, notwithstanding the desirability of central specifications in the interest of nationwide test equity and uniform assessment standards for all candidates, the individual driving test examiner should also be granted a certain scope of judgement.

Probationary driving licence

Upon receipt of a driving licence, the applicant acquires an unlimited entitlement to drive the corresponding motor vehicles. In Germany, the first driving licence granted is a two-year “probationary driving licence” (except for the classes M, L, S and T). The period of probation is extended for one period of a further two years if the novice driver commits one serious or two less serious motoring offences during the original probationary period; this results furthermore in an obligation to attend an improvement seminar for novice drivers (ASF) at the driver's own expense (§ 2a (2a) StVG). The attendance at such improvement seminars is intended to identify competence deficits and to enable the novice driver concerned to develop responsible driving behaviour.

Within the framework of a pilot scheme running until 2009 in a number of federal states, it is furthermore possible, under certain circumstances, to shorten the probation by a single period of a maximum of one year through voluntary participation in second-phase training. Elements of this second phase are driving safety training and group discussions in which the novice drivers can discuss aspects of driving safety and exchange experiences.

3.1.2 Special legislative foundations of the practical driving test

Test participants

Further occupants of the test vehicle, alongside the test candidate, are the examiner and the driving instructor. It is also possible, however, subject to the consent of all those involved, for a further test candidate to be present in the vehicle in readiness for a subsequent test drive (PrüfRiLi 5.15).

The driving test examiner is an “officially recognised expert or examiner for motor vehicle traffic” and belongs to a Technical Examination Centre (§ 15 sentence 3 FeV). He acts on behalf of the state, performs his duties impartially and must not be economically dependent on the number or results of tests conducted (§ 10 and § 6 (1) KfSachvG). He sits in the right-hand rear seat of the test vehicle (Annex 12 PrüfRiLi, 3.1.1). His “tools” for the conducting of the test – apart from §§ 15 to 18 and Annex 7 FeV – are the Examination Guidelines which are generally implemented by decree of the responsible state authority (cf. above comments on 3.1.1).

In addition to the test candidate and the examiner, the driving instructor also participates in the practical driving test. He sits in the front passenger seat next to the test candidate and, as the test candidate does not yet hold a driving licence, is the responsible driver of the vehicle (§ 2 (15) sentence 2 StVG). This status represents a distinction to other European countries.

As the responsible vehicle driver, the driving instructor assumes an important protective function with regard to the occupants of the test vehicle and all other road users. He is obliged to intervene in critical situations. This may take the form of verbal commands, but could equally entail his taking over the steering wheel or making use of the vehicle's dual controls. At the same time, however, he aims to perform his duties as accompanist for the test candidate as inconspicuously as possible, so as to enable the examiner to reach a true assessment. Furthermore, he must not give the impression that he is assisting the candidate in any way, as this would lead to the test being terminated as “failed” (Annex 7 FeV,

2.5.3). The reconciliation of these two tasks can in some cases constitute a role conflict for the driving instructor.

Start of the test

The practical test can take place once the corresponding application documents have been received by the responsible Technical Examination Centre appointed to conduct driving tests by the administrative authority and once the driving instructor has confirmed that training for the driving licence class in question has been completed. This confirmation is given on the training certificate. The driving test examiner checks that the required scope of training has been completed by way of the training certificate, verifies the identity of the test candidate and explains both the general procedure of the test and the nature of the instructions which will be given to the driver (§ 17 (5) FeV).

The test vehicle is to be provided by the licence applicant (§ 17 (1) sentence 3 FeV). In most cases, however, the test is taken in a vehicle belonging to the driving school. The test vehicle must comply with the requirements of Annex 7 FeV, 2.2 and Annex 12 of the Examination Guidelines. Basic requirements applicable to the test route are contained in Annex 7 FeV, 2.4.

The duration of the practical test is to be at least (Annex 7 FeV, 2.3):

for	Total test duration	of which pure driving time
Class A	60 minutes	25 minutes
Class A1	45	25
Class B	45	25
Class BE	45	25
Class C	75	45
Class CE	75	45
Class C1	75	45
Class C1E	75	45
Class DE	75	45
Class D	70	45
Class D1	75	45
Class D1E	70	45
Class M	30	13
Class S	30	20
Class T	60	30

The term “pure driving time” is here understood to mean the duration of the test excluding the time taken for the examination of the basic driving manoeuvres, for safety checks and other checks before departure, for the examination of manual skills and for the attaching and detaching of a trailer. The preparation and final summary of the test (e.g. announcement of the result) are similarly not to be counted under “pure driving time”.

End of the test

The examiner assesses the performance of the test tasks and reaches a decision as to whether the candidate has passed or failed the test. If a card driving licence is already on hand at the time of the test, the examiner hands this licence to the successful candidate at the end of a passed test. Alternatively, the candidate may receive a temporary driving test certificate, which serves as proof of the entitlement to drive within the country until the licence can be issued (§ 22 (4) sentences 3 to 7 FeV). In case of a failed test, the examiner hands over a written test report to the unsuccessful candidate and gives a brief account of the relevant errors (Annex 7 FeV, 2.6).

3.2 European legislation

Fundamentals

As the countries of Europe grow closer together, the mobility of the citizens between the individual member states of the European Union assumes ever greater significance. In this context, harmonisation of the legislation pertaining to driving licences is an important prerequisite. The efforts to achieve a uniform system of driving licence classes and a comparable quality of driving licence testing are reflected in the three Council Directives on Driving Licences which have been adopted to date.

First Council Directive on Driving Licences

The first EC Directive on Driving Licences (OJ EC No. L 375, p. 1) was already published in 1980. It provided for a model design for all driving licences, mutual recognition of the individual national driving licences by all member states, and the exchanging of a driving licence issued by one of the other member states, without obligation to pass a further driving test, should the holder move his place of normal residence from one member state to another. It also laid down certain minimum requirements with regard to the theoretical and practical driving tests and fitness to drive.

Second Council Directive on Driving Licences

The second EC Directive on Driving Licences (Directive 91/439/EEC, OJ EC No. L 237, p. 1), adopted in 1991, declared the international driving licence classes which are applicable today to be binding. Furthermore, common and binding minimum requirements were formulated for the theoretical and practical driving tests (Annex II), and a further Annex III was established with minimum medical requirements for motor vehicle drivers.

The requirements applicable to the practical driving tests for the individual driving licence classes were revised once more with the Amendment to Annex II of the Second EC Directive on Driving Licences in 2000 (Directive 2000/56/EC). In Germany, the Examination Guidelines were subsequently amended accordingly in 2004. The most important changes related to driver training and testing in the heavy goods vehicle and bus classes. But the amendment also brought changes in the basic driving manoeuvres to be assessed in the practical driving test for Class B: Only two basic driving manoeuvres (instead of previously three) were now mandatory elements of the test.

Third Council Directive on Driving Licences

In 2006, a third EC Directive on Driving Licences (Directive 2006/126/EC, OJ EU No. L 403, p. 18) was adopted to continue the process of driving licence harmonisation in the member states of the European Union. This directive contains provisions to aid the combating of driving licence fraud and so-called “licence tourism” by preventing persons with alcohol or drugs problems from obtaining a driving licence abroad, and furthermore grants the national authorities more effective powers to keep persons whose have been found unfit to hold a driving licence on account of their alcohol or drug abuse off the road, even if they have (again) obtained a driving licence of another member state to replace a withdrawn licence. This provision already came into effect on 19th January 2009.

In addition, the third EC Directive on Driving Licences stipulates the binding introduction of a card-style driving licence and secures this objective by requiring the compulsory exchange of “old-style” driving licences, albeit over a longer transitional period of in total 26 years. The term of validity of newly issued card driving licences is to be limited to between 10 and 15 years. Certain modifications have also been made to the assignments of the individual driving licence classes.

In its Annex IV, finally, the directive specifies minimum qualifications for driving test examiners, who must thus in future meet minimum requirements in respect of their knowledge and training. At the same time, an obligation of regular further training is introduced. This is also seen as a contribution to harmonisation of the standard of driving licence testing in the member states of the European Union.

In accordance with the stipulations on transposition in Art. 16 of the Directive, the corresponding laws, regulations and administrative provisions in the member states of the European Union (with certain exemptions, e.g. measures to combat “driving licence tourism”) are to be amended accordingly by 19th January 2011 and applied from 19th January 2013.

Significance of the Council Directives on Driving Licences

The Directives on Driving Licences which have been adopted by the European Commission to date must be viewed as an important step towards harmonised driver licensing in Europe, while nevertheless preserving national driving licence legislation. The amendment of the German Examination Guidelines in 2004, which served to bring the national guidelines into line with the EC directives, illustrate the extent to which European law already influences also German driving licence legislation. It is to be expected that further harmonisation measures will follow on the basis of “minimum standards” and that this will be suitable to promote improvements in the quality of driving licence testing in all the member states of the European Union.

It is to be noted that, although the EU has in the meantime effectively harmonised the prerequisites for access to a driving licence and its subsequent validity, such harmonisation is still outstanding in the spheres of administrative and criminal law with regard to the withdrawal of licences (including the provisions for points systems and sanctions). It also remains to be seen when the European Union will standardise the training for driving licence applicants: It is currently still left to each individual member state to determine whether such training is prescribed and, where appropriate, how it is to be organised, for example whether training is only permitted to be provided by professional instructors.

Relationship between the Council Directives on Driving Licences and national legislation in the individual member states

Whereas EC and EEC Regulations are immediately applicable and enforceable in the member states, this is not the case with EC Directives. The addressees of the EC Directives are not individual citizens, enterprises, organisations or legal persons, but the governments of the member states, who are thereby placed under an obligation to transpose the directive in question into national law. This is to be recognised from the concluding articles of any given EC Directive. In the case of the Second Council Directive on Driving Licences 91/439/EEC, for example, the relevant provisions read:

- Art. 12 (1): “After consulting the Commission, Member States shall, before 1st July 1994, adopt the laws, regulations or administrative provisions necessary to comply with this Directive as of 1st July 1996.”
- Art. 14: “This Directive is addressed to the Member States.”

In Germany, the transposition is effected in particular through amendments to the Driving Licence Regulations (FeV) and the Examination Guidelines (PrüfRiLi), but in certain fundamental points also through amendments to the Road Traffic Act (StVG).

Bernhard Hampel & Dietmar Sturzbecher

4 Methodical development of the practical driving test in the past

4.1 Starting points and overview

The first driving licence granted in Germany was according to today's understanding actually an operating licence, as it was issued not for the driver, but for the vehicle. It was Carl Benz, one of the inventors of the automobile, who received this momentous document on 1st August 1888 (Strothmann, 2008). Only a decade or so passed after the arrival of the first motor vehicles, however, before general consensus recognised that the associated hazards emanated not solely from the new technology per se, but also, and indeed above all, from the persons who operated it. Consequently, licences were from then on granted to a named driver. The first personal driving licence was issued by the Royal Police Directorate in Munich in April 1899; later, licences were supplemented by so-called "test certificates" (Brauckmann, Hähnel & Mylius, 2006; Swoboda, 2001).

As explained in Chapter 2.3.2, the practical driving test can be viewed in its methodology as a kind of "work sample". The function of a work sample is to supply evidence, on the basis of which it can be estimated whether and to what extent an applicant is sufficiently competent to handle future related tasks successfully. To this end, he must complete certain test tasks under controlled methodical conditions. Applied to the case of the practical driving test, these tasks are defined above all as driving tasks. In this way, it can be verified whether a driving licence applicant is in a position to cope with the later everyday demands of road traffic. Whereas the necessary personal qualities and competence components (e.g. knowledge, ability in the sense of vehicle control and driving skills, adequate vision) were assumed to be inherently present without specific investigation in the times of Carl Benz, the further developments in driver licensing produced increasingly detailed and discrete stipulations as to how a licence applicant should be required to demonstrate his driving competence in a driving test.

The expansion and differentiation of the test requirements resulted in part from the continuous evolution in traffic conditions. There are naturally certain fundamental demands on drivers which have remained unchanged ever since the automobile was invented; the importance of caution and mutual consideration as prerequisites for safe participation in road traffic immediately springs to mind. Many other general conditions of road traffic, however, are subject to constant adaptation, and with them the knowledge and ability which is necessary to drive a motor vehicle in public traffic. Such factors are the technical features of the vehicles, the complexity of traffic situations and, last but not least, the people wishing to obtain a driving licence.

The described transformations necessitate the permanent further development of driving licence testing in accordance with scientific findings and methods, and that both with regard to the contents and from the point of view of methodology. Before moving on to a more detailed presentation of significant periods in the development of the practical driving test and the methodical advances achieved thereby, it is interesting to sketch the underlying trends which have influenced the continuous amendment of the test contents. These underlying trends can be characterised as follows:

1. Technical knowledge and skills were replaced at the focus of attention by a concentration on potential hazards, as vehicle handling became increasingly straightforward and road safety could not be guaranteed adequately otherwise.

2. Communicative and social demands gained in importance, because higher traffic densities required better coordination of the actions of individual road users and an improved traffic flow. For a driver, therefore, it became increasingly important not only to circumvent the hazards posed by other road users, but also to avoid irritating or hindering those other users to a greater extent than was inevitable under the circumstances.
3. The value systems and attitudes associated with the driving of a motor vehicle have become a more frequent topic of debate against the background of the increasing numbers of young novice drivers and their above-average accident figures, and today play a greater role in the further development of driving test contents than in the past.

Which historical developments are mirrored by the above trends? When the first driving tests were introduced, the applicants were for the most part chauffeurs. They equated driving with occupational interests and needed to master not only the handling of a motor vehicle, but furthermore the corresponding maintenance and repairs. Nowadays, by contrast, a motor vehicle is often less a “working tool”, but rather a readily accessible consumer good and recreational prop, particularly for the youth generation, which in many respects defines social standing through the possession and use of a motor vehicle. The “youth risks” and emotional or affective aspects of driving are thus today of greater importance for the driving test than they were before.

Furthermore, the aforementioned increase in traffic density led to a greater intensity of road traffic regulation and thus higher demands on the individual driver. As technology has advanced, there have been rapid developments in traffic guidance systems to help road users to maintain their overview of the traffic situation. Despite such systems, however, the personal communication and social coordination between drivers gained noteworthy significance, particularly in the “bustle” of city traffic; they became imperative for successful solving of the ever more frequent conflicts between the goals of “safe driving” and “fast travel”.

Finally, the ability to drive a motor vehicle is no longer a matter of merely operating a machine, but has instead become a cultural technique which, in the same way as reading and writing, is valuable and important for life success in a mobile society. The driving test has thus assumed a socio-political dimension beyond its status as an “examination of qualification”: For the – most commonly young – driving licence applicants, it represents a “developmental task” (Havighurst, 1982) and thus the transition to a life sphere previously reserved for “adults”. It can reasonably be assumed that the quality of the “examination of maturity to participate in motorised road traffic” helps to determine whether young people take the rules of behaviour in road traffic seriously, or whether these rules are viewed as bothersome “knowledge ballast” which can be forgotten as quickly as possible once the test has been passed.

Further development of the contents and methodology of the driving test is still to be completed, and indeed can never be completed as long as technical advance, changing traffic structures and not least social transformations continue to pose constantly new challenges. The objective of the following consideration of past developments is to better understand the evolution of the current driving test provisions which are described in detail in Chapter 5 and to identify possibilities for optimisation. In this context, the focus is to be placed

on further development of the methodical foundations for the practical driving test.¹⁷ Alongside the progress achieved, the discussion identifies approaches which could not be implemented in the past, but should now be taken up once more under today's improved conditions and with modern scientific methods and technologies.

4.2 Test contents and methodology from the beginning of driving licence testing to 1975

Changes in test contents

In the early years, the development of the test contents was characterised by a process of differentiation and expansion of the topic area "vehicle operation" to include also aspects of safe driving behaviour. At the turn of the 20th century, acquaintance with the technical handling of a motor vehicle was still sufficient as proof of the ability to drive. In addition, a driver needed to possess detailed technical knowledge of his vehicle and was required to display composure, self-control, presence of mind and constant attentiveness (Fournier, 1901). The authors of the Berlin police ordinance published in April 1901, which was taken later as a model for national regulations on the granting of driving licences, determined that the driving test must not represent a "mere formal act", and that it must be imperative for the licence applicant to demonstrate that he was "at all times master of his vehicle" (Fack, 2000b). Nevertheless, the demands to be satisfied to obtain a driving licence were at this time still minimal. In Berlin, for example, the applicant was only required to drive back and forth in the courtyard of the police headquarters for a few minutes (Brauckmann, Hähnel & Mylius, 2006; Swoboda, 2001).

Very soon, however, it was demanded that driving licence applicants show knowledge of pertinent traffic rules and evidence of their level-headedness, strength of character and sense of responsibility. The verification of these competencies generally took the form of an interview or oral examination, a brief test drive in the courtyard of an authority or driving school, and finally a drive in real traffic; all these test elements were supervised and assessed by a state-mandated expert, who then also announced a decision on the result of the test. Otherwise, the procedure to obtain a driving licence varied considerably from one region to another and was not standardised until a "Motor Vehicle Traffic Act" and its associated examination guidelines "Instructions for the Testing of Motor Vehicle Drivers" were passed in 1909. At this same time, it became obligatory to furnish proof of driver training.

The basic roots of present-day novice driver preparation can be identified in these historical developments: Today, still, training in a driving school and a more or less training-related driving test represent the most important components of novice driver preparation in Germany, though various trends towards voluntary training elements as supplements to the traditional system (e.g. "accompanied driving", "second-phase driver training") are also emerging. It remains necessary to successfully complete a theoretical test – formerly an oral examination, today a written test (paper-and-pencil version or computer-based) – and a practical test of vehicle handling ("technical preparation of the vehicle", "technical completion of the drive"), fundamental driving manoeuvres in a low-traffic environment ("basic driving manoeuvres") and driving competence in real traffic ("test drive") in order

¹⁷ In the interest of maximum clarity, the following presentation of the test methodology is to be limited to the driving test for vehicle class B (formerly class 3), as a typical and frequent form of driving licence testing.

to obtain a driving licence (see Chapter 5). And finally, today's driving tests are also conducted by officially recognised experts or examiners.

In the early 1930s, the focus of driver training was shifted further “away from the technical aspects and towards practical driving requirements” (Ostwald, 1931), and the contents of the training were concentrated more on practical driving exercises and the development of desirable traffic behaviour. Driving licence testing also changed accordingly, and the contours of the present-day driving test became increasingly recognisable. One significant development step had been the 1923 “Motor Vehicle Traffic Ordinance”. These regulations also specified that the test begin with an oral interview. The subsequent practical test, however, was now to be divided into three sections, each of which was specified in much greater detail than had been the case in the past.

The first part of the practical test required the candidate to demonstrate his acquaintance with the vehicle by way of safety checks before setting off (brakes, steering, ignition, etc.), starting of the engine and simple driving exercises (passing obstacles, turning, reversing). Such safety checks are today still demanded during the practical driving test under the heading “Technical preparation of the vehicle”; the requirements “turning” (today: “Turning the vehicle to face the opposite way”) and “reversing” (today: “Reversing around a corner to the right making use of a junction, crossroads or entrance”) are similarly still prescribed basic driving manoeuvres.

For the second part of the test, the examiner “ventured” onto the road with the candidate for a “test drive on the open road in moderate traffic”, during which certain traffic situations were to be mastered, namely:

- Encountering and overtaking horse-drawn vehicles,
- Exiting a property,
- Turning into other roads at junctions,
- Use of the warning indicator,
- Changing speed (also on inclines and declines),
- Handling of the brakes in different circumstances.

Only after passing this second section was the candidate permitted to move on to the third part of the practical test: A “continuous drive” lasting at least one hour, which was also to be conducted on busy roads. If the driver displayed any uncertainties or errors during this drive, the test was aborted. As performed at that time, the practical driving test can thus be described as a “cascaded model”, according to which each more demanding or risk-prone section of the test was not tackled until the prerequisites deemed to be necessary had been demonstrated in an earlier test component. At the same time, the test drive in real traffic was more strongly differentiated than today: After all, it comprised two independent parts, which were distinguished in accordance with the expected traffic demands (e.g. with regard to the traffic density) and thus safety aspects.

After the end of the Weimar Republic, the NS regime reorganised not only driver training, but also driving licence testing: The obligation to attend a driving school was abolished and the responsibility for testing passed to the “National Socialist Motor Corps” (Nationalsozialistisches Kraftfahrerkorps, NSKK)”. The amendments to regulations, however, were not geared to improvements in road safety; priority was given instead to other objectives such as “mass mobilisation” in the interest of war preparations and “combat readiness”. This period, therefore, is not to be discussed further at this point; more detailed information can be found in the work of Sturzbecher, Mönch, Kissig and Marschall (2008).

From the end of the Second World War onwards, the developments in driving licence testing began to diverge in East and West Germany. The degree of motorisation increased only

gradually in the GDR. Furthermore, the available material and labour resources were employed as sparingly as possible for driver training and licence testing. The centralistically organised state authorities sought a solution to the problem of increasing accident rates in very strict organisation of the training aspect; further development of the driving test was at first not a key issue. It was thus merely the organisation of testing which was changed, while the contents and methodology continued the pre-war approaches (Sturzbecher, Petzholtz, Liebermann & Westphal, 2008). Driving tests were conducted by the local traffic police. The practical test comprised the following sections:

- Checks pertaining to traffic and operating safety, and starting of the engine,
- Simple driving exercises, in particular passing obstacles, stopping, braking, reversing and turning, and
- Participation in road traffic with low and high traffic densities.

In West Germany, too, the organisations which were refounded after the end of the war based their initial driving licence testing on the known pre-war methods and procedures. But in this part of the country, characterised by rapid motorisation of the population, the driving test quickly became a mass phenomenon with significance for the mobility of ever broader sections of society and thus acquired a political dimension (Mörl, Kleutges & Rompe, 2008). At the same time, the numbers of accidents – as similarly in East Germany – increased dramatically and reached an alarming peak in 1970 with some 22,000 road traffic fatalities (Brauckmann, Hähnel & Mylius, 2006). The question of effective counter-measures was brought onto the agenda. Flanking legislation to promote a higher standard of driver training, with corresponding intervention in the free exercising of their profession by the driving instructors, however, was at that time still not reconcilable with current political decision-making. It was hoped that an improvement in the accident situation could be achieved exclusively by way of stricter demands in connection with driver testing. This was manifested in the introduction of new test topics, such as “danger aspects”, and in certain methodical changes, for example a revaluation of the existing demands.

Implementation of these changes was the purpose of a reformulation of the examination guidelines in 1958, in which the problem of the test location (see below) was addressed for the first time. Further amendments to the guidelines followed in 1964 and 1970 and contained various supplementary provisions and more precise stipulations in respect of the test demands. In 1970, for example, the driving task “changing lanes” and requirements pertaining to tests on vehicles with automatic transmission were added; furthermore, it was recommended to route test drives also outside built-up areas, “where possible”. The 1970 Examination Guidelines, moreover, revealed the first pointers to a description of observation categories and assessment criteria for the driving test examiners. As these guidelines supplied the basis for improvement of the test methodology at the next stage of development of the practical driving test, they are to be discussed in detail in the following Chapter 4.3; further details are also to be found in Mörl et al. (2008).

Even the earliest definitions of test contents mentioned personality traits such as an awareness of responsibility or presence of mind as important factors, i.e. as prerequisites for the fitness to drive. This illustrates how, around the turn of the century, the “accident-prone driver personality”, as a safety risk, dominated the expert debate on necessary test contents (Drösler, 1965). It is true that legislation delegated the independent evaluation of fitness to drive to the newly formed Medical-Psychological Assessment Centres at the beginning of the 1960s; the determination of visible fitness deficits, however, has through all reformulations of the corresponding regulations to date remained – at least in principle – an observation task of the driving test examiner. From the very beginning, therefore, the driving test was more than a mere test of knowledge or abilities, and thus rather a test of competence in

today's sense (see Chapter 2). What has changed, however, is the evaluation of the causes and consequences of lacking prerequisites: Limitations of driving competence attributable to an applicant's personality are today no longer viewed as irrevocable fate, as in the historical "accident-prone driver theory", but instead as a status quo which can be improved through training.

Changes in test methodology

As already mentioned (see Chapter 2.3), the practical driving test is to be viewed as a work sample, during which the completion of test tasks set by the examiner is recorded on the basis of observation categories and evaluated according to defined assessment criteria in order to obtain a test result. In the early years of the practical test, the role of the examiner was essentially no more than to determine whether the driving licence applicant had the vehicle "under his full control". No specific observation categories or assessment criteria were formulated: The system instead placed confidence in the expert judgement of the driving test examiner.

Advances in vehicle technology and the increased traffic density, however, later shifted the emphasis of the test contents: An isolated technical mastering of the vehicle lost weight, and compliance with the rules of the road, and accordingly also observation of such rule compliance, became more important aspects of the practical test. The latter demand on driving test examiners required them to themselves acquire components of competence in psychological testing and methodology, which were in turn still to be elaborated by the technical experts in the field. It is true that such driving rules were already laid down in the applicable Road Traffic Regulations (Straßenverkehrsordnung – StVO), but these regulations had been formulated by lawyers in a language larded with legal terminology. They thus contained no concrete observation categories, and assessment criteria only in the sense of errors in behaviour. Furthermore, they often lagged behind the latest traffic reality: "The first German StVO dated from 1934. Even after a series of amendments, the regulations soon no longer reflected the changing demands of motor road traffic after the Second World War. Moreover, they were too general in their wording; many detail issues could only be clarified by way of jurisdiction on the basic principles expressed in § 1." (Janiszewski, 2007, p. XXVI).

In many points, therefore, the driving test examiners were forced to rely on their own interpretations of the traffic regulations, and such interpretations were naturally based on technical considerations rather than any approach with foundations in psychological testing. The Technical Examination Centres attempted to overcome this lack of a methodical basis, which they evidently themselves regarded as a serious deficiency, through an increasingly specific description of the test contents, both in respect of the test demands and possible observation categories and assessment criteria, as expressed in the Examination Guidelines of 1970 (see above) and the supplementary Notice 731 issued by the Association of Technical Inspection Agencies (Verband der Technischen Überwachungsvereine – VdTÜV)¹⁸ in 1973. But even those 1970 Examination Guidelines – despite their partially high degree of particularity – were characterised by methodical deficits, for example because many simple points were described in detail, while other more significant issues were treated only succinctly. This led Hampel (1977, p. 46) to remark: "After scrutiny of the demand catalogue [...], one necessarily reaches the conclusion that the examiner is assumed to know already which demands are to be made, and that it is now only a matter of

¹⁸ Details from both sets of rules are to be presented in the following Chapter 4.3 (under "Observation categories"), as they greatly influenced the development during the period described there.

clarifying borderline cases. In our opinion, the stipulations of the Examination Guidelines are inadequate for a precise definition of the required behaviour.”

As, for lack of better alternatives, “the StVO indirectly took the place of a description of learning objectives” (ibid., p. 48), it was only to be expected that the evaluations of behaviour observations concentrated on errors in behaviour. The aforementioned VdTÜV Notice 731 did recommend that “not only errors, but also positive performance should be taken into account when assessing the test drive.” But as the Examination Guidelines demanded “in particular” the recording of errors (see below), it remained unexplained, how this recommendation was to be implemented in practice.

The examiner was only able to base his test result decision on the overall impression gained during the test drive – at least as long as no specific descriptions of driving tasks and no binding framework for specific observation and assessment categories could be made available. Generalising judgements along the lines of “immature” or “not sufficiently anticipating” were still by no means seldom as result justifications even after the introduction of situation-dependent observation categories. The classification of driving errors in VdTÜV Notice 731 represented a major methodical advance. Errors were there assigned to one of three categories: The first category comprised five “serious” errors which were always to result in failing of the test, i.e. also in case of “otherwise positive performance” (e.g. in particular the endangering of other road users or an intervention by the driving instructor). In addition, another 12 errors were to lead to a negative test outcome if they were observed repeatedly or frequently. It remained open, however, what exactly was to be understood by “frequently”, and furthermore whether this was to refer to each individual error or to the list of errors as a whole. As both lists were enumerative, but clearly did not contain all possible errors, a third category of “other errors” can be assumed, albeit without further assistance with regard to their observation and evaluation. No methodical derivation or grounds for these weightings were given.

Already from 1952 onwards, the regulations applicable in West Germany required the examiner to draw up a handwritten report on the course of the practical driving test and to enclose this report with the remaining documentation if the test was failed (Brauckmann et al., 2007). These notes were initially formulated freely, insofar as the examiner saw need to make any notes at all. The 1970 Examination Guidelines then specified: “The expert or examiner is to produce a record of the test.” In 1973, the VdTÜV considered it appropriate to recommend specification of a uniform layout for such records: the “Standard Driving Error Scheme” contained in its Notice 731. It is indicative of the methodical uncertainty at the time and the dissatisfaction with the demand catalogue presented in the recently adopted Examination Guidelines of 1970, that this system of classification was based not on the structure of the Examination Guidelines, but instead on the legislative framework of the Road Traffic Regulations (StVO), i.e. the driving errors were grouped in accordance with the regulation paragraphs.

If we examine the development of test methodology over the period from the beginnings of driver licensing through to 1975 from today's perspective, then it is conspicuous that the driving test examiner was originally granted an extensive scope of judgement for his assessment of the driving performance of a test candidate. Nevertheless, the practical tests were no doubt relatively objective as long as the principal demand was for the candidate to “have the vehicle under his full control” in the sense of vehicle operation. After all, it was a simple matter for the examiner – after 1911 generally a technical expert with corresponding qualifications – to observe and assess whether the candidate was able to set the test vehicle in motion or not, for example.

This changed, however, as the central observation task of the examiner was shifted increasingly to the manner of the candidate's behaviour and integration into the traffic environment. With the ever more generalised focussing of the test contents on specific behaviour demands in particular situations, it became scarcely possible to speak of objectivity according to today's understanding when gauging the quality of the practical driving test at that time. Consequently, it is also reasonable to question the reliability of the tests, in other words the accuracy with which repetition of a given test would have produced the same result. This deficiency, on the other hand, only became apparent in certain special circumstances, as there were no systematic method-related investigations of reliability, and it was in any case soon stipulated that the practical driving test could only be repeated after a specified waiting time, which was to be used for further training. A direct comparison between the results of a first test and a repeat test as a means to verify reliability was thus excluded on methodical grounds. The validity of the practical driving test, i.e. the question as to whether the test actually measured the parameters for which it was devised, was at that time similarly not a subject of systematic discussion from the point of view of psychological testing. Method-related attempts to verify the validity of the practical driving test, for example by way of external validity criteria, are not known. It was rather the case that the practical driving test was attested "face validity", being attributed to the assessments of experts.

To summarise: Over the period from the beginning of driver licensing up to 1975, both the contents and applied methodologies of the practical driving test were gradually differentiated – starting out from an original holistic form. The overarching demand of "vehicle control" was increasingly broken down into a spectrum of partial demands considered to be of particular relevance for traffic and driver safety. Attempts were subsequently made to formulate the first assessment criteria for each of these partial demands and to assign corresponding decision criteria, laying an unambiguous foundation at least for particularly serious errors in driving behaviour. These processes can be seen to have established the outline methodical structures which still characterise the practical driving test today.

The multi-stage structure which the driving test acquired over the period up to 1975 – beginning with an interrogation of fundamental traffic knowledge and evolving into a verification of driving competence in the lifeworld domain of real public traffic, with possibilities to abort the test at each stage – can without doubt be viewed as an enormous methodical advance compared to the original, historical form of testing. Furthermore, the option of premature termination of a test offered by the cascaded test structure served to reduce potential endangering of the test vehicle occupants in case of serious competence deficits, and at the same time spared the inept candidate unnecessary test stress. This procedure, however, is also related to the objective of test economy, and thus throws up methodical questions. One certain fact in this context is that the possibility of premature termination limited a verification of the construct validity, as an applicant rejected on account of deficiencies shown in the basic driving manoeuvres, for example, was given no opportunity to demonstrate abilities during a test drive in real traffic.

It is similarly necessary, from a critical methodical perspective, to note that acquisition of the knowledge and skills necessary to drive a motor vehicle is for the individual a life-long learning process which continues for as long as he uses such vehicles. A driving licence applicant reporting for a driving test is for this reason, and especially in view of the relatively short training period, hardly to be considered a well-versed driver. His knowledge and skills are still far from mature, and the responsible task of the driving test examiner is thus to ascertain, on the basis of the test performance, whether the attained level of competence (still) precludes unaccompanied driving, or whether it permits independent further learning in the real traffic environment without significant risks for the public. This re-

quirement can only be satisfied if the demand standards of the test are not formulated in the sense of demands to be met by an elaborated manner of driving, but instead derived from the psychological classifications of driving competence acquisition and the properties of the training. In other words: The fundamental questions to be answered, in the given order, are (1) which components of driving competence are necessary for participation in motorised road traffic, (2) which of these components can be evaluated by a driving test, (3) which level of maturity of the verifiable components must be viewed as the minimum standard with regard to novice driver safety and can this level typically be attained during driver training, and finally (4) how can these minimum standards be operationalised in a methodically meaningful manner in the context of a driving test; we will return to this point once more in Chapter 8.

The aforementioned expectations for a scientifically founded approach to the elaboration of content-specific and methodical driving test foundations represent a guideline for a systematic development programme, rather than a yardstick against which it can justifiably be hoped to measure the success of the initial, 90-year phase of developments in driving licence testing. Notwithstanding all criticism of the prevailing methodology of the practical driving test in the early years, it must not be forgotten that the same deficiencies in systematic method and in objectivity, reliability and validity were also present in examinations in other spheres of life in those days, and are often still to be encountered today. It was not until 1961 that Lienert presented the compendium of rules which is still today deemed the decisive literature on the designing and analysis of psychological examination methods. In the preface to the first edition, the author comments: The task of “developing psychological examination methods for the special purpose of aptitude selection in business and industry and subsequently verifying their diagnostic suitability [...] is simply unattainable without scientific aids. It demands [...] training of an extent which currently cannot be conveyed in all educational institutions” (Lienert 1961, p. VIII). It would thus be absurd to expect the driving examiners over the period under review to implement the methodology of psychological testing, when the foundations for this approach were only elaborated during the final 10 to 15 years of that period. On the contrary, it must be honoured – also from today’s perspective – that the examiners of that time fulfilled their task of contributing to the safety of road traffic in full accordance with the available knowledge and with awareness for their responsibility, constantly improved the demand and assessment standards, and in this way prepared the ground for further developments.

4.3 New methodical departure from 1975 to 1985

4.3.1 Reasons for a paradigm shift in the period under review

The decade from around 1975 to 1985 was a particularly creative phase for methodical further development of the theoretical and practical driving tests in both East and West Germany, characterised by many new approaches to test optimisation, with elements which have remained valid through to the present day. Viewed overall, these changes can be said to represent a paradigm shift in the field of driver licensing: Alongside a legislative framework and systematic classifications, the first indications of an independent valuation of psychological testing and methodical categorisation began to emerge. Irrespective of the fact that, as is to be shown subsequently, the methodical foundations of the driving test were laid only within a restricted scope during this development phase and thus remained incomplete, the efforts nevertheless established a successful and sustainable basis for the per se desirable duality of legislative and methodical systemisation in the organisation of driving licence testing.

The reasons for the diverse and vigorous endeavours to raise the driving test to a higher level of methodical quality are to be found in the coincidence of three processes of social

transformation which were to be observed in both German states. The first of these processes related to the exploding numbers of driving tests each year, which saw the threshold of 2 million tests surpassed in West Germany for the first time in 1975. Driving licence testing was now a matter affecting broad sections of the population; it had become a social phenomenon, and its quality consequently a social issue (Hampel, 1977).

The second process was the unbridled increase in the numbers of accidents, which forced recognition of the necessity of fundamental accident prevention measures. With the presentation of detailed studies on the specific risks of “novice drivers” (Heller, 1973), this problem became a topic of ever more critical debate. Schneider (1977, p. 27), for example, commented: “The repeatedly ascertained fact, that more than 50% of all accidents in which persons are injured are caused by drivers who have held a driving licence for less than three years, can be understood to highlight the problem under discussion.” He pointed out that the accident risk for young drivers was three times higher than the average, and emphasised that it was not acceptable to “view the fact of a higher risk for younger drivers as an incontrovertible law of nature. It is rather the case that solutions must be sought to this problem of novice risk, and they are probably to be found above all in the field of the training technology.” (ibid. p. 31). These thoughts led to the conclusion that improvements in driver training would only be achieved, “if the contents of testing correspond to those of the training. An improved test methodology, within the framework of feasibility, is a necessary prerequisite for our tackling of the problem of young novice drivers” (Hampel, 1977, p. 8).

The third process is to be identified in the stormy developments in psychology and pedagogy. The idea that findings and approaches from the human sciences could be applied more extensively than in the past to develop the driving test as the testing “of humans by humans” came to the fore. One significant feature of this phase of development is thus the beginning of systematic interdisciplinary cooperation. The establishing of a department for accident research at the BAST in 1970, bringing psychologists, medical scientists and educationalists together with traffic scientists and engineers, was an important step in this direction, as it enabled focal research topics to be defined and research funding to be distributed according to broader concerns. In the GDR, similar tasks with interdisciplinary objectives were entrusted to the “Central Research Institute for Transportation” (Zentrales Forschungsinstitut des Verkehrswesens) in 1971. Furthermore, scientific institutions were set up under the auspices of the Technical Examination Centres to deal either predominantly, or at least additionally, with the optimisation of driving licence testing (for details, see Hampel, Sturzbecher, Mönch, Trautsch, Wagner & Weiße, 2008). The common feature of all these institutions, alongside their interdisciplinary approach, was the fact that, although naturally acquainted with the routine business of driving tests, they were not involved in the organisation of testing, “because experience has taught us, that it is impossible to elaborate genuinely new concepts when ideas are immediately struck down with questions as to their feasibility and practicability” (Hirschberger, 1975).

4.3.2 The practical driving test in the GDR

During the period under review, the integration of training and testing was demanded as the priority task with potential to reduce novice driver accident figures in both East and West Germany. This goal was pursued especially purposefully in the GDR, however. Disregarding the very few exceptions, driver training was there provided by state-run driving schools; it was thus possible to exert immediate political influence of the training given to learner drivers. In this context, the government made a virtue out of necessity – namely the shortage of vehicles and fuel – and sought to organise the training as effectively as possible (see above).

The dynamic transformation of the system of driver training and driving licence testing in the GDR over the period from 1978 to the mid-1980s was based on two fundamental changes which came into effect in 1977: Firstly, the publication of “Training Plans and Programmes for the Training of Drivers for Driving Licence Classes 1 – 5”, and secondly, the issuing of a new driving school ordinance. On this basis, a new “four-phase training concept” was installed as the binding standard by 1981. To this end, the four training elements listed below were closely integrated according to didactic principles and gradually paired with a more strongly differentiated system of testing (further amendments to the training plans and programmes and to the driving school ordinance were adopted in 1982 and 1985):

- “Theoretical training” (27 sessions),
- “Simulator training” (6 training sessions on vehicle simulators to learn the basics of vehicle handling),
- “Training on an off-road training ground” (the training at a so-called “autodrome” from then on represented a mandatory element of driver training),
- “Training in public road traffic”.

The reorganisation and further differentiation of the system of testing followed on from the training reforms – in accordance with a pedagogically meaningful strategy¹⁹ – and was concluded with the passing of a fundamentally new set of driving test guidelines on 1st October 1985. These new guidelines split the traditional theoretical test into two sections, and the practical test into three sections. The overall driving test thus comprised a total of now five test sections (Sturzbecher et al., 2008):

- “Basic theoretical test, part 1” addressing “Basic theoretical knowledge”,
- “Basic practical test, part 1” with a focus on “Basic driving manoeuvres”,
- “Basic theoretical test, part 2” addressing “Danger aspects”,
- “Basic practical test, part 2” with a focus on “Hazard situations”, and
- “Final test” in real traffic.

The practical driving test, therefore, was divided into three independent sections; the two basic tests were usually conducted aside from the public roads at the training ground. The “Basic practical test, part 2” and the “Final test” in real traffic were usually arranged one immediately after the other, but each of these test sections could still be repeated separately if failed.

The two basic practical tests each comprised up to 13 test elements, depending on the licence class in question, with the tasks of the second basic test – like those of the preceding theoretical tests – concentrating more specifically on hazardous situations and thus demanding more advanced driving experience. The basic practical tests for licence class B, for example, required successful completion of the following tasks: Driving off within a specified time, targeted braking, a slalom course, shifting into second gear and back into first gear, reversing and the solving of a minor technical problem (e.g. replacement of a defective light bulb). The corresponding demands and assessment criteria were described in the annex to the guidelines at a level of detail which came very close to standardisation. Where no “autodrome” was available, the GDR driving test guidelines of 1985 specified:

¹⁹ Even today, various European countries in which training and testing are not only closely integrated in their contents and methodology, but also administered under state control, still commence reforms in the process of novice driver preparation with changes to the system of training, which are subsequently followed up with corresponding changes in the system of testing.

“The place of the test is to be chosen such that the basic practical tests can be performed without hindering or being hindered by other road users.” The order of the tasks to be accomplished during the basic practical test was determined by the examiner; in case of mistakes, the candidate was permitted to repeat each task once. If a task was still not mastered to the satisfaction of the examiner at the second attempt, then the test was deemed to have been failed.

The concluding element of the driving test, usually immediately following the “Basic practical test, part 2” at the training ground, was the 60-minute “Final test” in real traffic; the 1985 guidelines extended the length of the test drive from 30 to 40 minutes. The final test section was very similar to today’s practical driving test and was usually conducted in the presence of the driving instructor, who therein served as the responsible operator of the vehicle. In exceptional cases, the test was conducted by an examiner alone, who then also assumed the usual role of the driving instructor – similarly to the arrangement still practised today in some European countries (see Bönninger et al., 2005). During this test drive, further driving manoeuvres were examined, including stopping at the kerbside, turning on a road of a limited width, parking in a space parallel to the traffic and parking in a space at an angle or at right angles to the traffic. Furthermore, the candidate was required to check the operational and road safety of a randomly chosen part of the vehicle before setting off.

The test route was determined by the examiner during the actual test. This route was required to incorporate a variety of features, though these demands were only outlined very coarsely in the applicable guidelines: “The test route is to be varied irregularly and should, where possible, comply with the following requirements: It should be guaranteed, that the test route includes roads with a high traffic density, roads permitting speeds up to 80 km/h, a junction controlled using hand signals or by traffic lights, junctions with roads of equal priority, junctions between main and minor roads, level crossings, pedestrian crossings and bus or tram stops, and that complicated traffic situations must be mastered.” In some towns, a number of standardised test routes existed, one of which was then selected by drawing lots. At the end of the test drive, the candidate had to answer one or two questions on particular traffic situations which had arisen during the test. The purpose of these questions was to ensure that the basic theoretical knowledge had not only been learned specifically for the theoretical test sections. It is furthermore to be noted that the driving school ordinance required each candidate to furnish proof that he had passed a preliminary test in advance of both the theoretical and the practical driving tests.

Around the mid-1980s, studies of driver training and accident analyses provided ever more substantial evidence that novice drivers, in particular, often fail to brake with the maximum possible deceleration in emergency situations and thus unnecessarily extend the braking distance. Consequently, a further practical driving task was introduced in 1986, namely “Emergency braking in front of a suddenly appearing obstacle”. This task became an element of the “Basic practical test, part 2” on the training ground and served to demonstrate the ability to brake abruptly in case of danger. The test candidate was required to avoid a randomly chosen obstacle, which was swung in front of the vehicle while moving at a speed of at least 40 km/h. The obstacles usually took the form of dolls, though one-metre cubes of a foam material were sometimes used as an alternative (Petzholtz, 1988). With the task of emergency braking, there were thus now 29 individual test elements, from which the examiner then pieced the test together for a particular licence class in accordance with the test guidelines.

To summarise: The GDR model of novice driver preparation comprised theoretical and practical training and test components in a pedagogically meaningful combination, based on the psychological classifications of driving competence acquisition. “The purposeful integration of training and test elements is recognised not only from the chosen sequence,

but also from the subordination to an overarching goal: The learning of hazard perception and avoidance by way of ‘safety training’. [...] The ‘safety training’ was thus, in the first instance, a consistent didactic training principle and not merely a practical driving exercise. At the same time, risk prevention was assigned such significance as a learning topic, that the examination of hazard knowledge and practical hazard avoidance advanced to become two independent test sections.” (Sturzbecher et al., 2008, p. 77).

The driving task “Emergency braking in front of a suddenly appearing obstacle”, which was introduced in the GDR in 1986 and there examined at the training ground, has been prescribed in modified form as a test requirement in the whole of Germany since 2003. It remains to be questioned, of course, whether the current placement in the real traffic environment can be deemed an optimum solution. Nevertheless, this example illustrates that the described procedures of training and testing in the GDR have by all means influenced further developments in novice driver preparation in Germany. From today’s perspective, too, they hold potential for future inspiration, regardless of the fact that they still displayed no modern elements of informal (e.g. computer learning) or co-educative learning (e.g. accompanied driving²⁰, peer review):

- The practice of systematic training and testing at an “autodrome”, i.e. aside from the public roads, represented a intermediate step in a suitably protected environment on the way to training and testing in real traffic; the possible benefits under present-day conditions should be made a topic of open and unbiased discussion.
- The provision for questions to be asked on encountered traffic situations, and the resulting possibility – either after the test drive or during intermediate stops – for the examiner to test theoretical knowledge, to obtain information to aid the interpretation of his observations, and not least to correct his initial impressions of the candidate’s driving competence, has recently been introduced as an innovation in the practical driving test in a number of European countries (see Chapter 7); it is in our opinion also an optimisation option worthy of consideration in Germany.
- The completion of a preliminary test as a “rehearsal” for the actual practical test helped the candidate to control his test anxiety and, together with the intermediate tests, provided important pointers to any outstanding competence deficits to be overcome. From the standpoint of psychological testing, this can be associated with the concept of “promotion-oriented diagnostics” and is to be deemed desirable insofar as the (preliminary) test can be viewed as predictively valid. Inversely, as currently to be seen in the Netherlands, for example, such preliminary tests offer excellent opportunities to analyse the methodical quality of the practical test and to study optimised variants in practice without intervening in regular test procedures.

In contrast to the reforms in the system of training and testing overall, the level of examination-specific reflection and critical methodical evaluation of the (practical) driving test in the GDR is presumably unsuitable as a model for further development. In this context, Sturzbecher et al. (2008, p. 78) concluded: “A progressive system of testing could have been expected, at the latest in the 1980s, to apply methods with foundations in psychological testing and to reflect its results systematically and critically by way of an empirically based evaluation. As far as the GDR system is concerned, there is no knowledge of efforts in this direction. The essentially judgemental stance of GDR psychology was no doubt a

²⁰ A pilot project initiated at the end of the 1980s, however, did consider the possibilities for supplementary, non-professional training by family members with a driving licence and corresponding years of practical driving experience (Anklam, 1990; Sturzbecher et al., 2008).

contributory factor – alongside the inadequate technical prerequisites in electronic data processing.” It must be added, however, that there has to date been no full-depth, systematic search for critical methodical appraisals of the driving test in the GDR, and this will in any case prove difficult to accomplish, as the useful information is probably concealed in so-called “value-proving analyses” pertaining to the training system (e.g. Tischendorf, 1984).

4.3.3 The practical driving test in West Germany

The driving test as a learning-objective-referenced test

In the 1970s, the state guidelines for driver training in the driving schools in West Germany were formulated very generally and with scarcely binding character. Furthermore, the federal state structures and a liberal economic order in which professional freedoms were considered an important legal right seemed to preclude the exerting of direct and efficient political influence on the driver training system with the objective of reducing novice driver accidents. The essential control instrument for the quality of driver training remained, as it had always been, the concluding driving test: “Tests set quantitative and qualitative standards, whether explicitly or implicitly.” (Hampel, 1977, p. 8). Consequently, the experts in the field demanded reformation of the practical test in the 1970s, as a means to lower the accident risks for novice drivers.

From the point of view of test methodology, the ideas for reformation of the practical driving test were shaped above all by the various special driving behaviour observations with test character which had in the meantime been developed both at home and abroad. The BASt charged a “Study Group for Motor Vehicle Driver Tests” (Studienstelle für Kraftfahrzeug-Führerprüfungen) at TÜV Rheinland with documentation of these methods and investigation of the different “scientific approaches, with the objective of determining the extent to which they could be relevant for routine testing” (Hampel, 1977, p. 5). Within the framework of this study, 10 different methods of driving behaviour observation were evaluated with regard to their applicability in the context of practical (routine) driving tests, while at the same time subjecting the currently prevailing methodology to a critical appraisal.

Among the methods analysed was the so-called “Cologne Driver Behaviour Test”, which had been developed at the Central Driver Assessment Centre (Obergutachtenstelle für Fahreignungsuntersuchungen) in Cologne (Schubert & Edler, 1965; Kroj & Pfeiffer, 1973)²¹ as a tool with which to develop diagnostic opinions on individual driving styles within the framework of assessments of fitness to drive. At the time of the study, this test was the only routine method of its kind which had been in regular practical use over a period of several years. The “Cologne Driver Behaviour Test” can also be considered particularly typical for the then popular approach to models for “standardisation” of the practical driving test: For this test, the observations were related specifically to the individual sections of a driving route; the locally defined driving situations were thus perceived as the tasks of a test whose 10 “subtests” detailed the behaviour to be observed in the given situations. The test items were thus certain elements of behaviour which could be observed, or not, in a particular situation. This supplied quantifiable results (see Chapter 2.4.2, “Category systems”), which could be based on unambiguous decisions and later made the subject of corresponding statistical task analysis. In this way, an assessment drive was ad-

²¹ The Cologne Driver Behaviour Test (K-F-V-T), following a number of amendments, is still used today by the Central Driver Assessment Centre of the State of North Rhine-Westphalia in Cologne.

vanced to the status of a “genuine test” of driving behaviour, and complied fully with all the methodical demands placed on a test procedure.

The described and initially impressive methodical merits of the Cologne test, however, are only properly applicable for test drives as they are used in medical-psychological assessments of fitness to drive. The other side of the coin is a diversity of serious disadvantages: Such test drives are relevant to only a very limited section of the population; in the context of mass testing, standardised test routes would quickly become general public knowledge and would thus lose their demanding character. The alternative construction of an adequate number of parallel tests to permit rotation, and constant revision of these tests according to selected theoretical and methodical criteria to reflect changes in the traffic conditions, on the other hand, would require a very high expenditure. The heart of the problem from today’s perspective, however, is that standardised test routes are an obstacle to adaptive test strategies (see Chapter 5.5.1).

Alongside the economic disadvantages and methodical weaknesses, there were also didactic considerations which contradicted the use of standardised test routes: The striving of the Technical Examination Centres at that time was to have the practical driving test conducted over as many different routes as possible, so as to encourage driving instructors to spread their training over the whole test region, rather than concentrating on particular routes. As a test drive usually returned to its starting point, however, the number of suitably demanding test alternatives was nevertheless limited. This fact is naturally still applicable today: It can be assumed that each driving test examiner – consciously or subconsciously – possesses a stock of “personal” test routes which he considers suitable in accordance with his own (unsystematic) experience and, where appropriate, passes on to colleagues without corresponding local knowledge (Hampel, 1977). Thus, bases for at least a partial standardisation of test routes could be found at this point, insofar as this is considered desirable.

Overall, however, the study published by Hampel (1977) led to the realisation that most of the driving behaviour analyses developed hitherto either failed to satisfy strict standardisation criteria, or else – insofar as they could possibly be seen to represent standardised methods – could not be applied practicably under routine conditions. Even the driving tests were shown not to be objective in the strict sense, and that was indeed not to be expected in the eyes of the author: “The fundamental problem is that the immediate purpose of a participation in traffic is to change one’s location. Constancy of the test conditions, however, is an essential prerequisite for an objective test. A sober appraisal of the possibilities, therefore, reaches the conclusion that driving tests conducted in real traffic can at best come close to the goal of objectivity” (Hampel, 1977, p. 157). The basis for objectivisation of the practical driving test was identified as the necessity to “describe the learning objectives of driver training so clearly and explicitly, that both instructors and examiners find unambiguous orientation” (ibid., p. 158).

Following on from the results of the study, the contemporary experts in the field became convinced that a demand for maximum standardisation of the practical driving test was neither feasible nor methodically meaningful, and that the development of a methodical concept for the practical test should concentrate on the paradigm of “learning-objective-referenced tests” (see Chapter 2.3.4), instead of attempting to perfect the current model in the sense of a differential achievement test. Kroj (1977, p. 35ff) illustrated this change of thought as follows: “The essence is not to classify the test candidate according to his position within a random sample, but rather to determine whether he has attained a certain level of qualification. The measure for this level of qualification is not an average or randomly sampled test candidate performance, but rather the set of requirements for safe participa-

tion in road traffic. The driving test must thus evaluate the attainment of those learning objectives which guarantee safe participation in road traffic.”

For the specification of training objectives to be verified in a learning-objective-referenced test, the general practice is to base decisions on an expert rating and defined rules of behaviour (“generative rules”), which ensure that the selection embodies the maximum possible objectivity. With regard to the practical driving test, however, Hampel demanded additional methodical safeguards, as it was here not expedient, as in the field of general school education, for example, to accept a mere correspondence between the required learning and the test contents; it was additionally necessary to validate the final relevance of the training for the sphere of life in which it was to be applicable, namely safe participation in road traffic: “Particularly in the case of an everyday activity like driving, there is a constant danger of stereotype definitions of what constitutes a ‘good driver’ influencing the elaboration of objectives, if there is no monitoring on the basis of later driving mastery, in other words according to external criteria. This methodical intention is by no means simple to realise, but should not be abandoned. The driving test is thus, even as a learning-objective-referenced test, basically subject to the same requirements as a test in the conventional sense with regard to objectivity, reliability and validity, albeit with a necessity to adapt the statistical methods used to verify these criteria to the specific circumstances” (Hampel, 1977, p. 19).

Learning objectives, driving tasks and test locations

Hampel (1977) based his thoughts on the formulation of driving tasks on the simplified assumption that participation in road traffic represented a constant change of location along a particular driving route with a particular purpose. To this end, the driver passes along a sequence of route sections with different sets of properties, over the course of which the relatively stable properties of a route section (e.g. surface condition, lining buildings) are regularly supplemented by a span of variable properties (e.g. presence and behaviour of other road users, weather and lighting conditions). All the properties of a particular route section together make up a concrete traffic situation, and the appropriate handling of this traffic situation can be designated a driving task.²² Tasks are mastered with a combination of conscious and unconscious behaviour elements serving, for example, vehicle operation or orientation. In this connection, the objective of a change of location must be adapted to further considerations, such as road user safety or an unhindered traffic flow. The learning objective is the successful handling of all relevant driving tasks by way of appropriate behaviour.

The theoretical conception of driving tasks developed by Hampel (1977) built upon a corresponding concept which McKnight (1971) and McKnight and Adams (1970, 1972) had presented with their “driving situation test”. With regard to its observation standards, however, this test remained similar to the Cologne driver behaviour test in that it was founded on a system of categories (see above and Chapter 2.4.2), i.e. the observation and assessment of driving behaviour was related to “relevant events” and thus divided the process of driving into a multitude of individual elements. The driving task “Turning left at a crossroads”, for example, was broken down firstly into a timing-based sequence of subtasks (approaching the crossroads > reaching the crossroads > entering the crossroads > turning and exiting the crossroads), and then into variations dependent on the traffic circumstances (e.g. the presence of road markings or traffic signals, crossing or oncoming traffic, or even

²² This appears by all means reconcilable with present-day competence theory approaches (see Chapter 2.2.1), according to which driving is described as a problem solution process.

occurrences such as “defective turning indicators”). The actions required by the varying conditions at each point along this chain (e.g. use of the rear-view mirror, actuation of the turning indicators, turning of the steering wheel, braking) each represented an event to be observed, which was subsequently either noted or not, and thereby enabled an objective assessment of the overall process of turning. In concrete terms, this meant that a turning task at a normal urban crossroads (traffic signals green, oncoming traffic, pedestrians crossing) required a driving test examiner to observe and record a total of 13 events.

By way of summary, it can be stated that the logical and detailed structuring of driving tasks and the even more discrete dissection of the required driving behaviour into events proposed in the concept elaborated by McKnight (1971) were indeed impressive in their objectivity and appeared exemplary for a careful formulation of learning objectives. McKnight had actually developed his concept originally as an aid to driver training. The application of his event-oriented test concept to the driving test, however, would be evidently impracticable, as it places unreasonably high demands on the examiners in respect of their observation, assessment and documentation of the test. For a mass routine test, rating scale systems are shown to be superior to category systems (see Chapter 2).

But let us return to the driving tasks. In the same way as a traditional work sample can only test a representative selection of the actual occupational demands (see Chapter 2), the practical driving test, as a special form of work sample, must focus on a selection of representative driving tasks. The tasks must be related to the training contents in the context of a learning-objective-referenced test and, in the case of the driving test, moreover of particular significance for the promotion of traffic safety (see above and Chapter 5).

Driving tasks can be defined with varying degrees of differentiation, but even if a maximum differentiation is held to be desirable, the number of driving tasks to be assessed during a practical driving test must still remain limited for the purposes of practicability, because the test duration is not infinite, and the examiner himself possesses only a certain capacity to observe and evaluate the performance of the driving tasks by the test candidate. For the latter reason, the problem of meaningful driving task formulation has at no time throughout the history of the practical driving test become virulent with regard to improvements in methodical quality, but only where the objective has been to arrange the driving tasks to be performed in some form of test documentation (“test report”). It is furthermore to be remarked that no explicit attempts have been undertaken to date to derive the driving tasks desirable for a driving test from the point of view of the traffic sciences: It is rather the case that, viewed historically, the tasks of the practical driving test have evolved successively from the obvious demands of road traffic, a development which is in the end a source of the differentiation problems (see Chapter 5.4).

The first driving task catalogues were the outcome of experiments conducted by the Technical Examination Centres to develop appropriate test documentation. The error scheme presented by the VdTÜV in its Notice 731 in 1973 was still based on the categorisation (paragraphs) of the Road Traffic Regulations (StVO), contained some 100 assessment criteria and was overall inadequately adapted to the practice of driving licence testing. Significant methodical progress was achieved in the mid-1970s at TÜV Bayern, where – on the basis of the aforementioned catalogue of driving errors – a list of the traffic situations, or driving tasks, entailed by a typical test drive was compiled. Each of these driving tasks was assigned elements of driving behaviour in the sense of observation categories (see below and Chapter 2), producing a two-dimensional matrix of 20 “driving situations” and nine definitions of “situation-relevant behaviour” for the recording of driving errors. For practical purposes, however, this matrix was still too extensive to permit reasonable documentation of all the desirable properties of a candidate’s driving behaviour.

The further development of test documentation methods was similarly a topic of research for TÜV Rheinland, whose experts subsequently took up and enhanced the core idea of the Bavarian proposal, namely test requirements based on driving tasks. In doing so, they also reviewed a position expressed by Jensch, Spoerer and Utzelmann (1977), who – in a similar manner to McKnight – defined driving tasks by way of traffic situations in their development of a “doctrine of traffic behaviour”, but now summarised the numerous elements concisely in seven “prototypical driving tasks”. TÜV Rheinland adapted these driving tasks to test practice and designated them “types of driving task”²³ (see table below). Correspondingly tailored observation categories were then developed for the driving behaviour to be observed by the examiner, along with catalogues of driving errors as assessment criteria. The behaviour elements listed in the table were at that time still described as “errors”, as was required by the prevailing legal and administrative terminology; following today’s understanding, however, they should be referred to as observation categories. This is also reflected in the fact that the concept also provided for the documentation of successful task completion. From the methodical point of view, therefore, the following matrix is to be considered the origin of driving tasks and observation categories in the current-day meaning in driver training and testing in Germany.

Tab. 4.1: TÜV Rheinland draft for a matrix with which to record driving errors (Hampel, 1977)

Type of driving task:	Errors in:
1. Driving off, stopping; merging into traffic	(a) Vehicle handling
2. Use of road lanes	(b) Traffic observation
3. Passing and overtaking other road users	(c) Observance of traffic signs or traffic rules
4. Turning across oncoming traffic	(d) Use of indicators
5. Observance of the rules of right-of-way	(e) Road area use
6. Use of motorways and high-speed roads	(f) Safe distance to other road users
7. Attention to pedestrians and cyclists	(g) Driving speed too slow
8. Attention to buses and rail-borne vehicles	(h) Driving speed too fast
9. Basic driving manoeuvres ²⁴	(i) Obstructing of other road users
	(k) Endangering of other road users
	(l) Intervention by the driving instructor

Further indirect development of the driving tasks with regard to their function as minimum demand standards for test drives in real traffic was realised over the period from 1975 to 1985 through the elaboration of test location guidelines. Why did such guidelines become necessary? The changing levels of motorisation which were to be observed in West Germany in the 1960s and 1970s (Mörl et al., 2008) led to ever wider deviations in traffic density – and thus also in the test demands – between individual test locations. For the test guidelines formulated in 1958, it had sufficed to require that a test location be character-

²³ This choice of terminology evidently reflected the fact that the concept of driving tasks was still rather indistinct, or at least outlined differently to today: As each practical instance of “turning across oncoming traffic”, for example, was dependent on the conditions of the specific situation, it was considered necessary not to define the underlying demand as a single task, but instead to describe the possible situative diversity, hence the term “Type of driving task”. Today, on the other hand, the “driving tasks” are referred to situation classes (see Chapter 5.4) to achieve the same result.

²⁴ The basic driving manoeuvres were at that time still referred to as “basic driving exercises”, which could give the impression of a training element rather than a test component. To avoid any misunderstandings, therefore, the current and more appropriate term “basic driving manoeuvres” is used throughout the present text, except in historical citations.

ised by an “appropriate traffic density”, with possibilities to assess the driving performance of the candidate at crossroads and junctions, at road exits, when overtaking and in connection with official road signs and traffic signals. These criteria, however, soon proved inadequate, along with the corresponding guidelines of 1970. The driving instructors, who were of course in business competition with each other in West Germany, complained that they were being forced to expand the scope of driver training in the major conurbations, and thus to demand higher prices than their colleagues in rural areas. Local politicians were also demanding the recognition of their particular community as a test location, and the concept of “location” was in some cases even being interpreted to mean that it was not permissible to cross the territorial boundaries of the designated locality within the framework of a driving test. Against this background, the Technical Examination Centres began to doubt whether the conditions at certain test locations were still conducive to a level of training satisfying the objective of adequate driving safety. A study produced by TÜV Bayern revealed distinct correlations between the results of practical driving tests and the size of the community in which the tests were conducted (Hofmann, 1975). Already in 1973, therefore, the road safety programme of the Federal Government demanded the “exclusion of test locations with a low traffic density” (Hampel & Küppers, 1982, p. 6).

The previously mentioned “Study Group for Motor Vehicle Driver Tests” at TÜV Rheinland took on the task, on behalf of the BASt, of elaborating practicable proposals for a solution to the problem. Notwithstanding the conclusions reached by the prior study on “possibilities for standardisation of the practical driving test”, namely that the formulation of learning objectives and driving tasks derived there from was to be demanded as a prerequisite for further efforts to improve the objectivity of the practical test (Hampel, 1977), it was decided to seek “as far as possible merely solutions within the framework of the existing provisions” (Hampel & Küppers, 1982, p. 14), because the situation was one of an urgent “traffic policy state of emergency”, so to speak.

The immediate aim was thus a reorganisation of the regulations and guidelines already applicable to the driving test, and not the development of a whole new methodology. Such reorganisation is generally much simpler to manage from the point of view of administrative legislation and can be implemented much sooner than fundamentally new stipulations. Where new provisions were necessary, the study group gathered the opinions of traffic experts from the Technical Examination Centres, the driving instructors and representatives of scientific research nominated by the BASt. Compared to a systematic analysis of learning objectives and driving tasks, this was only the second-best solution; the involvement of all the affected institutions, however, did bring the advantage of greater acceptance for the ensuing guidelines on test locations.

The elaboration of the guidelines began with a survey of the most important traffic conditions at all 682 test locations listed for the whole country (“Analysis of status quo”). This survey was performed by the individual Technical Examination Centres for their particular areas of responsibility on the basis of a centrally defined concept. The second step was to determine target parameters by way of a written questionnaire distributed to 234 experts. To this end, they were asked to rate a catalogue of 53 local demands to be placed on a test location, formulated in the form of driving tasks, with regard to their significance for the designing of a learning-objective-referenced practical test. The outcome was a collection of 18 driving tasks for which corresponding local conditions should be encountered with a specified minimum frequency to constitute a wholly satisfactory test location. This collection of tasks was presented as a “standard demand profile for test locations” (Hampel & Küppers, 1982, p. 90), formulated by way of required driving tasks (see following table).

As a final step, validation of this demand profile was sought within the framework of a field test involving a random sample of 35 locations. This revealed that “the target para-

meters developed by the experts [...] lead to evidently unrealistic consequences if they are translated 1:1 into practice. [...] It seems expedient to define a value of 90 per cent as the threshold for compliance with the demand profile.” (ibid., p. 94). Furthermore, it was specified that, even in the exceptional cases of an otherwise unreasonable distance to a satisfactory test location, a value of 70 per cent was the absolute minimum rating which must be achieved.

Tab. 4.2: Standard demand profile for test locations (Hampel & Küppers, 1982, p. 72)

Demands	Average rating values	Target frequency per 5 driving tests			
		1	5	7.5	10
1. Driving off and merging into moving traffic from the kerbside	1.8			×	
2. Driving on roads with road markings	1.4				×
3. Driving on roads with a traffic density of at least 100 vehicles per hour	1.7			×	
4. Driving on one-way streets	2.2		×		
5. Changing between road lanes (aside from crossroads)	1.3				×
6. Driving on roads with 2 or several marked lanes for one direction	2.1		×		
7. Approaching and passing pedestrian crossings	1.5			×	
8. Passing public transport stopping points	2.2		×		
9. Passing unmarked crossroads with the priority rule “give way to the right”	1.3				×
10. Entering (merging into) in priority roads	1.5			×	
11. Passing crossroads with a stop sign	2.0		×		
12. Passing crossroads controlled with light signals	1.6			×	
13. Turning left on roads with oncoming traffic	1.3				×
14. Turning right/left with special consideration for cyclists (e.g. parallel cycle lane)	2.0		×		
15. Passing crossroads and junctions where the priority road turns away to the right or left	2.1		×		
16. Driving outside built-up areas (bends and blind spots)	2.0		×		
17. Basic driving exercises aside from moving traffic (e.g. side street or cul-de-sac)	2.4		×		
18. Motorway, high-speed road (speed over 80 km/h possible)	3.1	×			

The core problem for the elaboration of test location guidelines, therefore, was to find acceptable solutions to the inevitable conflicts between the aim of establishing the desirable test conditions and the actual circumstances of local traffic conditions without – as had been the case in the past – relying on subjective judgement or dubious precedents. The objectives and approaches of the study group were thus clearly determined by the political framework. The project analyses were not directed at the entirety of the desirable demands

for a practical driving test, but instead deliberately restricted to the necessary local factors. Due to the high methodical complexity, the work was not actually completed until 1981. The project results, subject to certain amendments, were later incorporated into the corresponding guidelines by the responsible committees; this was accomplished in 1987 (see Chapter 4.4).

If we consider the study drawn up by Hampel and Küppers (1982) from the perspective of the methodical demands placed on work samples, or here driving tasks, then it is to be noted first of all that the objective was not to produce a comprehensive description of all the driving tasks which would be desirable for a practical driving test, but rather “to compile practicable demand criteria for the locations at which driving tests are conducted” (ibid., p. 13), i.e. to describe the local prerequisites for the performance of driving tasks. Consequently, neither observation categories nor assessment criteria were placed at the focus of discussion within the course of their investigations. Nevertheless, the study can rightly be praised as the first to have defined the demand situations and driving tasks which a candidate should be required to master during a practical driving test according to systematic methodical principles and on the basis of empirical data.

Even so, the work was based not on a direct analysis of the demands of road traffic, but instead on considerations of the demands arising from the instruments of driver training and driving licence testing available at the time. Only if it is permissible to assume that the demands formulated in the regulations are themselves in turn related (directly) to real road traffic demands can it be supposed that the driving tasks identified by the authors mirror precisely those representative demands which the test candidate must later handle when participating independently in road traffic. The results of the survey to gather expert ratings on the significance of the proposed driving tasks, however, support this assumption.

Basic driving manoeuvres, training and test grounds

It was already explained in Chapter 4.2 that driving test candidates have been required to demonstrate a number of fundamental manoeuvres (“basic driving manoeuvres”) in an environment with little or no moving traffic ever since the very beginnings of licence testing. These basic driving manoeuvres were initially described only very generally with regard to both the associated demands to be satisfied by the candidate and the observation categories and assessment criteria for the driving test examiner; over the years, however, increasingly precise definitions evolved and permitted progressively more objective verification, i.e. they came ever closer to formal standardisation. The scope for judgment on the part of the examiners was greatly reduced, a development which was by all means welcomed by a majority of their number.

How did the outlined process of standardisation proceed? The 1970 Examination Guidelines provided only general notes to the effect that attention should be paid to reversing, turning and parking of the vehicle. The previously mentioned VdTÜV Notice 731 of 1973, on the other hand, already contained detailed specifications of the performance demands and the assessment and decision criteria to be applied to the basic driving manoeuvres, for example by laying down the acceptable dimensions for parking spaces, by describing impermissible errors, and by stipulating the number of errors which was to result in test failure. Each practical test was to incorporate at least three of the five defined basic driving manoeuvres: Reversing into a parking space (this manoeuvre was required in every test), parking in a space between two vehicles standing parallel to each other, turning the vehicle to face the opposite way making use of a junction, crossroads or entrance, turning the vehicle using only the width of the road, and driving off on a gradient. The elementary driving techniques moving off, changing gear and driving through curves, which were examined separately in the GDR, were considered inherent elements of driving competence by the

West German test system and thus assessed during the test drive. On the other hand, the GDR test element “emergency braking”, which represented an important starting point for the testing of reactions in hazard situations, was not required in West Germany.

Like the GDR, West Germany for a time also organised the testing of such basic driving manoeuvres on dedicated test grounds aside from public traffic. The reason, as explained in a circular of the responsible supervisory authority in the federal state of North Rhine-Westphalia, was that it “poses considerable difficulties in communities with a high traffic density to perform the prescribed [...] basic driving exercises in the course of a test drive [...] without significantly hindering the remaining traffic” (Hampel, 1977, p. 50). The test ground procedure, however, remained exclusive to densely populated areas and in the end failed to gain substantial popularity. Critics complained that this test method was not realistic: Instead of a real parking area with genuine parked vehicles, for example, the candidate found himself on a kind of “obstacle course” on which events occurred with a regularity alien to real-life traffic situations. The behaviour of other road users and the candidate’s reactions to such behaviour, after all, were to be seen as essential aspects of the driving test.

From the methodical point of view, the presented objections amount to an accusation that the contextual validity of the test, namely proof of an ability to participate safely in road traffic, was neglected in favour of maximum test objectivity. This raises the question – which, in our opinion, has still not been properly clarified even today – as to what exactly is to be examined by way of the basic driving manoeuvres: The mastering of fundamental driving techniques or the adaptation of certain driving manoeuvres to the remaining traffic?

It is furthermore to be brought to mind that the possibilities for testing of the basic driving manoeuvres on public roads are extremely limited in the major cities, not only due to the density of traffic, but also because there is relatively little free parking space available. If an examiner is not to spend an unreasonable amount of time looking for a suitable place at which to test the specified manoeuvres, therefore, he must in any case resort to one or more “informal test grounds”, i.e. suitable quiet streets, which he then visits more or less regularly and which are naturally also used by the driving instructors for training purposes. “A true-to-life test thus appears an illusion which is not to be realised in practice” (Hampel, 1977, p. 51).

Where did the disproportionate importance which is still today attached to the basic driving manoeuvres within the framework of the practical driving test originate (see Chapter 5.4)? From a methodical viewpoint, the basic driving manoeuvres permit an apparently valid determination of the extent to which fundamental vehicle handling techniques are mastered. A further merit is the broad scope for standardisation. These two aspects together found the methodical fascination vested in basic driving manoeuvres, though it must be noted that there is in all spheres of life a tendency to test preferably those parameters which are readily controllable. At the same time, however, these manoeuvres are also the test element which produces the greatest fears of failure among driving test candidates, because two incomplete attempts result in immediate termination of the test and thus acquire the same significance as any of the “mortal driving sins” which generally represent an unequivocal endangering of traffic safety (e.g. intervention by the driving instructor to prevent an accident or the ignoring of a red light). It thus appears reasonable to ask whether the significance of the basic driving manoeuvres is perhaps overestimated.

Observation categories, assessment and decision criteria

The elements of driving behaviour to be observed by the examiner during the test drive, i.e. the observation categories, were described for the period under review here in the Examination Guidelines of 1970. These observation categories had been elaborated by the

VdTÜV “Working Group on Driver Licensing” (“Arbeitskreis Fahrerlaubnisfragen”, AK-FF) on the basis of the currently applicable provisions, and subsequently agreed with the responsible traffic policy secretaries in the individual federal states (see below: “Validity”).

The catalogue of observation categories comprised 15 items which had evidently not been determined systematically or on the basis of their objective significance, but were rather the outcome of a randomly perceived need for clarification. For example, the checking of the candidate’s correct seated posture was described with detailed references to the desired positions of the right and left legs, lower back and both hands, whereas the important point of road use was brushed over with the almost laconic remark: “If rail vehicle tracks run along the right-hand side of the road, the area of these tracks should also be used.”

A further systematic weakness was to be seen in the fact that the observation catalogue referred partly to the handling of particular traffic situations or driving tasks (e.g. passing crossroads and junctions), but at the same time also to elementary behaviour which was not to be assigned to an individual situation and was consequently not to be understood as a driving task. The individual observation categories were thus not clearly differentiated; they even overlapped in some respects and soon proved to be unsuitable for the documentation of test performance (see below). It was evidently still necessary to elaborate a clear methodical distinction between situation-related demands (in the sense of driving tasks) and situation-independent behaviour categories (in the sense of observation categories).

With regard to the basic driving manoeuvres, the VdTÜV Notice 731 appended concrete demand and assessment standards to the 1970 guidelines; the formulation of observation categories was considered redundant at the time and thus appeared dispensable. The methodology behind test decisions was similarly left essentially unchanged by the contents of the association notice, i.e. the result was governed by the severity and frequency of the errors observed during the basic driving manoeuvres and the test drive (see Chapter 4.2). Hampel (1977), by the way, performed an empirical analysis of the correlation between test decision and the number of recorded errors and discovered that the two variables correlate to an extent of only $r = .35$. He subsequently concluded that the examiner formed his opinion more or less according to an overall impression of the test drive, provided the candidate had not made any serious mistakes.

Test documentation

As already reported (see Chapter 4.2), all regulations which had been applicable in West Germany since 1952 had required the driving test examiner to produce a record of each test, which would “in particular provide information on the errors made by the candidate.” The GDR driving test guidelines of 1985 similarly limited the obligation to draw up a report to a requirement to state “reasons for failure of the final test.” Two aspects which are common to all such stipulations is that they defined neither the scope of the report nor the time at which it was to be produced, and furthermore suggested giving priority to records of errors. Consequently, the examiners at first made only informal notes as a basis for the concluding oral evaluation. If the test was not passed, these notes were handed on to the responsible traffic authorities together with the formal application documents.

The responsible experts at the Technical Examination Centres were dissatisfied with this form of documentation, as it provided no adequate information for further development of the test quality. The wish for more differentiated and systematic documentation led to the natural proposal to compile a list of relevant driving tasks (i.e. above all the situation-related tasks) and the associated behaviour assessments as a basis for more meaningful reports. This procedure also seemed compatible with the idea of essentially standardised

report forms, for example an “EDP-ready marking sheet” which required merely the ticking of corresponding points rather than verbal notes.

As already mentioned in Chapter 4.2, the Technical Examination Centres experimented with a variety of drafts for new test reports from around 1973 onwards, over the course of which two trends emerged: Gradual reduction of the number of explicit driving tasks and observation categories, and an ever clearer layout to aid the work of the examiner. This was considered the expedient approach not least because the intention was to devise and test initially a documentation form suitable for all driving tests, in other words also for those with positive results. This objective was pursued most purposefully by TÜV Rheinland. As a basis for improved test reports, Hampel (1977) there elaborated a series of fundamental methodical positions, the implementation of which eventually produced a practicable test report which was also greeted as such by many examiners:

- In order to achieve maximum objectivity, it seems imperative to complete the written record of the driving tasks and assessments immediately during the test drive: “A lesser scope of information which has been recorded immediately is in our opinion more objective than a greater scope where nothing is known about the degree of falsification” (ibid., p. 147).
- The completion of each required driving task should be noted, so that the examiner is at any time able to check the current status of test completion.
- Immediate and unambiguous recording of the assessments corresponding to the individual driving tasks is greatly facilitated if the report dispenses with differentiated ratings and instead registers the detected errors, producing a ratio between the number of errors and the completed driving tasks. For an objective test decision, it is furthermore necessary to record also the successful completion of a driving task.
- The documentation demands must be kept to a reasonable minimum, as the examiner is otherwise constantly occupied with note-taking and can consequently pay less attention to observation of the candidate. This is also recommendable because the records – if they are to be immediate – are to be produced in a moving vehicle and should not become a matter of the examiner’s dexterity.
- The form of the records must be EDP-compatible, as only machine-based evaluation of the test results enables the necessary monitoring within the test organisations and effective comparisons between organisations.

The different test report designs proposed by the Technical Examination Centres were the topic of intensive discussions in the relevant technical bodies over an extended period. This illustrates the considerable divergence in expectations as to the functions of a test report. These ranged from a wish to possess a working basis for the handling of complaints or for the concluding oral evaluation with the candidate, through to demands that, following appropriate statistical processing, the reports must be suitable for self-monitoring on the part of the examiner or even as an instrument of disciplinary supervision. All parties were agreed, however, that a test report must be user-friendly, must be designed with reference to traffic situations and should permit computer-assisted evaluation.

In accordance with these specifications, the TÜV Information System (TÜVIS) set up by the VdTÜV elaborated a recommendation “Driving error marking for driving tests” in 1978. As suggested by TÜV Rheinland and TÜV Bayern, the driving errors were entered into a matrix comprising 13 “driving situations” and eight “driving errors” which were to be the subject of observation. The category “Crossroads” was here broken down into nine individual situations, differentiated schematically according to priority rules and driving direction – the reasons for this differentiation, however, are rather clouded. At the same time, it was deemed necessary to establish a special category “Supplementary observa-

tions”, which embraced six additional situations which could not be accommodated elsewhere by the system (e.g. behaviour towards police and emergency service vehicles). Errors in vehicle operation were to be described accordingly by way of seven report items. The observation tasks assigned to the driving errors were for the most part those proposed by TÜV Rheinland (see matrix in Tab. 4.1). The TÜV Rheinland suggestion that a statement should also be recorded on the examiner’s overall impression of the test drive was only followed in the sense that the possibilities to record a negative assessment were taken over (e.g. the category “Excessively nervous”, but not the category “Composed”).

Overall, it can be said that especially the classifications of “driving situations” or driving tasks in the VdTÜV recommendations of 1978 seem unconvincing and even a little confused, whereas the observation categories underlying the “driving errors” are in their essence acceptable. Moreover, the “marking sheet” focussed the attention of the examiner on the observation of errors. This system was initially adopted by a number of Technical Examination Centres (e.g. those affiliated to TÜV Hannover/Sachsen-Anhalt), but there were no uniform provisions. It can also be presumed that the analysis of the test reports with the technical means available at the time was very complex, and that the benefits of the new reports were thus not sufficiently evident. Consequently, most Technical Examination Centres returned to the traditional form of test documentation until 1996: The examiner described the errors which led to the candidate failing the test as free text and then enclosed these notes with the application documents.

Evaluation and quality assurance

In the case of a learning-objective-referenced test, it is – as already mentioned – above all necessary to demand content validity. This is generally verified by way of expert judgements. In Germany, these experts are the responsible section heads of the Technical Examination Centres, who coordinate their opinions with each other in advance of presentation to the VdTÜV “Working Group on Driver Licensing” (AK-FF), in which the supervisory authorities of the federal states are also represented. The expertise of the involved section heads is generally founded on many years of experience as an examiner and on their regular exchanges with examiner colleagues.

This rather informal method of expertise formation is, of course, unable to exclude the possibility of subjective views leading to a filtering of the gathered information and thus shifting of the expert ratings in a particular direction. When elaborating the aforementioned guidelines on test locations, this problem was avoided by approaching a wider circle of experts (not only examiners, but also driving instructors, traffic psychologists, traffic engineers and lawyers), establishing a broader basis for the expert opinion and thus a higher degree of objectivity. Even so, the empirical verification of the derived specifications showed that the proposals made by the experts with regard to the quality of test locations produced a number of unrealistic results (see above). This illustrates vividly, how expert opinions cannot simply be adopted unreflected, and must instead be founded scientifically and verified through empirical research. At the same time, expert judgements are clearly unsuitable as substitutes for external validity criteria.

The external validity of the practical driving test, in other words the question as to whether it really influences traffic and driver safety, as is tacitly assumed, was not, however, a subject of convincing methodical analysis during the period from 1975 to 1985. Indeed, this task is even today still outstanding. The reasons can be seen in the fact that such analyses represent a highly complex methodology research problem, the fundamentals of which can only be touched upon in this context. The difficulties begin already with the selection of a suitable external criterion; the accident criterion, which has often been used in this connection in the past, has with time proved somewhat problematic, because novice driver acci-

dents are not only attributable to the driving competence deficits of those drivers. Furthermore, interpretation of the corresponding correlations requires knowledge of the candidate's individual mileage, the precise acquisition of which throws up new problems. The paramount obstacle, however, is the lack of a control group, as the candidates who fail their driving test are generally not subsequently participants in motorised road traffic.

As, therefore, the quality of driving licence testing is difficult to measure against external criteria, the exchanges between examiners have always played a significant role for the process of internal quality assurance. To this end, the programmes of further training seminars for driving test examiners were intensified in the 1970s; at the same time, increasing importance was attached to the expertise of the traffic psychologists employed by the Technical Examination Centres.

Valuable pointers for improvements in test quality were derived from the trial use of machine-readable test reports, where a distinct correlation was revealed between the number of practical tests conducted by an examiner over the course of the year and his test assessments: With increasing numbers of tests, the assessments became ever stricter and displayed diminishing variance. On this basis, it can be concluded that intensive work as an examiner promotes the reliability of examiner judgements (Hampel, 1976b). An analysis of the errors recorded during test drives permitted the identification of two extreme groups of lenient and strict examiners with different assessment criteria (Hampel, 1976a). For the individual examiners, direct feedback on particularities in their assessments were provided by personal evaluations of the submitted test documentation, as was common practice at TÜV Rheinland, for example, in the 1970s. Each examiner received his own set of annual statistics – without the immediate involvement of his superior – and could there compare his individual test results and the percentage distributions of recorded driving errors with the corresponding data for all examiners (Hampel, 1976b).

The test examiners had always received a certain non-systematic feedback on test quality, in the sense of customer satisfaction, through the complaints brought forward by driving instructors in individual cases, and some test organisers began to train their managerial staff in the adequate handling of such complaints in the 1970s. Numerous examples show that, at the latest from the mid-1970s, the Technical Examination Centres were implementing internal quality assurance at various levels. This internal quality assurance was later expanded and integrated with external instruments of quality control (see Chapter 5.7).

4.4 Phase of consolidation from 1986 to 2003

Reasons for the lack of new approaches

The period from 1985 to 2003 can be considered a phase of consolidation for the methodical further development of the practical driving test. The work on classification according to the principles of psychological testing and further development of the methodical foundations for practical testing was interrupted; instead, the field was satisfied with the mere incorporation of individual existing points of methodical optimisation into the legislative categories.

There were various reasons for this pause:

- In 1970, Germany had still recorded over 20,000 road accident fatalities. Subsequently, however, this figure had decreased constantly, reaching just 5,361 in 2005, despite the fact that the number of vehicles on the road had almost tripled over the same period (Brauckmann, Mylius & Hähnel, 2006). It would no doubt be rash to conclude that this positive trend represented evidence of the improving quality of driver training and driving licence testing; on the other hand, the figures also gave no indication of an urgent need for action.

- The harmonisation of driving licence testing at EU level was costing a great deal of time and effort: The EC Directives of 1980 and 1991 were to be transposed into national legislation. This required a whole series of administrative restructuring measures, culminating in the separation of the stipulations governing the licensing of drivers for participation in motorised road traffic into an independent set of rules, the Driving Licence Regulations (FeV), in 1999. No really decisive changes were necessary in Germany, however, as the required standard was in its essence already in place. This gave rise to the impression at that time, that the German system of driver training and licence testing stood at a relatively high level.
- From 1989, furthermore, this period was dominated by the task of realising German unification also in the fields of driver training and driving licence testing. As already mentioned, novice driver preparation in the GDR gave training priority over testing, whereas it was changes in the test demands which regularly necessitated modification of the training concepts in West Germany. A great deal of detailed work, and not least a readiness to accept compromise, was required to harmonise these two different systems. And it is a known peculiarity of compromises, that the abandoning of positive approaches is often also the price for agreement.
- Finally, the responsible experts in the Technical Examination Centres were fully occupied with the project “Optimisation of the theoretical driving test” (see Chapter 1) over the period from 1999 to 2004, with the result that possible development resources were essentially bound elsewhere.

It was thus externally imposed change which characterised the period from 1986 to 2003, and it is understandable that the traffic policy decision-makers and the Technical Examination Centres should display little inclination to concern themselves additionally with methodical innovations. Their noticeable efforts were directed rather at the successive implementation of developments from the previous years. The new Examination Guidelines of 1987 already served this intention: They can be considered to represent methodical progress not least from the fact that all the necessary regulatory stipulations concerning test practice, which had previously only been contained in notices published by the VdTÜV, were now incorporated into examination guidelines which were readily comprehensible for driving licence applicants, driving instructors and driving test examiners alike (Mörl, Kleutges & Rompe, 2008).

The Driving Licence Regulations (FeV) which came into force on 1st January 1999 also contributed to systematisation and clarification of the rules governing driver licensing, as they gathered stipulations already contained in the Road Traffic Licensing Regulations (Straßenverkehrs-Zulassungs-Ordnung, StVZO) into an independent instrument. In September 2000, an amendment to the 1991 European Directive on Driving Licences was adopted by the EU. It was transposed into German examination guidelines in 2004. The process of legislative consolidation surrounding driving licence testing was thus brought to a close in 2004; this also marked the beginning of a new phase in which the Technical Examination Centres devoted attention explicitly to the methodical foundation and further development of the practical driving test. One expression of the realigned objectives was the start of preparations for the present project in 2004 (Sturzbecher, Bönninger & Rüdell, 2008). As the legislative framework established in 2004 is essentially still valid and applicable today, its methodical categorisation and evaluation is to follow in Chapter 5.

Test tasks and test locations

With regard to further development of the test demands, the establishing of “test districts”, which had already been proposed by Hampel and Küppers in 1982, and their anchoring in the 1987 Examination Guidelines was a significant step. A “test district” is here to be un-

derstood as an area “within which different driving tasks can be performed with a suitable frequency and with a suitable degree of difficulty to enable the expert or examiner to determine the practical qualification of the test candidate.” In the past, the provisions concerning “test locations” had often been interpreted literally and restrictively to mean that a test drive must end at the respective town or community boundary and that cross-country routes represented an impermissible aggravation of the test requirements. As test practice had already been adapted to the needs of modern traffic on many occasions, the test examiners found themselves in a legal grey area in such cases before the introduction of test “districts”. Later, the term “test district” was dropped once more in favour of the specification “test location and its surroundings” (see Annex 11 PrüfRiLi, 2004).

It remains to be noted that the criteria put forward in tabular form by Hampel and Küppers (1982) to assess the suitability of a test location were adopted for the most part for the “test districts” defined in the Examination Guidelines of 1987 (Annex 7). The differences between the suggestions made by the two authors and the requirements still applicable to a test location today are almost entirely attributable to amendments made in 1987; as they are to be illustrated in Chapter 5.4 (see Tab. 5.3), it is possible to dispense with a detailed presentation at this point.

The initiators of the criteria for acceptable “test districts” had expressly emphasised that their list of test demands was limited to those demands which are dependent on local conditions. Nevertheless, the straightforward tabular structure of the demand catalogue often gave rise to the misconception that this catalogue covered all the driving tasks to be examined. On the other hand, the work samples required in other fields, for example the final test for a trainee waiter, also assume that the necessary environment (e.g. a venue with a restaurant) and tools (e.g. tableware) are available and can be used accordingly, without use of the restaurant or tableware constituting a concrete task for the work sample. In similar fashion, the test location (or “test district”) should be viewed as the “venue” at which the driving tasks are to be performed.

In reality, the demands on the contents of the practical test stipulated in the said guidelines under the heading “Test drive” are specified in much greater detail than the demands to be placed on test locations. The demands relating to the test drive are no longer summarised under the term “driving tasks”, however, presumably because a number of the specified demands are not understood as driving tasks in the usual sense (e.g. technical preparation of the vehicle or gear-changing). Despite this recognisable weakness in methodical system, which had in fact already been present in the previous guidelines of 1970 (see above), the 1987 Examination Guidelines stated much more specifically and in much greater detail, which positive behaviour the candidate was expected to display in certain traffic situations; the focus was thus no longer placed on his errors. All these provisions later evidently formed the starting point for elaboration of today’s Annex 10 to the Examination Guidelines of 2004, which, according to our methodical understanding, describes observation categories (see Chapter 5.5).

The requirements pertaining to performance and assessment of the basic driving manoeuvres had already been described in adequate detail in earlier stipulations and could be taken over without amendment in 1987. The questioning of the candidate in connection with the test element “Technical preparation of the vehicle” (see Chapter 5.4) was introduced into the practical driving test with transposition of the Second EC Directive in 1999.

Test assessment and test decision

The 1987 Examination Guidelines also left the methodology of test assessment unchanged; the test decision was thus still based on the severity of observed errors. Even so, the catalogue of “serious” errors leading to termination of the test and automatic failure was

greatly expanded, and thus acquired essentially its present scope. This expansion reflected how traffic density and the complexity of the encountered traffic situations had increased over the previous years: It apparently served also to emphasise those elements of erroneous driving behaviour which had proved particularly conspicuous as causes of accidents (e.g. straying onto the wrong side of the road, changing lanes without observing other traffic, or lack of consideration for children or disabled pedestrians).

Test documentation

One significant change in methodology during this period under review was that, from 1996, the test report was to be handed out to the unsuccessful candidate at the end of a failed test. Prior to this, after the end of the experiments described above, there had been no properly uniform handling of the documentation of practical driving tests in the individual Technical Examination Centres; precise details of the specific procedures, however, cannot be reconstructed in every case.

With regard to the scope and system of the information recorded in the test reports, three groups of Technical Examination Centres can be distinguished in the years before 1996: Some test organisations, such as TÜV Rheinland, resumed the method of informal written remarks; they represent the first group. The test organisations of the second group returned to the list of driving errors arranged in accordance with the paragraphs of the Road Traffic Regulations (StVO), as contained in VdTÜV Notice 731 (see Chapter 4.2). The examiners in this group apparently welcomed the opportunity to draw attention specifically to the violated traffic rules during the final oral evaluation with the candidate. This system was initially also taken over by DEKRA in the federal states of the former GDR in 1990 and 1991. In a third group, test organisations sought to implement the idea of a matrix of “driving tasks” and “observation categories” (see Chapter 4.3). TÜV Hannover/Sachsen-Anhalt, for example, used the previously described VdTÜV matrix developed through the TÜV Information System (TÜVIS). DEKRA, too, tested the matrix form from 1992 and gradually developed this concept further into a practicable documentation instrument.

The DEKRA matrix (see Fig. 4.1), as the outcome of an intensive process of elaboration and testing by the responsible technical experts, incorporated on the one hand a list of 17 traffic situations, which – as an improvement over the TÜVIS draft – covered the whole spectrum of possible traffic situations relatively evenly. Alongside, the matrix specified a catalogue of eight observation categories, the majority of which had already been described by Jensch, Spoerer and Utzelmann (1977) and by Hampel (1977) (cf. Tab. 4.1: “TÜV Rheinland draft for a matrix with which to record driving errors”). The transition from observation to evaluation was facilitated by an interesting documentation solution: Driving errors which resulted in immediate termination and thus test failure were highlighted by way of a thicker border around the corresponding matrix box. The interesting and quite promising efforts to develop a practicable and useful test report at DEKRA were abandoned in 1994, however, once it slowly became clear that a written test report was only to be handed out to unsuccessful test candidates. This end to the work on optimisation of the test report can be viewed as a regrettable decision from the methodical perspective, because the DEKRA report of that time offers more starting points for the currently pending further development of test documentation than the test report presently prescribed by Annex 13 of the 2004 Examination Guidelines.

Up to 1996, the Technical Examination Centres were also divided on the question as to whether all tests should be documented, or only those with negative results. The various examination guidelines which had been applicable since 1952 had specified that the driving test examiner was to “produce records which provide evidence particularly of the errors made by the candidate”, and furthermore only in the case of a failed test that these

records were to be signed and enclosed in the administrative file. Most Technical Examination Centres were thus of the opinion that no serious errors could have occurred during a passed test and consequently there was nothing to be recorded. In the East German federal states, on the other hand, all tests were documented before the introduction of a standard test report in 1996. This standard test report, which is still used today by all Technical Examination Centres, is to be presented in detail and subjected to a critical methodical analysis in Chapter 5.6.

The described divergences with regard to the scope and form of the test report mirror the question already posed in Chapter 4.3, namely that of the purpose to be served by the test documentation: Is it merely to provide a documentary basis for the processing of possible complaints – indisputably an important function – or is it to offer the driving test examiner possibilities to weigh up and verify a test decision and a starting point for self-reflection? If learning processes on the part of the examiner are the intention, as a means to preserve and promote his testing competence, then the documentation of all tests – naturally in a suitable, user-friendly form – is imperative: After all, the recording of successfully completed examinations in technical fields is also not reduced to a simple “OK”, but instead generally accompanied with pertinent information to underline that the performance was “free of defects”. On the other hand, the outlay for data collection is only justified if the documentation is also analysed accordingly; the creators, i.e. the individual examiners, in particular, must recognise the benefit for their work.

Improvement of framework conditions

The extension of the test duration for the practical driving test from the previous 30 minutes to now usually 45 minutes in 1987 was an important step towards improvement of the assessments formulated by the test examiner and thus an enhanced test quality. As it is known from test theory that the reliability of a test increases as the square of its duration, this change, which the VdTÜV had already demanded in its 1983 memorandum “TÜV proposals for a future-oriented driving test”, can be presumed to have doubled the test reliability. For the further development of the practical driving test, therefore, it is necessary to ask constantly, whether the available time is still to be considered sufficient for performance of the test.

Indirect improvements to test objectivity and reliability were also achieved during this period through the specification of criteria to be met by a test vehicle. The previously applicable specifications had been spread over several areas of the corresponding legislation and were held to be inadequate in their contents.

Summary

An appraisal of the nigh on 100 years of methodical development of the practical driving test from the early days of driver licensing through to 2003 testifies to the intensive efforts undertaken by the Technical Examination Centres, on the one hand to achieve a higher standard of road safety for society by improving the validity of driving tests, but at the same time not to neglect the individual candidate's expectation of maximum test equity. Further progress along this path is not to be attained primarily – and certainly not solely – by broadening the test demands to be satisfied by licence applicants or by intensifying the standardisation of test organisation: It has been shown that a realistic and thus valid form of practical driving test is incompatible with strict rules in respect of test routes and the procedure of individual tests.

The growing significance of the “human factor”, which was emphasised in Chapter 1 in connection with improved traffic safety, can be seen to be no less applicable with regard to the raising of driving test quality: In our opinion, optimisation of the practical driving test is only to be achieved if the test examiner views himself as an integral part of the measuring process, and that by all means as a sensitive instrument which is “susceptible to faults” and consequently requires the same regular calibration as any other test device. It is thus not only further training and constant exchanges, but also constant self-reflection on the part of the examiner – also on the basis of sophisticated test reports – which gains in importance. McKnight (1971) began the explanation on his driving situation test with the words: “This test is only as good as you are.” There is probably no more succinct way to summarise both the methodical problem and the possibilities for further development of the practical driving test.

Dietmar Sturzbecher, Jörg Biedinger, Arne Böhne, Jürgen Bönninger, Gerhard v. Bressensdorf, Peter Glowalla, Marcellus Kaup, Christoph Kleutges, Gerhard Müller, Reinhard Müller, Wilhelm Petzholtz, Rolf Radermacher, Andreas Schmidt & Winfried Wagner

5 The practical driving test at present

5.1 Starting points and overview

Chapter 2 (“Methodical foundations”) of the present report described – from the starting point of the current positions in psychological testing – the principal methodical categorisation on which the practical driving test is founded. On this basis, the practical test belongs to the group of process-oriented holistic examination methods, and therein represents an example for the method category “work sample”. The instrument of a work sample is an attempt, by way of representative, i.e. typical, significant and topical work-related tasks, to determine whether an applicant for a particular occupation is in a position to cope with the demands of the corresponding working reality. Translated to the subject area “motorised road traffic”, this means that representative test tasks relating to the driving of a motor vehicle must reveal whether a driving licence applicant satisfies the demands placed on a driver by traffic reality. These test tasks must be applied to a drive with a motor vehicle and, alongside elements relating to preparations and requirements before and after the drive, must embrace above all driving tasks during the drive itself. It is thus to be investigated and subsequently presented (see Chapter 5.4), which test and above all driving tasks constitute the present practical driving test, and whether these tasks can be considered representative and methodically meaningful in their structure.

Similarly in Chapter 2, it was shown that the mastering of test tasks in the sense of a work sample, and thus also the practical driving test, can only be assessed in a methodically meaningful manner as a basis for a responsible test decision, if observation categories and the assessment and decision criteria according to which the examiner is to judge the test candidate have been defined beforehand: Any other form of “free observation” would fail to meet the methodical prerequisites for a (not least prognostic) valid test method. It is therefore also to be investigated and similarly subsequently presented (see Chapter 5.5), which observation categories and which assessment and decision criteria are used to record and evaluate test performances in the context of the practical driving test.

With regard to the observation categories, it must be taken into account that, when observing behaviour, the subjects of the observation are forms of behaviour. It is thus necessary to identify behaviour categories which describe the specific behaviour to be observed by the test examiner during the performance of the test tasks by the candidate. In the case of the practical driving test, it is to be expected that many of these observed behaviour categories will refer to the candidate’s driving behaviour, though consideration is also to be given to elements of his behaviour when preparing and concluding the drive. The currently applicable observation categories are also to be judged as to whether they are representative and methodically meaningful in their structure.

In accordance with the systematics of psychological testing, assessment criteria are the specifications by which the examiner determines the level at which the observed behaviour was performed. If the elaboration of differentiated performance judgements is not desired, or else impracticable due to the conditions of the test concerned, the assessment criteria will be correspondingly general and could, in the simplest case, be limited to a distinction between “correct” and “incorrect” behaviour. Insofar as a test is to enable not only a description of the test candidate’s performance, but also a decision on success or failure, it is furthermore necessary to define decision criteria. The assessment and decision criteria cur-

rently used in the context of the practical driving test are similarly to be analysed in respect of the methodical quality and content relevance.

Where, now, are the test and in particular driving tasks, the observation criteria and the assessment and decision criteria of the current practical driving test to be found? To be able to answer this question, it is necessary to take into account the fact that, on the one hand, the sought demand and implementation standards must in the present-day understanding naturally be components of a fundamental methodical classification, i.e. a method system described on the basis of psychological testing. On the other hand, it is imperative to remember that the practical driving test has since the very beginning been a state-prescribed and -controlled test of an individual person, the demand and implementation standards for which have been defined in legislation, i.e. within the framework of a legal system. In Chapter 4, it was described how the upturn for psychological testing came more than half a century after the publication of the first legislative instruments governing the practical driving test. The legal categorisation of the practical test was thus elaborated long before its psychological and methodical classification, and it was (and is) thus not to be expected that the legal framework could meet all the quantitative and qualitative demands of a systematic application of psychological testing: The law experts can only develop legal standards to implement those methodical specifications which have previously been made available by the corresponding specialist disciplines (traffic pedagogy, psychological testing), and a legislative system must naturally restrict itself to stipulations of the most necessary test conditions.

At the latest by the 1970s, however, the scientific prerequisites had been established for a comprehensive description – from the perspective of psychological testing – of the driving test²⁵ in general and the practical driving test in particular, i.e. for the elaboration of a fundamental methodical categorisation. The methodical systematics should also have been analysed with regard to compatibility with the existing legal framework; it is in this context not to be excluded that, in case of discrepancies, it could even be expedient to modify the legal standards if they appear inappropriate from the methodical point of view.

Starting in the 1970s and above all in the early 1980s, there were indeed efforts to develop certain elements of a psychological-testing-related systematisation of the practical driving test (see Chapter 4): For example, attempts were undertaken, on the basis of empirical analyses, to optimise the “driving error catalogues”; at the same time, driving tasks were defined and considered with regard to their probability of realisation at different test locations. All such studies, however successful in themselves, nevertheless represented only selective treatments of the fundamental and complex task of developing a methodical foundation for the (practical) driving test. The discontinuation of the “Study Group for Motor Vehicle Driver Tests” at TÜV Rheinland in 1985, furthermore, removed the structural scientific basis for further processing of this task. An unbiased referencing of the individually elaborated methodical foundations to a system of driver licensing regulations was not tackled at all: In most cases, the field was satisfied to seek “as far as possible solutions within the framework of the existing provisions” (Hampel & Küppers, 1982, p. 14), and to respond to “traffic policy states of emergency” (see Chapter 4).

²⁵ It would naturally have been better to integrate such categorisations directly into a comprehensive, pedagogical-psychological system, which could have referred to the unity of driver training and driving test (“novice driver preparation”) and would have permitted consideration of the relevance of possible combinations of training and test elements with regard to attainment of an overarching goal, namely the lowering of the accident risk for novice drivers.

From today's perspective, both the elaboration of a closed and robust methodical foundation for the practical driving test and the mutual adaptation of the correspondingly developed methodical test standards, on the one hand, and the already existing legal test standards, on the other hand, would appear to be still outstanding; the present report is seen as a first step towards the realisation of these two tasks. With its discussion of the terms "qualification" and "fitness to drive", Chapter 2 offers a good illustration of how imperative it is, not to neglect the latter task of a comparative appraisal of the methodical and legislative standards, and how the divergence between the legal and psychological classifications hinders further development of the driving test. It is thus particularly advisable, not to develop the psychological systems of testing alongside the legal framework for the practical test, and instead to seek out the licensing regulations and guidelines which cloak the demand and implementation standards to be elaborated for the practical test from the point of view of psychological testing. The solution to this search is in our opinion as follows²⁶ (see Chapter 3):

- *Test or driving tasks*: The demand contents (not the demand level) of the practical test are described in principle under the regulation heading "Test subject matter" in § 17 FeV ("Practical test") (see below); for more precise specification, reference is made to "Annex 7, Part 2". Annex 7, 2.1 of the Driving Licence Regulations (FeV) provides an overview of the test subject matter; the individual elements of the test are subsequently described more precisely (2.1.1 "Technical preparation of the vehicle", 2.1.4 "Basic driving manoeuvres", 2.1.5 "Test drive"). The overview of the test contents is also taken up in the Examination Guidelines (PrüfRiLi 5.16) and specified in greater detail in Annex 3 ("Basic driving manoeuvres") and Annex 11 ("Demands on the test location and its surroundings" with a description of driving tasks) to the Examination Guidelines.
- *Observation categories*: Details of the points to which the examiner is to "pay attention", or – in other words – what is to be observed, are given in Annex 3 ("Basic driving manoeuvres for Class B") and in Annex 10 ("Demands on the test drive") to the Examination Guidelines.
- *Assessment criteria*²⁷: The usual form of driver testing in Germany, which does not provide for visual recording of the test performance, follows an adaptive testing concept and generally ends with the presentation of a driving licence, precludes collection of the observation data by way of a category system requiring highly detailed documentation of the observed elementary behaviour as individual events and assessment only upon completion of the observation. It is rather the case that observations must not only be documented, but also evaluated immediately, in order to supply the information inputs for further adaptive planning of the test realisation. This is achieved by way of a rating scale system, with the aid of which the behaviour displayed by the test candidate can be estimated, i.e. assessed, immediately. The use of a rating scale system also reduces the demands placed on test documentation (see below), if only the assessments and no longer all the underlying observations are recorded and if a low-resolution assessment scale is used. As the practical driving test is not a differential

²⁶ All circumstances presented hereafter in Chapter 5 refer to driving licence class B.

²⁷ The subsequently presented methodical correlations are all discussed in detail in Chapter 2 of the present report. References are also made to Chapter 4: Where it is concluded in Chapter 4, for example, that the "driving situation test" developed by McKnight (1970, 1971, 1972) was impracticable under the conditions of a practical (routine) test, then the reasons are to be seen in its methodical test conception, which required the complex documentation of observed behaviour in an event-oriented category system.

test, and thus also requires no differentiated performance assessment, the behaviour assessment relies essentially on a (low-resolution) three-level assessment scale which distinguishes fundamentally “correct” and “incorrect” behaviour (“errors”) and then further classifies the errors in accordance with their significance for traffic safety as “serious” or “simple”²⁸ errors. The assessment criteria for the practical driving test are thus revealed in the licensing regulations in the form of “error catalogues”, which are specified explicitly (in the case of the “serious” errors) or by way of examples (in the case of non-“serious” errors) in the Examination Guidelines (PrüfRiLi 5.17.2) with regard to the test drive, and accordingly in Annex 3 to the Examination Guidelines for the basic driving manoeuvres.

- *Decision criteria:* The criteria for decisions as to whether a test has been passed are to be found in Annex 7, 2.5.2 (Error categories) and 2.5.3 (Behaviour of the driving instructor) of the Driving Licence Regulations (FeV), as well as in the Examination Guidelines (PrüfRiLi 5.17) and its Annex 3 (Basic driving manoeuvres).

The necessity of test documentation for the practical driving test has already been addressed on several occasions. Such documentation can serve various purposes and may assume a variety of contents and forms. With regard to the contents, it could record the examined demands, the observed task performance, the subsequent assessments of this performance and, last but not least, the test decision. Beyond this, it is to be discussed whether the time sequence of the test processes should also be documented. The legislative provisions concerning test documentation are to be found in the Driving Licence Regulations (Annex 7, 2.6), in the Examination Guidelines (PrüfRiLi 6) and in Annex 13 to the Examination Guidelines (“Test report”). All questions relating to the current test documentation – including the methodical appraisal of this documentation – are the subject of Chapter 5.6. The concluding Chapter 5.7 is devoted to the evaluation and further development of the practical driving test.

In the following, however, it is intended to describe initially the current test model and the test results obtained thereby (Chapter 5.2), as well as the test participants and procedure of the test (Chapter 5.3).

5.2 Test model and test results

Test model

With a few exceptions²⁹, a person wishing to use a power-driven vehicle on public roads in Germany is required to obtain a driving licence (§ 2 StVG; § 4 FeV; see Chapter 3). To obtain this licence, it is not merely necessary to attend (theoretical and practical) driver training in a driving school and to pass a (theoretical and practical) driving test. The process of obtaining a driving licence actually begins before driver training and is to be outlined in the following. This process is a standard process which is applicable in identical

²⁸ Strictly speaking, viewing Annex 7 FeV, 2.5.2, the German regulations to date refer only to “serious errors” and to the “repeated occurrence or accumulation of different errors which, as single errors, are generally not yet reason for failure [of the driving test]”. The second term can be deemed impracticable as the designation for an error category. The term “non-serious error” suggests itself as an alternative. This alternative, however, is still not an optimum solution, because it could be taken to attach too little significance to such errors, and these errors are indeed observed separately by the test examiner, i.e. recorded in the methodical sense. The term “simple error” thus seems to be more appropriate and user-friendly in our opinion.

²⁹ These exceptions include mopeds, which may be used with a moped test certificate, motorised invalid carriages with a maximum design speed up to 15 km/h, and agricultural or forestry tractors, self-propelled machines, fork-lift trucks and other floor conveyors each with a maximum design speed up to 6 km/h.

form across the whole country, though minor deviations do exist in a few cases with regard to state-specific regulations or regionally specific procedures relating to the interactions between the local licensing authorities and the Technical Examination Centres.

The process for the granting of a driving licence begins with the applicant submitting a corresponding application to the authority or office responsible under federal state law or else directly to the responsible driver licensing authority. The driver licensing authority is generally a body of the relevant district administration, or else the town or city administration in the case of administratively autonomous municipalities. The application documents must be accompanied by, among other requirements, an eyesight test certificate issued by an official eyesight test centre or a corresponding certificate or expertise from an optician, a photograph of the applicant and a certificate confirming attendance at a course in life-saving first-aid measures. Together with the application, the applicant informs the licensing authority as to which driving school has been chosen for the driver training. The licensing authority verifies that the submitted application documents are complete, specifies the later driving test location and checks that the applicant has a domestic place of residence. Furthermore, it consults the Central Register of Traffic Offenders at the Federal Motor Transport Authority (Kraftfahrt-Bundesamt) to confirm that no reservations exist as to the fitness of the applicant to drive a motor vehicle.

The legal term “fitness to drive” describes the physical and intellectual prerequisites for the obtaining of a driving licence. The Driving Licence Regulations (FeV) list a series of circumstances which exclude fitness to drive entirely or else impose corresponding conditions. Acute psychosis, serious alcohol abuse or the regular use of narcotics, for example, preclude fitness to drive (Annex 4 FeV). A physical disability, on the other hand, does not automatically lead to a negation of the fitness to drive, provided the physical limitations of the applicant can be compensated by way of appropriate technical installations in the vehicle (Deutsche Fahrlehrerakademie e.V., 1997). A further prerequisite for confirmation of the fitness to drive is that the applicant has also not acted seriously or repeatedly in violation of traffic regulations or criminal law (§ 2 (4) sentence 1 StVG, see Chapter 3).

Assuming that the Central Register of Traffic Offenders supplies no grounds to doubt the fitness to drive, the licensing authority requests that a driving licence be produced for the applicant by the Federal Printing Office (Bundesdruckerei). This driving licence is normally passed on to the Technical Examination Centre responsible at the designated test location together with the test application. The licensing authority or the Technical Examination Centre informs the driving school concerning receipt of the test application.

Once the test application has been received by the Technical Examination Centre, the learner driver can be registered for a driving test. The driving school agrees a test date with the Technical Examination Centre. The Technical Examination Centre then passes the test application and the driving licence on to the driving test examiner.

The overall driving test comprises theoretical and practical sections. The theoretical test has already been described in detail in a separate study (Bönninger & Sturzbecher, 2005) and is thus not to be considered further at this point.

The licence applicant must have passed the theoretical test to be allowed to take the practical driving test. Furthermore, the practical driving test requires the prior completion of driver training at a driving school. A practical driving test must be taken at the latest 12 months after a successful theoretical driving test; otherwise the validity of the theoretical driving test expires (§ 18 FeV). Moreover, the applicant must have reached the minimum age prescribed for test candidates for the driving licence class in question. The practical driving test may be taken one month before the applicant reaches the minimum age prescribed for independent operation of a motor vehicle (§ 17 FeV).

If the applicant is participating in the training model “Accompanied driving”, the practical driving test may already be taken one month before his 17th birthday. In this case, after passing the test and reaching his 17th birthday, the applicant receives a time-limited test certificate containing the proviso that, until his 18th birthday, he is only permitted to drive if accompanied by a specifically named person. As soon as the young driver reaches his 18th birthday, he can ask for the test certificate to be exchanged for a driving licence.

Which test purpose is pursued by the practical driving test? In the Driving Licence Regulations, this purpose is described as follows: “In the practical driving test, the candidate is to demonstrate that he possesses the technical knowledge required to operate a motor vehicle safely in traffic, where appropriate together with a corresponding trailer, sufficient knowledge of an environment-aware and energy-saving manner of driving, and the ability to apply this knowledge practically” (§ 17 (1) sentence 1 FeV). From the didactic perspective, the driving test should mirror the contents of driver training in an appropriate manner and thereby provide evidence that the driving licence applicant has attained the learning objectives of the training. The corresponding assessment given by the driving test examiner constitutes also a forecast of the future driving behaviour of the candidate: The examiner must, on the basis of his behaviour observations during the practical driving test, draw a conclusion as to whether the candidate can be expected to cope with traffic demands in the future.

The prime objective of the practical driving test, as already described, is to verify the knowledge and abilities which are necessary to operate a vehicle safely in traffic. In the literature of the field, the practical test is thus referred to as a “test of qualification” (Heiler & Jagow, 2002, p. 116ff.). Already in 1977, Hampel pointed out in connection with the practical driving test that the terminology “test of qualification” could easily lead to misunderstandings, because the term “qualification” was used in the driving licence regulations as a reference to traffic law rather than in any pedagogical-psychological meaning: The term “qualification” in this legal sense – according to Hampel – denotes evidence of a passed test in the same way that a state administrative or law examination demonstrates the qualification to assume the position of a senior civil servant or court judge. This is to be distinguished from the psychological concept of “ability”, which designates an attribute acquired through training, which is not – as in the case of legal qualification – granted as recognition, but rather developed by the individual in a learning process as an inherent prerequisite for a corresponding action (Hampel, 1977).

The distinction which Hampel (1977) demanded between law-related and pedagogical-psychological aspects when determining the contents of the practical driving test also appears meaningful from today’s perspective, but still does not relieve the field of its obligation to analyse the compatibility of the systematisations used with regard to the corresponding observation subjects and to identify any contradictions (see Chapter 5.1). A pedagogical-psychological categorisation of the practical driving test as a “test of qualification”, for example, fails to do justice to its holistic character: The driving test examiner is not, after all, merely drawing conclusions as to the candidate’s abilities from his test performance, but also assessing other competence components, such as understanding, skill, action, experience or motivation, and above all the presence of transferable (“intelligent”) knowledge suitable for flexible application, also in new situations. It thus seems more reasonable to follow the concept of competence presented by Weinert (1999; see Chapter 2.2) and to view the practical driving test as a “test of competence”.

When defining the practical driving test as a test of competence in the pedagogical-psychological sense, we assume that the test of driving competence includes the verification of learned abilities and skills by the candidate and that the level of mastery of these competence components demanded in the practical test is specified in the relevant exami-

nation guidelines. In this context, the skills expected in the practical test, for example, must not yet encompass complex action routines or specific driving skills which exceed the required test contents. The decisive point is rather that the test performance of the candidate should demonstrate his capability of operating a motor vehicle independently, appropriately and safely even in difficult traffic situations (Annex 7 FeV, 2.1.5).

The practical driving test represents the concluding second part of the overall test model, but can in turn itself be divided into three test elements: the “technical preparation of the vehicle”, the “basic driving manoeuvres” and the “test drive”. Specific assessment rules exist for each of these three elements, as presented in detail in Chapter 5.5. The task characteristics of the individual test contents are described more closely in Chapter 5.4. At this point, the test elements are to be outlined only briefly; it is moreover to be mentioned in advance that the “test drive” is to be viewed as the most important of these elements:

- The “technical preparation of the vehicle” comprises vehicle safety checks, which are examined on the basis of random selection, and the correct setting-up of the vehicle for the test drive. Errors in the safety checks cannot alone lead to failing of the test (see Chapters 5.4 und 5.5).
- In Germany, “basic driving manoeuvres” are examined in real traffic – contrary to the practice in Belgium, Austria or Switzerland, for example (see Chapter 6). The basic driving manoeuvres are characteristically driving tasks to be performed at low speeds, with the exception of the task “emergency braking”, which tests the correct reaction in an emergency situation at a speed of approximately 40 km/h.
- The “test drive” is the central element of the practical driving test. It is here that the candidate must show that he is able to handle a motor vehicle appropriately and safely also in difficult traffic situations. During the test drive, the candidate must fulfil the requirements of traffic safety, for example, as well as demands relating to the flow of traffic: He is expected to drive defensively, considerately and with foresight, but should at the same time merge into the traffic flow without hindering other road users.

After passing the practical test, the candidate is issued with his driving licence as an entitlement to drive a motor vehicle. The first licence granted for vehicles of Class B is subject to a two-year probationary period, unless a driving licence of Class A1 has already been obtained previously. Furthermore, within the framework of a pilot scheme running until 2009 in most federal states, it is possible to shorten the probation by a single period of a maximum of one year under certain circumstances through voluntary participation in second-phase training.

The importance of the practical driving test lies in its function as a transition between driver training and independent participation in road traffic; it represents the conclusion of driver training and a review of its success, but at the same time the beginning of independent driving practice (Barthelmeß, 1999). It is not properly the driving test, even as the final goal of driver training, which determines the contents of the training in the driving schools – that is formally the task of the framework plan laid down by the Learner Driver Training Ordinance (FahrerschAusbO) – but it does significantly influence the weight which driving instructors and learner drivers attach to the individual training aspects. Viewed overall, the driving test contributes to implementation of the legislative regulations on the licensing of drivers to participate in road traffic; it is thus a component of the system of licensing criteria which was already described in detail in Chapter 3.

Test results

The test results for the (practical) driving test are evaluated by way of the so-called “failure rate”, i.e. the proportions of unsuccessful test performances. The following table permits an

international comparison³⁰ of the failure rates with regard to the practical driving test. This overview is taken from an international study which analysed driving licence testing in 28 European countries in 2004 (Bönninger, Kammler, Sturzbecher & Wagner, 2005). Separate failure rates can be specified for first-time and repeat tests for 14 of these countries. A further six countries do not maintain separate statistics to differentiate between first-time and repeat tests; in these cases, an overall figure is quoted for all tests. All results refer to Class B driving tests, with the exception of Croatia, where the failure rate refers to all vehicle classes. The German failure rates refer to Classes B and BE.

Tab. 5.1: Failure rates for the practical driving test in per cent

	First-time tests	Repeat tests	All tests³¹
Belgium	----	----	46
Denmark	----	----	40
Germany	28 (Class B, BE)	33 (Class B, BE)	----
Estonia	33	33	----
Finland	20	15	----
France	45	47	----
Greece	----	----	----
Great Britain	57	----	----
Ireland	52	56	----
Croatian	45 (all classes)	44	----
Latvia	38	----	----
Lithuania	39	38	----
Luxemburg	50	----	----
Monaco	44	56	----
Netherlands	54	55	----
Northern Ireland	----	----	53
Norway	----	----	29
Austria	6	4	----
Poland	approx. 30	----	----
Portugal	approx. 20	----	----
Russia	----	----	----
Sweden	30	35	----
Switzerland	----	----	35
Slovakia	----	----	12.4
Spain	49	----	----
Czech Republic	approx. 35	approx. 22	----
Turkey	24	10	----
Hungary	40	45	----

³⁰ When analysing the comparison, it must be taken in account that the failure rates given in the subsequent table must be interpreted in the context of varying national regulations (e.g. different training models, some of which permit training by non-professionals, whereas others require professional driving instructors, as well as different assessment guidelines). The comparability of the national failure rates is thus limited.

³¹ These countries do not maintain separate statistics for first-time and repeat tests.

In Germany, 28 per cent of the candidates are not successful at their first attempt to pass the practical driving test. The corresponding failure rate for repeat tests is 33 per cent. The candidates thus appear to have marginally less difficulty with the practical driving test than with the theoretical test; the failure rate for the theoretical driving test in Germany is 29 per cent for first-time candidates and 43 per cent in the case of repeat tests.

If we compare the failure rates on the international level, ignoring the aforementioned methodical reservations, then the German driving licence applicants seem to be relatively successful in the practical driving test. In 17 other countries, the failure rate for first-time practical driving tests is higher than in Germany. In a number of European countries, for example Great Britain, Ireland, Luxemburg and the Netherlands, as many as half the test candidates are unsuccessful in their first practical driving test. Only seven countries, among them Austria, Finland and Portugal, achieve a higher success rate than Germany.

The German test candidates achieve a similar rank in the international comparison with regard to repeat tests. Separate statistics on the failure rates for repeat tests are available for 14 European countries. In eight of these countries, the failure rates are in part appreciably higher than in Germany, with between 35 and 56 per cent unsuccessful candidates. In Great Britain, Ireland and the Netherlands, where the failure rates were already relatively high for first-time practical tests, more than half of the candidates in repeat tests were again unsuccessful. In only six European countries, among them Austria, Finland and the Czech Republic, are the candidates more successful in repeat tests than in Germany.

5.3 Test participants and test procedure

Test participants

The practical driving test is realised in the form of an “individual test”, i.e. there is normally only one single test candidate in the test vehicle. If all the persons involved consent, however, it is permissible for a second candidate to be present in the vehicle to enable two test drives to be combined.

Further occupants of the test vehicle, alongside the test candidate, are the driving test examiner and a driving instructor from the driving school³² which the candidate attended for his driver training; the participation of a driving instructor is obligatory in Germany (§2 (15) sentence 1 StVG). The driving instructor sits in the front passenger seat next to the test candidate, but is only expected to intervene during the driving test should this be necessary to avert an immediate danger. The driving test examiner sits in the rear seat of the test vehicle behind the driving instructor, i.e. diagonally behind the test candidate.

In certain exceptional cases, a further person may be permitted to participate in the driving test. This person is generally an auditor whose task is to supervise the test procedure. This supervision by an auditor, in turn, may take one of two forms: Firstly, random internal audits are performed by the local quality management officer within the framework of the quality management system of the Technical Examination Centre concerned; secondly, external audits are performed by representatives of the Federal Highways Research Institute (BASt) in connection with the accreditation process.

Exclusively “officially recognised experts or examiners for motor vehicle traffic” (“amtlich anerkannte Sachverständige oder Prüfer für den Kraftfahrzeugverkehr”, aaSoP) are permit-

³² To ensure that driving test examiners work together with all the driving schools in their relevant area, the Technical Examination Centres have introduced a rotation principle for the allocation of individual test assignments to their available driving test examiners.

ted to act as driving test examiners (§ 15 FeV). The driving test examiner performs a sovereign duty on behalf of the state and must belong to a Technical Examination Centre. He is required to perform his duties impartially and must not be economically dependent on the number or results of tests conducted. The driving test examiner must meet a number of binding prerequisites before he can be granted the authorisation to conduct driving tests; for example, he must be at least 24 years of age and must be intellectually, physically and professionally qualified for the work as an examiner (§2 KfSachG). Furthermore, he must have completed studies in mechanical, vehicle or electrical engineering, as well as at least a six-month examiner training programme at a Technical Examination Centre. After commencing his duties as a driving test examiner, he must additionally provide proof of attendance at further training seminars in the field of driver licensing for at least two days in two years. The examiner training and the further training demands placed on driving test examiners were described in detail elsewhere within the framework of the present project (Dietrich & Sturzbecher, 2008).

The task of the driving test examiner during the test drive is to determine whether the test candidate possesses the necessary knowledge and abilities to operate a motor vehicle safely, in accordance with the rules of the road and in an environment-aware manner. The examiner controls the course of the driving test by giving oral instructions to the candidate. The driving instructions given by the examiner during the test drive in real traffic are limited essentially to directions specifying the route to be taken by the candidate. The examiner may praise elements of good performance by the test candidate accordingly; such performance is also to be taken into account when assessing the drive. Furthermore, the examiner should encourage the test candidate and attempt to relieve any arising stress situations. To avoid placing unreasonable psychic stress on the test candidate, the examiner refrains from commenting on mistakes made by the candidate or asking the meaning of traffic rules and signs (PrüfRiLi 5.14). The examiner documents significant driving errors in a test report.

The driving test examiner is required to control the course of the driving test purposefully (see Chapter 5.4), to observe the candidate's performance systematically (see Chapter 5.5) and to document his observations in an appropriate manner (see Chapter 5.6), so as to be able to pass a clear and well-founded judgement on successful or unsuccessful completion of the test at the end of the test drive. The test situation, on the other hand, displays considerable dynamics, as a practical driving test is conducted not under experimental conditions, but in the real traffic environment. This enhances the validity of the test result as an indication of the candidate's driving competence and his potential ability to cope with the demands of road traffic as a novice driver; at the same time, however, it also means that the individual test demands can only be planned and controlled in advance to a limited extent. The driving test examiner will thus continually modify his diagnostic test concept during the actual course of the test, for example in order to better assess observed competence deficits (see Chapters 2 and 5.5).

The implementation of such an adaptive testing concept appropriate to the dynamic course of the test situation naturally requires that the driving test examiner be granted a founded and defined scope of judgement, which he must then apply in a situation-specific and candidate-oriented manner. It is to be noted that the exercising of judgement always entails also a risk of arbitrariness or abuse on the part of the person concerned. This aspect should similarly not be underestimated in the case of the practical driving test, not least because the examiner, in his capacity as a state-mandated assessor, holds a particular position of power over the other test participants and formulates his test assessment independently of those other participants. The driving test examiner must thus exercise his particular power within the social structure of the test participants reliably, sensitively and with awareness

for his responsibility. This also means that he must state reasons for his decisions and, above all in cases of conflict, must be in a position to defend his independent judgement convincingly towards the test candidate and the driving instructor. Consequently, the conducting of a practical driving test demands a high degree of responsibility, reliability, attentiveness, concentration and professional competence in observation, assessment, decision and communication with the other test participants, in order to be able to reach a professionally and methodically qualified judgement on the driving competence of the test candidate within the relatively short test duration.

High demands are also placed on the accompanying driving instructor by the practical driving test. In most cases, it is the driving instructor who trained the test candidate who takes part in the driving test. The practical driving test is thus a routine element of the professional activities of a driving instructor. Nevertheless, a conscientious driving instructor will follow each individual practical driving test with high expectations: After all, the result of the result also sheds light on his teaching performance during driver training.

The particular demands on the driving instructor result from his dual function in the test situation. During the test drive, the driving instructor assumes the role of the responsible vehicle driver in the sense defined by the Road Traffic Act. He is responsible for the safety of the test vehicle occupants and all other road users (Glowalla, 1999). At the same time, it is his duty to enable the test examiner to reach an objective assessment of the test. He is not permitted to influence the course of the test. If the driving instructor attempts to deceive the examiner or otherwise renders true assessment of the candidate impossible, for example by giving the candidate furtive signs or hints, then the examiner must terminate the driving test and record it as “failed” (PrüfRiLi 5.18).

In critical traffic situations which represent a potential endangering of the test vehicle occupants or other road users, the driving instructor can easily find himself in a role conflict. The conflict arises from his dual roles, on the one hand as responsible vehicle driver, but at the same time also as a neutral test observer who is generally interested in a positive test result for the candidate. The role conflict is aggravated in critical traffic situations in that the driving instructor must decide whether to intervene or to let the candidate cope with the situation himself: If he intervenes, he comes to the aid of the candidate in the given situation, but this assistance will in most cases lead to the candidate failing the test. It is left up to the driving test examiner to decide whether the intervention by the driving instructor influences the test result.

For the test candidate, the practical driving test represents a particular occasion in his life. Successful completion of the test, after all, grants access to the long-desired participation in motorised road traffic. Furthermore, many of his peers and attachment figures will already possess a driving licence; the test demands are thus perceived as relatively easy to fulfil. The candidate is consequently under pressure to succeed during the test itself: If he fails the test, then this diminishes his self-esteem and disappoints the expectation of relatives and friends. Furthermore, a failed test always entails additional costs and a delay in the obtaining of a driving licence.

Alongside the pressure to succeed, the test stress for the driving licence applicant is heightened by the limited possibilities of independent preparation for the practical driving test. This is much simpler in the case of the theoretical test, by contrast, for which the candidate can choose from an extensive range of independent study offers. Furthermore, the candidate must constantly reckon with unforeseen traffic situations during the test drive. Moreover, he is unable to compensate a serious driving error and its influence on the test decision during the further course of the test. And finally, stress-relieving communication with

the driving instructor and examiner is only possible to a very limited extent during the test drive due to the prescribed role assignments.

Under the described test conditions, it can be expected that more or less every test candidate will be faced with a certain test stress during the practical driving test. The extent of this stress is influenced by the personality of the candidate, the behaviour of the accompanying driving instructor, and above all by the driving test examiner and his preparation of the individual test situation. It is thus an important quality objective for the work as a driving test examiner to provide for a test atmosphere as free as possible of anxiety and stress. As many aspects of the test regulations and the stipulations regarding examiner behaviour result from this objective, the following excursus on the correlations between test anxiety and test performance appears to be particularly expedient.

Excursus: Test anxiety and test performance

The practical driving test can be viewed as a so-called “social occasion”, in which the test candidate, the driving test examiner and the accompanying driving instructor participate. Social situations are characterised in that the participating persons assess themselves and the others involved already before, as well as during the mutual communication, and thereby establish expectations which, in turn, determine the further course of the interactive communication and development of the social situation. This is a constant process and necessarily influences the performance of the test candidate and the observation and assessment behaviour of the examiner.

The social character of the driving test situation is asymmetrical: The examiner tests the candidate from a position of power; this role assignment cannot be reversed. This characteristic is experienced as unpleasant and stressful by most test candidates. In a significant proportion of cases, test anxiety complements this test stress and diminishes the test performance. Test anxiety is seen as the propensity to perceive performance demands and assessment situations as threatening to self-esteem: The central element of anxiety is the subjective evaluation of the situation as a threat (Lazarus, 1966). Such anxiety is reflected on the cognitive and physiological levels (Spielberger, 1975). In the context of anxiety-related cognition (in other words “concern”), the candidate worries that he may not manage to satisfy the performance demand; he has visions and expectations of failure, is distracted from the actual demands and thus cannot concentrate on processing of the required task (Schwarzer, 1987). On the physiological level, an anxious test candidate feels an increasing agitation (i.e. “nervousness”): The sympathetic nervous system becomes increasingly active, which may be expressed in a dry mouth, trembling, stomach ache or any of a whole series of other symptoms. The anxiety tendency and anxiety level in test situations varies substantially between individuals (Wine, 1980).

Which features of a test situation are apparently significant for the development of performance or test anxiety? One key origin of anxiety is the circumstance that successful mastering of the demands is personally important, but at the same time successful completion is held to be doubtful. This latter assessment may result from the recognition of inadequate preparation for the test. On this basis, anxiety increases further if the candidate sees no further possibilities to counter the threat effectively. That is always the case when the candidate is no longer able to compensate any errors committed by way of expected performance. Test situations appear all the more threatening, the more unforeseeable and unpredictable their features (Mowrer, 1939; Seligman, 1979; Brunstein, 1986), and the fewer possibilities the candidate has to prepare himself appropriately. Another anxiety-driving factor is the ambiguity of the test situation: If, for example, the test demands and assessment standards are in any way unclear, then the anxiety increases and may be preserved over a longer period, indeed even over the whole duration of the test (Lazarus & Cohen,

1978; Lazarus & Launier, 1978). Such anxiety factors³³ are reduced effectively above all through a maximum degree of test transparency, but at the same time also by creating an appropriate “socio-emotional climate” in the interaction between examiner and test candidate, as emphasised by Strittmatter (1993, p. 77ff) within the framework of a project on the reduction of test anxiety.

The promotion of test transparency begins long before the test itself. The test candidates must already be acquainted with the demands of the practical driving test and the applicable assessment standards during the driver training in the driving schools. Furthermore, it should be expected that the driving schools train also competencies suitable to overcome stress and anxiety in the test situation. As it is generally the case that a high realistic assessment of his own competence by the test candidate equates to a lesser test anxiety, the learner driver must not only be prepared for the content-specific demands of the practical driving test, but also strengthened in his conviction that the attained training status is adequate to master those demands successfully in the test itself.

Alongside the susceptibility of the driving test candidate and his test preparations, the test regulations and the behaviour of the examiner during the driving test are decisive factors influencing the development of test anxiety³⁴ and the performance behaviour of the candidate. Even though the candidate is generally aware of the test demands before attending the practical driving test, the individual manner in which the examiner intends to set these demands in the form of driving instructions, for example, must be explained to him at the beginning of the test drive. The same applies to the test assessment: If the test candidate assumes that the examiner will be documenting only errors in behaviour and then notices that the examiner is making extensive notes, then he may be disturbed by his observation of such documentation, even if it is not actually of relevance for the test decision, and this will probably trigger test anxiety. The examiner is required to judge the test performance according to a so-called “factual assessment standard” (Ingenkamp, 1997); supportive comments made by the examiner on positive aspects of the candidate’s performance during the test are seen as similarly important, because confidence in one’s own abilities (“subjective competence”) is considered an essential protective factor against test anxiety. If the examiner refers to “avoidable errors” during the practical driving test, then he indicates to the test candidate that he believes in his future learning progress. The examiner should also take care to refer the current performance of the test candidate to the latter’s efforts and

³³ It is not possible to discuss all aspects of anxiety development in general and anxiety in test situations in particular at this point; the reader is thus referred to the corresponding literature, for example Schwenkmezger (1985), Schellhas (1993) and Krohne (1996).

³⁴ The Technical Examination Centres already recognised the decisive role to be played by test organisation and examiner behaviour in the reducing of test anxiety from an early stage. Already in 1976, Hampel from TÜV Rheinland pointed out that a longer driving test duration would lead to a calming of the candidate rather than to greater stress, and the candidate would then be in a better position to demonstrate his performance capabilities without disturbing influences. This recognition contributed to an extension of the test duration. In the late 1980s, particular attention was paid to the “anti-anxiety courses” which were offered by TÜV Bayern to help candidates overcome their test anxiety. As a further means to offer learner drivers vivid information on the procedures and general conditions of the test already during driver training, and in this way to reduce their uncertainties and anxieties, but at the same time also as a model for stress-relieving organisation of the test by the examiner, a number of information and training films (“Sie werden es schon schaffen”, 1982; “Best of Julia”, 2001) were produced and used in the basic and further training for examiners. The same purpose was served by “Umgang mit Prüfungsangst” (Hampel et al., 2008), a handout on methods to cope with test anxiety produced for driving test examiners and driving instructors by the TÜV | DEKRA arge tp 21 working group in 2007.

preparation; it is imperative to avoid remarks which imply a general lack of competence or inadequate fundamental talent on the part of the test candidate.

It was explained above that the practical driving test is by structure an asymmetrical social relationship, in which the involved persons each hold a different social status and function and thus cannot interact on equal terms. Asymmetrical interactions are only ever perceived as pleasant if a positive atmosphere reigns between the participants. A positive and satisfying “socio-emotional climate” in this sense represents the second possibility for the driving test examiner to help reduce test anxiety (see above) and according to Rogers (1973) combines three aspects: (1) unconditional acceptance and respect, (2) empathic understanding and (3) congruence. Empirical indicators for the correlation between these aspects of a positive socio-emotional climate and anxiety reduction have been found in many studies (Fittkau, 1969; Höder et al., 1979; Jacobs & Strittmatter, 1979).

(1) The aspect of “acceptance and respect” means that the candidate feels accepted by the examiner as he is: The examiner should show consideration for the candidate with all his thoughts, emotions and behavioural traits. This is naturally not to be understood that the examiner must agree with the standpoint of the candidate in every case. Respect means that recognition on the part of the examiner is not primarily dependent on whether the candidate behaves in the sense of the test demands and performs well. The opposites of respect are reactions such as “sharp criticism, condescension, disdain, humiliation, contempt, irony, threats, insult and derision” (Strittmatter, 1993, p. 27). The examiner should also ensure that his respect is expressed not only verbally, but also in a consistent non-verbal form (facial expression, tone of voice, gestures). Furthermore, it appears important that the examiner should console the candidate in case an inadequate test performance (Sacher, 1996) and, on the basis of an error analysis, provide tips on how success could be achieved in the future.

(2) “Empathic understanding” means that the examiner avoids rash critical evaluations of the candidate’s behaviour, advice or lecturing comments. The examiner should display manifest concentration and must not “switch off inwardly” or allow his thoughts to wander. Concentrated observation and listening are important prerequisites for empathic understanding. Furthermore, empathic understanding includes also feedback on how the thoughts, emotions and actions of the other person are seen from one’s own perspective.

(3) “Congruence” means that the test candidate does not perceive the examiner’s behaviour as fake or pretence. The examiner must also stand behind what he says and does (“genuineness”), otherwise his empathic understanding will be viewed as a mere ploy. This congruence is an important prerequisite for a reduction of test anxiety, because it gives the test candidate a certain confidence in his behaviour.

Test procedure

The fundamental contents and procedures of the practical driving test are defined in § 17 of the Driving Licence Regulations (FeV). The test subject matter, test vehicles, test duration, and the realisation and assessment of the test are governed by the stipulations of Annex 7 to those regulations and are specified in greater detail in the Examination Guidelines (PrüfRiLi 5 and Annexes 3 and 10). The content-related aspects of the practical driving test are to be discussed further in the following Chapter 5.4. For the time being, the typical procedure of a practical driving test is to be outlined, as the Driving Licence Regulations and the associated Examination Guidelines contain a high density of provisions and it is thus reasonable to assume that all practical driving tests are similarly structured.

The practical driving test is always conducted both within and outside built-up areas. The sections of the test which take place within built-up areas are conducted exclusively in a

town or community which has been designated a “test location” by the responsible state authority (see Chapter 4).

In most cases, the practical driving test is taken at the candidate’s place of residence or else at the place at which he is attending school or vocational training. If these places are not test locations, then the test is conducted instead at a nearby test location stipulated by the licensing authority. Upon application, the licensing authority may also permit the driving test to be taken at a different test location.

The driving test examiner specifies the starting point for the practical driving test at the test location or within its surroundings. This starting point is chosen such that, insofar as possible, the candidate can also reach this point by public transport without undue difficulties (PrüfRiLi 5.10).

The test vehicle is to be provided by the test candidate. In almost all cases, it is a vehicle belonging to the driving school. The test candidate must pay a fee to the driving school for the provision of the test vehicle. The test vehicle must meet the requirements specified in Annex 7 to the Driving Licence Regulations (FeV) and Annex 12 to the Examination Guidelines (PrüfRiLi), and must be recognised as a test vehicle. The official sign plate “Driving School” must not be mounted on the vehicle during the test.

At the beginning of the practical driving test, the test candidate must present a training certificate issued by his driving school, which must confirm that he has completed the minimum scope of basic practical training and the special training drives stipulated in the Learner Driver Training Ordinance (FahrSchAusbO, Annex 7.2). In accordance with § 6 (1) FahrSchAusbO, the driving instructor is not permitted to conclude the practical training before the driving licence applicant has completed the prescribed scope of training and before he is convinced that the training objectives defined by § 1 of the above ordinance have been achieved. The completion of the training must not lie more than two years previously. The driving test examiner verifies the required scope of training by way of the training certificate and confirms the identity of the test candidate by checking his passport or personal identity card. In his subsequent introductory remarks, the examiner then explains the procedure of the test and the nature of the driving instructions which will be given to the candidate.

After these preparations, the actual driving test can begin. All parts of the test are always conducted in public traffic spaces. The first task for the candidate is to prepare the test vehicle to start the drive, the so-called “technical preparation of the vehicle”. This includes, for example, matching the seat position, head-rest and rear-view mirror to the individual physical height of the candidate. The technical preparation of the vehicle also requires the candidate to perform randomly chosen safety checks on the vehicle. These safety checks are intended to show that the candidate is acquainted with the operating and control features of a motor vehicle. All these preparations are performed only insofar as this is possible without technical aids.

Once the technical preparation has been absolved, the test drive begins. The procedure and duration of the test drive are determined by the driving test examiner. The minimum overall duration of the test is 45 minutes. Within this duration, the pure driving time of the test drive – the time of the test excluding the time for the general preparation and conclusion of the test, the technical preparation of the vehicle and the examination of the basic driving manoeuvres – is not to be less than 25 minutes for a driving test for a Class B licence, except where the test candidate has already shown at an earlier stage that he is not able to satisfy the requirements of the test. In this case, the test is terminated prematurely with a negative result.

The driving test takes place on roads both within and outside built-up areas. Approximately half of the pure driving time should be spent on a route outside built-up areas. If the local circumstances permit, this route should also include sections of motorway or high-speed trunk road. The test sections within built-up areas are concentrated in the test location designated for the driving test. Where the chosen route leads through other built-up areas, however, the driving performance in these areas is also taken into account in the overall assessment. The drive outside built-up areas is conducted in the surroundings of the test location. The legal classification of the road sections (e.g. federal, state or district road, federal motorway) plays no role in the selection of a test route. The decisive factor is whether or not all essential traffic situations and demands can be examined during the test drive along the chosen route. Deviations from the requirement to use roads both within and outside built-up areas are only permissible where necessitated by extraordinary circumstances.

The driving test examiner is to organise the practical driving test according to the principle “from simple to more difficult” and is to allow the candidate a “familiarisation phase”. This means that route sections with enhanced demands should, where possible, be avoided at the beginning of the test, so as to help the test candidate to gradually reduce and overcome his uncertainty and stress during the test.

The course of the test drive, i.e. the route to be taken and the driving tasks to be performed, is determined by the examiner by giving corresponding instructions to the candidate. These instructions must be given clearly and plainly. It is not permissible to demand that the candidate acts in contravention of the traffic regulations. The Examination Guidelines contain detailed specifications regarding the concrete form of the driving tasks to be performed during the test drive. These tasks range from passing and turning at crossroads and junctions, via changing lanes to overtaking and driving at a higher speed (see Chapter 5.4). As the driving test examiner determines the test route during the drive itself, neither the driving instructor nor the test candidate know the test route in advance. The resulting unforeseeability of the encountered traffic situations contributes to the realistic nature of the test.

The “basic driving manoeuvres” are also examined during the test drive. Annex 7 to the Driving Licence Regulations (FeV) lists a total of five basic driving manoeuvres for the Class B licence, of which two are to be examined in each driving test. The driving test examiner announces the examination of the basic driving manoeuvres separately. When performing these manoeuvres, the test candidate must pay attention to both the correct handling of the vehicle and safe behaviour in the traffic environment. Each basic driving manoeuvre is assessed immediately upon completion. If the first attempt at a basic driving manoeuvre is unsuccessful, the candidate is permitted to repeat the manoeuvre once more.

It is intended that the test drive be terminated as soon as it becomes clear that the candidate is not able to satisfy the demands of the test (Annex 7 FeV, 2.5.2 and PrüfRiLi 5.19).

At the end of the test drive, the candidate must demonstrate that he is able to park and leave the test vehicle in accordance with traffic rules and demands. For example, he must engage the parking brake after stopping to prevent the vehicle rolling away. It is furthermore expected that the candidate pays attention to other traffic before leaving the vehicle.

The practical driving test ends with the announcement of the test result (“passed” or “failed”). In the case of a successful test, the driving test examiner enters the current date on the driving licence and hands it over to the test candidate (PrüfRiLi 6). Subsequently, he provides a brief oral feedback on the candidate’s performance and on possibilities for further optimisation.

Generally, therefore, the driving test candidate receives his driving licence immediately upon successful completion of the practical driving test. This does not apply, however, in the following cases:

- If the candidate has not yet reached the minimum age to drive a vehicle of the class in question, the driving licence is returned to the licensing authority together with the processed test application, and from there issued to the candidate once the required minimum age is reached.
- If the candidate seeks to obtain a driving licence for several vehicle classes, but the corresponding practical tests are to be organised on separate occasions and have not yet all been completed successfully, the driving test examiner returns the test application and the driving licence to his Technical Examination Centre. The practical tests for the remaining classes are arranged as soon as the responsible driving school has requested a corresponding appointment and this appointment has been confirmed by the Technical Examination Centre.
- If the candidate fails the test, a repeat test can be taken, subject to the waiting times specified in the relevant legislation (usually not less than two weeks), as soon as the responsible driving school has requested a new test appointment and this appointment has been confirmed by the Technical Examination Centre. To enable preparation for the repeat test, the unsuccessful candidate receives a test report documenting his significant driving errors.

No special form of practical driving test is envisaged for persons with disabilities. A disability does not automatically negate a licence applicant's fitness to drive a motor vehicle, as possible driving limitations – for example, due to diseases or deformities of the limbs – can be essentially compensated by special technical installations in the vehicle and corresponding behaviour on the part of the driver (e.g. § 2 FEV). In this context, the VdTÜV recommendation “Automotive engineering 745” (“Merkblatt Kraftfahrwesen 745”) describes examples of the technical measures required in the case of frequent physical disabilities and specifies cases in which it is not possible to drive a motor vehicle³⁵. Provided all minimum prerequisites are met, the citizen's legal entitlement to be granted a driving licence is guaranteed.

One special case in connection with the practical driving test is that of testing for vehicles with automatic transmission (§ 17 (6) FeV). If the practical driving test is taken with a vehicle with automatic transmission, the candidate must demonstrate during the test drive that he is acquainted with the particularities of an automatic transmission (Annex 10 PrüfRiLi, 5). In this case, the validity of the driving licence issued after a successful test is also limited to vehicles with automatic transmission. This does not apply for the driving licence classes M and T, nor for the trailer classes.

5.4 Test contents

Methodical foundations and overview

In Chapter 2.3.2 of the present report, the practical driving test was described from the point of view of psychological testing as a work sample. The work sample is a form of simulation-oriented test method used within the framework of personnel or aptitude diagnosis (for example as part of the examinations for vocational qualifications) to assess

³⁵ It must be added here that the test vehicle must also incorporate all the special modifications required by the test candidate.

whether an employment candidate possesses the action prerequisites demanded in similar form at the future workplace (Schuler, 2001). The test contents of a methodically sound work sample are determined on the basis of a demand analysis and comprise a representative selection of important work tasks which mirror the performance-relevant aspects of working reality as closely as possible. Each task of the work sample represents a problem to be solved by the assessment candidate. His efforts in this context are thus to be viewed as a problem solution process by which he is able to display his relevant competence; the term “competence”, after all, designates the capacity to solve problems successfully (Weinert, 2001). The assessment of the work sample is based on systematic behaviour observation, for which purpose unambiguous and binding assessment criteria must be defined. It is furthermore important that the course and result of the process be documented (Kanning, 2004).

Why is the practical driving test to be understood as a work sample under the premises of psychological testing? Describing the test contents in the broadest sense, the practical driving test is also a simulation-oriented test method: It simulates independent preparations to use a vehicle and a subsequent drive under the responsibility of a test candidate from the starting point to the end point of a route in real traffic, including a number of specific driving manoeuvres. The simulative character of the test is expressed in the fact that, firstly, the choice of the driving route, and thus the scope of the demands to be mastered, is not left to the driver of the vehicle, as is otherwise the case in traffic reality. Instead, the route and its demands are specified by the examiner in the sense of test tasks (basic driving manoeuvres, driving tasks). Secondly, the test candidate is required to act as if he were the responsible driver of the test vehicle. From the legal point of view, however, it is the accompanying driving instructor who assumes the role of responsible driver during the test drive (§ 2 (15) StVG). During the practical driving test, therefore, the demands placed on a driver are simulated under protected conditions (supervision and possibilities for the driving instructor to intervene). The candidate then handles these demands, which are presented above all as (basic) driving tasks and for him constitute the problems by which he can demonstrate driving competence (see above).

Like a work sample in general, the practical driving test in particular comprises a selection of tasks which must be representative of the demands with which the test candidate will be confronted in road traffic in future. In the case of the practical driving test, these test tasks are divided into three groups: (1) Preparations for a drive in road traffic (test element “Technical preparation of the vehicle”), (2) special aspects of vehicle handling, including an emergency braking manoeuvre (test element “Basic driving manoeuvres”) and (3) driving tasks in real traffic (test element “Test drive”). As far as the practical driving test is concerned, the psychological requirement of representative test tasks is to be interpreted to mean that the tasks of the three groups prescribed within the framework of the test must be frequently encountered or typical demand structures of current traffic reality and furthermore of particular significance for road safety. The latter point must be emphasised, as driving tests place time, financial and stress-related burdens on the individual and are only to be justified by way of a methodically effective test and its references to the public good, for example to safety in public road traffic.

As the conditions for the upholding of traffic safety are in a state of constant change, parallel to the dynamic changes in traffic realities, the demand to ensure that test tasks are representative incorporates also an obligation of continuous further development with regard to the test contents and their associated test tasks. It is here necessary to take into account two components of change (see Chapter 4.1): (1) Developments in respect of traffic systems and vehicle technologies, and (2) shifts in the target groups of the driving test and their specific personality traits (e.g. education prerequisites, value systems).

What does the demand for constant further development of the contents of the practical driving test mean in detail? In our view, when addressing the issues of contemporary traffic infrastructure, the necessary regular revision of the test tasks should ask, for example, whether traditional structural elements still characterise modern road traffic, or whether new elements (roundabouts are one example which immediately comes to mind) have in the meantime acquired a higher traffic and safety relevance. With regard to vehicle technology, it should be weighed up whether, given the latest technical developments, certain vehicle set-up procedures or safety checks within the framework of preparation for a drive are still to be considered topical, or whether their original functions have not already been assumed reliably by technical aids. Furthermore, in view of the continuing advances in driver assistance systems (e.g. parking aids), the gain in safety to be achieved from the examination of certain basic driving manoeuvres (e.g. parking manoeuvres) must be discussed. In addition, the categorisation and the traffic and safety relevance of the driving tasks to be examined in real traffic, in particular, must be constantly adapted to the changing traffic reality. And last but not least, it must be clarified whether systematic changes in the target groups which typically take a practical driving test have possibly resulted in the devaluation of certain test elements and thus demand the specification of new test elements.

If the standard of personal certification (DIN EN ISO/IEC 17020) presented in Chapter 5.7 and anchored in § 72 of the Driving Licence Regulations (FeV) is applied to the practical driving test, then it must be assumed, with regard to the constant further development of the test, that the continuous evaluation of the test tasks from the perspective of psychological testing must be accompanied by verification of the content topicality and target-group adequacy of all the tasks of the practical test at least every five years.

But let us here return to the structure of the tasks set for the practical driving test. Selected test tasks from the three aforementioned task groups or “test elements” (see above) represent the components of an individual practical test. During the course of the test, the tasks of each task group are assessed independently of each other; nevertheless, all these assessments are taken into account in the overall assessment of performance and thus the decision of the driving test examiner on successful completion of the test drive (see Chapter 5.5). The sequential order of the individual test tasks is not fixed; it is specified by the driving test examiner according to the logical course of a drive in real traffic and the local circumstances of the individual test situation. Consequently, the test tasks in connection with the technical preparation of the vehicle will generally be performed before the test drive, whereas the basic driving manoeuvres can be incorporated flexibly into the test drive. The entirety of the test contents prescribed in the relevant legislation is to be outlined in the following, arranged according to the task groups.

Technical preparation of the vehicle

Before the test drive begins, the test candidate must prepare the vehicle for the drive within the framework of the test element “Technical preparation of the vehicle” (Annex 7 FeV, 2.1.1 and PrüfRiLi 5.16; see above). This includes, firstly, vehicle adjustments such as the settings of the seat position, head-rest and rear-view mirror. If the steering wheel is adjustable, then it, too, must be matched to the individual seat position of the candidate. Finally, the test candidate must ensure that the seat belt is being worn correctly and that the vehicle doors are properly closed. In addition, at the beginning of the technical preparation of the vehicle, the test candidate is asked to perform randomly chosen vehicle safety checks. This involves checking the proper condition of the operating elements of the vehicle, insofar as this is possible without technical aids, and is intended to demonstrate that the test candidate is acquainted with the operating controls of the vehicle. The function checks which can be demanded by the driving test examiner during the practical driving test, as defined in the

Examination Guidelines (Annex 10 PrüfRiLi, 2.2), include checks of the proper condition of the

- tyres: e.g. damage, tread depth, tyre pressure,
- headlights, sidelights, turning indicators, horn: Check the functioning of sidelights, dipped and full-beam headlights, rear light(s) with number-plate illumination and rear fog lamps, hazard warning lights and turning indicators, horn and brake light(s); name the signal lamps,
- rear reflectors: Presence and damage,
- steering: Release steering lock and check steering play,
- brakes: Check the functioning of the foot and parking brakes, and
- fluid levels: Engine oil, coolant and windscreen washer fluid.

The safety checks to be performed on the test vehicle are not intended solely to test the candidate's skills with regard to technical handling of the vehicle. Another important didactic objective is to encourage the awareness of the future driver for his vehicle as such: The candidate is to recognise the monitoring of the technical condition of his vehicle as his personal responsibility as a contribution to road safety (DEKRA-Kompendium, 2007³⁶). This didactic aim of the test is, without doubt, to be considered an important aspect if we postulate the pedagogical intentions of the practical driving test and are convinced that these intentions can also be realised during the limited test duration.

In the context of an assessment of the representative character of the test tasks, as demanded above, it is equally reasonable to ask whether all the test tasks prescribed for the technical preparation of the vehicle are actually so important for the upholding of road safety that they need to be specified in examination guidelines. It is naturally beyond question that a damaged tyre or defective brake system represents a major traffic risk. It could well be reconsidered, however, whether releasing of the steering lock or checks of the fluid levels are genuinely representative tasks from the point of view of road safety: Even though they are only examined randomly, tasks which are in this sense not representative occupy test time which could be used more effectively to assess the candidate's avoiding of hazard situations during the test drive, for example. Furthermore, test demands which are perceived as apparently meaningless for road safety (no-one is endangered by a vehicle with a locked steering wheel) or otherwise "alien" (there are presumably few drivers who check the fluid levels before each journey, not least because such information is supplied ever more frequently by monitoring systems) could convey the impression of a test which is out of touch with reality and consequently, as a result of cognitive generalisation effects, lead to underestimation of other test contents of higher safety relevance.

In accordance with Annex 7 FeV, 2.1.1 and PrüfRiLi 5.16, the above-described random safety checks on the test vehicle and adjustments to the interior technical features (e.g. head-rest, rear-view mirror, steering wheel) are test subject matter and constitute the independent test element "Technical preparation of the vehicle", alongside the similarly independent test element "Test Drive". Nevertheless, "technical preparation of the vehicle" is mentioned a second time in Annex 7 FeV, 2.1.5, in this case as a component of the test

³⁶ Within the framework of quality assurance in respect of the driving test, the Technical Examination Centres publish handouts for driving test examiners which not only present the corresponding legislative foundations and official guidelines, but also provide work instructions and recommendations to assist their examination work. They contain detailed descriptions of the test procedures, assistance on implementation of the Examination Guidelines and notes on how to establish a conducive test atmosphere.

drive. The reason for this differentiation is probably an attempt to portray differences in the weighting of the individual test elements for the decision on a test result. This, however, could also be achieved by specifying an unambiguous decision algorithm, an alternative which would be desirable from the methodical point of view as a means to increase the realisation objectivity of the practical test without giving rise to a perplexing structural problem in respect of the test contents.

In the same way that the test vehicle must be prepared for the test drive, it is also necessary to bring the test drive to a proper conclusion. The corresponding tasks are stipulated in the sense of a test demand under the heading “Technical completion of the drive” in the Examination Guidelines (Annex 10 PrüfRiLi, 16): “At the end of the test drive, the vehicle is to be parked in compliance with the traffic regulations, such that it can be loaded or unloaded safely and such that persons are able to get into or out of the vehicle safely.” At this same place, the guidelines also specify the assessment criteria by which the technical completion of the test drive is to be judged. Proper technical completion of a drive requires:

- Securing the vehicle against rolling away by engaging a gear and/or applying the parking brake (use of both methods when parking on a gradient),
- In the case of vehicles with automatic transmission, securing against rolling away in accordance with the manufacturer’s recommendations (owner manual),
- Securing against unauthorised use, and
- Observation of the traffic before and when opening the vehicle door.

Why is the “Technical preparation of the vehicle” defined as an independent test element specifically distinct from the test drive, and furthermore explicitly described as test subject matter, while “Technical completion of the drive” is deemed a component of the test drive and is not emphasised as a particular element of the test contents? It is not easy to answer this question: Both demand structures comprise essentially actions in the sense of vehicle operation which are performed predominantly, though not exclusively, inside the vehicle and while the vehicle is stopped; both getting into or out of a vehicle and the associated opening of the vehicle door require the observation of other road users and thus traffic observation; where the test candidate makes a mistake in the handling of either demand structure, this error is not considered to be a serious error – provided it does not represent an endangering of other road users. It would be a simple matter to find further similarities in content and methodology between the two demand structures; on the basis of all these similarities, it would perhaps be better, both from the point of view of training and test didactics and under documentation and assessment organisation aspects, to amalgamate these demand structures into a single test element “Technical preparation and conclusion of the drive”.

The proposed separation of the “technical completion” from the test element “Test drive” would firstly contribute to clearer presentation of the observation tasks and assessment criteria for the actual test drive. Secondly, implementation of the proposal would contribute to a methodical “type standardisation” in respect of the test demands of the test drive, because these demands, from the methodical perspective, are best represented by “real” driving tasks; in this connection, it would also be expedient to delete the (double mention of) “Technical preparation of the vehicle” and “Technical completion of the drive” under Annex 7 FeV, 2.1.5. A third presumable effect of the recommended restructuring, finally, would be enhanced road safety: The differentiation of the test element “Technical preparation of the vehicle” lends it an apparently greater didactic significance in both driver training and driving test, even though this is probably not matched by the relevance of all corresponding test contents as safety risks; the demand aspect “Technical completion of the

drive”, on the other hand, drowns in an abundance of other important demand aspects of the test drive, but is by no means less safety-relevant: Accidents involving cyclists, for example, are often caused by the thoughtless opening of a vehicle door. If the two demand aspects were to be summarised as an independent test element (e.g. under “Technical preparation and conclusion of the drive”), on the other hand, the awareness of this risk would be strengthened.

Basic driving manoeuvres

Basic driving manoeuvres are a particular form of driving tasks and – from the overall point of view – test tasks. “Driving tasks” are understood as demand structures or selected action demands placed on the driving test candidate and are described with reference to classes of traffic situation: “Driving tasks are typical driving situations” (McKnight & Adams, 1970; Hampel, 1977; see also Chapter 4). Such driving tasks are formulated in the form of situation-related action sequences (e.g. the driving task “Driving on one-way streets” or the basic driving manoeuvre “Reversing around a corner to the right making use of a junction, crossroads or entrance”). In this sense, the demands of the test aspects “Technical preparation of the vehicle” and “Technical completion of the drive” discussed in the previous section can be categorised as test tasks, but not as driving tasks, because they are necessarily not to be fulfilled while driving.

Through his successful completion of the basic driving manoeuvres, the driving test candidate is able to demonstrate that he can handle a motor vehicle belonging to Class B independently at low speed. Contrary to the practice in a number of other European countries, such as Belgium, Austria or Switzerland (see Chapter 7.2), the basic driving manoeuvres are examined in the real traffic environment in Germany; they are methodically driving tasks which are to be performed on low-traffic roads (e.g. side streets, cul-de-sacs) preferably without a gradient (Annex 3 PrüfRiLi). This serves to minimise any hindering of the traffic flow for other road users and at the same time avoids excessive stress for the test candidate when actually performing the basic driving manoeuvres. The basic driving manoeuvres thus display not only content-related, but also methodical particularities: They are examined not under randomly occurring traffic conditions, but instead under simplified or “protected” conditions with regard to the prevailing traffic intensity and density (see Chapter 4.3.3).

The currently valid Examination Guidelines specify a total of five different basic driving manoeuvres, of which two are to be incorporated into each test. The contents of the individual basic driving manoeuvres are described in detail in the following tabular overview.

Tab. 5.2: Basic driving manoeuvres for the practical driving test for Class B

	Basic driving manoeuvre	Contents of the basic driving manoeuvre	
1	“Reversing around a corner to the right making use of a junction, crossroads or entrance ”	Reversing in a tight curve to the right, without running over the kerb or road edge; stopping the vehicle parallel to the kerb or road edge.	One of these two basic driving manoeuvres is to be chosen for each test.
2	“Reversing into a parking space (parallel to the traffic)”	Reversing into and parking in a space approx. 8 metres in length (e.g. between two vehicles parked one behind the other).	
3	“Parking in a space (at an angle or at right angles to the traffic)”	Driving in forward or reverse gear into a space between two vehicles parked parallel to each other or into a parking space marked at an angle or at right angles to the direction of traffic, and stopping in this space.	One of these three basic driving manoeuvres is similarly to be chosen for each test.
4	“Turning the vehicle to face the opposite way”	Independent selection of a suitable place and method to turn the vehicle around (e.g. parking space, road junction, driveway).	
5	“Braking with the maximum possible deceleration”	The candidate must bring the vehicle to a standstill within the shortest possible distance from a speed of approx. 40 km/h by using the foot brake.	

The first four basic driving manoeuvres are characteristically driving tasks which are performed at low speeds. By contrast, the task of “Braking with the maximum possible deceleration” (“Emergency braking”) is to be performed from an initial speed of 40 km/h. Unlike the other basic driving manoeuvres, this task relates to correct behaviour in a hazard situation: The driving test candidate is expected to demonstrate that he is able to bring the vehicle to a standstill by applying the maximum available braking power.

If we wish to judge the diagnostic value of the basic driving manoeuvres for the examiner’s general decision on whether or not the test candidate “possesses the technical knowledge required to operate a motor vehicle safely [...] in traffic, sufficient knowledge of an environment-aware and energy-saving manner of driving, and the ability to apply this knowledge practically” (§17 FeV), then we must fall back on the psychological foundations developed in Chapter 2.2.3 (“Driving skills as the core of driving competence”) and consider the demands of the basic driving manoeuvre from this perspective.

In the case of the first four basic driving manoeuvres, the test candidate must show that he “is able to handle a motor vehicle of Class B independently at low speed” (Annex 3 PrüfRiLi). It is thus a matter of demonstrating that a certain level of psychomotor vehicle handling has been attained. No mention is yet made of “skills” at this point, as this would entail an expectation that the test candidate not only performs the required action sequences, but additionally displays a certain degree of automation and particular precision and coordination in his actions. Driving skills, and the resulting fine coordination and desirable quality of the action sequences (smooth acceleration and driving, jerk-free braking), are only later expected of applicants for a driving licence for classes D, D1, DE and D1E, who already possess driving experience (PrüfRiLi 5.1): A driver wishing to carry passengers must already demonstrate safe and skilful handling of the vehicle during the driving test in public traffic. The practical driving test for a private car, on the other hand, takes place at a time at which the test candidate, due to his lack of driving routine, must still con-

sciously control his vehicle handling actions (coordination of psychic and motor action sequences, in particular with regard to vehicle operation and traffic observation) and, similarly as a consequence of this limited driving experience, achieves only coarse coordination of the various psychic and motor action components, which is furthermore “susceptible to disturbances”. This susceptibility is manifested, for example, in stalling of the engine under conditions of stress, i.e. when the normal tension of the test situation is aggravated by unforeseen difficulties or failures.

The stipulation that the basic driving manoeuvres are to be performed “on low-traffic roads preferably without a gradient” (Annex 3 PrüfRiLi) also indicates that the legislator wishes to limit the level of demands placed on the candidate. This appears reasonable, given the fact that the practical driving test takes place after a relatively short phase of driver training and before the acquisition of broad driving experience: This lack of driving experience on the part of a novice driver, namely, means that interactions of the various psychomotor action sequences associated with driving, such as gear-changing, use of the clutch, steering, braking or accelerating, are not yet sufficiently automated, and their accomplishment, due to the still necessary conscious control of individual actions, consequently occupies greater cognitive resources than in the case of an experienced driver (Rasmussen, 1986; Hacker, 1998)³⁷. The test candidate thus has correspondingly fewer cognitive resources at his disposal for information acquisition and information processing in other areas, for example hazard perception (McKenna & Farrand, 1999).

The above correlations permit the assumption that successful completion of the basic driving manoeuvres, in combination with the correspondingly necessary information processing, will still generally pose difficulties for the test candidate at the level of training which has usually been attained by the time of practical driving test. This situation is heightened by the fact that, in Germany, the basic driving manoeuvres are to be performed in the real traffic environment, albeit under low-traffic conditions: While performing the basic driving manoeuvres, the test candidate must simultaneously observe the relevant stipulations of the Road Traffic Regulations (StVO) and the behaviour of all other road users; it is necessary, “for example, to observe the traffic adequately before and while performing the manoeuvres and to use the vehicle indicators when moving away from the kerbside” (Annex 3 PrüfRiLi). This traffic observation demand is not easy for a driving test candidate to fulfil, as his lack of driving experience leads, for example, to risks being recognised significantly later and, furthermore, less reliably compared to an experienced driver; situations may also be interpreted wrongly (Brown & Groeger, 1988). The results of eye-tracking studies (Underwood, 2003) suggest that these weaknesses derive from novice-typical deficits in respect of information acquisition and information processing.

The examination of the basic driving manoeuvres in real traffic therefore offers useful diagnostic possibilities, but at the same time also constitutes risks which are not to be underestimated in respect of the test success of the candidate and overall road safety. The diagnostic possibilities are to be seen in the fact that the attained level of coordination of the psychomotor and cognitive components of driving competence, i.e. controlled driving and risk management, can here be examined under realistic conditions, and thus validly. The risks, on the other hand, stem from the significant likelihood of overtaxing the candidate on

³⁷ Studies conducted in Great Britain suggest that comprehensive controlled automation of the mentioned psychomotor skills must be viewed as a process which, depending on the amount of driving done, may require up to three years (Maycock & Forsyth, 1997). The routine accomplishment of action sequences can thus hardly be expected of the candidate during a Class B driving test.

account of the relatively short duration of his driver training to date and the resulting competence deficits: Even the specification of basic driving manoeuvres which are quite simple to complete for a person with driving routine can quickly push a test candidate to his performance limits, which is one reason why the basic driving manoeuvres often give rise to test anxieties on the part of candidates.

If this risk is to be avoided, it is necessary to analyse precisely the competences required to successfully master the basic driving manoeuvres in the context of the expectations justified by the usual scope driver training completed before the practical driving test, and to implement the results in transparent demand and assessment standards: If it is clear that driving test candidates are generally not yet in a position to perform the basic driving manoeuvres successfully in all possible traffic situations, the imperative conditions must be laid down in the sense of a minimum standard. This is evidently not necessarily achieved by the present formulations, for example the non-conclusive specification that the basic driving manoeuvres are to be performed on roads “preferably without a gradient” or the scarcely controllable expectation that the traffic be observed “adequately” (Annex 3 PrüfRiLi).

What could be changed with regard to the examination of the basic driving manoeuvres? The first point which must be made is that the examination of basic driving manoeuvres is not dispensable, because these tasks are representative of the demands of road traffic, i.e. every driver is required to park, reverse or turn his vehicle, or even to brake in emergency situations, more or less frequently in the course of day-to-day road use. On the other hand, with the exception of the emergency braking, a driving licence holder is later able to determine freely the traffic situation in which the manoeuvres are performed: He can take a longer detour to save stressful turning or reversing manoeuvres; he is not forced to use a particular parking space, but can instead wait for a more convenient parking opportunity. If the basic driving manoeuvres are to be examined realistically and thus validly, therefore, the examiner could upon request, and within certain limits, permit the test candidate to decide where he wishes to demonstrate the parking, reversing or turning manoeuvres, and that without the possibility to base any negative assessment merely on the fact that the test candidate makes use of traffic situations which minimise the corresponding action demands.³⁸ This method is already practised occasionally in Germany, though it has not yet been conceptualised and anchored in the methodical and legislative systems of German driving licence testing as in a number of other European countries (“independent driving”, see Chapter 7.4).

At the same time, further effective reduction of the sources of test anxiety could be achieved by increasing the transparency of the test, and all suspicions that the examiner could be abusing his scope of judgement would be avoided if the basic driving manoeuvres to be examined were to be selected by the candidate himself drawing lots before the test drive, as is today the case in Poland or Russia, for example, and as was already standard practice in the GDR. In this context, it is also worth considering the proportion of the test duration which should be allocated to examination of the vehicle preparation and manoeuvring ability, and whether it would not be expedient to reduce the requirement to just a single basic driving manoeuvre: Which traffic safety risks arise from an unsuccessful parking manoeuvre – and which accident risks could evolve from competence deficits when

³⁸ Experienced examiners point out, however, that a flexibilisation of the test demands may for some driving test candidates represent a burden of additional cognitive effort and decision conflicts.

driving on roads outside built-up areas, for which the test currently prescribes a duration of just 12.5 minutes?

It remains to be said that, against the aforementioned background of a significant proportion of driving test candidates suffering under test anxiety, and in accordance with the completed research on ways to effectively combat this test anxiety (see excursus above), partial liberalisation of the selection of a time and place for demonstration of the basic driving manoeuvres represents an effective possibility to reduce the stress placed on the test candidate. The current possibility to repeat a particular manoeuvre in case of an unsuccessful first attempt is unable to make this contribution to stress reduction, as the second (and final) attempt, following as it does from a preceding failure, actually leads to an enhanced expectation of failure and thus to ever greater stress (see above). Implementation of the present proposal, on the other hand, would result in automatic mutual adaptation of the competence level of the candidate and his (personally determined) demand level.

Further stress-reducing effects could be developed by additionally adapting the assessment standards to the reality and actual differentiation of the demand standards: When the driving test examiner, as at present, is essentially able to exercise personal judgement in determining the situative demands for the examination of the basic driving manoeuvres, and is furthermore not to expect the test candidate to demonstrate of an advanced level of competence when performing such manoeuvres, stipulations such as a maximum kerb clearance of 30 cm (basic driving manoeuvre 2.2) or the limitation to two additional corrections of the vehicle alignment (basic driving manoeuvres 2.1, 2.2 and 2.3) are clearly to be deemed excessive regulation. A professionally and pedagogically qualified examiner does not need such stipulations to be able to judge the adequacy of the candidate's action sequences during a parking manoeuvre; stipulations of this kind are more likely to detract from reasonable use of this scope of judgement.

It also appears advisable to consider whether the fundamental psychomotor mastering of the basic driving manoeuvres and the smooth execution of the aforementioned psychomotor actions should not already be assured before the driver training in real traffic. This, however, would entail modification of the test system. One conceivable approach could be to introduce, for example, an intermediate test at a location aside from public road traffic ("autodrome"). Such intermediate tests, with all their methodical merits and disadvantages, were components of the former German test system (see Chapter 4) and are also conducted in a number of other European countries (see Chapter 7.4).

The options described here with regard to the structure of the examination of the basic driving manoeuvres are still unable to offer finally satisfactory solutions, but they nevertheless provide starting points for the necessary further reflection on the design and significance of the test element "Basic driving manoeuvres" within the methodical system of the practical driving test and the overarching system of novice driver preparation. Further development of the basic driving manoeuvres from the point of view of their content must also take into account the modern driver assistance systems which today support the driver in respect of the operationalised demands of the basic driving manoeuvres. The examination of "Braking with the maximum possible deceleration" (basic driving manoeuvre 2.5), for example, has only been meaningful since the introduction of ABS systems to control the braking power in accordance with the prevailing road and weather conditions. Another example is the availability of parking aids, which simplify the parking manoeuvres required as basic driving manoeuvres 2.2 and 2.3. Such examples serve to show how the advances in automobile technologies in general and driver assistance systems in particular influence the test contents of above all those basic driving manoeuvres which are aimed at demonstrating the attained level of vehicle handling.

These correlations throw up various questions: Should driver assistance systems be deactivated for the duration of the practical driving test – insofar as this is actually possible? Who is to decide, where necessary, whether and which driver assistance systems may be used: the examiner or the test candidate? If the use of driver assistance systems during the practical driving test is left to the discretion of the candidate, then he would co-determine the test contents by way of his choice of test vehicle. This has, of course, always been the case to a certain extent, because the candidate already selects his test vehicle in or together with the driving school, but it is nevertheless necessary to discuss the relevant limitations from the methodical perspective. In this same context, it is furthermore indispensable to clarify the extent to which this affects the diagnostic task of the examiner (the examiner must be acquainted with these systems, for example, in order to even recognise their functioning), and whether the test really is simplified for the candidate, because the use of driver assistance systems requires the test candidate to acquire additional knowledge on the installation of such systems in the test vehicle and on their operation, function principles, effectiveness, safety relevance and limitations.

Whichever answers may be found to the many open questions: It is urgently necessary for greater attention to be paid to the significance of driver assistance systems in further development of the methodology and contents of the practical driving test, and likewise in the translation of the future methodical solutions into the system of driving licence legislation. This applies not only with regard to the basic driving manoeuvres, but indeed to all three test elements; this issue is to be addressed once more in Chapter 8.

Test drive in real traffic

The test drive – in the narrower sense in which the term is now to be used here – is understood to mean the test candidate's drive with the test vehicle from the starting point of the test route to the end point of the test route. This test drive represents the most significant component of the practical driving test; its demands are characterised not least by relatively stable local circumstances and by constantly varying traffic conditions, for example traffic intensity or density, or weather and visibility conditions.

In accordance with the Driving Licence Regulations (§ 17 (3) FeV), the candidate must complete the practical test, and thus also the test drive, at the place of his principal residence or at the place at which he is attending school or vocational training, studying or has his place of employment. If these places are not test locations³⁹, then the test is conducted instead at a nearby test location stipulated by the licensing authority. This stipulation is explained not least by safety-related considerations: The aim of the legislator is to ensure that a learner driver, where possible, is trained and examined at the place where he will be participating in traffic for the most part after obtaining a driving licence (cf. official grounds for § 17 (3) FeV, VkB1. 1998, p. 1073), so as to avert the risks which may otherwise emanate from a novice driver with insufficient knowledge of the local traffic conditions.

The practical driving test is always conducted both within and outside built-up areas (§ 17 (4) sentence 1 FeV). The part of the practical test which takes place outside built-up areas in the surroundings of the test location should include a section of motorway, if pos-

³⁹ In accordance with § 17 (4) sentence 3 FeV, test locations are built-up areas which, by way of their road network, the existing traffic signs and installations and their traffic density and structure, permit the testing of the essential driving procedures. Test locations are designated as such by the responsible supreme state authority, an office stipulated by that authority or the office responsible under federal state legislation (§ 17 (4) sentence 4 FeV).

sible, and must permit the examination of all significant driving procedures also at higher speeds (§ 17 (4) sentence 5 FeV).

When attempting to describe the content-related demands of the test drive, and for the subsequent structuring and standardisation of those demands at an appropriate level, the psychological construct of “driving tasks” is a convenient starting point. This construct originates from the work of McKnight (1970, 1971, 1972) and was taken up once more by Hampel in 1977 (see Chapter 4.3.3). Hampel, however, following on from the approach taken by Jensch et al. (1977), who – in a similar manner to McKnight – defined driving tasks by way of traffic situations when developing their “doctrine of traffic behaviour”, lent the term “driving task” a new meaning: Whereas McKnight understood a driving task to be a relatively elementary und essentially situation-specific demand within the framework of the extremely diverse demands of driving, Hampel associated the term with a more complex demand structure, which, like a memory script, refers rather to a class of similar (driving) situations⁴⁰.

For an understanding of the peculiarity of the driving task construct in psychological testing, it seems expedient to discuss briefly the script concept: According to the theory presented by Schank and Abelson (1977), our everyday knowledge of events is stored in the form of so-called scripts: “A ‘script’ is an elaborate causal chain which provides world knowledge about an often experienced situation [...], scripts are predetermined sequences of actions that define a situation” (Schank, 1975, p. 264). The meaning content of an event “is represented by a script, insofar as the roles of the persons involved, the initial and final states, the relevant circumstances and the sequence of actions are specified” (Kluwe & Spada, 1981, p. 310f). Alongside these concrete components, scripts, as “classes of stereotyped social events”, reserve “slots” for distinctive situative features (Silbereisen, 1987). By filling these empty slots, it is possible to adapt a script to match a particular situative context or to serve experience-driven action control in familiar situations.

Traffic psychology already defined traffic situations as social events very soon after publication of the script concept and used this approach in traffic pedagogy (Barthelmess, 1976)⁴¹: All road users are transmitters and receivers of (non-verbal) signals which are recognisable, interpretable and thus also action-relevant in the sense of (social) information processing. Even if other road users are not present at any given moment, it is still necessary to remain on the look-out for them. Furthermore, (social) traffic events can be structured in the sense of (driving) demands, and as such accomplished with essential stereotyped actions with increasing driving experience. Consequently, like Hampel (1977), we view “driving tasks” as demand structures or selected action demands placed on the driving test candidate, which can be described in similar fashion to memory scripts on the basis of classes of traffic situation (e.g. with regard to the situation class “Turning left on roads with oncoming traffic”).

For the test psychologist who keeps sight of the objectivity of the practical driving test as the prerequisite for its methodical quality (see Chapter 2.4), it appears extraordinarily desirable at this point to describe the safety-relevant demands of driving in real traffic as

⁴⁰ The concept of “prototypical driving tasks” put forward by Jensch, Spoerer and Utzelmann (1977) marks an intermediate stage in the development from McKnight’s elementary understanding of the term (1970, 1971, 1972) to the more complex definition of “driving task” by Hampel (1977).

⁴¹ Barthelmess (1976) described, for example, the significance of the categorisation of traffic situations for traffic behaviour and developed training programmes on the basis of the script concept.

modernly, exhaustively and disjunctly as possible in a catalogue of “driving tasks” and to demand the satisfaction of precisely these driving tasks as the minimum standard for all driving test candidates as a means to ensure test equity. This methodical objective, it seems, is thus not at all new: Hampel already proposed in 1977, for example, that a catalogue of typical situations or driving tasks be specified as required components of all driving tests, as a first step towards standardisation of the practical driving test. As a further step, he recommended the elaboration of standardised route sections, i.e. roads offering known possibilities for the examination of certain driving tasks, which the driving test examiner could then combine flexibly in the sense of an adaptive testing concept. He advised against complete standardisation of the test routes for a variety of reasons, however; we will return to this point later.

From today’s perspective on the two proposals, it can be said that, as far as standardisation is concerned, the second step need not necessarily follow on from the first, but is nevertheless imperative for the development of individual competence on the part of the driving test examiner: The examiner is well advised to determine and note those route sections within his regional test area along which there is a high probability of opportunities to examine certain driving tasks and which he can combine accordingly; such route knowledge is a source of confidence and relieves the examiner of complex planning decisions during the test drive itself. Consequently, that is today – as it was also in the past – the usual method by which the examiners plan test drives.

The first step towards standardisation which Hampel proposed in 1977, however, was never taken; the divergent regional traffic conditions in Germany and the status of traffic policy formation at that time were not conducive to the implementation of such an individual-based minimum standard for the demands to be examined within the framework of the test drive (see Chapter 4.3.3). Instead of a candidate-oriented demand standard, therefore, a demand profile founded on driving tasks was defined for certain traffic spaces, namely for the previously mentioned “test locations”. The demand profile elaborated by Hampel and Küppers (1982, p. 91) has already been presented (see Tab. 4.2 in Chapter 4.3.3). It specifies that a test location must permit the examination of a certain spectrum of driving tasks; at the same time, however, it also allows limited exceptions in respect of the completeness of the catalogue of driving tasks which can be examined at a given location. It is furthermore required that the driving tasks defined by traffic experts arise with a certain frequency over the course of five practical driving tests. This was not understood to mean that the examiner should maintain an overview of the tasks performed by each group of five candidates and thus the attainment of frequency targets. It was rather that random verification of compliance with the specified frequencies with a certain level of probability over selected practical tests at selected locations was taken to indicate that the desired frequency standards were met at those selected locations, and thus presumably at all locations.

The extent to which the specified driving tasks and frequency standards were actually observed, or even considered, in driving test reality has to date – according to our knowledge – not been the subject of systematic methodical reflection. Such methodically critical empirical studies on the basis of practical driving tests or comparable investigations, however, are to be considered necessary not only – as already recommended by Hampel (1977) – when designating test locations, but also, given the rapidly changing traffic conditions in many regions, with a certain regularity for all existing test locations.

How has the list of applicable driving tasks evolved since 1982 – irrespective of its possible purpose as a candidate-oriented minimum demand standard or a standard demand profile for test locations? What is the situation today? The currently valid “Table of driving tasks” and the applicable “Demands on the test location and its surroundings” are to be

found, in accordance with § 17 (3) to (5) FeV, in Annex 11 to the Examination Guidelines. The following Table 5.3 shows the current demands on a test location (in accordance with Annex 11 PrüfRiLi) and highlights the deletions and amendments compared to the proposal made by Hampel and Küppers (1982, p. 91). It can be seen that relatively few changes have been made, and that some of these changes have been of a merely editorial nature (driving tasks 1, 5, 6 and 17). There has been only very minor modification of the actual contents. The amendments to the contents of the table of driving tasks over the past three decades can be summarised as follows:

- The driving task “Driving on roads with road markings” has been deleted without replacement.
- One-way streets are now only to be used where they offer a possibility to turn left.
- The driving task “Turning right/left with special consideration for cyclists” has been expanded slightly in its content: The cyclists are now to be observed not only on cycle lanes, but also on side streets. At the same time, the required frequency of this situation has been reduced from previously five to now two occasions per five practical tests.
- A driving task “Driving outside built-up areas with possibilities to overtake” has been added. At the same time, the required frequency of the driving task “Driving outside built-up areas (bends and blind spots)” has been reduced from previously five to now two occasions per five practical tests.
- In the driving task relating to the use of motorways, the original alternative of a “high-speed road” has been deleted.

Tab. 5.3: Current demands on test locations and their surroundings – Table of driving tasks (in accordance with Annex 11 PrüfRiLi; the changes compared to the catalogue proposed by Hampel & Küppers, 1982, are highlighted: underlined = added; strike-through = deleted)

Demands	Target frequency per 5 driving tests				
	1	<u>2</u>	5	<u>7</u>	10
1. Driving off and (merging) into moving traffic from the kerbside				×	
Driving on roads with road markings					×
2. Driving on roads with a traffic density of at least 100 vehicles per hour				×	
3. Driving on one-way streets <u>with the possibility to turn left</u>			×		
4. Changing between road lanes (aside from crossroads)					×
5. Driving on roads with 2- or several marked lanes for one direction			×		
6. Approaching and passing pedestrian crossings				×	
7. Passing public transport stopping points			×		
8. Passing unmarked crossroads with the priority rule “give way to the right”					×
9. Entering (merging into) in priority roads				×	
10. Passing crossroads with a stop sign			×		
11. Passing crossroads controlled with light signals				×	
12. Turning left on roads with oncoming traffic					×
13. Turning right/left with special consideration for cyclists (e.g. parallel cycle lane) <u>on cycle lanes or side streets</u>		×			
14. Passing crossroads and junctions where the priority road turns away to the right or left			×		
15. Driving outside built-up areas (bends and blind spots)		×			
<u>16. Driving outside built-up areas (with possibilities to overtake)</u>		×			
17. Basic driving exercises <u>manoeuvres</u> aside from moving traffic (e.g. side street or cul-de-sac)			×		
18. Motorway, high-speed road (speed over 80 km/h possible) <u>in reachable vicinity</u>	×				

The fact that the driving tasks which the test candidate can expect to face in the practical driving test have hardly changed over the past three decades is not per se reason to question the content-related or methodical quality of the driving tasks. With regard to the content, it may be true that the characteristics of road traffic have changed over these three decades, but on the other hand, a demand or driving task list can always only establish the most important demands, and there are few significant changes to be expected in this respect, even over longer periods.

Taking into account this starting position, it is first of all to be pointed out that the table of driving tasks in use today is based essentially on a systematic elaboration of traffic demands from the point of view of corresponding experts and was verified empirically for a methodical meaningful series of test locations in the early 1980s. Today's driving tasks were thus at that time considered a representative selection of the most important driving

tasks, and that is probably also true today for the most part. Nevertheless, the representative character of the driving task catalogue must be verified from the present perspective: It could be asked, for example, whether the traffic density of 100 vehicles per hour, irrespective of their direction of travel, which was taken as the basis by Hampel and Küppers (1982), is still realistic today? In Poland, the regulations currently demand test route sections with not fewer than 400 vehicles per hour on one lane. And are relatively new traffic demands, such as the correct use of roundabouts, reflected adequately in the driving tasks? Definitely not. An analysis of the real demands of modern road traffic and the subsequent formulation of conclusions with regard to updating of the table of driving tasks thus appear both inescapable and urgent from the methodical point of view.

Where are the starting points to be found for modernisation of the driving tasks from the point of view of their content, irrespective of whether they are to serve as the definition for candidate-related minimum demand standards or for specification of a test-location-specific standard demand profile?

In this context, it seems expedient that the driving tasks should not only reflect the diverse demands of modern road traffic, but also, with regard to the inevitable limitation of the driving tasks to be examined, take into account the accident situation as it affects especially novice drivers. Bearing in mind this necessity, which derives from both safety considerations and the economical aspects of test organisation, it becomes conspicuous that, although novice drivers are involved disproportionately often in fatal accidents on cross-country roads outside built-up areas, the demands relating to the circumstances of the built-up area of a test location are currently specified in much greater detail than the demands on the section of a test route outside built-up areas: Only three of the 18 driving tasks or demands on test locations refer explicitly to driving outside built-up areas; the corresponding demands are furthermore described with just two relatively general criteria (“routes with bends and blind spots” and “routes with possibilities to overtake”). Changes are probably necessary at this point, though they will presumably face a certain political opposition, because they would mean a greater outlay for testing (longer test and driving times, longer test routes) and a departure from the traditional, albeit safety-irrelevant designation of test locations: How otherwise is it possible to explain why precisely the required frequency of route sections outside built-up areas has been reduced in the table of demands on test locations compared to 1982, despite the fact that such roads must today be considered black-spots for novice driver accidents?

From the methodical point of view, the “Table of driving tasks” contained in Annex 11 to the Examination Guidelines represents a catalogue of demands to assess the local circumstances for the driving test – namely the test location and its surroundings – and not (yet) a catalogue of demands to be satisfied by the test candidate, even though a candidate-oriented minimum demand standard would be highly desirable (see below). This duality and the content references of local and personal demand standards appear to be necessary aspirations: Even excellent driving tasks for the candidate are of little value for the improvement of test quality if the driving test examiner has no local opportunity to perform those tasks; similarly, local circumstances are just as meaningless if they are not used systematically for the examination of candidate-oriented driving tasks. The present table of driving tasks, therefore, is indeed able to serve as a starting point and reference for both objectives, namely the evaluation of a location’s suitability for test purposes and assessment of the test performance of the driving test candidate. The logical consequence is thus to analyse the current table of driving tasks from the content and methodical perspective and to judge whether the formulations of the various driving tasks are similarly complex and disjunct. An assessment of their representative character, on the other hand, is to be left to traffic experts, though it is already striking that it fails to cover a number of safety-

relevant driving tasks which are practically unavoidable in modern road traffic, for example the correct use of roundabouts.

A first analysis of the contents and methodology of the driving task list illustrates the necessity of its restructuring and further development, as it reveals both content redundancy and methodical inconsistencies, the elimination of which would facilitate test organisation, test observation, test assessment and test decisions:

- The contents of the driving tasks are related to different overall references (driving tasks 1 to 17 operationalise behaviour demands; driving task 18 “Motorway in reasonable vicinity”, on the other hand, establishes a location demand, whose behaviour relevance is not immediately evident, and the satisfaction of which appears difficult).
- The driving tasks appear to be of varying complexity with regard to their level of abstraction (the driving task “Driving on one-way streets with the possibility to turn left”, for example, is a relatively seldom traffic situation with a very specific demand structure, whereas the driving task “Driving outside built-up areas, with possibilities to overtake” is encountered frequently and seems very general).
- The driving tasks overlap in part (e.g. three driving tasks are devoted explicitly to turning left).
- The driving tasks appear partly similar or else mutually inclusive (e.g. the driving tasks “Changing between road lanes, aside from crossroads” and “Driving on roads with several marked lanes for one direction”).
- The particular significance of individual, very specific driving tasks for traffic safety appears questionable (e.g. the driving task “Driving on one-way streets with the possibility to turn left”).
- Individual driving tasks appear inevitable under the modern conditions of road traffic and thus presumably need not be prescribed specifically, not least because it can be assumed that the examiner will already take them into account adequately while exercising his general scope of judgement (e.g. the driving task “Turning left on roads with oncoming traffic” or the task “Driving off (merging) into moving traffic from the kerbside”, as merging into existing traffic is a component of many different driving manoeuvres).

Let us summarise the above discussion of test contents. In a pedagogically meaningful training system, the concluding test or examination must be learning-objective-referenced (see Chapter 2.3.4), i.e. it must mirror the contents of the training in an appropriate form. Applied to the existing system of novice driver preparation, this means that the practical driving test must provide evidence as to whether the driving licence applicant has achieved the learning objectives of the driver training. This didactic correlation comprises an institutional and an individual perspective.

From the institutional and overarching perspective, the training objectives and contents – and equally the test objectives and contents – are to be derived from the demands of modern road traffic in accordance with scientific principles, verified empirically and depicted in their interrelationships. This task was not tackled by Hampel and Küppers (1982), who, for a series of reasons already mentioned earlier, took the existing examination guidelines as their starting point, and not traffic reality; in fact, it seems that the task has still not been solved satisfactorily today. There is a good chance, however, that the issue will remain on the agenda and lead to further development of the practical driving test: The political will of the traffic policy-makers is unmistakable, the necessary scientific basis for further development is provided by thematically relevant research projects of the Federal Highway Research Institute (BAST) and the Technical Examination Centres, and cooperation be-

tween the various interest groups involved has been facilitated by way of modernised working structures.

From the individual point of view, it can be demanded that the driving test examiner should structure and organise each specific practical driving test such that the test candidate is granted appropriate opportunity to demonstrate his knowledge and ability and to learn from mistakes. At the same time, the principle of test equity must be preserved, i.e. the test demands and contents must be as uniform as possible for all candidates. In Germany, the designation of test locations with similar traffic conditions is intended to fulfil this requirement. The choice of this starting point appears plausible; after all, empirical studies conducted by the Technical Examination Centres in the early 1970s revealed that the location can exert a decisive influence on the result of a practical driving test, and that this factor contradicted the desired equal treatment of all test candidates. Nevertheless, it can be deemed more than questionable, in terms of methodology, to infer that the present list of prescribed local traffic situations in itself suffices to found an assumption of equal test demands for all individual, candidate-specific test routes selected within the framework of these local circumstances, even if the validity of the criteria list were to be meticulously and empirically verified for each test location. This applies in particular where no account is taken of the local situations or driving tasks which are actually encountered or completed. In other words: The first step proposed by Hampel in 1977, namely to guarantee the examining of all safety-relevant driving tasks in every practical test and to establish test equity, has still not been taken; we are still lacking a catalogue of representative driving tasks which could be demanded of all driving test candidates in the sense of a minimum standard.

The specification of test locations which merely provide access to the desired test conditions is thus unable to satisfy the requirement of candidate-oriented demand standards and test documentation. This notwithstanding, test locations with comparable traffic conditions by all means represent a fundamental and indispensable first level of test demand standardisation, even if, in the opinion of traffic experts, the demand profile of some test locations is not optimal. The advantages of comparable test locations are obvious: They serve to pre-structure the driving tasks and thus contribute to the methodical quality of the practical test and to the safeguarding of test equity; furthermore, they define more precise training contents for the driving instructors. Last but not least, the designation of test locations secures the involvement of local authorities in the further development of the practical driving test and should be maintained in principle also for this reason. Once the imperative candidate-oriented demand standards can be presented, however, the list of criteria for test locations must be updated in accordance with the (new) specifications of driving tasks for the test candidate. In addition, the methods for determination of the suitability of a test location should be modernised: At the time at which the significant majority of the currently valid test demands were elaborated and tested, it was still necessary, for example, to determine road traffic densities laboriously with paper and pencil; nowadays, satellite-assisted observation systems permit the fast acquisition of reliable information on traffic intensity.

Within the context of the pending review of the driving tasks, it is not to be excluded that certain aspects of the criteria for test locations (not the driving task catalogue for the candidate, see below) will be found to be in need of flexibilisation or regionalisation. We are here thinking of amendments which would permit the integration of particular, regionally specific hazards into the test route and thus allow the examination of regionally specific demands (e.g. mountain roads with greater gradients, tree-lined roads, typical weather and road conditions). To date, the test contents in their present versions have always been viewed methodically – as is generally the case in Germany – from the vantage of stan-

standardisation, and it has been assumed that a nationwide standard specification of content is desirable in the interest of test equity. It remains to be asked, however, whether higher demands placed on the test contents, such as the reference to safety objectives, could possibly override the requirement of uniformity. Expressed another way: The traditional concern as to whether a complete standardisation of test demands is possible must be placed alongside the question as to whether this is in fact desirable. If, in answer to this provocative question, route sections characterised by regionally specific hazards were to be prescribed as tasks for the practical driving test, this would not constitute a violation of test equity or standardisation objectives in the broader sense: The fundamental, elementary driving tasks would remain identical for all test candidates, and routes featuring special regional hazards would be used for the driving test in the whole country. Where is the disadvantage compared to the present solution, whereby it is a matter of random chance whether such route sections are included in the chosen test route?

Accident research shows that novice drivers are involved in accidents predominantly at local accident black spots and on roads characterised by regionally typical risks. This seems to support the idea of incorporating not only location-independent driving tasks, but also more complex route-specific content, in the sense of known local risks, into driver training and the practical driving test, so as to make use of all opportunities to reduce the numbers of novice driver accidents. Methodically, this means that – in future hopefully uniformly applicable – driving tasks will be operationalised and combined according to location-specific considerations. From the legislative point of view, possibilities thus arise to prescribe a location-specific combination of the individual driving tasks by way of a location criterion in the sense of a “route characterised by special risks”. Corresponding possibilities are currently being elaborated and tested within the model project – “Regio-Protect 21 – Regionalised protective novice driver preparation in Brandenburg” (IPV & TÜV | DEKRA arge tp 21, 2008). The aim of defining special high-risk route sections as test content, however, must not be misunderstood as a step towards standardised test routes. There are important reasons for opposing such test routes (see Chapters 4 and 7), above all the fact that they conflict with an adaptive testing concept (see the following Chapter 5.5).

In conclusion, it is to be noted that the test demands, and in particular the driving task catalogue, are closely integrated with the scope of the training contents and available learning aids. Any modification of the test contents, and likewise changes in the observation categories and assessment criteria discussed hereafter, must pay due heed to this fact and thus be coordinated carefully and on a longer-term basis with all those contributing to the system of novice driver preparation.

5.5 Test observation, test assessment and test decision

5.5.1 Correlations between test observation, test assessment and test decision

The practical test as an assessment, decision, problem-solving and learning process

At the beginning of Chapter 5, it was explained that the present legal framework of the practical driving test must be extended to incorporate a methodology based on the principles of psychological testing, and that the two systems must complement each other without contradictions. To be able to achieve this objective, it is first necessary to visualise the pedagogical-psychological nature and contents of the examination processes which make up the practical driving test. It is here expedient to build upon the statements of Chapter 2.3.3 (“The practical driving test as behaviour observation”).

How could we describe the psychological nature of the practical driving test? When attempting to answer this question, it must be kept in mind that the previously illustrated

systematic behaviour observation is not realised for its own sake, but instead serves to enable the driving test examiner to reach a methodically sound test decision within the framework of a complex performance assessment process. The practical driving test is thus, from the psychological perspective, an assessment process which ends in a decision. Decisions are in general based on the more or less deliberate, target-oriented, evaluative and conflict-aware actions by which a person wishes or is required to select one of at least two options. Decisions are differentiated by way of the number and binding definition of the available options, and in accordance with the structure and complexity of the decision process (Wickens & Holland, 1999). In the case of the practical driving test, the examiner is offered two precisely specified decision options (“passed” or “failed”), of which he must select one in the course of a complex, multiple-stage decision process. As soon as this decision is required more frequently, as applies for most driving test examiners, it is possible to assume a certain automatism in decision-making⁴².

The development of action routines facilitates the daily exercising of his examination duties for the driving test examiner, as such routines reduce the required cognitive input in the decision situation: If the current test situation matches a stored decision schema to a sufficient degree, then the expected test decision is reached quickly and automatically on the basis of habitual preferences. A certain automatism in the decision process is a feature not only of “routine decisions”, but also of “stereotype decisions”, a second form of decision if the level of automation is chosen as the distinguishing attribute. In the case of stereotype decisions, decisions are based additionally on learned assessment schemata: The decision is reached by way of selective information acquisition and “established” processes of information evaluation and referencing. The described automatisms are by all means useful mechanisms in the sense of efficient information processing, and give consideration to the fact that balanced decision processes are often not possible or meaningful in everyday situations.

Neither routine nor stereotype decisions serve the interests of traffic safety, however, and respect for the person of the driving test candidate excludes both as an overarching goal of examiner behaviour, even taking into account the legislatively prescribed assessment standards which are naturally to be applied when reaching a test decision (see Chapter 5.1).

The expectation is rather that the driving test examiner reaches “reflective decisions”⁴³ within the legal framework governing the course of the test. Reflective decisions demand a high cognitive input and imply explicit reflection on decision preferences and the underlying information. The person making the decision is thus not guided by habitual or stereotype preferences for particular decision options, but instead formulates a preference on the basis of a broad spectrum of information acquired from the environment, in the ideal case as an outcome of targeted identification and processing, and memory contents, in other words enriched decision-relevant knowledge.

⁴² It is well documented in the economic sciences and in psychology that human decision-making is not a rational and normative process which integrates all relevant sources of information and takes in account their probabilities, but is instead determined not least by “decision anomalies” (see Kirchler, 1999), including not only routines and stereotypes, but also the observation and assessment errors described in Chapter 2.

⁴³ For completeness’ sake, it should be mentioned that “constructive decisions” can also be differentiated on the basis of cognitive input and the degree of decision automation. Such decisions demand the highest cognitive input, as option declaration and consequence determination are themselves elements of the decision-making process. This form of decision can be deemed irrelevant with regard to the practical driving test, however, as the options are already specified and the consequences of a false test decision are known.

How, therefore, does the driving test examiner reach reflective decisions in the context of the practical driving test, and what does this mean for the test strategy to be applied? To answer this question, we must extend the prior evaluation of the psychological nature of the practical driving test (see above): The practical test is to be seen not merely as a performance assessment test ending with a test decision, but beyond that as a complex overall decision process. The examiner is from the very beginning aware that an adequate decision is expected from him at the end of the test, and his actions throughout the whole test are geared to this expectation. The demands placed on his actions are determined by the psychological structures and contents of assessment processes, as well as a number of further influencing factors (e.g. the examiner's objectives and values, his essentially prescribed assessment standards and his personal bases of evaluation), and can be summarised as follows:

1. Planning and structuring of the test or observation situation (see Chapter 2.4.2, also termed "classification") on the basis of demand standards (see Chapter 5.4) and through determination of the test route
2. Systematic observation of the behaviour of the test candidate (see Chapter 2.3.3) on the basis of the aforementioned observation categories (see Chapter 5.1)
3. Interpretation and assessment of the behaviour of the test candidate, above all on the basis of the aforementioned assessment criteria and standards (see Chapter 5.1)
4. Elaboration of decision preferences and appraisals of the corresponding decision certainty and justification; furthermore consideration of the possible necessity to verify the decision preferences, leading in turn to further development of the original test concept and to the planning and structuring of new observation situations
5. Decision-making (including the final test decision).

The (1) planning and structuring of the observation situation through determination of the test route, (2) observation and (3) assessment of the behaviour of the test candidate, (4) verification of the basis for assessment and decision and (5) final decision-making thus represent, in a nutshell, the five elementary action demands placed on the driving test examiner in respect of his assessment of the test candidate. These demands account for and control the examiner's actions; their fulfilment is at the same time the means and yardstick by which he demonstrates his examiner competence. A driving test examiner who satisfies these demands in the process of assessment and decision-making reaches reflective decisions. As competence is defined as the capacity to solve problems successfully (Weinert, 2001), both the actions of the examiner, as the basis of his examiner competence, and the behaviour of the test candidate, which serves to demonstrate his driving competence (see Chapter 5.4.), can be viewed as problem-solving processes.

It remains to be added that the practical driving test could also be understood as a learning process for both the test candidate and the examiner. The candidate is already unlikely to forget his driving test for some time to come on account of its major significance for his social status and mobility, and will in future perhaps give sustained consideration to or even implement the remarks made by the examiner regarding potential for optimisation of his driving behaviour. Examiners who are aware and make use of this pedagogical opportunity hereby apply a concept of "promotion-oriented diagnostics", which can also represent a knowledge gain for the candidate. For the driving test examiner, on the other hand, the concluding test decision is from the psychological point of view to be interpreted as the result of a learning process comprising the gathering and processing of observation data and assessments.

The practical test as a circular adaptive action process

The five aforementioned action components “Planning and structuring”, “Observation”, “Assessment”, “Verification” and “Decision” could be arranged in a circular model identifying the constituent stages of the examination process (see following illustration). The model describes the assessment process and the associated process of reflective decision-making which is realised over the course of the practical driving test, albeit without raising claims to completeness with regard to the individual required actions in a particular case. This assessment process is at any given moment subject to the influence of the prescribed framework of test conditions and the actual performance of the candidate over the course of the specific test so far.

As the decision on whether the test is passed or failed is reached on the basis of a diversity of driving tasks and a corresponding multitude of individual assessment and decision processes, the depicted cycle is repeated in accordance with the sequence of observation situations required to enable final decision-making. The described steps are thus not to be considered disjunct, and their order is similarly not imperative. They are also not necessarily required to run successively, and will in fact frequently evolve simultaneously, for example where different driving tasks are performed parallel to each other. The model thus incorporates feedback and action loops, not least because it is also necessary to realise individual observation situations several times over the course of a methodically complex and systematic behaviour observation like the practical driving test (see Chapter 2.3.3). The feedback loops are depicted in the model as interactive relationships between the individual action components and the examiner’s knowledge base for an adaptive test strategy. This demonstrates clearly how the knowledge base, comprising the prescribed standards, on the one hand, and the assessments and decision preferences elaborated in accordance with observations made in the course of the test itself, on the other hand, serves the examiner as a continuous reference for his further actions. The recurrent relationship between the steps “(1) Planning and structuring of the observation situation” and “(2) Observation of candidate behaviour” is explained by the fact that, over the dynamic course of the test, the ongoing behaviour of the candidate and the changing traffic situation and demands are inseparable from each other: Even though the examiner has initially planned the relevant observation situations in which he hopes to observe a particular behaviour, the traffic situation does not remain static and may, under certain circumstances, require immediate further development of the original observation intentions.

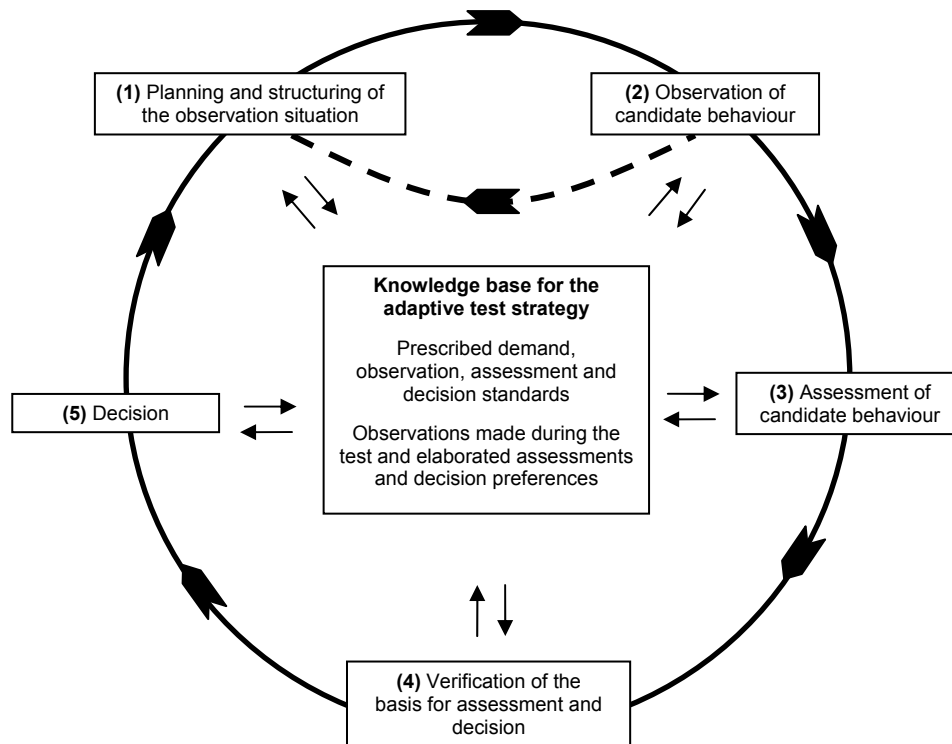


Fig. 5.1: Circular model illustrating the action elements of an adaptive test strategy

Decision-relevant test situations or driving tasks are thus realised over and over again during the practical driving test, before culminating in a methodically founded test decision. It may also be necessary to repeat individual action steps in later phases of the test to permit an acceptable reaction to new demands arising during the test itself (e.g. a driving error which cannot be assessed conclusively). Where the driving test examiner performs the described action cycle repeatedly with reference to different driving tasks, before reaching an objectively founded and methodically adequate, i.e. "reflective" test decision, it is possible to speak of an "adaptive test strategy", which is to be seen as the appropriate methodical answer to the flexible test conditions and demands of the lifeworld structured domain "road traffic".

Before we discuss the background of the "adaptive test strategy" concept in psychological testing, the following two examples serve to illustrate what constitutes such a test strategy. Basically, the concept of an "adaptive test strategy" describes the case in which

- (1) the situation-specific demand characteristics of certain test or driving tasks as they arise during the course of the practical driving test, and
- (2) the behaviour displayed by the test candidate in handling these demands exert a dynamic influence on the further planning of the test by the examiner.

(re 1) Whenever the test candidate performs the driving task "Changing between road lanes (aside from crossroads)" (see Chapter 5.4), for example, the demands posed by this task are always dependent on the situative traffic conditions. If no other vehicles happen to be on the road, the task of changing lanes places only minimal demands with regard to traffic observation and vehicle positioning. The examiner will register this simplifying factor and will seek to require the candidate to repeat the changing of lanes in denser traffic. The examiner thus varies the test conditions for a particular driving task systematically in accordance with the previous test conditions (Biedinger, 2007).

(re 2) If the driving task “Changing between road lanes (aside from crossroads)” is not performed satisfactorily by the test candidate, for example because he neglects to observe the traffic and fails to maintain the required safety margins, then the examiner will attempt to give the candidate a second opportunity to demonstrate the desired behaviour in a similar situation. With the planning and realisation of this similar situation, the examiner adapts the further course of the test to the previously displayed performance and seeks to verify (see above, step “Verification” in the model) the justification of his situative decision preference (in this case “failed”, due to the candidate’s driving error) in a further demand situation. Another example for the adaptivity of the examiner’s actions with reference to candidate behaviour is the reaction to a “serious error”: A serious error cannot be compensated by the positive performance of any remaining tasks, and the adaptive response is in this case immediate, premature termination of the test.

The practical test: “Adaptive testing” versus “Adaptive test strategy”

But now to the background of “adaptive testing” from the perspective of psychological testing, and to the necessary distinction from the aforementioned concept of an “adaptive test strategy”. One methodical alternative to conventional test methods, which require the successive processing of the set tasks in an identical order for all candidates, is that of a solution-dependent test method. The underlying idea is here that the candidate is only presented those tasks which permit a differentiation of his scope of abilities. While the effectiveness of a conventional test is reduced by the fact that tasks which are either too simple or too difficult for the candidate possess little discrimination power and are consequently of lesser information value, the effectiveness of a solution-dependent test is enhanced by taking the candidate’s answers as information input influencing the sequence of tasks. Thanks to this methodical particularity, the measuring accuracy of answer-dependent test methods remains constant even in the extreme ranges of the measured attribute.

Generally speaking, there are two approaches to solution-dependent testing. The first approach is that of “sequential testing”, in which the order of the tasks is specified by the test designer, but the overall test allows for termination upon attaining a critical score and thus the possibility to reach a test decision. The second approach is that of “adaptive testing”, where the order of the tasks is not fixed, but instead varied on the basis of the solutions demonstrated by the candidate. This approach represents the more flexible test process, because it is to a large extent influenced by the solution behaviour of the candidate.

The selection, order and number of tasks to be performed in the context of an adaptive test method are determined by way of corresponding algorithms derived from probabilistic test models. The development of an adaptive test is thus more complex than the designing of a classic test (Bortz & Döring, 2002). According to Fisseni (2004, p. 290), the tasks of an adaptive test must satisfy certain demands:

1. The pool of tasks for an adaptive test must contain tasks representing all levels of difficulty. Only in this way is it possible to specify the abilities of the candidate precisely in respect of the attribute dimension.
2. The tasks must have been verified empirically with regard to the homogeneity, i.e. it must be ensured that all tasks are indicators for the same latent dimension. Furthermore, estimations of the task parameters (e.g. their difficulty) must exist.

If tasks meeting these requirements have been defined, the process of an adaptive test is as follows: The test process begins with a task of medium difficulty. If the task is solved, the candidate is presented a more difficult task; correspondingly, if the current task is not solved, the next will be a simpler task. Once the abilities of the candidate have been narrowed down to a certain coarse range in the initial phase of the test, the subsequent task selection is determined by finer estimations of the candidate’s ability. For Fisseni (2004),

the advantage of an adaptive test is to be seen in streamlining of the test process, i.e. a smaller number of tasks produces a result of similar accuracy to that of a longer test designed in the classic manner. Further benefits are the greater measuring precision at the extremes and the fact that it avoids any loss of motivation on the part of the test candidate due to frustration or boredom. On the other hand, this process of adaptation of the task difficulty to the abilities of the individual candidate may, in Fisseni's opinion, also be viewed as problematic, as it includes no provision for an initial "warm-up" phase in the sense of a number of simpler test tasks.

To what extent are similarities to be found between the practical driving test and an adaptive test method? If we consider first the overarching test model, then the practical driving test is better described as a probabilistic test rather than a classic test method, because it derives the underlying attribute "Qualification to drive a motor vehicle" from observed behaviour, without the test result being viewed directly as the embodiment of an attribute. If the demand structures of the practical driving test are analysed more closely, they reveal no test tasks in the narrower sense: There are no clearly delimited test tasks with evaluated psychometric parameters, and the individual driving tasks are also not classified according to their difficulty, as is necessary for an adaptive test method. A selection and ordering of the test tasks according to their difficulty is thus not possible. In view of one prominent attribute of the practical driving test, namely the scope of judgement it offers the examiner with regard to task assessment, it could indeed be discussed whether it is at all reasonable to speak of a test method in connection with the practical driving test. It is furthermore to be taken into account that it does not strive to localise a test candidate as precisely as possible along an ability continuum, but instead prepares merely a binary decision, i.e. a classification as "qualified" or "unqualified". Correspondingly, differentiation at the extremes of the range of ability is less important than differentiation in the critical range, i.e. at the boundary between "qualified" and "unqualified" candidates.

Even if the practical driving test is evidently not to be viewed as an adaptive test, there are nevertheless aspects of the test process or test strategy which can be described as essentially "adaptive": In this context, "adaptive" means that influences for the further course of the practical driving test planned by the examiner are derived from the behaviour shown by the candidate when performing the already specified driving tasks or test components (see above). In contrast to a genuine adaptive test, however, this process is not implemented to the extent that correct behaviour in a difficult traffic situation results in the selection of exclusively even more difficult traffic situations during the remainder of the test, as a means to determine precisely how well the individual candidate is qualified. It is rather the case that adaptation of the test planning is of consequence predominantly in response to ambivalent test performances, i.e. where it is not yet possible to reach a valid test decision.

One prerequisite for such an adaptive approach is judgement of the difficulty of individual traffic situations on the part of the driving test examiner, and furthermore an ability to plan ahead. As the difficulty of an individual driving task, such as changing between the lanes of a road, is not inherently defined, but is instead always dependent on the prevailing traffic and weather conditions, the difficulty of a particular task must be estimated anew each time. In each new test, the driving test examiner thus repeats the steps which, in the case of a constructed adaptive test, would be performed within the framework of test development and implementation: He assesses the difficulty of the tasks, infers the underlying ability of the test candidate to drive a motor vehicle in accordance with the legal requirements from the observed behaviour during performance of those tasks, taking into account the aforementioned ad hoc determination of their level of difficulty, and, in case of decision uncertainties, plans to revisit certain traffic situations of a certain difficulty in order to clarify his final decision as to whether the candidate is "qualified" or "unqualified". He thus pursues

an adaptive test strategy, without the practical driving test itself warranting classification as an adaptive test.

Consequences of conceptualisation of the practical test as an “adaptive test strategy”

In Chapter 2 (“Methodical foundations”) and Chapter 5.4 (“Test contents”), it was explained that, above all for reasons of validity, the practical driving test is conducted not on standardised driving routes, but in a lifeworld context, and that this circumstance renders it difficult to describe detailed driving tasks, above all for the test drive. As the test dispenses with standardised driving routes, the driving test examiner is required, in accordance with the adaptive test strategy, to perform further planning and route design tasks during the actual course of the test. This assumes, however, that his observations are not first documented and later evaluated, as is usual in the case of experimental observations, but instead that continuous assessments are made and processed parallel to the observations. This demand occupies considerable mental working capacities, which are consequently no longer available for the purposes of test documentation. As a result, it is no longer possible to place high demands on the test documentation; at the same time, due to the already successive assessments and their incorporation into the process step “Verification”, the test documentation loses methodical weight with reference to the test decision.

We see very little prospect for fundamental and methodically beneficial modification of the described methodical approach, for example by way of technical recording of the test and a subsequent evaluation: Firstly, recordings are hardly able to convey the holistic impression of a traffic situation which is necessary to achieve an adequate estimation of the safety relevance of a particular hazard situation as a component of the test decision. On the other hand, however undesirable evaluative feedback from the examiner to the candidate may be with regard to objectivity, a test without such feedback is equally inconceivable, because the examiner must necessarily give instructions for the further (adaptive) realisation of the test drive and the candidate will always associate these instructions with a certain intermediate assessment. A practical test without real-time (and thus also interpretable) assessments is therefore just as unrealistic as a football match where the referee takes up his duties after the final whistle. Indeed, it is to be shown in Chapter 5.5.3 that, over the course of the test, initial assessments are normally reviewed by the examiner himself within the framework of interpretation processes and thereby contribute to reasonable test decisions.

If the intention is to maintain, in principle, the proven organisation of the practical test and thus the simultaneous realisation of route planning, observation, assessment and documentation, while at the same time guaranteeing a high psychometric quality for the test, it is necessary to modernise and streamline not only the driving tasks, but also the observation categories and assessment criteria. Furthermore, methodical compromises must be accepted, and priorities must be set with regard to the individual demands placed on the examiner, namely his route planning, behaviour observation, performance assessment and test documentation. Finally, it must be described precisely, how the examiners are to be enabled, within the framework of their initial qualification (including the integrated practical training elements) and further training (including necessary supervision elements), to accomplish the above tasks simultaneously and to a high quality standard.

5.5.2 Test observation

It was already explained in Chapter 2, what is to be understood by an “observation” and how the practical driving test can be characterised as a participatory external observation performed without the use of technical recording aids. At the same time, typical observation errors were described, along which possible ways to avoid such errors. Starting points mentioned with regard to observation results of a high methodical quality were the me-

thodical planning and significant assessment of (1) the conception and structuring of the observation situation, (2) the documentation of the data acquired in the observation situation, and (3) the evaluation methodology. An observation concept was then derived in Chapter 5.5.1 (“adaptive test strategy”), wherein observation was finally defined as one element of a five-step sequence in the assessment and decision process realised by the driving test examiner when assessing the test candidate. At this point, we can now take up the previous discussion once more and investigate the “fine mechanics” of observation, including the associated possibilities for standardisation. It is to be assumed for this purpose that the observation situation is sufficiently and adequately structured at the beginning of the practical test by way of the natural observation context (test vehicle and traffic environment of the test location), the test and driving tasks specified in the Examination Guidelines and the examiner’s instructions (see Chapter 5.4): Both the test situation and the tasks are known to both the driving test examiner and the test candidate; the test and thus the observation of candidate behaviour can begin.

The essential foundation of observation is perception; “perception” is at the same time to be viewed as the generic term for “observation”. Perception refers to the gathering, filtering and deciphering of information with the aid of the human senses. The aspect of filtering here relates not only to the aforementioned observation errors, but above all to a deliberate, selective form of perception, which focuses attention on certain aspects of the observed subject at the expense of recognition of other aspects. Observation, therefore, appears to be more planned and selective than typical perception; it is determined by a searching approach and is from the very beginning geared to the possibilities for assessment of the observation in the sense of a verification intention. The observation of candidate behaviour by the driving test examiner is thus not a merely passive self-exposure to inflowing sensory stimuli, but rather a form of active acquisition of the test reality; in other words, the examiner lends his sensory perceptions a direction (essentially aimed at the behaviour of the test candidate) and arranges these perceptions with regard to a particular purpose (determination of an adequate test decision), with the intention of basing his further actions on the information obtained in this way (adaptive test strategy).

If the examiner’s observations are to fulfil this purpose, and if, furthermore, the driving test is to follow a uniform methodology, as a means to secure test equity and a high methodical quality, observation categories must be specified for the observation. Observation or – since the examiner is observing the behaviour of the test candidate – behaviour categories guide the examiner’s observation actions and concentrate them on those aspects of candidate behaviour which are significant for the test decision. They thus serve two important functions: On the one hand, they reduce the scope of the information to be processed and take workload off the examiner, especially where their number is limited and they display an appropriate degree of complexity. At the same time, they contribute to objectification of the information processing.

In the legislative systematics of the practical driving test, observation categories are essentially defined for the test drive in general in the Driving Licence Regulations (Annex 7 FeV, 2.1.5), and then in detail in Annexes 3 (for the basic driving manoeuvres) and 10 (for the test drive) to the Examination Guidelines (PrüfRiLi). Concerning the test drive, as the central component of the practical test, Annex 7 FeV, 2.1.5 initially specifies that the driving test examiner is generally to focus his attention on a search for indicators of

- independent, appropriate and safe handling of the test vehicle,
- defensive, considerate and foresighted driving behaviour matched to the prevailing traffic flow,

- an environment-aware and energy-saving manner of driving in accordance with the rules of the road, and
- behaviour suitable to avoid and avert hazards.

Subsequently, it goes on to define 15 different, structured references for the behaviour to be observed by the examiner, related firstly to the different test phases (“Technical preparation of the vehicle” including safety checks, “Technical completion of the drive”), and secondly to driving tasks (for the actual test drive in the narrower sense). The last sentence of the introductory paragraph already indicates that these stipulations constitute observation or behaviour categories: “Particular attention is to be paid to correct behaviour, handling or performance concerning the following points”, i.e. the described behaviour is to be observed in each case. The 15 references listed in Annex 7 FeV, 2.1.5 are further expanded in the Examination Guidelines (Annex 10 PrüfRiLi). This annex, with its condensed form of representation of observation categories, was made available with the 2004 Examination Guidelines and is here to be analysed more closely from the methodical point of view.

It is first of all to be noted that the observation categories described in Annex 10 to the Examination Guidelines are preceded by (1) “General notes”: “The test drive is the central element of the practical test. The following demands apply to the test drive.” It is not immediately clear to the methodologist, why the test drive is highlighted as the “central element” of the test at this point: The methodical significance of a test element is expressed, from the perspective of psychological testing, in its weighting for the overall assessment, and it can be determined in this connection that failure to perform the basic driving manoeuvres correctly will lead to failing of the practical test in precisely the same way as failure to perform the driving tasks of the test drive in the narrower sense.

At this point, however, the statement of a particular significance for the test drive can be deemed unproblematical; the more critical fact is that the (2) “Technical preparation of the vehicle” is named as an independent test element alongside the test drive in Annex 7 FeV, 2.5.1 (“Assessment of the test”, albeit here as rules for the test decision rather than as guidelines for assessment in our sense, see below), whereas this distinction between the test drive in the narrower sense and the other test elements is not visible in Annex 10 to the Examination Guidelines. It can also be asked, why the (16) “Technical completion of the drive” does not appear in Annex 7 FeV, 2.5.1, although it is from the point of view of both content and methodology the natural counterpart to the technical preparation.

Alongside the tasks of technical preparation and completion of the test drive, whose contents represent above all behaviour categories relating to vehicle control, there are further behaviour categories which refer to handling of the test vehicle among the total of 15 specified observation categories. These include (3) “Hand position on steering wheel”, (5) “Changing gears” and (7) “Automatic transmission”, of which (3) and (7) merely designate the subject of the observation, without pointing out the particular behaviour to be observed. Observation category (4) “Behaviour when driving off” also restricts itself – alongside the reference to necessary traffic observation – to the aspect of vehicle control (“the candidate should change up into the second gear already after approximately one vehicle length”). The same can also be said of category (6) “Upward and downward gradients”, which stipulates that “the correct handling of the vehicle on upward or downward gradients ... with coordinated use of the accelerator, clutch and brakes” is to be observed.

Viewed overall, and for the moment disregarding the current legislative framework, the analysis from the methodical perspective immediately throws up the question as to why the seven aforementioned observation categories, which

- all focus their contents on the handling of the test vehicle,
- are scarcely, if at all differentiated with regard to behaviour specifics, and

- are presumably – compared with the candidate’s performance of the driving tasks during the test drive – of minor significance for traffic safety,

cannot, for the sake of greater clarity and to accentuate their safety relevance, be summarised in a single observation category “Vehicle control”? Regarding the safety checks, it should be considered whether detailed specification in the sense of observation categories (see Annex 10 PrüfRiLi, 2.2) is actually necessary to ensure traffic safety or even just to provide orientation for the examiner, who has in Germany, after all, obtained a sound professional qualification. To illustrate the current proposal for streamlining of the contents of the observation categories, the following excerpt from Annex 10 to the Examination Guidelines shows once more the currently applicable observation categories which, in our opinion, could be summarised in a single category “Vehicle control” (see following table).

Tab. 5.4: Overview of the observation categories of Annex 10 PrüfRiLi relating to vehicle control

- (2) *Technical preparation of the vehicle*: Before starting the test drive, attention is to be paid to correct adjustment of the seat position, including adjustment of the head-rest and, where appropriate, the steering wheel, correct use of the seat belt, proper adjustment of the rear-view mirror and proper closing of the vehicle doors. In the case of motorcycles, attention is to be paid to the correct wearing of suitable protective clothing (helmet, gloves, closely fitting jacket, sturdy, at least ankle-high shoes, e.g. boots). The candidate must be acquainted with the vehicle operating features. If driver assistance systems are used, the candidate must operate them independently. (These stipulations are then followed by notes regarding the vehicle safety checks.)
- (3) *Hand position on steering wheel*: Attention is to be paid to correct positioning of the hands on the steering wheel during the test drive.
- (4) *Behaviour when driving off*: Before and when driving off, the traffic approaching from behind, in particular, is to be observed carefully. On roads without gradient, the first gear of a vehicle of Class B should only be used to drive off, and the candidate should generally change up into the second gear after approximately one vehicle length.
- (5) *Changing gears*: Attention is to be paid to timely gear-changing. The candidate should select the next higher gear as early as possible and, in the case of vehicles of Class B, depending on the vehicle type, should as a rule make use of at least the first four gears up to 50 km/h; any further gears are also to be used as early as possible. The specifications contained in the vehicle owner manual are to be taken into account.
- (6) *Upward and downward gradients*: The candidate is to demonstrate mastering of the correct handling of the vehicle on upward or downward gradients, in particular driving off on an upward gradient (up to approx. 10%) with coordinated use of the accelerator, clutch and brakes. It is not deemed an error if the parking brake is not used, provided the vehicle does not roll backwards significantly.
- (7) *Automatic transmission*: The candidate must be acquainted with the particularities of an automatic transmission.
- (16) *Technical completion of the drive*: At the end of the test drive, the vehicle/vehicle combination is to be parked in compliance with the traffic regulations, such that it can be loaded or unloaded safely and such that persons are able to get into or out of the vehicle safely. Attention is to be paid to the following: Securing of the vehicle against rolling away by engaging a gear and/or applying the parking brake (use of both methods when parking on a gradient); in the case of vehicles with automatic transmission, securing against rolling away in accordance with the manufacturer’s recommendations (owner manual); securing against unauthorised use; observation of the traffic before and when opening the vehicle door.

It is to be remarked that certain of the observation categories which could be summarised under or refer to “vehicle control” mention aspects of environment-aware driving as behaviour to be observed:

- Timely gear-changing in (4) “Behaviour when driving off” and (5) “Changing gears”,
- Stopping of the engine in case of a longer wait in (12) “Behaviour at crossroads, junctions, roundabouts and railway crossings”,
- Making use of the vehicle momentum and allowing the vehicle to roll without using the accelerator or changing gear where a pending stop can be foreseen, and avoiding unnecessary braking and acceleration in (15.1) “Foresighted driving”).

This indicates that it is also possible to operationalise environment-aware driving behaviour, which is generally expressed in the driver’s vehicle handling, in observation categories under the aspect of vehicle control.

When considering the remaining observation categories of Annex 10 to the Examination Guidelines, the category (8) “Traffic observation and observance of traffic signs and installations” is especially conspicuous (“During the test drive, the candidate must also observe the following traffic in the side and rear-view mirrors, and must recognise traffic signs and installations in good time and react appropriately. He must not allow himself to be distracted by vehicle control demands or the instructions given by the driving test examiner.”), because the behaviour it describes in the form of examples is also to be found in five other observation categories (see following table).

Tab. 5.5: Overview of the observation categories of Annex 10 PrüfRiLi relating to traffic observation

- (4) *Behaviour when driving off*: Before and when driving off, the traffic approaching from behind, in particular, is to be observed carefully. ...
- (11) *Overtaking and passing*: ... When overtaking, attention is to be paid to the following: ... Observation of the road in front of the vehicle to be overtaken; observation of the traffic situation behind the vehicle making use of the side and rear-view mirrors and, where appropriate, with a side-glance to check the “blind spot”. ... Parked or stopping vehicles or other obstacles are to be passed with sufficient clearance, at an appropriate speed and with adequate observation of the traffic, if necessary using the direction indicators.
- (12) *Behaviour at crossroads, junctions, roundabouts and railway crossings*: Attention is to be paid to the following: Careful observation of the traffic ...
- (13) *Turning and changing lanes*: When turning left and when changing lanes to the left, the inside rear-view mirror and the left-hand side mirror are to be used. When turning right and when changing lanes to the right, the inside rear-view mirror and the right-hand side mirror are to be used. After sufficient observation of the traffic, the direction indicators are to be activated in good time. If necessary, the traffic is to be observed once more, in particular by checking the “blind spot”, in certain traffic situations (e.g. turning where cycle lanes or rail tracks are present or when changing lanes). Before actually turning, the oncoming, following and crossing traffic is to be observed.
- (15) *Driving outside built-up areas*: ... 15.1 Foresighted driving: Observation of the road and the verge areas; Observation of the following traffic by way of the side and rear-view mirrors, if necessary checking also the “blind spot” where traffic may be at a closer distance; Observation of junctions and crossing roads already from a greater distance.

In the cases of the remaining three categories (“Driving speed”, “Distance to the preceding vehicle”, “Behaviour towards pedestrians and at tram and bus stops”), it appears obvious that traffic observation cannot be neglected without endangering traffic safety; following the logic of the legal system, the lack of a reference to the necessary observation of the candidate’s traffic observation by the examiner appears to be a safety-relevant deficit.

The example “traffic observation” shows clearly that the observation categories are specified to differing quantitative and qualitative extents in respect of the underlying behaviour expectations, that their contents overlap noticeably, and that they could be structured more systematically and more efficiently: When “traffic observation” is, on the one hand, declared as an independent observation category 8 (“Traffic observation and observance of traffic signs and installations”), but is at the same time to be found explicitly as required behaviour in the observation categories 4 (“Behaviour when driving off”), 11 (“Overtaking and passing”), 12 (“Behaviour at crossroads, junctions, roundabouts and railway crossings”), 13 (“Turning and changing lanes”) and 15 (“Driving outside built-up areas”), this can be presumed not to contribute to the clarity and practicability of the observation categories, which, after all, are intended as an important aid to the driving test examiner. As a means to realise methodical optimisation (and equally optimisation with regard to the contents) in this situation, it is suggested that the formulation of observation categories based on the methodical system of driving tasks, which can be recognised at least from the observation categories 4, 6, 10, 11, 12, 13, 14 and 15, be abandoned completely in favour of a formulation of situation-independent observation categories. In other words: The observation category “traffic observation” is to be defined and specified only once; it would then apply for the whole practical driving test and naturally also for all driving tasks.

Taking up this proposal, it is recommended to maintain the present observation category 9 (“Driving speed”) alongside the aforementioned categories “Vehicle control” and “Traffic observation”, as this factor plays a safety-relevant role in almost all driving tasks (see Chapter 5.4) and is also to be found explicitly or implicitly in a number of other observation categories as expected behaviour (explicitly in 11, 12, 14 and 15). In accordance with its task in psychological testing as an indicator for imperatively expected behaviour on the part of the test candidate, however, it would be better to formulate this observation category with a behaviour reference and thus to prefer the designation “Speed adaptation”.

Which other observation categories appear necessary to describe the driving behaviour of the test candidate in appropriate safety-oriented content and, from the methodical point of view, by way of a correspondingly limited number of clearly discrete categories, without departing from the observation standards prescribed by the German legislation on driver licensing⁴⁴? To be able to answer this question, the methodologist seeks further objective correspondence in the expected behaviour specified by the current observation categories, because the frequency of such correspondence represents evidence not only of the traffic and safety relevance of the behaviour concerned, but also of the potential for simplification and aggregation. When looking for overlapping aspects in the various categories, attention is drawn to the aspect of “vehicle positioning”, which crops up explicitly as expected behaviour in the following currently applicable observation categories:

- 10 (“Keeping distance to the preceding vehicle”),
- 11 (“Overtaking and passing”: “Closing up to the preceding vehicle, observing the minimum safety margin, [...] swift overtaking with sufficient clearance to the side, [...] rejoining the original traffic lane without hindering the vehicle overtaken [...] Parked or stopping vehicles or other obstacles are to be passed with sufficient clearance”),
- 12 (“Behaviour at crossroads, junctions, roundabouts and railway crossings”: “Use is to be made of all sufficiently large gaps in the traffic.”),

⁴⁴ Chapter 7 considers international solutions beyond the German framework of driver licensing legislation.

- 13 (“Turning and changing lanes”: “Attention is to be paid to timely and unambiguous lane selection [...] When turning, the vehicle must not stray further than necessary onto the lane used by oncoming traffic. Swinging out unnecessarily is to be recorded as an error.”),
- 14 (“Behaviour towards pedestrians and at tram and bus stops”: “The candidate must only approach any pedestrians on the road [...] with such clearance to the side, that they retain their feeling of security while crossing the road.”), and last but not least
- 15 (“Driving outside built-up areas”, 15.2 “Correct use of the road”: “Observance of the requirement to drive on the right, maintaining sufficient clearance from the edge of the road, correct and lane-true driving within the marked road lane, full use of acceleration and deceleration lanes, correct lane changing”).

Aside from the observation categories which have already been merged into the proposed single category “Vehicle control”, or else remain valid for the present recommendation (“Traffic observation” and “Speed adaptation”), therefore, all other observation categories incorporate the aspect of vehicle positioning, as a result of which it seems recommendable to establish a further situation-independent, behaviour-related observation category “Vehicle positioning”. Should further differentiation of this observation category be deemed desirable, a convenient distinction could be drawn between “Vehicle positioning on the road” (in the sense of “Use of the road”, as in the current observation categories 13 and 15.2) and “Vehicle positioning in relation to other road users” (in the sense of “Safety margins”, as in today’s observation categories 10, 11, 12 and 14).

The starting point for our critical appraisal of the methodology of the present observation categories was the wish to identify methodical streamlining and restructuring potential, and thereby to condense the existing observation contents into representative and maximally discrete categories. Modernisation of the observation contents also appears to be quite evidently necessary, but requires not only the reviewing and – insofar as necessary and meaningful – reorganisation of the current definitions, but also a scientific analysis of present-day traffic demands; this is neither feasible nor intended in the present context, but remains outstanding. Consequently, the task of category streamlining which has been tackled here can be concluded with consideration of those “leftover” observation contents which have not yet been scrutinised. Such contents are to be found in the observation categories 11 (“Overtaking and passing”), 12 (“Behaviour at crossroads, junctions, roundabouts and railway crossings”), 13 (“Turning and changing lanes”) and 14 (“Behaviour towards pedestrians and at tram and bus stops”), all of which are reminiscent of the system of driving tasks in their formulations, as well as in category 15.1 (“Foresighted driving”).

Which safety-relevant aspects of behaviour which the examiner is supposed to observe in the candidate’s performance, but which have not been discussed so far, are revealed by the aforementioned observation categories? One element which seems to crystallise out of an examination of the remaining behaviour definitions is the foresighted and social component of traffic behaviour, which is geared to smooth traffic flows and consideration for other road users. This component incorporates

- “foresighted” driving, timely reactions and the avoiding of unnecessary hesitation (to be found in 12 “Behaviour at crossroads, junctions, roundabouts and railway crossings” and 15.1 “Foresighted driving”),
- communication in the form of “unambiguous” actions and timely signalling (to be found in 11.1 “Overtaking”, 11.3 “Passing”, 13 “Turning and changing lanes” and 15.1 “Foresighted driving”), and

- the avoiding of hindrances or hazardous situations (to be found in 11.1 “Overtaking”, 12 “Behaviour at crossroads, junctions, roundabouts and railway crossings” and 14.1 “Behaviour towards pedestrians and at tram and bus stops”: “The candidate must only approach any pedestrians on the road at such speed and with such clearance to the side, that they retain their feeling of security while crossing the road.”).

It is not easy to define a single concept to cover all the described behaviour components and thus a designation for the correspondingly summarised behaviour and observation category. The core of the behaviour to be observed is, in our view, to be seen in the responsive, mutual coordination with other road users, in respectful and considerate interaction, and in integration into the overall traffic processes. These demands can only be met by way of communication. Furthermore, our attention is drawn to a relatively new, but at the same time important demand of modern road traffic, which was already mentioned in Chapter 4 and becomes relevant here once more: “Communicative and social demands gained in importance, because higher traffic densities required better coordination of the actions of individual road users and an improved traffic flow. For a driver, therefore, it became increasingly important not only to circumvent the hazards posed by other road users, but also to avoid irritating or hindering those other users to a greater extent than was inevitable under the circumstances” (Hampel & Sturzbecher, see Chapter 4.1). Taking into account these reference points within the underlying contents, one possible designation for the final observation category could be “Communication and adaptation to traffic”. An overview of the structure of possible observation categories can thus now be presented in Table 5.6.

Tab. 5.6: Observation categories

	Observation category	What is to be observed?
1	“Vehicle control” (possibly distinguishing “Action sequences” and “Environment-aware driving”)	– How does the candidate handle and control the test vehicle – taking into account the available technical possibilities – with regard to the interaction of psychic and motor action sequences and in the context of an environment-aware manner of driving?
2	“Traffic observation”	– How and at what point does the candidate survey the road and traffic situation around his vehicle?
3	“Speed adaptation”	– How does the candidate adapt his driving speed to the prevailing road, traffic, weather and visibility conditions?
4	“Vehicle positioning” (possibly distinguishing “Use of the road” and “Safety margins”)	– How does the candidate observe the road markings and how does he use the available road space? – Which clearances are maintained to various stationary or moving obstacles and other road users?
5	“Communication and adaptation to traffic”	– Does the candidate signal his intended actions clearly and in good time? – How does he adapt his driving behaviour to the traffic behaviour of the other road users?

It is not to be passed over that the recommendations derived here from a content-based analysis and restructuring of the observation categories anchored in the German legal system produce a model of observation categories which, in respect of its scope and contents, is very similar to that implemented in methodically progressive driver licensing systems in a number of other European countries (see Chapter 7). Most astounding, however, seems to be the fact that the five categories proposed here can be traced back relatively exactly to the observation categories described by Jensch, Spoerer and Utzelmann and by Hampel in 1977 (see Tab. 4.1.); those categories could easily be condensed further (e.g. “Driving

speed too slow” and “Driving speed too fast” as “Speed adaptation”, or “Traffic observation” and “Observance of traffic signs” becoming simply “Traffic observation”). This brings historical lines of methodical development to light, and illustrates, moreover, that it is less a fundamental upheaval in respect of content, but rather methodical reformulation and streamlining which is needed to optimise the system of the practical driving test in Germany.

Which observation categories are prescribed for the driving test examiner with regard to the basic driving manoeuvres? The assessment of the basic driving manoeuvres, and thus also the preceding observation of the candidate’s behaviour while performing those manoeuvres, is governed, in the case of the practical driving test for a Class B licence, by the stipulations of Annex 3 to the Examination Guidelines (on the basis of PrüfRiLi 5.17.1 and Annex 7 FeV, 2.1.4.2). This Annex 3, however, does not provide relatively detailed specifications of the behaviour to be observed by the examiner – as in Annex 10 on observation of the test drive –, but instead offers separate lists under the headings of “Behaviour to be assessed as an error”, which can be viewed as assessment categories in the methodical sense. Even though a discussion of the assessment criteria is reserved for the next chapter, it is meaningful to present these lists already at this point, because they allow conclusions to be drawn as to the observations required to ascertain any errors made, and thus also the corresponding observation categories (see Tab. 5.7).

From an analysis of the errors which lead to failure in the examination of the basic driving manoeuvres, and thus also to failing of the practical driving test overall, the error of insufficient observation of the traffic is immediately prominent. Annex 3 to the Examination Guidelines mentions this error under four of the five basic driving manoeuvres; prerequisite for determination of this error is that the driving test examiner in turn observes the candidate’s observation behaviour in respect of the traffic situation. This demand on the examiner is thus already covered by the observation category “Traffic observation” derived above. The content of the fifth basic driving manoeuvre is a braking manoeuvre which demands an abrupt reduction of the driving speed. Observation of the corresponding driver behaviour is thus similarly embraced by the previously defined observation category “Speed adaptation”.

At the same time, the observation of the candidate’s performance of the basic driving manoeuvres is able to found conclusions regarding the attained level of vehicle control, which is demonstrated, for example, in coordinated use of the accelerator, clutch, brakes and steering. Consequently, the observation demands can be assigned partially to the above observation category “Vehicle control”. The lists of errors also contain test demands relating to the positioning of the vehicle in parking spaces (basic driving manoeuvres 2 and 3) or on the road (basic driving manoeuvres 1, 4 and 5). The observation of whether the candidate complies with these demands can thus be based on the already derived observation categories “Vehicle control” and “Vehicle positioning”.

Finally, the basic driving manoeuvres are not examined aside from other public road traffic, meaning that the candidate must reckon with and possibly pay due consideration to other road users when performing those manoeuvres. Observation of the corresponding candidate behaviour is, where appropriate, included in the observation category “Communication and adaptation to traffic”. All in all, it remains to be concluded that the observation categories derived from Annex 10 to the Examination Guidelines as a basis for assessment of the test drive are, on the one hand, quite sufficient and, on the other hand, also necessary to be able to observe the candidate’s performance of the basic driving manoeuvres in adequate fashion.

Tab. 5.7: Assessment standards for the basic driving manoeuvres in Class B

	Basic driving manoeuvre	Behaviour to be assessed as an error
1	“Reversing around a corner to the right making use of a junction, crossroads or entrance”	<ul style="list-style-type: none"> – Insufficient observation of the traffic – Running over the kerb or road edge – Not stopping the vehicle approximately parallel to the kerb or road edge – More than two corrections of vehicle alignment
2	“Reversing into a parking space (parallel to the direction of traffic)”	<ul style="list-style-type: none"> – Insufficient observation of the traffic – Running over the kerb or road edge – Incorrect final position (e.g. boxing in other vehicles) – Distance of more than 30 cm from the kerb or road edge – More than two corrections of vehicle alignment
3	“Parking in a space (at an angle or at right angles to the traffic)”	<ul style="list-style-type: none"> – Insufficient observation of the traffic – Insufficient clearance to the side – Vehicle contour protrudes beyond the marked parking space – More than two corrections of vehicle alignment
4	“Turning the vehicle to face the opposite way”	<ul style="list-style-type: none"> – Insufficient observation of the traffic – Impermissible deviation from the requirement to drive on the right
5	“Braking with the maximum possible deceleration”	<ul style="list-style-type: none"> – Initial speed too low – Foot brake not actuated abruptly – Failure to achieve the necessary deceleration – Significant deviation from the line of driving due to inappropriate steering – Stalling of the engine

To summarise: Observation categories represent essentially situation-independent classes of observation subjects. In the case of the practical driving test, as an example of systematic behaviour observation, they are to be understood as classes of behaviour which are to be formulated independently of a particular test or driving task, serving not least to reduce the complexity of the observation (and assessment) subjects. The function of observation categories can be seen as concentration of the examiner’s human perception on a targeted search for information relevant for the subsequent assessment and decision, and thus objectification of his information processing. Practicable observation categories will consequently contribute to an enhanced methodical quality of the observation-based assessment processes and take workload off the examiner, provided their number is limited accordingly and assuming that they cover the whole scope of the driving behaviour to be observed as exhaustively and disjunctly as possible.

With regard to further development of the practical driving test, the present chapter described one possibility to restructure and streamline the observation categories currently used by examiners for the practical test (as specified in Annex 3 and Annex 10 PrüfRiLi): The recommended observation categories, which can be applied uniformly to the observation of all test elements (basic driving manoeuvres, test drive), are thus derived from the traditional observation categories and are not inherently new! On the other hand, our approach of content-oriented analysis has still not solved the task of supplementing and modernising the observation categories to reflect the changing traffic reality. This further task

can only be accomplished through a scientifically based discussion bringing together all those involved with the driving test; the ideas presented here have hopefully provided the significant methodical stimulus. The results of such discussion must then culminate in scientifically founded observation standards, reflected without contradictions in the corresponding legislative instruments.

5.5.3 Test assessment

As the next step, the information on candidate behaviour acquired within the framework of systematic behaviour observation in accordance with an adaptive test strategy is to be evaluated and processed as a basis for the test decision. It is thus now the process leading from the observation to the (overall) assessment which is to be examined; this process is characterised by a series of individual assessments, flanked by interpretations. Such interpretations serve, on the one hand, to prepare the assessments, but at the same time, in the case of an adaptive test strategy, also influence the reviewing of assessments and, should it not yet be possible or required to reach an appropriate test decision, the manner in which they are to determine the further realisation of the test. In this context, the two aspects “interpretation” and “explanation” play a notable role, as important components of a diagnostic process. The quality of these two process steps is significantly dependent on the level of test competence (see also Dietrich & Sturzbecher, 2008), i.e. the professional training and experience of the driving test examiner; it is furthermore decisive for the methodical quality of the test process overall. Consequently, before proceeding to a more detailed discussion of the process of assessment and the already mentioned assessment standards for the practical driving test, it seems expedient to briefly consider these two forms of diagnosis.

The continuous interactions of interpretation and explanation govern the cognitive processing of the observed situations and information. “Interpretation” can be understood to mean the construing of perceived relationships, as they appear to be expressed directly or symbolically in the given situation. Interpretation is realised as targeted inference of the cause or background from an observation or fact, or of one assumption from another. The decisive characteristic is that conclusions drawn by interpretation cannot achieve full evidential value, due to the lack of adequately certain knowledge of the relationships. This distinguishes interpretation from “understanding”, which is generally the objective of interpretation: “Understanding is based on the almost complete perceptibility of a context, whereas interpretation is based on merely a number of indicators and is thus less certain” (Dorsch et al., Ed., *Psychologisches Wörterbuch*, 1994). “Explanation” then builds upon interpretation by attempting to arrange the emerging and at first simply determined facts into general correlations.

Let us consider an example: If, for instance, a driving test examiner observes that a test candidate overtakes a cyclist with a relatively narrow clearance to the side, then he will not stop at just observing this behaviour, but will attempt to interpret the possible causes of this apparently risky behaviour. The result of this interpretation is of decisive influence for the outcome of the test: If the examiner reaches the conclusion that the candidate made his decision to overtake in spite of an evident risk (e.g. on-coming traffic) and thus knowingly accepted the endangering of the cyclist, he will treat this as a serious error in behaviour and will terminate the test prematurely, irrespective of otherwise positive performance (in accordance with PrüfRiLi 5.17.2.1: Endangering of other road users). On the other hand, if the examiner is convinced that the endangering of the cyclist was not reasonably foreseeable at the beginning of the overtaking manoeuvre (e.g. sudden swerving of the cyclist), and that the failure to observe the prescribed safety margin served exclusively to avert an otherwise unavoidable greater danger, he will continue the test and will seek to plan and realise test situations with a comparable demand structure (i.e. similar driving tasks) in

order to verify or overturn his initial interpretation (“The candidate avoids, wherever possible, any endangering or harming of other road users.”). Interpretation is thus usually effected in several steps, over the course of which the progressive integration of earlier and subsequent observations and interpretation results clarifies the diagnostic significance of the observations and gradually evolves into explanation. At the end of this diagnostic process, the examiner no longer possesses merely indicators for an assessment of the candidate’s behaviour, as at the beginning, but instead diagnostically founded explanations, which can then contribute to a test decision and can be conveyed to the candidate. Along the way, incorrect interpretations are excluded through the formation of symptom series and the range of confirmed, correct interpretations is narrowed down. Last but not least, the importance of an interpreted attribute is determined. This places “assessment” in the foreground.

The nature of assessment is that a particular subject assigns an object (e.g. a physical entity, an element of behaviour or a circumstance) an evaluation in the sense of a property resulting from the subject-object relationship. It thus seems clear that assessment is a subjective process, which is determined by the historically evolved, holistic personality of the person making the assessment. This explains the multitude of human value systems and opinions, even where one and the same object is to be assessed. In certain cases, such diversity of opinion may indeed be considered desirable or acceptable, for example as an expression of democratic political processes. With reference to diagnostic processes, however, divergent assessments of an observed situation are not at all desirable in view of the target of a test decision, as they cast doubt on the methodical reliability of the test method (see Chapter 2.4.1). Consequently, an examiner is provided with assessment criteria serving as a standard.

It can be taken as logical that the contents of the assessment criteria imperative for the objectification of examinations and tests must be aligned to the specific objects to be observed and the diagnostic method used: If, therefore, as in the case of the practical driving test, particular aspects of test candidate behaviour are to be diagnosed and thus acquired by way of behaviour observation, the assessment criteria must focus on precisely these aspects of behaviour. It is a relatively simple matter to check whether this methodical requirement is met, namely by specifying and prescribing the relevant expected behaviour in observation categories for the examiner.

From the methodical point of view, assessment criteria may be formulated in various ways and thus differentiated. These different formulation possibilities are expressed in the form of different assessment scales, which represent aids to attainment of the aim of a maximally objective personal judgement and can basically be allocated to one of three different types: (1) Ranking scales, (2) rating scales and (3) forced-choice scales. It must be remarked, however, that the mechanical application of assessment scales without an understanding of the psychological processes underlying the assessment is not suitable to contribute to safeguarding of the methodical quality of a test.

Let us consider the available assessment scales more closely. In the case of a ranking scale, there is no differentiated (individual) comparison of the objects under assessment against a defined assessment standard. It is thus exclusively a matter of determining the order of the assessed objects in respect of their different embodiments of the assessed attribute, but not an assessment of the specific absolute quality of that attribute. In other words, in the form of an example: A driving test examiner could use a ranking scale to indicate whether the driving behaviour demonstrated by one test candidate is to be preferred over that of another candidate at the moment of his assessment. This may be desirable when assessing performance within the framework of personnel selection; for the purposes of the practical driving test, however, ranking scales are useless.

Rating scales are by far the most frequently used assessment standards. The task of the examiner is here to assess the fulfilment of an assessment criterion on a multi-level scale. Such scales normally comprise between three and nine levels, with the individual resolution generally geared to the desired assessment accuracy. The choice of a particular number of levels, however, may also serve other assessment objectives: The use of an assessment scale with an even number of levels, for example, is an effective means to counteract the occasionally observed tendency for an examiner to select the mean value (see Chapter 2.3.3) and forces a decision in one direction or the other by not providing a middle level. The clear preference for rating scales over ranking scales is explained by the fact that they supply information on the actual, absolute test performance. With reference to the practical driving test, the use of rating scales would mean that the driving test examiner is to assess the candidate's behaviour and performance in respect of the specified observation categories according to a graduated scale (e.g. 1 = "good", 2 = "satisfactory", 3 = "sufficient" und 4 = "poor").

The third type of scale, finally, is the forced-choice scale. Such scales comprise predefined assessments in the sense of statements on the person to be assessed. The examiner is in each case required to judge whether the statement is applicable or not. The outcome is a dichotomous "yes-or-no" judgement (e.g. "qualified" versus "unqualified"; see above), whereas a rating scale demands an assessment on a scale of at least three levels. If, in the case of the practical driving test, for example,

- a minimum standard is defined to describe the observed behaviour of the candidate which is deemed to be adequate,
- failure to attain this minimum standard is designated an "error",
- the possible errors are summarised in a list, and
- notes are taken to show whether a test candidate has committed errors or not,

then the examiner is effectively making use of a forced-choice scale. It also seems clear that, from the methodical perspective, such a scale does not differ fundamentally from a rating scale (as opposed to a ranking scale), but can be viewed, in the practical sense, as a special variant of a rating scale: The rating is based on a two-level scale and can be documented particularly efficiently, as the absence of a note is defined as evidence for successful attainment of the higher rating level and the assessment concentrates exclusively on the recording of errors.

Which assessment criteria are applicable for the assessment of the practical driving test by the driving test examiner? Let us begin our consideration of the assessment criteria with the test element "Technical preparation of the vehicle". As already mentioned in earlier chapters, the observation categories pertaining to this test element are to be found in Annex 10 to the Examination Guidelines (Annex 10 PrüfRiLi, 2). Assessment criteria, on the other hand, are not specified at this point, and are also not to be found elsewhere in the legislation and regulations governing driver licensing. The legislator apparently deems the assessment of candidate behaviour during the technical preparation of the vehicle and safety checks (and similarly, looking ahead, also the "Technical completion of the drive" in accordance Annex 10 PrüfRiLi, 16) to be trivial, and thus sees no reason to specify assessment criteria. This may be acceptable from the legal point of view; methodically, however, it is at least an annoyance, as it fails to contribute to the objectivity of the corresponding examiner assessments.

It could be argued against this critical methodical standpoint that errors made during the safety checks (Annex 10 PrüfRiLi, 2.2) alone do not lead to failing of the overall test (PrüfRiLi 5.17.2.2) and are thus of only extremely marginal influence for the test decision; but does this also apply for errors in respect of the remaining demands of the "Technical

preparation of the vehicle” or especially the “Technical completion of the drive”? From the methodical perspective, unambiguous assessment and decision specifications would be desirable at this point, though that should not necessarily mean a restriction of the scope of judgement granted to the driving test examiner. Another aspect which stands in favour of a clear regulation is the fact that assessment of the aforementioned circumstances by the examiner will not be prevented by the absence of assessment criteria; the “Technical preparation of the vehicle”, for example, conveys a first impression of the candidate’s driving competence and will presumably still influence the planned further course of the test substantially.

Unlike the technical preparation, the test element “Basic driving manoeuvres” is characterised by a series of concrete assessment criteria in the form of error definitions, as to be found in Annex 3 to the Examination Guidelines (Annex 3 PrüfRiLi, 2.1 to 2.5); an overview is provided in the corresponding table in Chapter 5.5.2. The rules specified under “Assessment of the basic driving manoeuvres” (Annex 3 PrüfRiLi, 3), however, are not to be deemed assessment criteria for this test element in the methodical sense, as they actually represent specifications for realisation of the manoeuvres (“Each basic driving manoeuvre may be repeated once.”) and rules for the test decision overall; we will return to this point later. As already mentioned in Chapter 5.5.2, no methodically exact observation tasks in the sense of behaviour specifications exist for the basic driving manoeuvres. Consequently, it is also not possible to judge their reference to assessment criteria or error definitions in respect of their matching of observation categories. From an analysis of the error definitions, however, it does become conspicuous that they are very detailed with regard to performance measurement and address both process qualities (e.g. “More than two corrections of vehicle alignment”) and result qualities (e.g. “Vehicle contour protrudes beyond the marked parking space”). If we compare the demand standards described in Chapter 5.4 and the above assessment standards for the basic driving manoeuvres, on the one hand, and the demand and assessment standards for the test drive, on the other hand, then it can be noted that the examiner’s scope of judgement is very limited with regard to the basic driving manoeuvres, a fact which, according to Hampel (1977), is welcomed by the majority of driving test examiners.

From the point of view of methodology, it is to be remarked in this context that the precision of the assessment criteria applicable to the basic driving manoeuvres no doubt serves to enhance the practical reliability of the test. As regards the validity, by contrast, it must also be asked, where and how the minimum standards expressed in the assessment criteria or “behaviour to be assessed as an error” were derived in terms of their background in traffic science, and how they relate to the overarching goal of the practical driving test, namely the safeguarding of road safety. No scientifically founded origin of the relevant minimum standards is known; how, therefore, does the minimum standard in respect of the corrections of vehicle alignment, for example, come to specify a maximum of two corrections, and not instead one or three corrections? How are the serious consequences of his error in the basic driving manoeuvres to be explained adequately to a test candidate whose vehicle still protrudes beyond the marking of a parking space by a few centimetres after the second attempt, and who thus fails his driving test, given the essential lack of safety relevance in this fact and the daily observation that incorrect parking in this sense is neither unusual nor consistently punished? In the case of a minor misalignment, an examiner can naturally also make use of his scope of judgement in accordance with PrüfRiLi 5.17 (“The rules are not to be interpreted pettily.”); from the psychological viewpoint of the candidate, however, there is a significant difference between an assessment on the basis of understandably derived, tolerant criteria and the need to place hope in the examiner’s generosity in case of failure to comply with petty requirements.

Another methodical question which cannot be ignored concerns the extent to which the legal definition of the practical driving test as a “test of qualification”, in which no proof of elaborated vehicle handling “skills” is expected, is reconcilable with the strict error definitions and high demands placed on vehicle control relating to the basic driving manoeuvres. From the perspective of psychological testing, it is difficult not to assume that the limitation of the examiner’s scope of judgement in connection with the basic driving manoeuvres is a case of over-regulation, and thus to deem the underlying demands unreasonable when placed against the demands of the test drive in general and with a view to their safety relevance in particular. For the further development of the practical driving test, therefore, it is important not only to weigh up introduction of the observation categories recommended for the test drive in Tab. 5.6 (see above); it is furthermore necessary to consider a revision of the assessment criteria.

Let us now turn to assessment of the test drive. In Annex 7 to the Driving Licence Regulations (FeV), it is specified under 2.5 “Assessment of the test” that the practical driving test is failed if the candidate commits a so-called “serious error”, or else in case of the repeated occurrence or accumulation of different errors which, as single errors, are generally not yet reason for failure of the test (Annex 7 FeV, 2.5.2). In the context of our methodical system, this stipulation is not actually an assessment criterion for any concrete test performance, but rather a criterion for the test decision to be reached; on the other hand, it does indeed provide a pointer to the assessment criteria to be applied. Following the above stipulation, namely, assessment criteria can be sought in the form of forced-choice scales defining two discrete types of “error”: Our search can thus be concentrated on two “catalogues of errors”, one containing “serious errors”, and the other those errors which are not deemed serious in this sense, i.e. “simple errors” (see Chapter 5.1). The relevant error catalogues are to be found in the Examination Guidelines. The serious errors are here listed in detail and conclusively (PrüfRiLi 5.17.2.1); the simple errors, on the other hand, are merely described by way of examples (PrüfRiLi 5.17.2.2).

If a serious error in behaviour is observed, the test is to be deemed failed and terminated prematurely, irrespective of any otherwise positive performance. The following are to be considered serious errors in accordance with PrüfRiLi 5.17.2.1:

- Endangering or harming of other road users,
- Gross disregard of the rules of priority and right-of-way,
- Failure to observe a red traffic light or the corresponding signal of a police officer,
- Failure to observe certain traffic signs (stop signs, prohibitive signs without selective supplementary stipulations such as “Except for access”, no-entry signs),
- Overtaking where this is prohibited,
- Driving past a school or public service bus which is stopping or stopped at a bus stop with its flashing hazard warning lights at a speed in excess of 20 km/h,
- Final alignment on the traffic lane intended for oncoming traffic when turning left,
- Changing lanes without observing the traffic,
- Failure to react to the presence of children, persons in need or senior citizens.

The following categories of behaviour are mentioned in the Examination Guidelines (PrüfRiLi 5.17.2.2) as examples of less serious, “simple errors”, which only leading to failing of the practical driving test if they are observed repeatedly or in accumulation:

- Inadequate traffic observation,
- Inappropriate speed,

- Driving past a school or public service bus which is stopping or stopped at a bus stop with its flashing hazard warning lights at a speed in excess of walking speed but not in excess of 20 km/h,
- Incorrect distance or clearance to other road users,
- Lack of readiness to brake,
- Failure to observe the requirement to drive on the right,
- Failure to observe traffic signs, with the exception of the situations mentioned under 5.17.2.1,
- Excessive hesitation at crossroads and junctions,
- Incorrect positioning or failure to adopt a definite position on one-way streets,
- Incorrect use of or failure to use turning indicators,
- Incorrect use of or failure to use the brakes and existing deceleration systems,
- Errors in vehicle handling,
- Errors relating to an environment-aware and energy-saving manner of driving.

How are the listed assessment criteria to be gauged from the methodical perspective⁴⁵? First of all, it must be noted that there is no – methodically imperative – assignment of particular specified assessment criteria to specified observation categories, already disregarding the fact that the criteria are defined merely as “errors”. On the other hand, such assignments are in any case only meaningful after optimisation of the methodical system of the current observation categories; corresponding inspiration is given in the previous Chapter 5.5.2. Furthermore, a number of weaknesses in formulation are shown: What, for example, is to be understood by “gross” disregard of the rules of priority and right-of-way? Does the auxiliary criterion “grossness” refer to an underlying intentionality in the disregard, as could be derived from the prevailing legal notion in our culture area, or does it refer to the level of danger resulting from the grossness? In the first case, it must next be asked how the driving test examiner is to recognise that rules have been ignored intentionally⁴⁶; in the second case, alternatively, up to which level of danger is such disregard considered not to be serious.

A further point of methodical criticism can be seen in the fact that, irrespective of the detail in their error specifications, the Examination Guidelines provide no grounds for the assignment of the individual driving errors to one or other of the two categories (serious or simple errors). It appears that the category of serious errors is reserved above all for those instances of inappropriate behaviour which represent a significant endangering of road safety or inconsiderateness towards “weaker” road users (e.g. failure to observe right-of-way, ignoring of children). Simple errors, on the other hand, seem to refer instead to uncer-

⁴⁵ It must be pointed out once more at this point, that the determination of what constitutes a serious error of decisive significance for the test assessment should be based on appraisals of safety relevance by traffic experts and cannot be viewed as a task for the methodologist.

⁴⁶ This question is not intended to be provocative. It is rather the case that, in all daily activities, the individual is constantly faced with the challenge of deciding whether the behaviour of others is intentional or unintentional. Particularly where interpersonal conflicts are involved, this judgement assumes an outstanding significance for subsequent behaviour. We could raise the objection that “methodical discipline” is to be exercised and that only the overt attributes of a situation are to be judged; in practice, however, this undertaking cannot be realised: If any doubt exists, we automatically attempt to estimate the level of the other person’s intent and cannot subsequently ignore the results of this estimation. Moreover, it could be asked whether this would really be desirable from the point of view of validity in the context of the driving test.

tainty on the part of the test candidate (e.g. hesitation at crossroads) or deficiencies in vehicle handling. If the assignments were indeed based on the aforementioned principles, however, it still remains unexplained, why the failure to drive at an appropriate distance behind the preceding vehicle, for example, is counted a simple error: This behaviour, after all, is one of the most common causes of accidents in road traffic⁴⁷. A methodical further development of the practical driving test, therefore, needs to specify fundamental assignment criteria to permit proper differentiation of the error categories. These categories would then appear more logical and could unfold their didactic effect for the test.

Methodical criticism of the details notwithstanding, it must not be forgotten that the assessment criteria in their present form have proved practicable over several decades, and their inherent balance between assessment specifications and scope of judgement for the driving test examiner has been found to be reasonable. From the methodical point of view, the desirable approach also seems to be an improvement of the formulations and methodical categorisation of the existing criteria, in conjunction with a few necessary amendments (see below), rather than the definition of fundamentally new or different assessment criteria. Once this optimisation has been realised, and as soon as a newly elaborated fundamental methodical system emerges with a maximally concise set of legislative rules, attention can be turned once more to communication and uniform implementation of the assessment criteria in test practice, e.g. by way of working aids for the driving test examiners.

It is similarly to be noted that, on occasions, discrepancies may arise between the assessments of a candidate's test performance reached by the test examiner and the driving instructor. Even without knowledge of the observed reasons for such discrepancies in individual cases, one fundamental source can be identified, namely the fact that the examiner's assessment is a status diagnosis, i.e. he judges (only) the currently displayed level of performance (the "performance status"), whereas the driving instructor possesses additional information regarding the course of the candidate's performance development and thus considers also the development progress, i.e. he practises "process diagnosis". Potential assessment discrepancies may be explained solely by way of these different perspectives; since the decisive perspective in both the diagnostic and legal sense is that of the examiner, however, the core of the issue is whether the driving test examiner is able to handle and resolve this conflict, possibly in a discussion with the driving instructor.

To conclude, attention must be drawn to a last open question which remains to be answered through further development of the practical driving test. It has been explained at length how the methodical system of assessment relating to the practical test rests on the specification of a minimum standard in the form of errors to be avoided. A whole series of reasons for this can be identified, resulting primarily from the conditions under which the test is conducted (e.g. complex lifeworld context, relatively large number of observation categories, mass test, spatial confines and the limited possibilities for diagnostic assistance, observation aids or PCs) and the high methodical demands of an adaptive test strategy (simultaneity of observation, assessment, documentation and the further planning of driving tasks, see below). Unfortunately, as Hampel (1977) already ascertained, the methodically necessitated focus on the candidate's errors detracts from fulfilment of one diagnostic task

⁴⁷ This does not mean, however, that novice drivers are also necessarily involved more frequently in accidents for this reason. It should be taken into account, furthermore, how the categorisation of accident causes and the practical implementation of this categorisation may distort the safety-specific weighting of the causes of accidents involving novice drivers.

clearly emphasised in the Examination Guidelines, namely to record also positive aspects of performance and to take these into account in the test decision.

If the requirement to honour good performance is to be taken seriously, then it is necessary, in the sense of assessment criteria and with a view to the observation categories, to define what is to be considered “good” performance. The methodical further development of the assessment standard must thus continue beyond the establishing of minimum standards, and must derive a scientifically founded, candidate-typical performance spectrum from the psychological development mechanisms of driving competence acquisition and from the prescribed level of training. On this basis, it is then possible to define errors below the required spectrum which lead to failing of the test. All behaviour situated above this spectrum consequently represents (positive) test performance which is not candidate-typical and, when it comes to the test decision, could at least serve to compensate any simple errors which may have been observed.

Summarising the methodical expectations presented and underpinned in this chapter with reference to reasonable assessment criteria, the target vision for a German assessment system can be described as a four-level scale system relating to specific patterns of behaviour (“observation categories”) to be assessed during the performance of tasks in three test areas (i.e. the test elements “Technical preparation and conclusion”, “Basic driving manoeuvres” and “Driving tasks”). The four levels of the system could be defined as follows, based on the traditional responses to errors and assuming that the decision rules for the test decision are not to be changed: “++” (“excellent”); “0” (“normal”; marking of this category on the test report could be considered unnecessary, provided the completion of driving tasks is recorded otherwise); “-” (“simple error” in the normal sense, possibly including the hindering of other road users) and “—” (“serious error” in the normal sense, including the endangering of other road users).

5.5.4 Test decision

The practical driving test is to be viewed in its nature as a performance evaluation process concluding with a test decision; in addition, from the overall perspective, it is also to be considered a complex decision process (see Chapter 5.5.1). Within the framework of the evaluation process, assessments and partial judgements (e.g. on passing of the test element “Basic driving manoeuvres”) are incorporated into an overall judgement, i.e. the test decision. This incorporation process can be characterised by individual interpretation, evaluation and explanation steps. In general, the final test decision includes also a prognosis or more or less founded assumption regarding the future behaviour of the test candidate as a participant in road traffic: Will the candidate, subsequently to the test, be in a position to drive a motor vehicle independently, correctly, safely (i.e. also free from accidents) and with due responsibility?

The principles according to which the driving test examiner is to reach his test decision at the end of the practical driving test are laid down in Annex 7 to the Driving Licence Regulations (Annex 7 FeV, 2.5). It is first of all specified there that, in the case of the practical driving test for Class B, the technical preparation of the vehicle, the basic driving manoeuvres and the test drive are each separate test elements and are also to be “assessed” independently of each other. Once any of these test elements has been completed successfully, it is not to be repeated during the remainder of the practical driving test (Annex 7 FeV, 2.5.1 and PrüfRiLi 5.17.1). “Assessed” is here evidently understood to imply that the corresponding test elements are to be distinguished and considered individually in respect of their influence on the test decision and with reference to the question as to whether and how elements are to be repeated in the further course of the test. It can already be seen clearly at this point that, in the legal system of the practical driving test, the terms “assess” and

“decide” are unfortunately not used in their psychological sense, or indeed distinguished in the manner demonstrated here. On the other hand, it would be a simple matter to adapt the legal categorisations to the expectations of psychological testing.

The general rule governing the test decision to be made by the examiner is specified in Annex 7 to the Driving Licence Regulations under 2.5 “Assessment of the test”: The practical driving test is to be deemed failed if the candidate commits a so-called “serious error”, or else in the case of a repeated occurrence or accumulation of different errors which, as single errors, are generally not yet reason for failure (Annex 7 FeV, 2.5.2). Concerning the safety checks to be performed within the framework of the technical preparation of the vehicle in accordance with Annex 10 to the Examination Guidelines (Annex 10 PrüfRiLi, 2.2), it is laid down that an error by the candidate at this point is not alone to result in his failing the whole test (PrüfRiLi 5.17.2.2). Deficits revealed during the safety checks are only taken into account for the test decision in the case of repeated errors during the subsequent test drive. This stipulation is presumably applicable to the whole technical preparation of the vehicle; at least no contradicting provisions are to be found (see above).

How important is the candidate’s performance of the basic driving manoeuvres for the test decision? According to the Examination Guidelines (Annex 3 PrüfRiLi, 3), the overall practical driving test is failed if the test candidate (1) fails to perform a basic driving manoeuvre correctly also after repetition of the manoeuvre, (2) fails to observe the traffic sufficiently and thereby endangers other road users, or (3) collides with a person, a vehicle or some other object. It remains to be added that all problems revealed in connection with the methodically by all means precise demands and assessment criteria, but at the same time exaggerated classification of possible errors (see Chapter 5.5.3), influence also the examiner’s (partial) decision on the outcome of the test element “Basic driving manoeuvres”, and consequently the overall test decision.

For assessment of the test element “Test drive”, the driving test examiner is provided with a conclusive catalogue of “serious” errors which are to lead to immediate termination and failing of the test. From the methodical point of view, this appears to be very useful for the test decision, given the severity of the consequences of such errors. As far as errors which are not serious in this sense, i.e. the so-called “simple errors”, are concerned, the catalogue of errors is not conclusive, which could be taken as evidence for a (certainly desirable) scope of judgement on the part of the examiner, in the same way as the lack of further precision of the terms “repeated” (Does this really mean twice?) and “accumulation”, and furthermore the combination of the two in the sense of alternatives (“or”). It would be equally feasible, however, to argue that a desirable scope of judgement should remain limited to the assessment criteria (From which point is incorrect behaviour to be deemed an error in the sense of the assessment criteria?), and should not encroach upon the higher-level decision criteria. These questions must be discussed and weighed up carefully in the context of further development of the practical driving test.

In general, it would presumably be advantageous, if it were not necessary to “hunt through” the various legislative instruments on driver licensing to find the methodical rules on which the test decision is to be based, in other words if they could be bundled in a single decision algorithm. This could be realised relatively simply within the framework of a closed, methodical representation of the system of the practical driving test; this task is unfortunately still outstanding (see Chapter 1). At the same time, it is not immediately clear to the layman, why it should not be possible to mould the stipulations of Annex 7 to the Driving Licence Regulations (FeV), the Examination Guidelines and the Annexes to the Examination Guidelines into a more concise and systematic form, especially as the different formulations of apparently identical provisions in the different documents are in certain respects a source of confusion.

For the sake of completeness in respect of the test decision, it is also to be mentioned that the test drive, and thus also the practical driving test overall, are to be terminated prematurely and deemed failed if the accompanying driving instructor attempts to deceive the examiner, or if the behaviour of the driving instructor renders proper assessment of the candidate's test drive impossible (PrüfRiLi 5.18, and in similar form Annex 7 FeV, 2.5.3).

The lack of stipulations on how to take positive aspects of the performance into account in the test decision (PrüfRiLi 5.17) is understandable from the methodical point of view (there are, after all, no assessment criteria for "good" performance, see Chapter 5.5.3), but is nevertheless difficult to accept, even if it is certain that petty "calculation rules" would also not represent an adequate solution to the underlying problem.

Notwithstanding the test decision, it remains the duty of the driving test examiner to notify the licensing authorities of any observations which found doubts as to the physical or mental fitness of the test candidate (§ 18 (3) FeV). The candidate is to be informed accordingly in such cases.

The errors which could be made by the examiner in connection with his observations and assessments of the individual, task-related elements of test performance were already discussed in Chapter 2. Generally speaking, it must be added that all aforementioned assessment errors are naturally also of consequence for the concluding "overall assessment", i.e. the test decision, despite the fact that the practical driving test would appear to be inherently structured and to a certain extent standardised by way of the previously described and legislatively stipulated demand structures (test or driving tasks and test locations), observation categories and assessment criteria. Nevertheless, each driving test will remain unique; that is not least a result of the diversity of test conditions which, for methodical reasons (e.g. adaptive test strategy), are not or cannot be standardised, ranging from weather conditions and the prevailing traffic situation (external influencing factors), via the quality of the social relationships between the test participants (interactional factors) to their individual personality traits (internal influencing factors). The difficulties for methodical control over this diversity of conditions have also been discussed previously (see Chapter 2 und 5.5.1).

No mention, however, has yet been made of two special factors which similarly influence the test decision, and may possibly affect also the behaviour of the examiner: The limited duration of the test, with the resulting performance and decision pressures placed on the examiner and candidate, and the necessity to justify the test decision – where this decision is "not passed" – by way of unambiguous, corresponding competence deficits on the part of the candidate.

The latter factor, in particular, expresses a moral problem which should not be underestimated. May an examiner specify correspondingly general grounds for his decision (e.g. "The candidate is not sufficiently mature to drive a motor vehicle independently"), insofar as he intuitively considers failure of the test to be the correct decision option? Presumably not, although there are countries in which the examiner's safe feeling as a passenger in the test vehicle is taken into account in the test decision, and this safe feeling is probably no more than a linguistic representation of the aforementioned intuition. On the other hand, may an examiner apply his scope of judgement when selecting and planning the basic driving manoeuvres and general driving tasks, such that the candidate is pushed to the limits of his performance capabilities? From the legal point of view, he is indeed entitled to do so, and this would lead relatively reliably to failure if the examiner so wishes, given the candidate's still limited driving experience and the still incomplete automation of his actions as a driver (see above). This is the borderline to an abuse of his scope of judgement, the discussion of which cannot be avoided by way of standardisation debates or legal considerations. It is rather the case that further development of the test must return once more to the

methodically deeper question as to the necessary, yet tolerable scope of judgement for a quality-conformant and thus also adequately objective practical driving test.

5.6 Test documentation

The legislative stipulations regarding test documentation are to be found in the Driving Licence Regulations (Annex 7 FeV, 2.6), in the Examination Guidelines (PrüfRiLi 6) and in Annex 13 to the Examination Guidelines (“Specimen for a test report”). It is stated in Annex 7 FeV, 2.6, for example: “If the test is not passed, then the expert or examiner is to inform the candidate accordingly with a brief indication of the significant errors and is to hand over a test report.” The Examination Guidelines also take up the wording of this clause, but add that the test report is to correspond to the specimen of a report which is to be found in Annex 13. At the same point, the report contents and the procedure for completion of the test report are specified more precisely: “The examiner is to produce a record of the test to provide, in particular, information on the errors made by the candidate and on the behaviour of the driving instructor in the sense of PrüfRiLi 5.18. At the end of the test, this record is to be concluded with specification of the result and, if the test was not passed, is to be signed and enclosed with the administrative file.”

That already outlines the rules on test documentation to be found in the licensing legislation. It remains to be determined that the purpose served by the test documentation is evidently to establish a sound justification for the failing of a test and to indicate this legal certainty to the test candidate. How otherwise is the restriction placed on the scope and content of the examiner feedback to the candidate to be explained? The recitative and accentuated listing of selected errors can hardly be expected to satisfy pedagogical intentions. The latter, after all, would not only be directed at test candidates who fail the test, as no candidate possesses extensive driving experience at the time of the practical test and both successful and unsuccessful candidates thus display more or less significant competence deficits which are to be overcome in the course of further driving practice.

It is also apparent that the legislator has not aimed to achieve documentation of the course of the test: Error checklists in the form of the specimen test report to be found in Annex 13 to the Examination Guidelines are unsuitable to depict either the course of a test or the correlations between demands and assessments. It can thus also be doubted whether the assessment transparency permitted by the current test documentation is adequate as a basis for an appropriate reaction to objections. That is not necessarily to mean the legally sound rejection of such objections, but may also refer to the constructive processing of this (albeit unwelcome) customer feedback as stimulation to improve service quality and to develop the corporate culture of a service provider (see Chapter 5.7).

Let us stay briefly with the legal foundations and examine the specimen of a test report (Annex 13 PrüfRiLi) more closely (see following Fig. 5.2). The aim here – in the same manner as previously for the table of driving tasks in Chapter 5.4 and the list of observation categories in Chapter 5.5 – is to analyse the contents and evaluate the systematic nature of the catalogue of errors comprising the report.

Which criteria can be applied to evaluate the system of the specimen test report? As the catalogue of errors is supposed to reflect the legal stipulations in a user-friendly form, is drawn up merely as a checklist and is designed to be completed with the minimum possible effort, it would be reasonable to expect the report to mirror the Examination Guidelines by simply listing the “serious errors” (those errors which lead to immediate failure and termination of the test in accordance with PrüfRiLi 5.17.2.1) and “simple errors” (which are illustrated only by way of examples in PrüfRiLi 5.17.2.2 and only result in failure of the test in case of repeated occurrence or accumulation), together with a box to indicate that

the error concerned was observed. Furthermore, it would appear expedient to adhere to the classifications of errors (simple versus serious errors) and the order of their mention in the Examination Guidelines, so as to maximise the clarity and recognition of the error catalogue for the examiner. Both, however, have been neglected: Neither the error specifications nor the order of their mention in the Examination Guidelines and specimen test report are identical; no consistent distinction is made between simple and serious errors.

Name: _____

Vorname: _____

Prakt. Prüfung am: _____

Fahrerlaubnisklasse: _____

Sehr geehrte Bewerberin, sehr geehrter Bewerber,
 Sie haben die praktische Prüfung leider nicht bestanden. Bei der Bewertung der Fehler konnte auch die Berücksichtigung Ihrer guten Leistungen keinen ausreichenden Ausgleich schaffen.
 Die nachstehend aufgeführten wesentlichen Fehler wollen wir Ihnen zur Kenntnis geben:

1	Nichtbeachten von Rot oder Zeichen der Polizei	
2	Grobe Missachtung der Vorfahrts- bzw. Vorrangregelung	
3	Mangelnde Verkehrsbeobachtung beim Fahrstreifenwechsel	
4	Endgültiges Einordnen zum Linksabbiegen auf Fahrstreifen des Gegenverkehrs	
5	Fehlerhaftes oder unterlassenes Einordnen	
6	Gefährdung oder Schädigung	
7	Fehlende Reaktion bei Kindern, Hilfsbedürftigen und älteren Menschen	
8	Nichtbeachten von Verkehrszeichen	
9	Mangelhafte Verkehrsbeobachtung — Anfahren — Aus- bzw. Einscheren — Abbiegen — Rückwärtsfahren	
10	Nichtangepasste Fahrgeschwindigkeit: — Autobahn — über Land — Stadt — zu hohe Geschwindigkeit an Haltestellen	
11	Fehlerhaftes Abstandhalten	
12	Unterlassene Bremsbereitschaft	
13	Nichteinhalten des Rechtsfahrgebots / des Fahrstreifens	
14	Fehlerhaftes Abbiegen	
15	Langes Zögern an Kreuzungen und Einmündungen	
16	Fehlerhafte oder unterlassene Benutzung des Blinkers vor Fahrstreifenwechsel / Abbiegen / Ausscheren / Wiedereinordnen / Anfahren	
17	Fehler beim Überholen / Überholtwerden	
18	Fehler bei der umweltbewussten und energiesparenden Fahrweise	
19	Fehler bei der Fahrzeugbedienung	
20	Fehler bei den Grundfahraufgaben	
21	Fehler bei der Abfahrtskontrolle, Handfertigkeiten	
22	Fehler beim Verbinden und Trennen von Fahrzeugen	

Nicht bestanden sind:

Abfahrtskontrolle, Handfertigkeiten	
Verbinden und Trennen von Fahrzeugen	
Grundfahraufgaben und Prüfungsfahrt	

Bemerkungen: _____

Zusammen mit Ihnen hoffen wir auf einen erfolgreichen Abschluss Ihrer Ausbildung bei der nächsten Prüfung.
 Ihre Technische Prüfungsstelle

 Name des aaSoP in Druckbuchstaben

 Unterschrift

Ein Download von www.fahrtipps.de

Fig. 5.2: Specimen for a test report (Annex 13 PrüfRiLi)

If we compare the test report with Section 5.17.2 of the Examination Guidelines, then it can be seen that lines 1 to 4 of the test report are serious errors which result in failing of the test as soon as they are observed once, irrespective of otherwise positive performance; similar errors follow as lines 6 and 7. This list of “serious errors”, however, is interrupted

by line 5, which specifies the simple error “Incorrect positioning or failure to adopt a definite position on the road”. This layout seems to be somewhat inappropriate, firstly because the position of this simple error between otherwise serious errors suggests to the examiner that the error is of greater significance for the test decision than is actually the case in the legal provisions. At the same time, serious error 4 (“Final alignment on the traffic lane intended for oncoming traffic when turning left”) represents merely a special embodiment of simple error 5. Both the designation of error 5 and its positioning within the test report are thus viewed as issues for necessary discussion.

From the perspective of the practicability of the test report, the intermingling of simple and serious errors, as is to be found in lines 8 (“Failure to observe traffic signs”), 10 (“Inappropriate speed: – Motorway – Outside built-up areas – City – Excessive speed at public transport stopping points”) and 17 (“Error when overtaking / being overtaken”) could be considered even more serious than the above deficiencies. It is not immediately clear, why a straightforward “checklist”, which is apparently designed exclusively to satisfy the expectations of maximum processing economy, does not simply show the “serious errors” whose observation is placed at the focus of the licensing legislation. The present representation at any rate fosters misunderstanding and recording errors. As regards the system of the Examination Guidelines, it is simply difficult to understand why the errors “Lack of readiness to brake” and “Incorrect use of or failure to use the brakes and existing deceleration systems” are specified separately, as both errors are presumably determined from essentially similar indicators.

Assuming, therefore, that the test report should reflect the legal system of assessment and decision criteria applicable to the practical driving test, there seems to be considerable potential for optimisation. This potential can also be derived from the fact that the test report, as a catalogue of errors, provides no space for notes on positive performance in accordance with Section 5.17 of the Examination Guidelines. This shortcoming may be forgivable from the legal standpoint (see Chapter 6), but it is nevertheless remarkable from the psychological point of view.

Where does the problem lie? The driving test examiners are encouraged to note down their observations immediately, both to ensure that none are forgotten and to lessen the mental workload of remembering (see Chapter 4), because: “A lesser scope of information which has been recorded immediately is more objective than a greater scope where nothing is known about the degree of falsification.” (Hampel, 1977, p. 147). Consequently, the examiner may also make note of error assessments which require further judgement in accordance with the adaptive test strategy presented in Chapter 5.5 (action element “Verification of the basis for assessment and decision”); depending on the local circumstances, however, this verification may only be possible in a later phase of test. The test candidate, on the other hand, will necessarily realise that the examiner is taking notes, but cannot determine the character of what has been recorded. As it is known, however, that the test report serves primarily to document errors (alongside certain administratively relevant data, see below), it is only natural that he should suspect the final recording of errors which will lead to failure of the test. This could add to the test stress or even test anxiety bearing upon the candidate, and in this way actually produce new uncertainty and driving errors. To avoid this situation, the Swedish driving test examiners, for example, are not permitted to commit their notes to paper until after the test drive (which seems rather disadvantageous for the aforementioned reasons), while their Norwegian counterparts inform the candidate that their test report provides also for the recording of positive performance (see Chapter 7.3).

This brings us already to the methodical system of the practical driving test in general and the test documentation in particular. Let us first of all examine the didactic aspects of the

test report. Given its aforementioned layout deficits, the test report seems hardly suitable as a means to offer an unsuccessful candidate pointers to possibilities for an improvement of his driving behaviour. This, on the other hand, can be deemed especially important, because the verbal comments on the test outcome, which the examiner has always given in the case of a failed test, are not necessarily comprehended fully in the emotionally stressful moments immediately after announcement of a negative result. The test report handed to the candidate, by contrast, could be analysed later together with his driving instructor, who, after all, may not have participated in the test drive himself, and will in any case have no written notes of his own (see Chapter 5.3). Such reappraisal is made difficult by the extremely concise form of the report, which, without additional verbal explanations, allows only a vague impression of what actually occurred.

The Technical Examination Centres have been aware of the described didactic shortcomings of the test report for some time and have elaborated organisation-specific solutions. The staff instructions issued to the DEKRA examiners, for example, include the following stipulation: “To ensure that the records are meaningful, plausible to others and unambiguous, the driving test examiner is to give explanations with more precise details of the registered driving errors. The errors are to be numbered consecutively in the chronological order of their occurrence. Serious errors which are decisive for the test assessment are to be recorded with an additional note of the location.” (DEKRA, 2007, p. 64). The basic driving manoeuvres which the candidate has not completed successfully despite a second attempt must be designated exactly in the examiner’s test report. The report is concluded with remarks on the positive performance of the candidate. All this supplementary information greatly enhances the methodical value of the test documentation. It is thus to be asked, why it should not be possible to facilitate the recording of such information by way of a correspondingly user-friendly test report layout.

We can now turn to our consideration of the test report from the perspective of psychological testing. In this context, it is initially beyond doubt that work samples, particularly where they are to be applied routinely, must also be evaluated to ensure their objectivity and assessment transparency, and furthermore that documentation of both the process itself and the process result is generally a prerequisite for this evaluation (Ebbinghaus & Schmidt, 1999; Kanning, 2004). Hampel (1977) added the aspect of self-evaluation to these requirements, demanding that the test report offer the examiner possibilities to review and verify his test decisions and to reflect on his own actions (see also Chapter 4). The necessity of test documentation for scientific evaluation purposes is also underlined by a glance into the history of the driving test: Neither the distinct correlations between the traffic conditions at different test locations and the relative frequency of failed practical tests (Hofmann, 1975), nor the fact that examiners can be characterised and differentiated according to their susceptibility to various assessment errors (Hampel, 1976a) or with reference to the decision certainty (Hampel, 1976b), would have been revealed without the availability of instructive test documentation. In this respect, the decision to forego corresponding test reports in 1996 (see Chapter 4.4) must be viewed as a dead end in terms of test methodology, and one which is hardly reconcilable with the BAST accreditation requirements (2005). The latter stipulate, namely, that the compliance with quality standards be demonstrated for individual cases by way of corresponding records, which must furthermore permit plausibility checks to be performed, and that evaluation studies be conducted with regard to the psychometric test quality (*ibid.*, points 6 and 7). To summarise, therefore, it remains to be stated that adequate quality assurance – including the professionalisation of the driving test examiners – and evaluation-based further development of the practical driving test appear not to be feasible without more instructive test reports than those which are used today.

The desire for meaningful test documentation does not imply that the reports should in future enable reconstruction of the whole course of a test; that is neither necessary nor possible. This negation of both necessity and possibility can be derived from the special circumstances of the adaptive testing concept implemented by the examiner to control the realisation of the practical driving test (see Chapter 5.5): In the case of an adaptive testing concept, the test strategy is subject to continuous further development in accordance with the candidate's ongoing test performance. Consequently, the observed candidate behaviour is not first documented as a basis for later assessment (i.e. after the test), as is typical for experimental behaviour observations. The assessment is instead required immediately subsequent to an observation; it is thus not necessary to record the behaviour-related observations, and assessments made against the applicable rating scale can already be entered in their place. Such assessments, as ready-classified and aggregated observation-based information, can be documented much more efficiently than observations, especially in conjunction with low-resolution scales whose extremes, at least, are anchored to easily observed behaviour patterns. Nevertheless, the reference to actual behaviour observations is lost when assessment documentation is substituted for behaviour documentation; the course of the test can no longer be reconstructed. On the other hand, it is precisely this fallback to the more efficient form of assessment documentation which makes it possible to combine the cognitively complex adaptive test strategy with parallel test documentation in the first place. On account of this complexity and the unfavourable working conditions in the test vehicle, the documentation demands must, in general, be restricted as far as possible.

On these bases, we are now able – continuing the approaches of Hampel (1977) and Chapter 4 – to define more precisely (1) the functions of a future test report, (2) its possible structure, (3) its presumed contents, and last but not least (4) the demands raised with regard to user-friendliness.

1. Addressing the functions of a future test report, it is possible to differentiate an organisational, a pedagogical and an evaluative component. The organisational function refers to the need to document the completion of a certain driving task from the future task catalogue (see Chapter 5.4), such that the examiner is at all times during the test able to check the course of the test so far: If the specified driving tasks are indeed representative test tasks serving to safeguard traffic safety, then it should also be ensured that every candidate completes all of these tasks. This, in turn, implies that the completion of individual driving tasks must also be recorded during the test drive.

The pedagogical function of the test report is to provide the candidate with substantiated and reviewable feedback on the strengths and weaknesses in his driving competence, so as to permit targeted further improvement. Just about every candidate – irrespective of whether he passes the test – can be expected to reveal a certain scope for optimisation, not least due to the limited driving experience which can be gathered up to the time of the test. Consequently, every candidate must also receive a test report. At the same time, the examiner would then possess a documentary basis for his concluding remarks to the candidate. From the perspective of its didactic intentions, furthermore, the practical driving test would also be raised to the same level as the computer-assisted theoretical test, after which the candidate is already presented with a test report containing notes for future learning. In the broadest sense, this would also contribute to integration of the test and training systems.

The evaluative function can be further subdivided into the aspects “self-evaluation” and “external evaluation”. The former aspect is understood to mean that the examiner should be able to review his assessments and his basis for the derived judge-

ment once more before reaching the final test decision, and consequently to verify the related considerations with the aid of written documentation. The second aspect refers to the possibilities to identify any particularities in an examiner's assessments through an analysis of his test reports, and thereby to improve his professionalisation status.

2. As far as the structure of the test report is concerned, it would be expedient to revive the proven matrix structure (see Chapter 4.4). The matrix structure is to be given methodical preference over a list structure as the use of rows, columns and cells permits the acquisition of three rather than just two content dimensions; moreover, it is able to depict correlations between these three dimensions of content. The advantages of a matrix-based report have already been discussed with the VdTÜV working group on practical testing ("AG Praktische Prüfung, Arbeitskreis Fahrerlaubnisfragen") of the Technical Examination Centres, and agreement has been reached to the effect that this structure satisfies the demands of an adequate test documentation better than a error checklist.
3. The contents of the test report are determined by the methodical system of the practical driving test, based on the structure elements (1) test tasks (driving tasks and basic driving manoeuvres, technical preparation and completion of the drive), (2) observation categories and (3) assessment criteria, all of which must possess direct cross-references in terms of content. In the future test report, the test tasks – as the quantitatively largest group – should be assigned to the rows, the observation categories to the columns and the assessment scales to the cells. In this way, the test report would provide a record of which positive aspects of performance and which errors with which safety relevance were displayed by each candidate with reference to selected elements of behaviour during each of the test tasks. In addition, the test report should naturally continue to provide space for further notes (e.g. candidate data, examiner data, driving test data, remarks concerning premature termination of the test and the behaviour of the driving instructor, signatures, general remarks).

Viewed overall, the described report structure and contents would offer various possibilities for evaluation on different levels. The two most important levels refer to the (driving) task catalogue and the assessment criteria list: After the test, for example, each candidate could be given a verbal summary of his driving performance strengths and weaknesses, firstly in respect of the various driving tasks (e.g. behaviour at crossroads and roundabouts), and secondly with reference to particular overarching patterns of behaviour (e.g. traffic observation, vehicle positioning, energy-saving and environment-aware manner of driving). The chances for future practical implementation of the concept outlined here are good, as it is based closely on the observation categories which were customary until 1996. Furthermore, the aforementioned VdTÜV working group has already submitted a proposal on the driving task catalogue for a future test report; the discussion is currently in progress.

4. Concerning the demands placed on the practicability of the test report, it can first be assumed that the report must be designed with a view to maximum user-friendliness, so that it can be used as simply as possible during the actual test drive (see above): Subsequent completion would foster falsification through errors of memory, while the recording of supplementary notes would place unreasonable demands on the examiner. Furthermore, the test reports should be suitable for electronic further processing, which is no doubt simple to achieve by way of a PC-assisted solution.

When developing a meaningful test report, i.e. a report which realises the aforementioned functions, it must be taken into account that the handling of the currently used error check-

list is very simple for the examiner. A more sophisticated test documentation would almost certainly increase the demands and will not be greeted unanimously. It thus seems all the more important to ensure that the elaboration and introduction of an optimised test report is flanked with thorough studies of its user-friendliness and practicability.

It must also be considered that, compared to an error checklist, documentation of the correlations concealed in the matrix requires additional mental “translation skills”, the realisation of which should be promoted by way of further training and supervision. Another point to be remembered is the fact that – notwithstanding all aforementioned discrepancies – the driving test examiners have in the meantime become accustomed to the recording of errors in accordance with the Examination Guidelines, and such error records do indeed help to found test decisions. It is thus necessary to continue the search for design alternatives for a future test report which would provide for as smooth a transition as possible between the current and future implementations.

5.7 Quality assurance and further development of the test

5.7.1 Selected foundations of quality management

Developments in quality management

As a learning-objective-referenced test, the practical driving test is holistic and action-oriented in character, and takes place in traffic situations with a realistic demand structure. Even so, the demands to be handled by the candidate within the framework of the test are not left to the coincidental circumstances of everyday traffic. It is rather that examination guidelines seek to ensure that particular characteristic demands and a certain risk potential are encountered with a high degree of probability during the course of the test drive and must be mastered accordingly by the test candidate. In this way, the chances for diagnosis of safety-relevant competence deficits on the part of the test candidate, for example inadequate risk perception or driving uncertainties, are improved substantially. If these chances are to be utilised to the full, it is imperative to subject the test conditions and test contents to critical reflection from the methodical perspective, as a basis for subsequent optimisation, and at the same time to further develop the training and quality assurance systems implemented by the Technical Examination Centres. At this point, therefore, it seems expedient to consider a few general foundations of corporate quality assurance; thereafter, the quality assurance system in place in the Technical Examination Centres can be described in the way it relates to the practical driving test.

The term “quality” is used in a number of different senses: It may refer to an “attribute” or “inherent property”, or equally to “standards”, “grades” or “usability”. Its origin lies in the Latin word “qualitas”, derived in turn from “qualis”, meaning “of the kind that”. No generally accepted definition of quality is to be found in economics literature (Kamiske & Brauer, 1995). In DIN ISO 8402, quality is understood as “the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs” (Deutsches Institut für Normung, 1992).

The above definition is a clear indication that the concept of quality is in the first instance a relativistic construct: The quality of a product or service⁴⁸, and in the same way that of the driving test, can be understood as the balance achieved between the differing demands, needs and value systems of society, the providers and their customers⁴⁹. Quality assurance can thus similarly only be understood on the basis of macro-social, democratically organised processes, and itself represents a process of permanent clarification and negotiation in respect of specific quality standards. The social interest in a high level of road safety, and consequently a methodically elaborated driving test, for example, can by all means be placed in a certain opposition to the interests of the driving test candidate, who wishes to obtain a driving licence with the minimum possible delay and financial outlay. These different interests must be negotiated in the context of traffic legislation and policy, taking into account also the expectations of the providers (i.e. the Technical Examination Centres), namely to conduct the tests economically. An international comparison of test demands, test conditions and test costs shows that such negotiation processes can lead to very different solutions (Bönninger et al., 2005).

Secondly, quality is a dynamic construct displaying a transitory character. For example, the driving test relates to the changing demands of real road traffic, which in turn entail changes in the test conditions and test contents. It is here only necessary to think of technical innovations such as driver assistance systems, which are to be found installed in more and more test vehicles and thus necessitate further development of the test contents and guidelines. Quality assurance is thus a constantly on-going process, in which the concerns of different interest groups must be reconciled. To a certain extent, however, the described dynamism contradicts the desire for transparent and “reliable” quality properties and demands held by those involved in the quality assurance process. Consequently, although recurrent verification of the existing quality properties and quality demands (by different target groups) is necessary (CIP – Continuous Improvement Process), the quality standards should only be modified where this is shown to be essential on the basis of methodically sound evaluation results, technical development or amendments to legislation. The preparation and realisation of such changes must be governed by scientifically founded rules. The theoretical driving test provides a useful example: All the processes and activities required for implementation, evaluation, maintenance and optimisation of the system, as well as the correspondingly responsible institutions, were specified in the manual “Handbuch zum Fahrerlaubnisprüfungssystem (Theorie)” (TÜV | DEKRA arge tp 21, 2008).

Thirdly, finally, quality is a multidimensional construct with structural, processual and result-related components. The structural quality of the driving test embraces the institu-

⁴⁸ Services are understood as offers of performance, or products of a company in the broadest sense, which are aimed directly at a person or objects in his possession with the intention of achieving a desired effect, meaning the modification or preservation of an existing state (Meyer, 1991). Typical properties of services are their immaterial nature, integration of the customer, the simultaneity of production and utilisation, i.e. the impossibility of storage (“uno actu” principle), their high complexity and difficult standardisation, the associated intensive use of information, frequently the multi-tier and multi-phase nature of their production, and the heterogeneity between and within different service branches (Engelhardt et al., 1993; Meyer, 1991; Büker, 1991; Berger & Offe, 1980). Engelhardt et al. (1993) speak in their definition of services of a “bundling of performance”, in which process-oriented (interactions, developments and influences on persons) and result-oriented perspectives are expressed. All these typical attributes of services indicate that the conducting of driving tests is to be viewed as a service. In the following, however, the more comprehensive term “product”, which after all includes also “services”, is nevertheless to be used alone in the interest of better legibility.

⁴⁹ The term “customer” is here not used in its narrower economic meaning, but rather in its broadest sense as a designation for the user or beneficiary of a service.

tional framework conditions which are often controlled by way of legislative provisions, for example the features of test locations or the qualifications of driving test examiners and their professional principles (this aspect is occasionally referred to as “orientation quality”). Process quality is understood to mean the form of realisation of the service, including the atmosphere of the interactions between the examiner and the test candidate, while result quality is generally taken to mean the standard of the service performed in its narrower sense, in the case of the driving test, therefore, the objectivity, reliability and validity of the realised tests (see Chapter 2). It is furthermore to be added that internal and external perspectives are to be distinguished when determining the quality criteria for the aforementioned dimensions, and that the readily measurable structural aspects of quality dominate in both quality research and political discussion, whereas the processual elements are frequently neglected.

A series of management and control tasks must be accomplished to at least secure, if not improve the quality of a service. The umbrella term used to describe the entirety of these tasks is “quality management”; this embraces the planning, organisation, documentation and verification of all activities and processes applied with the purpose of safeguarding the standardised quality of products or services. The most important components of quality management are the elaboration and further development of quality standards, promotion of their implementation, and verification of the implementation results (Heiner, 1996).

The above considerations already demonstrate emphatically that an appraisal of the quality assurance for a product must not limit the scope of its observations to merely the product itself. This is also reflected in the historical development of the concepts of quality and quality management. Early characterisations were founded primarily on a customer- and value-centred understanding of quality (Garvin, 1984): Quality was used synonymously with superiority in value and was deemed incapable of being measured; it was held to be definable solely through subjective (customer) experience and was bound to a favourable price. Later conceptions, on the other hand, appear to have been more method-oriented and preventive in their approach: Quality was increasingly interpreted as an objectively measurable parameter, standards were introduced, and errors were already to be excluded before they could arise through efficient monitoring of the production processes. Constantly new aspects of corporate processes and organisation attracted the attention of those responsible for quality assurance. In his book “Total Quality Control”, which was first published in 1961, Feigenbaum demanded that quality management be represented by structures embracing an enterprise as a whole, aligned to customer needs and incorporating provisions for regular system audits (Feigenbaum & Feigenbaum, 2003).

Another aspect of quality management gained in significance over the course of the portrayed change: the description of process sequences. Deming (1982) postulated: “Experience, without theory, teaches management nothing about what to do to improve quality and competitive position,” and thereby contributed decisively to today’s meaning of quality, not only as the quality of products, but also the quality of corporate organisation, the quality of working conditions and the quality of relationships to the environment. Within the framework of “Total Quality Management” (“TQM”), product or service quality was defined as a competitive advantage and thus placed in the context of corporate strategy. The satisfaction of customer needs is viewed as a paramount, overarching task of all business units. As an enterprise’s most important resource, the employee plays a major role in the TQM concept. To be able to utilise his problem-solving capabilities, both continuous investment in qualification and mutual trust are imperative. The core aim of TQM is thus the continuous improvement of all processes taking place within an enterprise.

In accordance with the sketched principle of placing predominantly the quality of corporate organisation in the foreground, rather than the quality of a specific product, the interna-

tionally recognised standard DIN EN ISO 9000 ff. is usually understood as a framework recommendation for the establishing of a quality management system. This standard belongs to a series of international standards; the standardisation, however, refers not to specific product attributes, but to the formal-processual demands to be placed on a quality management system and standards for the management of organisation processes. These defined standards are presented in a quality manual and reviewed at regular intervals by external experts; self-evaluation is possible by way of internal audits. If the standards are met, the enterprise concerned receives a time-limited certificate.

It must not be forgotten, however, that such certificates are no substitute for the continuous negotiation of specific quality standards for a particular product or service. Furthermore, as has already been described, a quality management system should also itself represent not least a strategic instrument to ensure and improve the quality of individual products and services. Its structure and procedure are thus dependent on the concrete objectives and particular circumstances of an enterprise: As enterprises operate within enterprise-specific organisational structures and offer different products, there can be no generally applicable or uniform quality management system.

The enterprise-specific implementation of DIN EN ISO 9000 ff. thus evolves as the “crux of the matter” with regard to application of this system of standards, originating as it does from the industrial sector: It is attempted, with greater or lesser difficulties in individual cases, to apply the provisions of DIN EN ISO 9000 ff. also in many service branches, though critics continue to bemoan the significant operative outlay for the necessary adaptation to actual circumstances. At the same time, they complain that, given the high degree of universality in the standards, it can prove impossible to mirror the specifics of an enterprise discretely, while actually negligible organisational parameters can be shifted into the focus of quality assurance in particular cases. Another frequent objection, finally, is that the process orientation and high degree of generality leave the formulation of organisational standards very abstract and thus incomprehensible to many customers. These limitations, together with the costs of accreditation and certification, have led to greater attention being returned to product-oriented instruments of quality determination spotlighting selected essential quality parameters, such that internal quality assurance has gained in importance recently alongside the auditing of process sequences by external experts.

By way of summary, it can be said that, viewed historically, the focus of quality assurance initially shifted from a one-sided consideration of product quality to a broader (albeit sometimes equally one-sided) reflection of corporate organisation and operative process sequences. The acceptable reason was to be seen in the desire to influence product quality preventively and at the earliest possible stage, as a means to save costs and achieve a corresponding competitive advantage. In some respects, the developments lost sight of the aspect of product quality. Currently, enterprises in the service sector (e.g. health service providers) are undertaking diverse efforts to establish a more balanced relationship between reflection on corporate organisation and processes, on the one hand, and the standards of the services provided, on the other, as a basis for a more efficient and product-related implementation of quality assurance. One important step towards the realisation of this objective is the measurement of service quality from the customer perspective. Let us now turn, therefore, to the question of the possible fundamental approaches to measurement of the quality of services such as the driving test.

Approaches to the measurement of service quality

It is the striving of enterprises to earn profit through their products and services, and thereby to operate gainfully. To be able to achieve these objectives, they will usually aim to grow as a company; the marketing objectives will thus be geared to increased turnover,

greater market shares and the securing of competitive advantages over other players in the branch (see following Fig. 5.3). This naturally applies equally to the companies and organisations operating the Technical Examination Centres. In the service branch “driving tests”, on the other hand, the pursuit and attainment of the aforementioned corporate objectives is restricted in that the Technical Examination Centres are not acting as wholly independent providers; they are merely mandated by the State to realise the driving test on the latter’s behalf. The remuneration for the service by the customer is consequently not a matter of discretionary calculation, but instead subjected to the principles of cost recovery and government control. Furthermore, the organisations are not able to expand at will, irrespective of the level of their service quality, because the procedure of state government mandating restricts their activities to a specified region, in which they are then permitted to offer their service “driving tests” as a “sole representative agent” (cf. § 10 KfSachvG)⁵⁰.

It can be derived from the above particularities that the organisations holding a mandate to conduct driving tests are not subject to the mechanisms of market economy competition in this sphere of their activities. Their quality management tasks and objectives are thus determined not by economic intentions under the banner of profit maximisation, but by public interests in road safety and the fundamental principle of equality of treatment for all citizens. The practical effects on the motivation to maintain quality management and the associated strategies, however, are minimal: It is true that the mandated Technical Examination Centres are permitted to act as sole representative agents, but this privilege to offer driving tests can also be withdrawn by the State if quality assurance is neglected (see BAST, 2005: Anforderungen an Träger von Technischen Prüfstellen). At the same time, corporate quality management objectives such as increased efficiency in the service processes, reductions in quality-related costs and the establishing of an internal quality awareness hardly differ from the corresponding objectives in other companies. The striving for a high degree of customer satisfaction, and thus a corporate quality image, is also an element of a practical market-oriented strategy for the Technical Examination Centres, as it strengthens customer ties and places barriers in the path of competitors seeking to enter the market in other product fields.

⁵⁰ The federal state of Berlin represents an exception in this respect; as an outcome of historical developments, both DEKRA and TÜV Rheinland are here entitled to conduct driving tests.

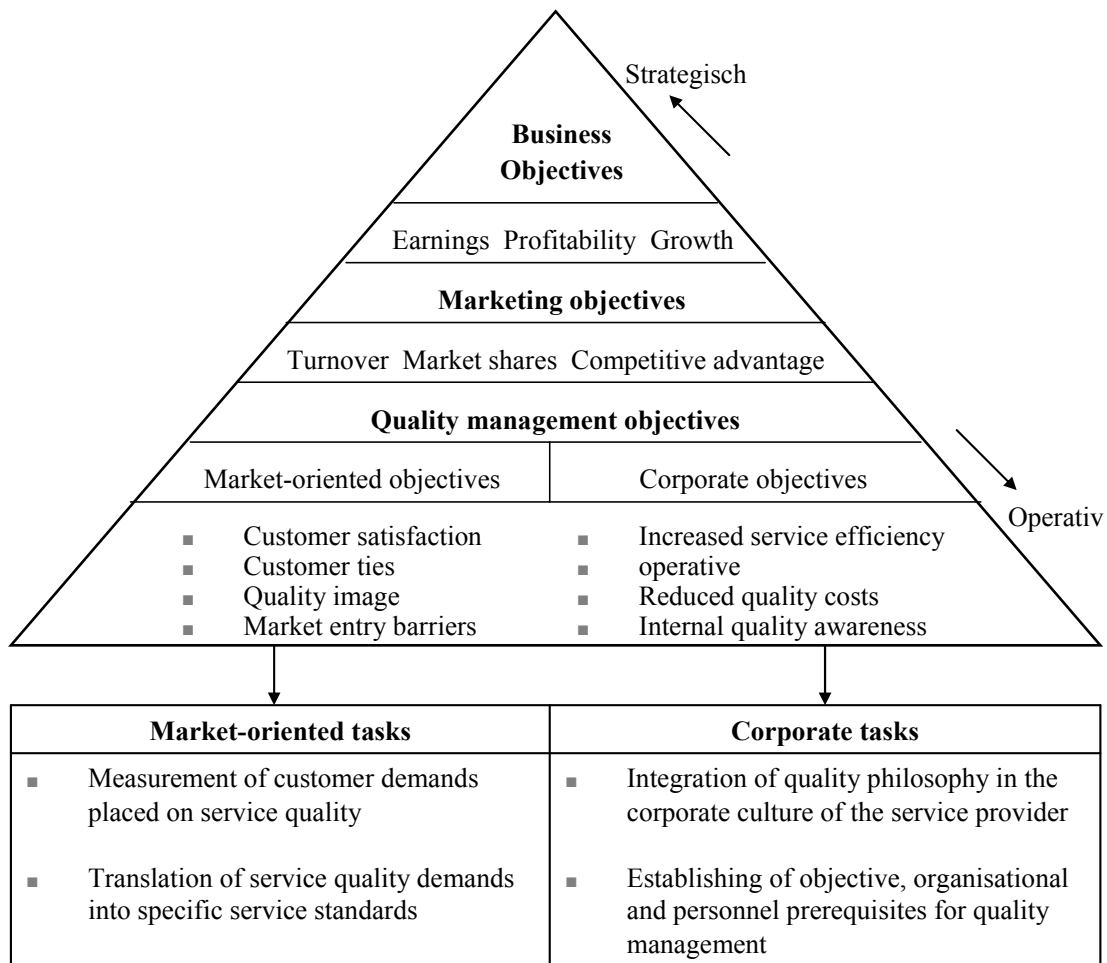


Fig. 5.3: Objectives and tasks of quality management in the target system of quality enterprises (Meffert & Bruhn, 2000)

Given the similarities between the quality management objectives of the Technical Examination Centres and those of any other company, the market-oriented and corporate tasks of quality management will also be subject to the usual demands: Firstly, the Technical Examination Centres must document customer expectations with regard to the quality of the service “driving tests”, and must translate the findings into specific service standards. At the same time, however, these customer expectations must be supplemented by government stipulations arising from the public (safety) interest in quality-oriented provision of the service. This produces dual quality standards, combining the expectations and demands of the test candidates, as the customers, and the content and method standards prescribed for driving tests by the State. This duality is also reflected clearly in the accreditation requirements (“Akkreditierungsanforderungen”, 2005) issued by the Accreditation Agency for Driving Licence Services (Akkreditierungsstelle Fahrerlaubniswesen) at the Federal Highway Research Institute (BASt). Secondly, alongside these broadly market-oriented tasks, the Technical Examination Centres must realise the corresponding corporate tasks of quality management. This includes the integration of a quality philosophy in corporate culture, and the establishing of all objective, organisational and personnel prerequisites for quality management. Such corporate tasks are similarly anchored in the accreditation requirements (see Chapter 5.7.2).

As good service quality will not come of its own accord, however strong the competition, it must be planned, promoted and monitored within the framework of a quality manage-

ment process. It is the interface between the providing enterprise and the customer receiving the service which here serves to measure service quality. Which possibilities are available to the Technical Examination Centres for measurement of the service quality of their driving tests? When seeking to answer this question, an overview of the potential approaches to the measurement of service quality (Meffert & Bruhn, 2003) appears to be a useful aid (see following Fig. 5.4).

For the measurement of service quality, a fundamental distinction must be made between “customer-oriented measurement” and “company-oriented measurement”. Customer-oriented measurements, as the name already implies, serve to document the customer’s view of the service. One particular form of customer-oriented measurement is that of so-called “objective measurements”, wherein a third person is employed to evaluate the quality of individual aspects of a service according to defined standards. The definition of such standards in respect of the relevant service aspects and the applicable assessment criteria serves to ensure that all test customer and expert evaluations refer to the same set of observations and benchmarks, in other words that the results are intersubjectively comparable, i.e. “objective”. Two of the best known instruments of customer-oriented objective measurement are the “silent shopper” method and expert observations.

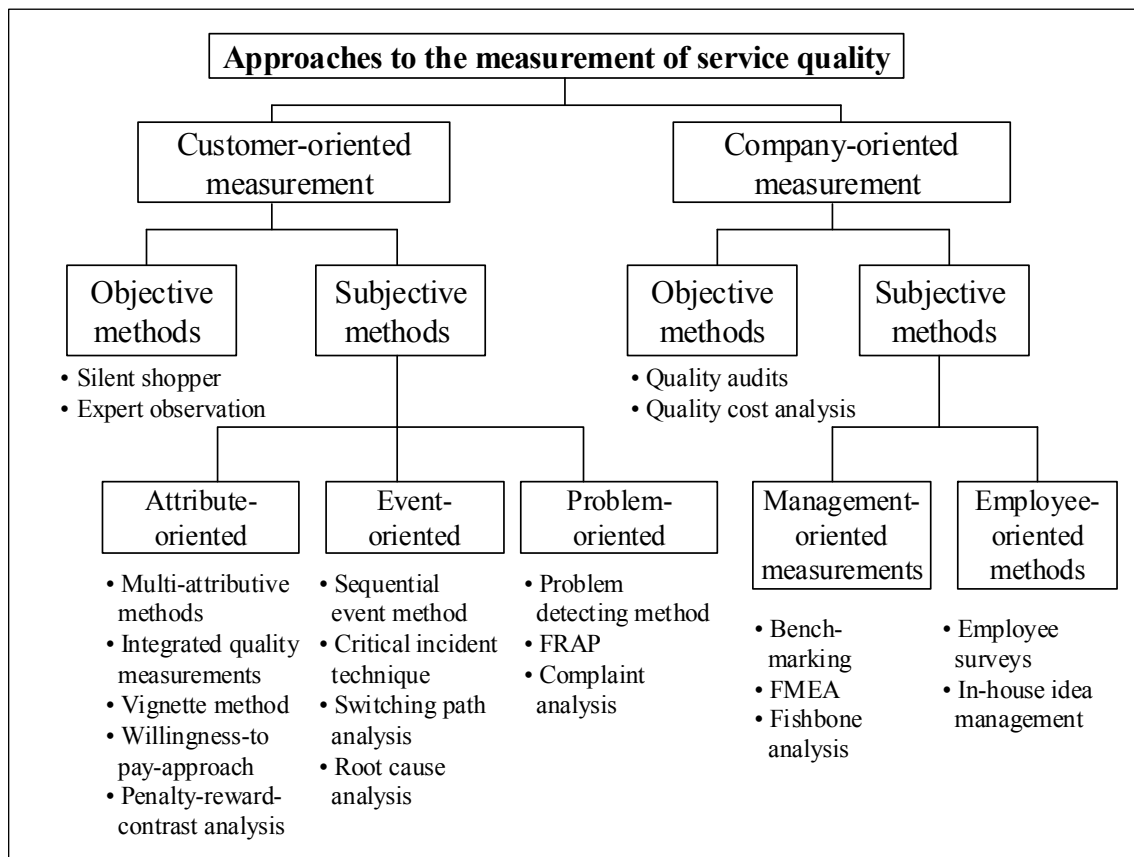


Fig. 5.4: Approaches to the measurement of service quality (Meffert & Bruhn, 2003)

The “silent shopper” method seeks indicators for possible quality deficiencies from the experience of the service process reported by test customers (often also referred to as “mystery customers”). The reliability and validity of the results obtained from this form of measurement, however, are necessarily dependent on the experience of the test customers. Under the second of the aforementioned methods, namely expert observation, external specialists observe customer contact situations and analyse the behaviour of both the service provider and his customer. One point of methodical criticism to be mentioned here is that

many customer situations are impossible to document without the knowledge of the service provider concerned, and that corresponding observation effects must be expected. Moreover, a third party can only draw inadequate conclusions on the customer's quality perception from the observed behaviour. At the same time, the realisation of such measurements is labour- and cost-intensive. Generally speaking, however, both methods are potentially suitable for the measurement of service quality in the context of the driving test.

Let us now turn to the subjective methods to measure service quality from the customer perspective. "Subjective" is here understood to mean that certain attributes, events and problems of the service process are assessed by real customers. The subjective methods of measurement are subdivided correspondingly into attribute-oriented, event-oriented and problem-oriented methods.

The attribute-oriented methods include the class of "multi-attributive methods"; these methods are based on a series ("multi") of detailed customer assessments on particular quality aspects ("attributes"); these individual assessments are condensed into a global judgement of quality. One of the best-known of the multi-attributive methods is the service quality or "SERVQUAL" approach. The measurement here takes the form of a standardised questionnaire, whose 22 items together represent five quality dimensions (tangibles, reliability, responsiveness, assurance and empathy). For each item, two statements are formulated in the style of a double rating scale, the first referring to the "target situation" and the second to the "actual situation". From the critical methodical viewpoint, it must be noted that the use of a double scale places very high demands on the response of the customer. Furthermore, the "target" component leaves considerable scope for interpretation, distorting the result variance. The "integrated quality measurement" method builds upon the same methodical foundation as the multi-attributive methods, but also takes into account the ensuing effects in its determination of quality (e.g. customer satisfaction, customer loyalty).

The other three attribute-oriented survey methods mentioned here are similarly based on variations of the questionnaire design: The "vignette" or factorial survey approach first defines "critical quality characteristics" relevant for the perception of quality, and then asks customers to give their assessments with reference to certain service situations. The "willingness-to-pay" approach is based on a value-oriented concept of quality and assumes that the customer will reach judgement on the quality of a service by comparing the service received with the financial, time, psychological or physical "sacrifices" accepted in order to obtain the service. The service is thus assessed according to its cost-benefit ratio. In the case of "penalty-reward contrast analysis", finally, those quality factors are identified which triggered unexpectedly high customer satisfaction when present or else a high degree of dissatisfaction if absent.

From the methodical point of view, it is common to all five attribute-oriented methods to determine service quality that the attributes deemed relevant for the assessment are not selected by the customer, but instead specified by the provider. Furthermore, the informative value of the individual methods is often diminished by the fact that the number of attributes to be assessed must be kept to a minimum, so as to avoid overburdening the customers replying to the survey. Finally, some of the mentioned methods are evidently unsuitable as instruments by which to gauge customer satisfaction with the service "driving tests": The "willingness-to-pay" approach appears inappropriate, because the price for a driving test is government-dictated and the test candidate is thus unable to choose between different price levels. "Penalty-reward contrast analysis" can also be excluded as a possible strategy for the measurement of customer satisfaction in the context of the driving test, because a driving test candidate generally possesses little or no prior experience with driving tests and thus possesses no realistic expectations as to the quality of this service.

Certain of the event-oriented subjective methods are equally unsuitable for use in connection with driving tests: “Switching path analysis” and “root cause analysis” both consider the processes which result in customers migrating to competing providers. In the case of the service “driving test”, however, such migration is not possible due to the special situation of the mandated Technical Examination Centres as sole representative agents of the State; these methods will thus not be described further at this point.

The “sequential event method” and the “critical incident technique”, as further event-oriented methods for customer surveys, both address particular phases of the service process. The aim of the “sequential event method” is a complete documentation of the various customer contact situations: The customer reconstructs the course of his service experience and is questioned on his process perceptions, impressions and corresponding assessments relating to each individual contact situation. The “critical incident technique”, on the other hand, considers only “key events” with a determining influence on the interaction between customer and service provider. Common to both methods is that the customer describes personally relevant experiences in his own words. This fact is also reflected in the high complexity and corresponding costs of data acquisition.

The third sub-category is that of problem-oriented customer survey methods. When applying the “problem detecting method”, the provider first compiles a list of possible problems in the service process; this list is subsequently compressed according to relevance and redundancy aspects, as a basis for questionnaires containing statements on the selected problems, for example statements on the urgency of problem rectification. To be able to utilise this method, however, it is necessary to already be aware of the problems perceived by the customer. This prerequisite is no longer pertinent in the case of “frequency relevance analysis for problems” (“FRAP”), another form of problem-oriented measurement which can be viewed as a further development of the “problem detecting method”, because FRAP determines first whether a particular quality problem has ever actually occurred, and if so, how serious was the resultant customer irritation. The remaining problem-oriented method to assess customer satisfaction is “complaint analysis”. This method is based on systematic records and evaluations of the statements submitted by dissatisfied customers, with the evaluations being structured according to the reasons for complaint, their frequency and the urgency with which they are presented. The advantage of this latter method is that the information on current and significant customer problems can be canvassed at minimal cost, since the outlay for collection of such customer assessments is borne by the dissatisfied customers themselves. If meaningful results are to be obtained, however, the customers must be encouraged to actually express their dissatisfaction to the service provider. This is a task for complaint management.

This brings us to the second major category of methods for the measurement of service quality, namely to the “company-oriented measurements”. These methods address the perspective of the service provider and can similarly be sub-divided into objective and subjective measurements. Under the subjective measurements, furthermore, a distinction is made between “management-oriented measurements” and “employee-oriented measurements”.

Examples of objective company-oriented measurements are quality audits and quality cost analyses. Quality audits are systematic external investigations; they serve to determine whether the instruments of quality assurance conform to corporate requirements, and whether these requirements are indeed suitable means to achieve the quality objectives. Quality audits are usually performed within the framework of a quality management system, and thus reference the individual elements (e.g. processes, products) of this system; they are entrusted to persons with no direct responsibilities in the company unit to be audited. The purpose of such audits is to judge whether improvements or modifications are necessary in respect of quality assurance. A quality cost analysis, on the other hand, is to

be understood as a comparison of the costs incurred to ensure a satisfactory level of quality against the losses to be expected in case of failure to attain this level of satisfaction.

Under the subjective company-oriented methods, the first group to be mentioned is that of “management-oriented measurements”. This group includes methods such as “benchmarking”, “failure modes and effects analysis” (“FMEA”) and “fishbone analysis”. In the case of “benchmarking”, company-specific processes and results (e.g. products or services) are compared with those of other companies; this is a targeted and continuous process, determining not only differences and their causes, but above all the internal potential for improvement. The other two methods differ in that “fishbone analysis” places a particularly urgent quality deficiency at the focus, and then examines the primary and secondary causes of that deficiency with the aid of a diagram resembling the skeleton of a fish, hence the name, whereas “FMEA” elaborates a systematic catalogue and analysis of all conceivable deficiencies in a service process. The approach taken by “FMEA” comprises four phases: Failure description, risk assessment (severity of the consequences), specification of quality improvement measures, and success evaluation. The merits of FMEA lie in the readily comprehensible methodology and the potential to identify and tackle sources of problems at an early stage.

“Employee-oriented methods” form the second group of subjective methods for company-oriented measurements of service quality. Examples representative for this group are “employee surveys” and “in-house idea management”. Within the framework of employee surveys, staff in service-providing functions are given an opportunity to express their subjective views of the company’s service quality, or else to relate critical customer experiences. The aim of this method is to revise false management perceptions of customer expectations with the aid of the front-line staff. Employee surveys should preferably be combined with corresponding idea management schemes; a system of bonus payments is a patent method to encourage suggestions for improvement. The advantage of this system is that employees with customer contact gain a greater awareness for quality and are motivated to recognise, describe and rectify quality-relevant problems. At the same time, this method can be implemented with a relatively minor input of human and financial resources.

To summarise: The discussion so far has demonstrated the need to elaborate not only organisation-related quality standards, but also specific service-related quality standards, and furthermore to monitor these standards within the framework of quality management. To this end, the quality of the service under observation, in our case the (practical) driving test, must be categorised in accordance with strict methodical criteria, and not least also from the customer perspective. This can be achieved with the aid of a diversity of different methods, which have been sketched here to provide a general overview, and have in some cases already been assessed in respect of their suitability to portray the quality of the driving test. On this basis, the analysis is now to proceed to the methods which are already in use as instruments of quality management in the Technical Examination Centres, and the experience which has been gained with these methods.

5.7.2 Safeguarding test quality as a central concern of the Technical Examination Centres

Quality assurance as an historical principle of the Technical Examination Centres

Technical innovations, products and systems must always be deployed safely and responsibly, in order to avoid risks and to exclude an endangering of the operator or the public at large as far as possible. It is thus imperative for the application of such technologies to be tested by neutral institutions acting in the interests of the customers and society. This mandate of testing in the public interest is a core task of the Technical Examination Centres, whose self-perception has since their founding been characterised by customer- and quality-orientation: The Technical Examination Centres see themselves in the role of a respon-

sible mediator between the public and technology, both in the field of equipment testing and with regard to tests of personal competence; corresponding statements are to be found in the corporate principles of all Technical Examination Centres entrusted with the realisation of driving tests. Active contribution to the further development of relevant performance scales and quality standards by the Technical Examination Centres is similarly a component of their quality orientation.

Against which background have the Technical Examination Centres contributed decisively to safeguarding of the quality of testing since their founding? As already indicated, the conditions of road traffic, and thus the demands placed on drivers, continue to undergo constant change, and in turn necessitate adaptation of the prerequisites and procedures of the driving tests in which prospective drivers are required to demonstrate their knowledge and abilities. If the currently attained level of safety on our roads is to be preserved, or better still improved, therefore, on-going further development of the test contents and guidelines is imperative (see above); the corresponding professional competence is to be found not least in the Technical Examination Centres. For this reason, the Technical Examination Centres have assumed a key role in the further development of quality standards in driver licensing ever since the introduction of driving licences in Germany, and in this function enjoy the confidence of both the public and state authorities.

Accordingly, it is hardly surprising that, upon adoption of the Driving Licence Regulations (FeV) in 1999, and the associated statutory obligation to obtain accreditation, the Technical Examination Centres were assigned the task of establishing and implementing quality assurance systems on their own responsibility. This obligation has since led to more thorough reflection and a stricter monitoring of quality management in the Technical Examination Centres, as a means to be able to recognise and rectify quality weaknesses. Essential components of the existing quality assurance system, however, were already installed and in use before the introduction of accreditation for the Technical Examination Centres (see Chapter 5.7.3).

Accreditation by the Federal Highway Research Institute (BASt)

In accordance with ISO/IEC 17011 (2004), accreditation is understood to mean “third-party attestation related to a conformity assessment body, conveying formal demonstration of its competence to carry out specific conformity assessment tasks.” A conformity assessment body is in this context an organisation which performs conformity assessment services, for example in the form of tests or inspections. In this sense, the Technical Examination Centres are to be considered conformity assessment bodies (“certification bodies”), and the driving test is thus a conformity assessment task: By way of a driving test (as a form of personal certification), the Technical Examination Centre assesses whether the qualification status of a test candidate is conformant with the stipulations of traffic-related legislation and, where appropriate, documents this by presenting him a “certificate of conformity”, namely a driving licence, on behalf of the State.

Accreditation of the conformity assessment bodies and the requirement for certification bodies to obtain accreditation are to be found in many service fields in which the services offered relate to public interests. Since 1st January 1999, the latter obligation has applied also to the organisations operating the Technical Examination Centres: “(1) Organisations operating [...] Technical Examination Centres (§ 69 in conjunction with §§ 10 and 14 of the Officially Recognised Experts and Examiners for Motor Vehicle Traffic Act, KfSachvG) [...] are required, in accordance with the standard DIN EN ISO/IEC 17020 dated November 2004, to obtain accreditation relating to the prerequisites for and realisation of these tasks. (2) The tasks of accreditation are assigned to the Federal Highway Re-

search Institute (BAST) in accordance with the standard DIN EN ISO/IEC 17011 dated February 2005.”

The introduction of mandatory accreditation and corresponding corporate quality assurance systems at the Technical Examination Centres was intended to ensure a constantly high level of quality in driver testing (see also the official grounds for § 72 FeV). The attainment of this objective is promoted on the one hand by uniform nationwide standards for driving tests, and on the other by guarantees for the independence and competence of driving test examiners, both of which are aspects of the accreditation. The realisation of the accreditation process by the Federal Highway Research Institute does not itself constitute an administrative act, but represents rather the preparation of an expertise for the authorities responsible for the approval of the Technical Examination Centres, i.e. the relevant government offices in the federal states. The accreditation agency verifies the quality assurance processes implemented by the Technical Examination Centres, but is not directly involved in the further development of those processes; this responsibility lies with the Technical Examination Centres themselves. This arrangement ensures a certain impartiality in the assessment process on the part of the accreditation agency, and thus efficiency for the organisation under government supervision.

Regarding the function of the standard DIN EN ISO/IEC 17011 in the accreditation process, it can be noted that the reference to the fundamental provisions of the standard facilitates analysis and improvement of the corporate organisation and quality assurance procedures of the Technical Examination Centres. At the same time, however, it must not be overlooked that, although driver testing can be described as a conformity assessment process, the full role of a certification body is not conferred upon the Technical Examination Centres. After all, it is in the end *de jure* not the Technical Examination Centre which decides on the granting of a driving licence as a certificate of conformity, for example, but the licensing authority. In practice, admittedly, the licensing authority will usually follow the decision of the driving test examiner, apart from a few very rare exceptions (e.g. formal inconsistencies or evident assessment errors), even though the summarising nature of the test documentation (see Chapter 5.6) renders it impossible to fully reconstruct this decision. Within the actual realisation of the driving tests, the licensing authorities initially also forego contribution to the conformity decision, because the successful test candidate is generally (see Chapter 5.3) presented his certificate of conformity – the driving licence – immediately by the driving test examiner.

The above example already indicates that the demands of general standards, such as DIN EN ISO/IEC 17011, cannot be applied automatically and in full to the case of the driving test, and that implementation must be accompanied by case-specific determination of the circumstances which are actually meaningful in the context of such standards. The question of the practicability of general standards, which was already discussed earlier in the present chapter, gains further in significance in connection with the relatively new standard DIN EN ISO/IEC 17024, which, compared to the previously applicable standard DIN EN 45013, is appreciably more specific in the content demands it places on the processes of certification bodies.

It should be added that, as an argument in favour of strict implementation of the aforementioned standards to driver testing, it was for a time hoped that this would promote European harmonisation in respect of the certification organisations and certification processes concerned with driver licensing. The first attempts to push this intention, however, appear to have failed: The contributors to the draft for the third EC Directive on Driving Licences, which for the first time defined minimum qualifications for driving test examiners, were unable to agree a quality system on the basis of the standard DIN EN 45013 which was still valid at the time of their discussion. In view of the traditionally substantial differences

in the training and test structures in the individual EU member states, it was merely stipulated that some form of quality assurance system must exist with regard to the qualification and further training of driving test examiners; no normative references, or even notes on content, were specified. Particularly in the context of necessary European harmonisation, therefore, it could be asked whether the formulation of a product-related minimum standard for the service “driving tests” might prove a faster, more practice-oriented and simpler means to bring the individual systems into line.

Coming back to the accreditation process, a comparison of the accreditation requirements and the described theoretical fundamentals of quality measurement in the service sector (see Chapter 5.7.1) reveals a number of parallels. It is thus possible to trace the theoretical sources for the elaboration of the currently applicable accreditation requirements, and furthermore to identify potential for their future further development. Consequently, they are also to serve as the structure for a subsequent examination of the actual implementation of quality management in the Technical Examination Centres (see Chapter 5.7.3):

(1) *External and internal audits*: The accreditation requirements prescribe an external audit by the accreditation agency both for an initial accreditation process (points 2.1 and 2.3.3 of the accreditation requirements) and in case of renewal of the accreditation (point 2.5). In the course of implemented quality assurance, this external monitoring is complemented by internal quality control functions (point 3.8) assigned to an independent “quality officer” (point 3.2.3) within the organisation. Both external and internal audits represent customer-oriented objective measurements of service quality in the sense of expert observations (see Chapter 5.7.1).

(2) *Customer survey system*: The accreditation requirements specify that the quality policy of the Technical Examination Centres is to take into account the expectations and needs of the customers and names the test candidates, supervisory authorities and licensing authorities as “customers”. This requirement corresponds to a customer-oriented subjective measurement of service quality (see Chapter 5.7.1) and is implemented methodically by way of a multi-perspective, multi-method customer survey system.

(3) *Complaint management*: The accreditation requirements oblige the Technical Examination Centres to prepare and apply rules for the handling of complaints (point 3.10). This is the equivalent of problem-oriented measurement of the service quality in the sense of complaint analyses (see Chapter 5.7.1).

(4) *Qualification, further training, systematic problem analysis and working aids*: The accreditation requirements demand that the operators of Technical Examination Centres provide for documentation of the qualification and further training needs of their staff. On this basis, seminars are to be organised within an appropriate scope; the participation of the driving test examiners is to be monitored (point 4.2). Furthermore, the accreditation requirements specify that driving tests “are to be performed professionally and in a uniform and necessary quality, taking into account the latest scientific and technical knowledge, the legislative framework and the obligations of professional ethics” (point 3.1). Possible deficiencies are to be analysed systematically, rectified and avoided in the future (point 3.9). To this end, it is firstly necessary to analyse problems arising during the realisation of the service “driving tests” (e.g. observation and decision difficulties on the part of the driving test examiners); this corresponds methodically to the critical incident technique or FMEA (see Chapter 5.7.1). Secondly, a uniform handling of the problems by the driving test examiners is to be promoted. This can be achieved by way of problem-specific further training and corresponding methodical recommendations for the examiner.

(5) *Information and instruction systems and quality records*: The accreditation requirements stipulate that the driving test examiner must possess clearly documented up-to-date

information and instructions pertaining to his duties and responsibilities (point 4.1). Furthermore, the compliance with quality demands in an individual case is to be demonstrated in the form of appropriate records. This can be achieved in practice by way of technical communication systems (e.g. information and recording systems, point 6), which exclude manipulation and indicate errors on the basis of immanent plausibility checks.

(6) *Evaluation and further development of the driving test*: It is specified in the accreditation requirements that statistics are to be maintained on the driving tests conducted (point 6.9), and that evaluation studies are to be produced in respect of their psychometric quality (point 7).

(7) *National and international exchanges*: The obligation of uniform test organisation contained in the accreditation requirements (point 3.1) requires the Technical Examination Centres to seek constant exchanges of the experience gained. Together with international exchanges, this represents a management-oriented method for the determination of service quality in the sense of benchmarking (see Chapter 5.7.1).

On this basis, the following chapter can now describe how the Technical Examination Centres actually implement the aforementioned elements of quality assurance. Organisational particularities may be identified at individual points, but it does not appear necessary to go into greater detail at this juncture. In such cases, therefore, we are to restrict ourselves to exemplary presentation.

5.7.3 Quality assurance in the Technical Examination Centres

External audits

Following accreditation (valid for a period of five years), the accredited operators of Technical Examination Centres are subject to continuous external monitoring by the auditing team of the Federal Highway Research Institute (BASt). Such external audits are performed once per year, with the scope of each audit being dependent on the number of practical driving tests conducted during the previous year (see point 8.1 of the accreditation guidelines). At least one theoretical test and two practical driving tests are evaluated on each day of the audit in a particular centre. The subjects, procedures and depth of the external audits are determined on the basis of the results of earlier audits performed during the accreditation process; consequently, the records of previous internal audits must also be kept available for examination by the external auditors. The operator of the Technical Examination Centre is required to assist the auditing team and must guarantee access to all documents, records and information deemed relevant for the monitoring or re-accreditation. All staff required to enable auditing and monitoring are delegated by the operator; this includes also administrative and scheduling staff employed in connection with driver licensing.

Alongside the regular external monitoring, special external audits may be necessary,

- if the continuous monitoring or re-accreditation process reveals serious deviations from the specifications of the accreditation guidelines and the operator has given an undertaking to rectify these deviations,
- if special circumstances have arisen which give rise to serious doubts as to whether the accredited operator still meets the quality demands in certain areas, or
- if the accredited operator has himself requested a special audits (e.g. to refute the accusations of a third party).

Internal audits

The accredited operators of Technical Examination Centres are required to monitor the effectiveness of their quality management system and to ensure compliance with all de-

mands stipulated in the accreditation guidelines by way of internal quality audits and regular reviews. The form, contents and scope of the internal audits are prescribed. As regards the contents, the internal audits can be subdivided into product audits and system audits: The subject of a product audit is the observance of quality attributes defined for the product “driving test” on the part of the test examiner. A system audit, on the other hand, serves to assess the effectiveness and suitability of the structures and specifications of the quality management system. The reference for the scope of internal audits is again the number of practical driving tests conducted during the previous year; the following checks are mandatory:

- Review and evaluation of the test-related documentation (e.g. records and reports), and review and evaluation of the driving test results at the level of the individual centre (scope 1 ‰),
- Examiner-specific audits of theoretical driving tests (0.05‰ of the practical driving tests of the previous year), and
- Examiner-specific audits of practical driving tests (0.20‰ of the practical driving tests of the previous year).

The corporate quality officer is responsible for realisation of the internal audits; he selects the quality auditors and defines the annual framework for the audits. The appointed auditors perform the actual audits, document their observations and create reports on the audit results. The reports on the individual audits are collected and analysed in respect of professional and quality-related issues; these analyses, in turn, form a basis for the elaboration of proposals for further development of the driving test and the quality management system. The results of all assessments, the conclusions drawn and the measures derived therefrom are presented in a management review.

Customer survey system

The driving test is an element of a safety system operating in the public interest to guarantee specifically the safety of road traffic. It is thus imperative to record and react with due earnestness to the comments received from all involved parties, in order to be able to optimise system content and methodology. Consequently, the Technical Examination Centres are required to conduct customer surveys referring to the organisation of tests (see above). The Technical Examination Centres can point to a long tradition in the development of customer surveys, the first such surveys having been realised at TÜV Rheinland in the mid-1980s. In the meantime, customer surveys have been established as an important quality assurance instrument at all Technical Examination Centres and permit conclusions to be drawn regarding optimisation of the driving test. The questionnaire materials used have experienced constant improvement over the years.

It is not possible to give a detailed review of the realisation and results of the many surveys at this point. It can be noted as an example, however, that DEKRA conducted a first comparative survey on the quality of the driving test from the perspectives of the different involved parties in 2003. To this end, both test candidates and driving instructors were questioned. The results of this survey were not only a subject of the regular staff quality reviews in the individual centres, but were also taken into account in the continuing development of concepts for the further training of driving test examiners.

Since 2005, all Technical Examination Centres mandated to conduct driving tests have been working together on further improvement of their customer survey methods. Through this cooperation, which takes place within the framework of TÜV | DEKRA arge tp 21, it has been possible to develop and test a multi-method and multi-perspective customer survey system, which is made available to the Technical Examination Centres for their indi-

vidual quality assurance purposes. Elements of this method system are questionnaires for test candidates and driving instructors, as well as interview guidelines for the licensing authorities and the responsible state government offices. The customer survey system exists in different versions (paper-and-pencil version, online version) and was presented together with the results of tests with the system in a separate research report of the present project “Optimisation of the Practical Driving Test” (Sturzbecher & Mörl, 2008). The fact that different Technical Examination Centres access a common method pool for their customer surveys is to be seen as a contribution to standardisation of the quality assurance systems used by the Technical Examination Centres, and consequently to a uniform basis for the organisation of driving tests in the whole of Germany.

Complaint management

Alongside customer surveys, analyses of any complaints received represent a further methodical approach to customer-oriented subjective measurements of service quality in the Technical Examination Centres. Complaint management processes are placed on the agenda not only in the context of quality development, but more recently also in connection with company-specific communication concepts, notably in companies in which human interactions play a significant role in the provision of services. Given the negative connotations of the term “complaint management”, various attempts have been undertaken to rename or extend the concept (e.g. “demand management”, “idea management”, “customer feedback management” or even “communication management”). In the end, however, the designation “complaint management” has remained customary usage.

A binding work procedure governs the recording, reviewing and processing of complaints in the Technical Examination Centres. This procedure is valid for all staff who receive and process complaints from external parties, and its fundamental contents are anchored in or derived from the quality manual. The recording of complaints by the staff of the Technical Examination Centres is not subject to form requirements, but must nevertheless ensure later traceability. This condition is generally met in the case of written complaints. If a complaint is presented orally, on the other hand, it is necessary for

- the name and address of the person making the complaint,
- the process to which the complaint refers, and
- a brief description of the subject of the complaint

to be recorded in writing. These written notes are then signed by the member of staff recording the complaint and passed on to the responsible office for review. Both written complaints and the written records of oral complaints are first marked with the date of their receipt.

The reviewing of a complaint serves to assess whether the complaint is justified, and which measures may be suitable to satisfy the customer concerned and to avoid recurrence of the quality defect. The person responsible for the review is the direct superior of the member of the Technical Examination Centre against whom the complaint is directed. In the case of serious complaints with potential to damage the reputation of the Technical Examination Centre, or where a complaint is combined with a claim for damages, the management of the Technical Examination Centre is also informed accordingly. The management can then decide whether it is expedient to reassign the responsibility for reviewing and further processing of the complaint. At the same time, the review investigates the causes for the quality defect in the service subject of the complaint, and whether the service was performed in accordance with the specifications of the quality management system. If the review is expected to require a longer period, the customer receives intermediate notification that his complaint is being processed. If evidence of a systematic quality defect is revealed, the

person processing the complaint informs the corporate quality officer and communicates the measures which are deemed to be necessary.

The further processing of a complaint is also normally placed in the hands of the direct superior of the staff members involved in the driving test concerned. If a complaint is found not to be justified, a brief statement is sent to the customer. Even evidently unjustified complaints are to be answered in a friendly and objective manner. In the case of a justified complaint, the measures necessary to satisfy the customer are initiated in accordance with the statutory rules (e.g. reimbursement of paid fees). Where the responsibility for the quality defect subject of the complaint cannot be assigned unambiguously to the Technical Examination Centre, the procedure is nevertheless to seek a compromise with the customer or a similar accommodating arrangement. The person processing the complaint then ensures that the necessary measures are implemented in full, i.e. he provides for these measures and requests notification of the outcome.

The complaint itself is documented together with all correspondence in the matter and records of the measures taken. It should be recognisable from this documentation, whether and if appropriate to what extent it was possible to satisfy the customer. Complaint documentation is kept on the files for at least three years.

Customer hotlines are an important channel via which complaints, or also positive feedback, can be communicated to the Technical Examination Centres. Competent staff are on hand to answer the telephones during normal office hours. They record any incoming complaints and pass the information on to the appropriate office if they are not able to answer the matter themselves. Complaints received in this way can be followed up with a minimum of intermediate delay; in general, however, they are subject to the same review and processing procedures as any other complaints.

Qualification, further training, systematic problem analysis and working aids

The principles for the qualification and further training of driving test examiners are laid down in the Officially Recognised Experts and Examiners for Motor Vehicle Traffic Act (KfSachvG) and in the ordinance on implementation of that law. The formal prerequisites for official recognition as a qualified expert or examiner are contained in § 2 KfSachvG, which states that recognition is granted to applicants with at least eighteen months working experience as an engineer with a Technical Examination Centre, an automobile workshop or an automobile manufacturer, who have furthermore completed at least six months training in a Technical Examination Centre and have demonstrated their professional qualification in a corresponding test.

The focus of the training is governed by the stipulations of § 4 KfSachvG, in combination with the ordinance on implementation of that law and the actual demands of practice. Its contents are geared to initial qualification and further training in respect of four demand dimensions essential to ensure objective and legally sound realisation of the driving test: (1) Vehicle-related technical aspects, (2) application of the relevant road traffic legislation (e.g. Road Traffic Regulations, Driving Licence Regulations, Examination Guidelines in accordance with Annex II), (3) safe and proficient handling of motor vehicles of all classes, and last but not least (4) job-specific aspects of the test situation (incl. pedagogical-psychological knowledge and action competence).

The curricular foundation for the initial training of officially recognised driving experts and driving test examiners is a teaching plan dating from the 1990s. This plan comprises merely a tabular overview of subject matter and methods, but contains no specifications of finer learning objectives or associated levels of achievement with regard to the acquisition

of knowledge, abilities, skills or even competencies. Plans exist for further training modules; a theoretically founded further training curriculum, however, is lacking.

As a means to further develop and standardise their systems of initial qualification and further training for driving test examiners, the various Technical Examination Centres have been pooling efforts in the TÜV | DEKRA arge tp 21 working group since 2005. Within the framework of this cooperation, principles for optimisation of the system of professionalisation for experts and examiners have in the meantime been elaborated and substantiated from the perspective of competence theory (Dietrich & Sturzbecher, 2008). These principles are currently the subject of further differentiation, and more precise descriptions of the contents and standards of the targeted competence components are being developed on the basis of two sample further training modules. As is known from corresponding experience in education research, the evolution from such modules to a professionally and methodically acceptable further training curriculum is a demanding process. In the course of the necessary activities, the previously existing compendiums of the individual Technical Examination Centres, for example those on the realisation of driving tests or the legislation pertaining to driver licensing and driving instructors, are to be integrated into an overarching action framework for all Technical Examination Centres, which will then contain jointly developed concepts, programmes, standards and materials.

Since the 1970s, the Technical Examination Centres have assisted their experts by making available working aids in the form of handouts with problem-oriented information and recommendations for practical implementation on a variety of relevant topics. Alongside factual information, these working aids are intended to convey also pedagogical-psychological knowledge and abilities as a means to promote uniform test realisation and assessment. Particular importance was attached to a publication of TÜV Rheinland (Schulte, 1991), which contained recommendations for driving test examiners to assist their test performance assessments in standard situations shown by experience to be a source of uncertainties. In the same year, TÜV Bayern also provided its examiners with a decision aid for problematical situations during driving tests. On the basis of a collection of 272 cases submitted by driving test examiners, Trautsch (1991) elaborated a heuristic categorisation of “problem cases” in respect of the test decision. Corresponding decision recommendations were made available as potential solutions. The working aid was furthermore supplemented by notes on test route planning and an annex with practical examples and assessment exercises.

There are many more examples which could be added to the list of problem analyses and recommendations issued by the individual Technical Examination Centres. In 2005, however, a whole new level of quality was defined in the elaboration of working aids for the driving test examiners: Since then, all the Technical Examination Centres mandated to conduct driving tests have been working together on the preparation of such tools, and are in this way contributing to a standardisation of driving test practice in the various regions of Germany. By 2008, working aids had been elaborated on the following five topics:

- “Handling test anxiety”,
- “Maintaining dialogue in difficult situations”,
- “Modern, environment-aware driving” (this publication was based on a reprint of material from the German Road Safety Council (DVR),
- “Fundamentals of assessment and decision processes” and
- “Recognising anticipation deficits and action uncertainties”.

The working aids produced so far can be seen as a further step on the way to a uniform professionalisation system for driving test examiners. The next steps are already on the

agenda: Work has begun on the topic “Driver assistance systems as framework conditions for the driving test”; the introduction of all working aids in the Technical Examination Centres has been accompanied and evaluated according to scientific principles.

Information and instruction systems, quality records

The designing of both information and instruction systems, on the one hand, and (quality) record systems, on the other, is specific to each Technical Examination Centre. Consequently, a description of all the system elements to be found in the individual centres lies far beyond the scope of this report. At this point, therefore, the examples of TÜV NORD Mobilität and DEKRA have been chosen to illustrate the introduction of innovative techniques over the past 10 years, along with the resulting benefits for quality optimisation of the product “driving test”. The following steps characterise the expansion of the information, instruction and quality record systems at TÜV NORD Mobilität:

- Introduction of the system “GÖTE” (1991, electronic communication with the licensing authority): This system implements the paperless communication of test-relevant data and in this way supports error-free task assignments containing all data important for the examiner.
- Introduction of the system “DAVID” (1995, further developed as “SAP DAVID”, 2003): This system permits the documentation of driver testing via a laptop computer. It thus further improves the service “driving test” by enabling, for example, more flexible scheduling of test dates and customer-friendly payment options. The most important benefits, however, are the reduced susceptibility to communication errors (e.g. incorrect transmission of test data) and the exclusion of potential manipulation of the driving licensing system. This is achieved by way of diverse plausibility checks relating, for example, to the monitoring of deadlines for testing, observance of any restrictions and provisos, verification of the test prerequisites, the presentation of training certificates, the licence issuing procedures and the quality of test reports.
- Introduction of the professional information systems “Infomaxx” (2000, online information portal for driving test examiners) and “FIS” (2003, offline information portal for driving test examiners): These systems provide for the direct retrieval of instructions and recommendations issued by the Technical Examination Centre. The driving test examiner has access to all the basic legislation on driver licensing, instructions from the Technical Examination Centre management and other professional information. Updates can be distributed directly and are thus also available to the examiners immediately.
- Introduction of the driving school information system “Fahrschulservice” (2003, pilot project 1998, information portal for driving schools): This system grants the driving schools access to all test-relevant data pertaining to their learner drivers (e.g. test results, test reports, deadlines, restrictions and provisos). This information can be used to support targeted training and preparation for a forthcoming test. The system offers also information on amendments and official procedures relating to the legislative framework and a facility to make test appointments.
- Introduction of the system “Jobfit/JobfitFlex” for further training of the driving test examiners (1999/2000): This system offers special further training seminars geared to quality assurance and improvement of the quality of driving tests. The seminar formats were tailored specifically to the demands of driver licensing and refer, for example, to the assessment of test situations, examiner behaviour or testing for disabled candidates.

Among the innovative solutions developed by DEKRA, mention can be made of the system of “document exchange processes without media disruption in driver licensing”⁵¹ (2002 in Thuringia, 2004 in Saxony-Anhalt). This system provides for exchanges of digital files between the offices involved in driver licensing, including electronic communication and data transfer between the licensing authorities, the Technical Examination Centres and the driving test examiners. The Technical Examination Centre receives an electronic test assignment from the licensing authority via the Internet, and in the case of a practical driving test, for example, passes the corresponding data to the test vehicle by way of wireless communication. With the aid of a PDA (personal digital assistant), the examiner is then able to determine the identity of the test candidate and record the test results. If the practical test is passed, the examiner presents the successful candidate a “provisional certificate of entitlement to drive a motor vehicle”. The production of the actual driving licence is not initiated until the test is passed and the licensing authority submits a corresponding order to the Federal Printing Office. The driving licence holder then receives his licence by post from the Federal Printing Office.

The advantages of this process include, among others, a shortening of the period required to obtain a driving licence, and greater flexibility in the scheduling of test dates for the driving schools and candidates. At the same time, sources of communication errors are eliminated, as data must only be entered into the system once. Plausibility checks, furthermore, contribute to quality enhancement, for example through the monitoring of test deadlines and the prescribed minimum scope of records. The system is supplemented by a facility to book test dates via the Internet, which was introduced in Berlin in 2003. The driving schools are thus able to check the availability of test dates together with the candidates, and can then submit a direct and immediate reservation. These possibilities are open to all participating driving schools without restrictions as to the place or time of access.

Evaluation and further development of the driving test

The Technical Examination Centres maintain a series of statistics on driving tests, recording the types and numbers of the tests conducted, the driving test examiner in each case, the test results and any special circumstances of individual tests. The evaluation of these statistics is used, on the one hand, by the management staff to optimise the professional management processes within the Technical Examination Centres; at TÜV SÜD, for example, this serves to assess the attainment of special annual quality targets. On the other hand, the data also contribute to more detailed studies and workshops seeking suitable measures for further development of the (practical) driving test. Such studies and workshops are assigned to ad-hoc working groups, which are established for a limited period to solve clearly defined tasks and integrate all the parties involved in the certification process. As examples to demonstrate the range of topics treated by such working groups, it is possible to mention a working group which dealt with introduction of the new basic driving manoeuvre “Braking with the maximum possible deceleration”, or the working group “Permissibility of driver assistance systems in the practical test”.

Contrary to the case of the theoretical driving test (see above), the development and introduction of a scientifically based system for the evaluation and further development of the practical driving test is still awaited: The aforementioned manual “Handbuch zum Fahrerlaubnisprüfungssystem” (TÜV | DEKRA arge tp 21, 2008) is thus still to be expanded by a

⁵¹ The system title signals that the driving licence, as a central element of the conventional process of document exchange between the licensing authorities and the Technical Examination Centres, is no longer part of the new process.

section in which the processes and activities necessary for optimisation of the practical driving test are described together with the relevantly responsible institutions.

The fact that there has to date been no empirical analysis of the practical driving test with regard to its instrumental quality, neither within the framework of regular internal quality management in the Technical Examination Centres, nor in traffic science studies, can be explained at least in part by the still outstanding modernisation of the demand, documentation and assessment standards on the basis of psychological testing. The present report, which offers corresponding principles and implementation proposals, is seen as a first step in this direction. It must be noted, however, that the methodical particularities of the practical driving test also hinder empirical sampling and evaluation studies: The practical test is from the methodical perspective a participatory observation, in which each observer is at the same time an element of the social system of the person under observation, and thus falsifies the psychometric quality of the observation results (Cierpka, 1987). In other words: If a further person participates in a driving test alongside the test candidate, the driving instructor and the examiner, with the intention of evaluating the test process, then it cannot be excluded that this person will influence the test result. It would thus be more favourable to evaluate the methodical design of the practical test outside the scope of regular testing, but nevertheless in test-like situations. One possibility could be to provide for “preliminary tests” similar to those already conducted in the GDR (see Chapter 4) and still today used in other European countries (e.g. the Netherlands) for testing, evaluation and training purposes (see Chapter 7). Overall, it is to be said that an empirical evaluation of the product quality of the practical driving test is by all means capable of revealing further optimisation potential, but that corresponding cooperation between the Technical Examination Centres only began with the current project.

In connection with the theoretical driving test, on the other hand, the common quality assurance of the Technical Examination Centres is already relatively well advanced. This cooperation began with the BAST project “Optimisation of the theoretical driving test”, which was concluded in 2005 with the presentation of a research report (Bönninger & Sturzbecher, 2005) (see Chapter 1). In the meantime, the foundations have been laid for the introduction of a computer-assisted theoretical driving test, and a revision project has been realised to serve both critical methodical evaluation of the existing test tasks (“analysis of status quo”) and the development and testing of an evaluation system for the theoretical test. Continuous and scientifically founded systematic evaluation of the theoretical test began in 2008. Working on the basis of the evaluation results, the development of innovative test question formats for the sphere of hazard perception is currently in progress.

National and international exchanges

It is not only on account of the accreditation requirements, but also in compliance with the Officially Recognised Experts and Examiners for Motor Vehicle Traffic Act (KfSachVG), that all Technical Examination Centres mandated to conduct driving tests in Germany are required to enter into constant exchanges of experience with each other. To coordinate these exchanges, the management representatives of the Technical Examination Centres established the “Working Group on Driver Licensing” (“Arbeitskreis Fahrerlaubnisfragen”, AK-FF) at the Association of Technical Inspection Agencies (VdTÜV). Within this working group, a separate team deals specifically with the practical driving test. The VdTÜV working group comprises representatives of the Technical Examination Centres and the Central Military Vehicle Registration Office (ZMK) of the Bundeswehr. Further advisory members are delegated by the Federal Transport Ministry, the federal states and the German Federation of Driving Instructor Associations (Bundesvereinigung der Fahrlehrerverbände, BVF).

Through the introduction of common European legislation on driver licensing, European exchanges have gained considerable significance since the early 1990s. In the context of European harmonisation, any amendments and thus also optimisation of the practical driving test in Germany can only be implemented in unison with the other EU member states. A platform for corresponding negotiations is provided by CIECA (“Commission Internationale des Examens de Conduite Automobile”). Founded in 1956, this organisation currently counts 36 countries among its members, including almost all member states of the European Union and the European Economic Area. CIECA offers a forum for structured exchanges of experience and information not only between the members themselves, but also between its members and other interest groups.

CIECA also realises projects and studies on traffic safety on behalf of the European Commission. The results are then incorporated into recommendations concerning the optimisation of driver licensing and further international harmonisation of its systems. Two examples can be mentioned as illustration: “Analysis of the theory and the practical test for the motorcycle categories” (1999) and the project “Towards European Standards for Testing” (“TEST”, 2002-2005).

Summary

All the aforementioned elements of quality assurance systems in place in the Technical Examination Centres point to opportunities for the further development of driver testing, and are in particular a source of ideas and concepts for optimisation of the practical test. Such ideas and concepts are analysed in the individual Technical Examination Centres, in their jointly operated TÜV | DEKRA arge tp 21 and VdTÜV working groups, and in cooperating scientific institutions, and thereby discussed in respect of their practicability. Before the present report is brought to a conclusion by deriving and further specifying the proposals of the Technical Examination Centres for further development of the practical driving test on the basis of the state of development described above, two further chapters are to be devoted to the consequences in terms of driver licensing legislation arising from the changes to the methodical foundations of the practical driving test identified as necessary in Chapter 5, and to an overview of the international development trends relating to practical testing.

Franz-Joachim Jagow

6 Legal evaluation of possible methodical changes to the practical driving test

6.1 On the system of the driving test

The practical driving test was from the very beginning a state-prescribed and -controlled test of individual persons. Its demand and implementation standards were initially focussed exclusively on the technical aspects of a motor vehicle (cf. also Chapter 5.1). The test candidate was essentially expected to demonstrate basic technical acquaintance with his vehicle and the handling necessary to avoid accidents. In the early years of the motor vehicle, it was furthermore important for a driver to be able to repair any defects which occurred while on the road, preferably without requiring external assistance; this was consequently also a topic of the driving test, because a driver could at that time rely on neither an extensive network of workshops, nor the organised breakdown service of an automobile club.

The pronounced technical reference in both the test and driver training can thus be explained by the conditions and circumstances at that time, and was similarly reflected in the legal regulations of the day. The “qualification” to drive a motor vehicle (i.e. mastering of its technical handling), for example, was already demanded by § 14 of the Ordinance on Motor Vehicle Traffic dated 3rd February 1910 (Reichsgesetzblatt, p. 389). It was not until several decades later that the approaches of psychological testing gained significance, bringing forth the specialist methodical knowledge which has founded strivings to categorise the practical driving test also in terms of its methodology.

The term “qualification”⁵² (German: “Befähigung”) is a legal concept and refers to a prerequisite for the execution of a particular duty, e.g. that of a court judge or senior civil servant. As passing of the driving test is a prerequisite for the entitlement to drive a motor vehicle in public road traffic, the driving test can also be viewed as a “test of qualification” in the legal sense (see Chapter 3.1.1). The concept of “ability” (German: “Fähigkeit”), on the other hand, is an originally psychological concept and “designates constant physical or intellectual traits or attributes” (Hampel, 1977). Abilities are thus action prerequisites which lie within a person himself. In this respect, there is a certain similarity to the psychological concept of “aptitude”, which in pedagogical psychology serves to describe “the entirety of the prerequisites for attainment of positively assessed results in career or schooling which are inherent in an individual” (cf. Dorsch et al., Ed., 1994, p. 161). In the legal sense, a licence applicant’s aptitude, or “fitness to drive” as it is termed in our context of driver licensing, is already described in the German Road Traffic Act (§ 2 (4) StVG), according to which a person is deemed fit to drive a motor vehicle if he or she displays the necessary physical and intellectual prerequisites and has not acted seriously or repeatedly in violation of traffic regulations or criminal law. Various aspects of this concept of fitness are then specified in greater detail in §§ 11 to 14 and Annexes 4, 5 and 6 in the Driving Licence Regulations (FeV).

The above example illustrates the difficulty of establishing meaningful mutual references between even apparently similar concepts (“qualification” and “ability”) in the legal and methodical systems of the driving test, and thus the desirability of harmonisation. In the following, therefore, individual starting points for a possible harmonisation of the legal and

⁵² The term “qualification” is already to be found in § 14 of the Ordinance on Motor Vehicle Traffic dated 3rd February 1910 (Reichsgesetzblatt, p. 389).

methodical intentions are to be outlined. For the present, however, these starting points can serve only as pointers to possible future solutions.

6.2 Evaluation of the starting points for optimisation of the methodical system of the practical driving test from the legal perspective

Methodical systemisation of the test content

The necessity of methodically founded restructuring and reorganisation of the test and driving tasks, observation categories and assessment criteria was demonstrated from the methodical perspective in Chapters 5.4. and 5.5. Regarding the realisation of these objectives, giving due consideration to the legal foundations for the practical driving test, an initial distinction must be made between legal and professional issues. It is first to be assessed whether a necessary modification of the regulations is reasonable from the professional point of view. Insofar as the professional aptness is confirmed, the second step is then to determine whether any legal reservations oppose the intended new provisions. The professional aspect of suggested amendments to the test contents were already discussed in the previous chapters, namely whether the independent test elements currently described in Annex 7 FeV, 2.1 (cf. Annex 7 FeV, 2.5.1), i.e.

- “Technical preparation of the vehicle”,
- “Vehicle function checks/Manual skills”,
- “Coupling and uncoupling of the vehicle”,
- “Basic driving manoeuvres” and
- “Test drive”,

could not be structured differently to improve the methodical systematics, whereby the five independent test elements could be condensed into just three elements, i.e.

- “Technical preparation and completion of the drive, basic driving manoeuvres and test drive”,
- “Vehicle function checks/Manual skills” and
- “Coupling and uncoupling of the vehicle”.

In this connection, it can be said that there is no legal impediment to a summarising of test tasks for the assessment of test performance, provided this is done on the basis of professional considerations and not arbitrarily. As no evidence exists or is otherwise known to suggest non-professional foundations or arbitrariness, there is also no reason for objection from the legal point of view.

The same applies, by the way, to the question as to why “Technical preparation of the vehicle” is named as an independent test element (cf. Annex 7 FeV, 2.1.1), while “Technical completion of the drive” is not an independent test task and is instead listed as one of a total of fifteen test aspects under the heading “Test drive” (cf. Annex 7 FeV, 2.1.5). The evaluation and classification of “technical preparation” and “technical completion” as independent or non-independent elements of a test is similarly first and foremost a professional question, which is only subsequently to be subjected to legal assessment. From the professional point of view, this is evidently reasonable; here, too, no grounds for legal objection are to be seen.

Modification of the test contents and redefinition of the delimitation between the theoretical and practical driving test

A further difficulty arises from the fact that the completion of certain test and driving tasks in real traffic is dependent on the presence of a corresponding traffic situation: If only little traffic is encountered on a motorway, for example, it is not possible to test either overtaking or the merging from a slip-road.

A computer-based test would enable the simulation of such imperative traffic situations which are not necessarily to be encountered in the available real traffic environment. It is thus to be considered whether the computer-assisted system envisaged for the theoretical test could not be used with dynamic traffic scenarios as a basis for the testing of tasks relating to the aforementioned traffic situations. This would naturally involve a new legal definition and delimitation of the theoretical and practical test sections – initially, however, it is again a professional question.

Modification of the test duration

It seems evident, on the one hand, that the times specified in Annex 7 FeV, 2.3 are rather short if the examiner is to take into account all the demands relating to a proper test, as described in Chapters 1 to 5. On the other hand, the multitude of tests to be performed daily or over the course of the year forces us to accept practicable compromises.

Changes relating to test locations

In Chapter 5.4, methodical demands were raised concerning the adequate significance and representative nature of the test contents. From the legal perspective, this relates to the designation of test locations. In the Driving Licence Regulations (FeV), it is specified that a driving test is to be conducted in the vicinity of the candidate's place of residence or education: In accordance with § 17 (3) sentence 1 FeV, the candidate is required to take the practical test either at the place of his (principal) residence or else at the place at which he is attending school or vocational training, studying or has his place of employment. If these places are not test locations, then the test is conducted instead at a "nearby test location" stipulated by the licensing authority in accordance with sentence 2. In exceptional cases (sentence 3), finally, the licensing authority may also permit the driving test to be taken at a different test location.

The designated test location is of significant interest in respect of a route- and location-specific operationalisation of the test tasks, and the associated opportunities to reduce the numbers of accidents involving novice drivers. The critical methodical appraisal has already been subject of this report (see Chapter 5.4, "Regio-Protect 21"), leaving the legal status to be clarified: The incorporation of local accident black spots and regionally specific hazards into the practical test also corresponds with the intentions of the legislator, namely that a learner driver, where possible, should be trained and examined at the place where he will be participating in traffic for the most part after obtaining a driving licence (cf. grounds for § 17 (3) FeV in Verkehrsblatt 1998, p. 1073).

There are two options open to the local licensing authority to realise this administratively in the aforementioned sense:

- According to § 17 (3) sentence 2 FeV, the authority is able, in an individual case, to specify that a test be conducted at a "nearby test location", if the accident black spot concerned is not covered by the normal test location in accordance with sentence 1.
- Otherwise – if sentence 2 is unable to provide a solution – the authority can also specify any other suitable test location in accordance with sentence 3.

If none of the available test locations incorporate the particular accident black spot, § 17 (4) sentence 4 FeV empowers the supreme state-level authority or another authority nominated by the supreme authority to modify the existing test locations (new boundaries) or to designate new test locations. If deemed necessary, finally, the legislator could provide a general sign by introducing an additional criterion “Local novice driver accident black spots” in § 17 (4) sentence 3 FeV.

Methodical systemisation of observation categories, assessment criteria and decision criteria

Following the argumentation of Chapter 5.1, the practical driving test is to be considered a “process-oriented holistic examination method” within the method category “work sample”. Translated to the subject area “motorised road traffic”, this means that representative test tasks relating to the driving of a motor vehicle must reveal whether a driving licence applicant satisfies the demands placed on a driver by traffic reality. Legal aspects of the selection and specification of test tasks have already been discussed (see above). The test tasks represent a basis for a “responsible test decision” on whether and how the candidate has mastered the set tasks. To facilitate this decision, and in the interest of objectivity, test equity and a methodically meaningful test evaluation, it is necessary to specify an appropriate structure, which is here realised in the specification of “observation categories” and “assessment and decision criteria”.

Observation categories are already today contained in Annex 7 FeV, 2.1.5 and in the Examination Guidelines (Annex 3 for the basic driving manoeuvres and Annex 10 for the test drive), and are not seldom seen to coincide with particular test tasks. By way of the observation categories, the attention of the driving test examiner is to be focussed on particular aspects of the candidate’s behaviour when performing the test tasks (cf. Chapter 5.5.2). This also serves to prepare assessment in accordance with the assessment criteria, by increasing the examiner’s awareness not only of the traffic situation, but also of the test situation.

The specifications of observation categories are aimed primarily at the examiners, but are also of special interest to the candidate, as they indicate how he can perform the test tasks successfully. It is only natural that the candidate should want to know what is stipulated by the observation categories, what the examiner will be observing and to which aspects of behaviour his particular attention will be directed: After all, the goal for the candidate is to pass the test.

In Chapter 5.5.2, it is proposed that the observation categories be reorganised independently of individual test or driving task situations. The recommendation is to define the following five categories, which could in future be applicable to all test tasks: “Vehicle control”, “Traffic observation”, “Speed adaptation”, “Vehicle positioning” and “Communication and adaptation to traffic”. This new concept is to be welcomed, because the observation categories would then in future be differentiated clearly from the test tasks, and furthermore appear both less complex and easier to handle.

Assessment criteria, i.e. regulations pertaining to performance assessment, are today to be found in Annex 7 FeV, 2.5.1 and in the Examination Guidelines (PrüfRiLi 5.17.1 and Annexes 2 to 9); specific definitions of “Behaviour to be assessed as an error” are given at various points. The assessment standards are geared exclusively to errors or negative performance, with a distinction being made between “serious errors” and “simple errors”, i.e. errors which are not classified as serious in the sense of the regulations. It is true that the introductory remarks under PrüfRiLi 5.17 state that “positive aspects of performance are to be honoured”, though this is subsequently qualified restrictively by PrüfRiLi 5.17.2.1, according to which the test is to be deemed failed if any of a list of serious errors is observed

“irrespective of otherwise positive performance”. This notwithstanding, it is left to the individual examiner to decide whether any positive behaviour is to compensate less positive performance aspects in a particular case. There are no legal reservations regarding this system of assessment.

It is even suggested, furthermore, that assessments of good performance be recorded, for example in Chapter 5.5.3, where the systematic proposal is to integrate a rating of “excellent” for good performance, albeit without intending to invalidate the existing decision rules for passing or failing of the test. The following remarks are pertinent in this context: Such ratings would not translate into tangible benefits for the candidate. The decisive factor for the granting of a driving licence is simply whether the test is passed or failed. There would also be no bonus for an “excellent” test candidate in connection with the demerit points system or fines imposed for traffic offences.

Another topic is the way in which negative performance is to be assessed. Generally speaking, the existing assessment criteria have already proved practicable over several decades, and the associated balance between assessment rules and scope of judgement on the part of the examiner is well-established (see Chapter 5.5.3). The assessment of individual test tasks, however, has been criticised. According to Annex 3 to the Examination Guidelines, for example, the practical test is not passed if the candidate fails to complete a basic driving manoeuvre correctly even after a second attempt, for which purpose even the need for more than two corrections of alignment when manoeuvring the vehicle into a parking space is to be counted an error leading to failure (see also the criticism expressed in Chapter 5.5.3).

This criticism is justified. In Chapter 6.3, attention is drawn to the fundamental value system underlying traffic legislation, as expressed in § 1 (2) of the Road Traffic Regulations (StVO). The primary goal is to avoid the harming or endangering of other road users (in particular, therefore, the prevention of accidents). The averting of obstruction and inconvenience is only mentioned as a secondary concern. Correct parking is naturally important, and incorrect execution may in extreme cases also result in damage to other parked vehicles; even so, the danger potential of parking errors on a car park is by no means comparable to that of errors occurring in moving traffic. Repeated errors when parking, therefore, should not automatically lead to failing of the test; the candidate should at least be able to compensate this error with a good performance during the test drive.

A reformulation of the Examination Guidelines should thus also be based on a thorough review of the overall relationship between the test drive and the basic driving manoeuvres in terms of the assessment criteria, and that with a particular view to the objectives which are defined for the whole road traffic legislation in § 1 (2) StVO. In this connection, it is necessary to note critically that the Examination Guidelines, despite the considerable detail in their listings of errors, offer no grounds for the assignment of driving errors to one or other of the two categories of incorrect behaviour (simple or serious errors). It is true that, unlike laws and ordinances, guidelines are not necessarily required to specify grounds, but they can nevertheless be complemented with introductory remarks or explanatory annexes, where corresponding occasion is seen. The standing of new examination guidelines pertaining to driver licensing would also benefit from the inclusion of such notes or explanations on important points, such as the grounds for the assignment of behaviour errors to a particular error category.

Regarding the decision criteria, it is to be noted, in accordance with Annex 7 FeV, 2.5.2, that the observation of any serious error, or else the repeated occurrence or accumulation of different errors which, as single errors, are generally not yet reason for failure, result in the test not being passed. In the Examination Guidelines (PrüfRiLi 5.17.2), examples are

given for the errors which lead to failure in case of repeated occurrence or accumulation. The fact that the list of examples is not conclusive, alongside the lack of an explanation of what is to be understood by “repeated occurrence” and “accumulation”, leaves the driving test examiner a certain scope of judgement in the way the guideline is applied.

The classification of the individual test tasks in accordance with Annex 7 FeV, 2.5.1, defining three separate test elements, which are then also to be assessed separately as factors contributing to the test decision and at the same time carry very different weight, is no doubt intended to serve better practicability in test realisation, but is also not to be questioned from the legal point of view. As even a successful candidate is not to be deemed a “complete” driver (he still lacks “automation” in his recognition and judgement of complex traffic situations and in his actions leading to problem solution), the test decision always incorporates also a forecast of the candidate’s future behaviour in road traffic (see Chapter 5.5.4). The recommendation expressed in Chapter 5.5.4, namely that the decision-relevant rules and factors be bundled in a single algorithm and moulded into a more concise form, is to be endorsed, as it establishes a sounder basis for professional test decisions.

The decision on failure of the driving test is not an independently challengeable administrative act. The examiner may indeed be performing a sovereign duty, but he is nevertheless acting solely as an advisory expert for the licensing authority, and his judgement on the candidate’s qualification to drive a motor vehicle serves only to prepare the authority’s rejection of the licence application. From the legal point of view, it is the rejection of the licence application on the basis of a failed driving test which constitutes the administrative act which can be legally challenged before an administrative court (generally held opinion, cf. Bouska & Laeverenz, note 15e on § 2 StVG).

Test documentation

An answer to questions relating to the pertinent contents and scope of test documentation is dependent on the purposes to be served by such documentation. From the legal point of view, it is for both the licensing authorities and the individual candidate sufficient to document and record failed tests: The vast majority of the candidates who pass the test and thereby obtain a driving licence will probably have no real interest in the recording and filing of their positive test results. The legal evaluation is somewhat different, however, if the documentation is to fulfil a particular different purpose, e.g. further development of the driving test or quality assurance. In such a case, the recording of positive results, possibly with a corresponding rating and supplementary notes on relevant test circumstances, may be deemed expedient from the professional point of view and thus legally founded.

Replacement of organisation-specific compendiums by a universally applicable manual on the practical driving test

Compendiums and manuals (see Chapter 3.1.1) belong to the category of “Test procedures and briefings” and can thus be viewed legally as a fourth independent group of specifying rules alongside laws, ordinances and guidelines. At present, it is evidently the case that each Technical Examination Centre works with its own manual or compendium. In this context, it can be asked whether a common manual would not be better in the interest of test equity and the application of equal standards. A first step in this direction has already been taken with the elaboration of a draft for a manual relating to the theoretical driving test by the TÜV/DEKRA arge tp 21 working group (2008).

Streamlining of regulations and improved clarity

The lack of clear and precisely structured rules is demonstrated in the stipulations on test location and test route. The legal basis established by § 17 (4) sentence 1 FeV, which specifies that the test is always conducted both within and outside built-up areas, can still

be deemed acceptable. This is followed by sentence 2 of § 17 (4) with the brief words: “Details are specified in Annex 7”. The subsequent sentence 3, however, contradicts the statement of sentence 2 and goes on to define the term “test location”, albeit only for the section of the test within built-up areas. Sentence 4 also concerns itself with the “test location” and specifies that the competent state authority designates the test locations for its sphere of responsibility (naturally observing the criteria of sentence 3). Sentence 5, finally, contains specifications for the section of the test outside built-up areas, to the effect that it is to be conducted outside built-up areas in the surroundings of the test location, “including a section of motorway, if possible” and permitting the examination of “all significant driving procedures also at higher speeds”. The reader will then return to sentence 2 and turn his attention to Annex 7, where he expects to find “details” specified. At the relevant place in that annex, he is initially confronted with a new term as the paragraph heading, namely “Test route”. Sentence 1 of Annex 7 FeV, 2.4 describes what is to take place on “test routes outside built-up areas” (namely “approximately half of the pure driving time [...] where possible including also motorways or high-speed roads, [...]”). Sentence 2 returns to the “built-up areas” and specifies that tests for the Classes M and S are to be conducted “predominantly” in those areas. In sentence 3, finally, it is stipulated that the test for Class T can also be conducted at locations which are not test locations in the sense of § 17 (4).

The above examples illustrate the urgency of a reformulation of the regulations. In this context, it is recommended that the present sentences 1 and 2 under § 17 (4) FeV be left unchanged, and that all other stipulations be transferred to the corresponding paragraph in Annex 7.

6.3 Demands on amendments to the statutory provisions

Statutory provisions must be suitable, necessary and appropriate (i.e. also reasonable and not arbitrary) as means to achieve a specified or defined purpose. At the same time, they must be definite (i.e. clear and unambiguous stipulations) and founded on an adequate legal basis. The authorisation for the introduction of legal instruments, here specifically the Driving Licence Regulations (FeV), is assigned in the German Road Traffic Act (§ 6 (1) 1 StVG), in particular under

- letter “e)” (test of qualification, in particular the admission to testing and the content, structure, methods, assessment, procedures, decision and repetition of tests, as well as the appraisal of new test methods)
- letter “f)” (testing of an environment-aware and energy-saving manner of driving)
- letter “k)” (quality assurance, accreditation by the BAST).

At the level of ordinances, the proposed amendments concern the Driving Licence Regulations (FeV) and the Implementing Regulations on Officially Recognised Experts and Examiners for Motor Vehicle Traffic (KfSachvV). In detail, the impact is dependent on whether and how the corresponding proposals and recommendations are taken up. Amendments to the Driving Licence Regulations would result from modification and tighter structuring of the test tasks and observation categories, revisions to the assessment and decision rules, and an improved basis for test documentation. Attention should also be paid to improved clarity and streamlining of the provisions contained in the Driving Licence Regulations and the Examination Guidelines. Finally, the contents of the Examination Guidelines must be revised accordingly.

In the context of the outstanding professional deliberations and the subsequent legal implementation of all proposed amendments, it is to be kept in mind that the general purpose of traffic-related statutory provisions is to prevent accidents and burdens on the environ-

ment. This principle is also expressed in § 1 (2) StVO, according to which no road user is to be harmed or endangered, or otherwise obstructed or inconvenienced to a greater extent than is inevitable under the circumstances. This characterises a value system whose primary and predominant goal is the unconditional avoidance and prevention of harm to or the endangering of others (in particular, therefore, the prevention of accidents). The content of § 1 (2) StVO is thus not only a general clause defining conformant behaviour, but also a value decision for all road traffic legislation.

Dietmar Sturzbecher, Susann Mörl & Jan Genschow

7 The German practical driving test in international comparison

7.1 Objectives of the comparative analysis and approach

As already defined as an overall objective (see Chapter 1.2), the project “Optimisation of the Practical Driving Test” was also aimed at elaborating the particularities and potential for optimisation in the contents and methods of the practical driving test in Germany by way of an international comparison. The focus was here placed on a comparative inventory and methodical reflection on the implementation quality of the practical test, in other words the organisational framework, the test contents, test assessment, test documentation and test evaluation. A diversity of sources and research strategies were used to determine the corresponding circumstances in selected other countries and are to be outlined briefly in the following.

One important source was the research report “Theoretical and Practical Driving Tests in Europe” (Bönninger, Kammler, Sturzbecher & Wagner, 2005), which was published under the present project in 2005 and contains descriptions of the driving tests conducted in a total of 28⁵³ European countries. To ensure that the information obtained from those countries was as up-to-date as possible, the research began with a series of Internet searches in 2004; at the same time, the institutions responsible at national level for the further development and practical realisation of driving tests were ascertained. These institutions included not only government ministries and their subordinate offices, but also private testing organisations which assume tasks in certain fields on behalf of the state authorities. Experts from these institutions were contacted and surveys were conducted both through phone calls and in written form. A summary of the information gathered is presented in the following Chapter 7.2.

To be able to take into account further developments of the practical driving test since the time of that systematic survey in 2004, the present report was preceded by further research to identify those European countries in which corresponding changes have been implemented. This research revealed interesting test models and methodical solutions in a number of countries. In Norway, Sweden and the Netherlands, in particular, there has been significant modification and further development of the test procedures over the course of the recent years. Consequently, staff responsible for methodical development of the practical test at the test organisations in these countries were consulted. Within the framework of these consultations, it was also possible to sit in on test drives as an observer. The results of these more detailed international exchanges are described in Chapter 7.3.

The form and function of the practical driving test are probably dependent on its assigned status within the system of novice driver preparation in the individual country, i.e. whether the practical test is integrated into a pedagogically ambitious (driving-school-based) system, as to be found above all in Scandinavia and Western Europe, or whether it is seen as a

⁵³ The countries concerned are: Belgium, Denmark, Germany, Estonia, Finland, France, Greece, Ireland, Croatia, Latvia, Lithuania, Luxembourg, Monaco, the Netherlands, Norway, Austria, Poland, Portugal, Russia, Sweden, Switzerland, Slovakia, Spain, the Czech Republic, Turkey and Hungary. The situations in England, Scotland and Wales were also examined, albeit together as Great Britain; Northern Ireland was treated as a separate test region, as a different organisation is there responsible for driver testing. No information was available from Slovenia or Bulgaria at the time of the report.

component of a graduated licensing system, as especially widespread in Australia and North America, where less importance is attached to professional driver training and elements of informal and co-educative learning predominate. Against this background, some first steps were taken to investigate the current situation of the practical driving test in countries outside Europe⁵⁴. These studies were based exclusively on document analyses; the corresponding results are presented in Chapter 7.4. The concluding Chapter 7.5 then comprises a brief summary of the inspiration for further development of the practical driving test in Europe to be drawn from the international comparison.

7.2 The practical driving test in Europe

7.2.1 Organisational framework

Test participants

In Germany and in all other European countries⁵⁵ with the exception of Slovakia, the practical driving test is generally conducted in the form of an individual test, although in Austria and Poland, where the examination of the basic driving manoeuvres takes place at a special training ground, this particular element of the test is organised as a group test. In Germany, too, it is permissible to conduct the test as a group test rather than as an individual test, insofar as all the participants concerned agree; group testing is furthermore an optional alternative to individual tests in Estonia, Croatia, Monaco, Portugal and Russia. Slovakia is the only country in which exclusively group tests are possible.

The combination of two consecutive test drives for different candidates, as is also possible in Germany, offers the methodical advantage that it is possible to incorporate more distant route sections in the surroundings of the test location to permit the examining of particular driving tasks (e.g. sections of motorway). This appears especially important where the prerequisites for the examining of such driving tasks are not to be found within the test location and its immediate surroundings. It must be noted, however, that the overall duration of the test is extended and, under certain circumstances, the stress experienced by the individual test candidate will be greater in the case of a group test. In Germany, therefore, it is the candidate's free choice, whether he is prepared to take the test together with a second candidate. As the corresponding decision of the candidate is not always foreseeable, and may even change immediately before the test drive, this rule hampers the efficient planning of test drives, with the result that group tests are actually seldom in Germany – despite the associated methodical opportunities.

One reservation from the methodical perspective is the fact that, in the case of a group test, the test conditions differ from those of an individual test, and influences on the test results cannot be excluded: The accompanying second candidate could distract the other test participants, for example; he has a better opportunity to adapt to the examiner's test strategy

⁵⁴ As a means to determine the latest state of international developments with regard to the training and testing of learner drivers, the Federal Highway Research Institute (BASt) is currently working on a project entitled "Novice driver preparation in Europe", which includes both consultations with experts and document analyses. The product is to be a comparative study of the different systems of novice driver preparation; this study is to be based on a previously defined conceptual framework, elaborated in accordance with the employed concepts of modern education research. The research results serve as a foundation for the identification of those elements of novice driver preparation whose standardisation would be desirable in the course of further European harmonisation. To be able to assess the prospects for harmonisation, traffic and traffic policy experts are also to be consulted.

⁵⁵ For the purposes of this chapter, "European countries" is understood to refer to the 28 countries subject of the research report "Theoretical and practical driving tests in Europe" (Bönninger et al., 2005).

and style of interaction; he may be able to overcome his test anxiety during the waiting time, or else his anxiety could be heightened; a diversity of further factors affecting test equity appear conceivable. It is not least possible that group tests could encourage a direct comparison of the two candidates by the examiner and thus foster observation and assessment errors during the second test in the sense of reference and ranking effects (see Chapter 2). If an individual candidate fears a corresponding disadvantage from a group test, then he is not compelled to agree to this form of testing. In this respect, the present German procedure seems to be methodically sound.

In almost all European countries, including Germany, the practical driving test is conducted by a single examiner. Exceptions are Greece and Turkey, where there are always two examiners present. Further research is here necessary to obtain information on the professional qualification of the additional examiner and his function during the test.

From the methodical point of view, the presence of a second examiner during a test based on systematic behaviour observation contributes to the objectivity of the test assessment and decision, and furthermore to critical methodical and professional reflection of the test itself. The reliability and validity of such a test are thus enhanced by the participation of a second observer (Kanning, 2004; see Chapter 2). Given the particular test conditions in the test vehicle, however, it seems hardly practicable to implement this methodically meaningful instrument of quality assurance for behaviour observations. This conclusion is not only a reference to the limited space in the test vehicle, which hinders documentation of the course of the test. It is furthermore to be remembered that the possibilities for observation for a second examiner, who would be required to sit behind the test candidate, are restricted, and his observation results would thus be only conditionally comparable to those of the first examiner. It is likewise questionable, whether the two observers would be able to work independently of each other, as demanded by Kanning (2004), or whether their views would not actually be combined, with a corresponding accumulation of their observation errors. There is consequently doubt as to whether the expected methodical advantage of a second examiner would be achieved; it is furthermore difficult to justify the probable additional cost to be borne by the test candidate.

In Germany, it is prescribed that a driving instructor participate in the practical driving test (see Chapter 5.3), though this need not necessarily be the instructor who trained the test candidate. Eleven other European countries also require the participation of a driving instructor; in most of the other countries, participation is either left to a decision of the driving instructor, or else permitted at the wish or request of the test candidate. Two exceptions are Ireland and Lithuania, where the presence of a driving instructor during the test is not permitted. The seating of the examiner in the test vehicle is dependent on whether or not a driving instructor participates: Where the participation of a driving instructor is required, he will generally also assume the role of responsible operator of the vehicle, while the examiner controls, observes and assesses the test from the rear seat. If the participation of a driving instructor is not prescribed, the examiner will also act as responsible vehicle operator from the front passenger seat, and thus fulfils two functions simultaneously.

It is here a logical question to consider which of the alternatives is to be preferred from the methodical viewpoint. When seeking an adequate answer, it is above all necessary to weigh up the advantages and disadvantages of the two models with regard to the different observation possibilities and the different assignments of functions.

As far as the possibilities for observation are concerned, the general visibility from the passenger seat is in certain respects better than from the rear seat: The front-seat observation position permits reconstruction of the traffic situation from practically the same perspective as the test candidate, and thus enables situatively appropriate assessments of any

perceived obstruction or endangering of other road users, which is not least of particular significance for the test decision. An observation position in the rear of the vehicle, by contrast, limits the examiner's possibilities to observe assessment-relevant circumstances in the surrounding traffic environment. This is not necessarily the case in respect of observations within the vehicle, as the controls and instruments above all in newer vehicle models are arranged such that they cannot be seen from the passenger seat. In addition, the candidate's head movements ("over-the-shoulder glance") can be observed better and less conspicuously from the rear seat. All in all, however, it can be said that an examiner observation position in the front passenger seat would appear to offer certain methodical benefits.

There is no opposing the fact, on the other hand, that the front passenger seat must be reserved for the person acting as responsible vehicle operator, given the aforementioned better possibilities for observation and their relevance for vehicle and traffic safety. An examiner who sits in the front passenger seat gains his significantly improved possibilities for observation at the expense of assuming a second function during the test: He becomes responsible not only for the professional and methodical quality of the test, but also for the safety of the vehicle. If we refer once more to the thoughts expressed in Chapter 5.5 regarding the demands of an adaptive test strategy, then it becomes clear that an expansion of the examiner's sphere of responsibility has serious consequences: The cognitive resources available for the examiner to plan and structure the demand situations shrink dramatically; he must rely on the demand structures inherent to the test location. Furthermore, he has little time to interpret observations and to reflect his assessments and their grounds. Documentation of observations, assessments and the course of the test are hardly possible; the examiner must even make mental note of any errors observed, so as to be able to document them at some subsequent opportunity.

Summarising from the methodical perspective, it can be said that the participation of a driving instructor in the practical driving test may help the test candidate to overcome test anxiety and avoid uncertainty in his driving. It thus seems beyond doubt that the possibility for the driving instructor to accompany the test is desirable, especially if the candidate so wishes. It remains to be considered, however, whether the driving instructor should also occupy the front passenger seat in the function of responsible vehicle operator. In our view, the important and improved possibilities for observation for an examiner sitting in the front passenger seat indeed represent a significant argument against such a solution; on the other hand, they cannot fully outweigh the impressive diagnostic opportunities embodied in the decoupling of the roles of examiner and responsible vehicle operator. For our present test circumstances, this decoupling unfortunately means that the examiner must take a rear seat in the vehicle. Through this methodical position, however, we establish possibilities for an adaptive test strategy, and at the same time comply consistently with the quality demands placed on systematic behaviour observations by psychological testing: Observers should preferably not participate actively in the observed situation (Kanning, 2004). In our case, this means that the examiner's influence on the course of the test is to be essentially limited to the specification of test tasks.

Test vehicle

In most European countries, as also in Germany, the test vehicle is effectively made available by the driving school, although there are certain differences in the national legislation regarding responsibility for the provision of a test vehicle. There are only a few countries in which vehicles belonging to the organisation conducting driving tests are used as test vehicles (occasionally in Estonia and Latvia, exclusively in Poland and Lithuania). Which solution is to be given preference from the methodical point of view?

Supporters of the provision of a test vehicle by the organisation conducting the test generally base their argumentation on objectivity aspects and legal considerations, though these arguments only appear convincing at first sight: It is true that the specification of a test vehicle by the examining organisation represents standardisation of the outward test conditions; at the same time, however, the test conditions become even more diversified from the perspective of the individual candidate, as he is now required to take the driving test in a vehicle which is to a greater or lesser extent similar to his training vehicle, and is thus faced with a variable scope of new demands during the test. Since it is hardly feasible to standardise also the training vehicles in a market economy, standardised test vehicles are also unable to achieve test equity. If each test candidate is permitted to use his own training vehicle, by contrast, then the general test conditions are actually the same for all candidates, even if they are using very different test vehicles.

The use of the candidate's training vehicle serves additionally to enhance the validity of the practical driving test, because a driver will generally also later choose to drive a vehicle with which he has already gained a certain degree of experience. Adaptation to a new vehicle is a demand which most drivers are required to master only a few times in their life, and for which they will often take advantage of professional support (e.g. the sales personnel when purchasing a new vehicle) and "protected spaces" in the sense of roads with only little traffic. Why, therefore, should adaptation to a new vehicle be operationalised as a demand of the driving test by confronting the candidates with unaccustomed test vehicles? In our opinion, this methodical position also stands up to the legal counter-argument that the holder of a driving licence is after all entitled to drive any vehicle of the corresponding class: The described situation may give no reason for legal objection, but it is not conformant with the reality of road traffic.

The discussion concerning the provision of test vehicles will no doubt gain new topicality in future, when technical advances, and here in particular the availability of driver assistance and accident avoidance systems, force re-evaluation of the test contents (see Chapter 5.4). This aspect, however, has played no role in the research conducted to date.

Test duration

The total duration of the practical driving test in the European countries under scrutiny is generally specified as a guideline and lies between 25 and 70 minutes. This duration includes the stipulated "pure driving time", which varies between 15 and 55 minutes; in the methodically progressive countries, the pure driving time usually lies towards the upper end of this range. With a test duration of 45 minutes and a pure driving time of 25 minutes, Germany ranks in the mid-range with regard to the total test duration, but lies at the lower limit for "time spent driving on the road" as specified in Annex II to the EC Directive on Driving Licences. The fact that consistent and methodically sound implementation of an adaptive test strategy also demands time, and furthermore that a longer duration permits the test candidate to overcome text anxiety and driving uncertainty (see Chapter 5.3), indicates that a higher minimum driving time should be stipulated in Germany.

7.2.2 Test contents

Technical preparation of the vehicle

The test element "Technical preparation of the vehicle", as stipulated for the German driving test (see Chapter 5.4), is together with the integrated vehicle safety checks similarly a component of the practical driving test in the majority of the other European countries. The individual points are usually examined in the form of a random selection, and are in many cases accompanied by questions posed by the examiner. The safety checks relate above all to checking of the brakes and signal lamps. In Germany, and likewise also in the Nether-

lands, Sweden, Switzerland and Spain, this part of the test includes also checking of the state of the tyres and checks of the lights, steering and signal horn of the test vehicle. In Germany, the Netherlands and Switzerland, the candidate should furthermore be able to check the proper filling levels of engine oil, coolant and windscreen washer fluid. During the vehicle checks to be performed in Norway, the candidate must answer questions as to the necessity for certain safety checks and how they are made, name possible faults in the corresponding vehicle systems, and then give information on how such faults can be rectified.

As already pointed out in Chapter 5.4, further development of the practical driving test in Germany must consider the extent to which the above and other aspects of the test contents are to be deemed safety-relevant: Contents with no particular reference to traffic safety occupy test time and may furthermore lead to the candidate viewing also other test contents as not directly important in terms of safety (see above). If the practical test is to realise the didactic intention of enhancing the candidate's awareness for safety and his responsibility towards other road users, then it is necessary, as is the case in Norway (see Chapter 7.3), to provide sufficient time during the test; if this is neglected, the examining of technical knowledge during the practical test is implemented at the expense of actual driving time.

Basic driving manoeuvres

Annex II to the EC Directive on Driving Licences defines special elementary driving manoeuvres⁵⁶ for the practical test ("Parking", "Turning the vehicle to face the other way", "Reversing around a corner", "Braking accurately to a stop or emergency braking"), of which at least two are to be chosen at random and examined; one of the two chosen manoeuvres, in turn, must involve use of the reverse gear. From the European comparison, however, it becomes evident that there are significant differences between the individual countries covered by the study with regard to the basic driving manoeuvres which are actually examined and, where appropriate, how the required manoeuvres may be selected for or by the test candidate. In Germany, all the aforementioned basic driving manoeuvres are selectable components of the practical driving test, although the manoeuvre "Braking accurately to a stop or emergency braking" here involves only a demonstration of emergency braking, but not accurate stopping at a previously specified point. Nine other countries also provide for the examination of all the basic driving manoeuvres described in Annex II to the EC Directive on Driving Licences. Among the least frequently examined basic driving manoeuvres are "Reversing around a corner" (no doubt because it is often practised as a component of turning the vehicle to face the other way) and "Braking accurately to a stop or emergency braking".

It is furthermore to be noted from the methodical point of view that, with only one exception, all countries examine at least two basic driving manoeuvres, and in some countries the manoeuvres to be performed are determined by the candidate drawing lots. As far as the number of basic driving manoeuvres to be examined is concerned, European harmonisation appears to have been successful, and the drawing of lots to determine the basic driving manoeuvres to be examined can be seen as a positive contribution to objectification of the test and to the reduction of test anxiety. While most European countries, including Germany, examine the basic driving manoeuvres in the real traffic environment, albeit on roads or other areas with a low traffic density, six countries stipulate the successful com-

⁵⁶ In the EC Directive on Driving Licences, such manoeuvres are designated "special manoeuvres to be tested"; in the following, however, the term "basic driving manoeuvres" used elsewhere in this report is to be maintained.

pletion of the designated basic driving manoeuvres at a separate training ground as a prerequisite for continuation of the test in real traffic. The examination of the basic driving manoeuvres in real traffic is in our view more concurrent with the intention of a realistic driving test, and thus the demand for ecological validity, than a test conducted on a training ground, at least where the driving test represents the conclusion of a substantial programme of driver training.

An international comparison reveals a number of other basic driving manoeuvres which, although only very seldom examined, could perhaps provide inspiration for the further development of this test element. Such manoeuvres include “Driving forwards or reversing through a slalom course”, “Driving off on an incline”, “Parking on an incline” and, last but not least, “Driving through bends”. As errors when driving through bends represent a typical cause of accidents involving novice drivers, this could be seen as a source of development potential for the practical test. On the other hand, control of the vehicle on roads with bends is already observed as a driving task during the test drive.

This example illustrates that further development of the test contents must incorporate fundamental pedagogical-didactic reflection on the appearance and function of the individual training and test elements within the framework of a demanding system of novice driver preparation, as targeted by the current BAST project “Novice driver preparation in Europe” (see above). The importance of this fundamental reflection is also demonstrated in the fact that the relevance and significance of the basic driving manoeuvres cannot be inferred from their contents alone, but is instead only to be recognised from the context of their embedding into an overall test situation: If, for example, a particular country examines an above-average number of basic driving manoeuvres during a test drive with a duration of only 20 minutes, then it must be feared that valid assessment of the candidate’s driving competence in real road traffic will suffer accordingly.

Test drive

Compared to the situation on a separate training ground, the circumstances of real traffic are less foreseeable, with the result that higher demands are placed on both the test candidate and the examiner. Furthermore, the level of the demands faced by the examiner and the candidate in real traffic can be expected to be higher on a flexible test route than on pre-defined standard routes: Where the test route remains flexible, the examiner can only plan the individual test tasks during the actual drive; for the candidate, in turn, the test demands of a flexible route, being defined successively by the examiner in response to the immediate test situation, are significantly more difficult to anticipate than those of a fixed test route. This applies especially where the pre-defined standard routes have been published and can thus be practised intensively beforehand.

In Germany and another 15 European countries, the test drive is realised on flexible routes in real traffic; the examiner here generally specifies the test route step by step in accordance with a more or less adaptive test strategy. In a few, still relatively seldom cases, navigation systems are used to determine sections of the test route. From our point of view, this represents a promising opportunity to combine the objectivity benefits of a standard route for certain sections of the test drive with the merits of an adaptive test strategy (see Chapter 7.3). In the remaining countries, which still means in two in five of the countries studied, each test centre or test location maintains a certain number of pre-defined standard routes, from which the route for an individual test is either selected by the examiner or else determined randomly by the drawing of lots. It can be assumed that these fixed routes and the corresponding test demands are to an extent already known to the candidates long before their driving test; consequently, some countries have adopted rules which provide for regular replacement of the standard routes (e.g. in Norway, see Chapter 7.3).

Alongside the predictability of the test route, it is above all the type and number of the driving tasks to be expected along the course of a test route which are decisive for the level of the demands placed on the candidate. These driving tasks, insofar as they are derived from the demands of traffic reality, can be specified by way of a candidate-oriented minimum demand standard and/or in the form of particular standard demand profiles for test routes or test locations (see Chapter 5.4); in the latter case, the specifications of driving tasks for a particular practical test are to be understood as factors determining a desired probability.

Specifications of the demands to be addressed along the course of a particular test route exist in all the European countries studied, though there are significant differences in scope and in the detail in which the required attributes of a test route are defined; these differences then lead to correspondingly different test demands. In one group of countries, representing approximately half of the countries covered by the study, there are only very general specifications of the demands on a test route. Typically, the regulations in such countries stipulate that the test drive should present an adequate diversity of driving situations or permit examination of the most important aspects of driving behaviour; this is occasionally accompanied by the more precise requirement that the route should include sections both within and outside built-up areas. In a few rare cases, such general route demands are supplemented with the specification of a particular route length or traffic density parameters. In our view, neither such general route descriptions nor route length specifications satisfy the methodical quality demands which are to be placed on a meaningful practical test and its demand standards.

In the remaining half of the European countries studied, the demand standards are described relatively precisely in the form of driving tasks or demands to be placed on test locations. These demand standards differ in their contents, though a number of particular demands, for example marked and unmarked crossroads and junctions, one-way streets, roads with bus lanes, roads with pedestrian crossings, inclines and declines, roundabouts, roads crossed by tram or railway lines, roads with varying traffic densities and streets in which priority must be given to pedestrians and cyclists, are to be found very frequently. In most cases, the licensing systems in these countries also attempt to reflect the traffic and safety relevance of the aforementioned demands in their standards by specifying certain frequencies for the occurrence of an individual demand during a test or over the course of a particular number of tests.

An even higher degree of European harmonisation in respect of demand standards is the aim of those countries within the described group which already adapted the contents of their national standards explicitly to the specifications of the EC Directive on Driving Licences⁵⁷ in 2004. The specifications serve as a target definition for all EU member states, the binding nature of which was discussed in Chapter 3. These targets are also to be observed in connection with further development of the practical driving test in Germany, even though satisfaction of the demands raised in the present report with regard to scientific foundation and the content-specific and methodical systemisation of the test standards (see Chapter 5) is not readily recognisable. Further starting points could be derived from the demand standards in Switzerland, where the individual demands are described not only by way of local conditions, but also with reference to the time of day and the weather conditions and traffic density prevailing during the test. Overall, the international comparison shows that a professionally adequate and systematic description of the demand standards is still to be tackled in other national driver licensing systems besides Germany, and that an appropriate differentiation of candidate-oriented driving tasks and local test prerequisites is similarly yet to be accomplished.

7.2.3 Test assessment

Observation categories

It is to be mentioned first of all, that almost all the European countries studied have elaborated specifications of the attributes of candidate behaviour to be considered and observed by the driving test examiner. In many cases, situation-independent general observation specifications also exist in the sense of our recommended observation categories, on the one hand, and supplementary lists of concrete indicators with more or less precisely designated behaviour patterns, on the other hand, wherein the latter lists of indicators display a

⁵⁷ An up-to-date view of this demand standards gives the Directive 2006/126/EC of 20th December 2006, Annex II, paragraph 7.4 “Behaviour in traffic”:

Applicants must perform all the following actions in normal traffic situations, in complete safety and taking all necessary precautions:

- 7.4.1. Driving away: after parking, after a stop in traffic; exiting a driveway;
- 7.4.2. Driving on straight roads; passing oncoming vehicles, including in confined spaces;
- 7.4.3. Driving round bends;
- 7.4.4. Crossroads: approaching and crossing of intersections and junctions;
- 7.4.5. Changing direction: left and right turns; changing lanes;
- 7.4.6. Approach/exit of motorways or similar (if available): joining from the acceleration lane; leaving on the deceleration lane;
- 7.4.7. Overtaking/passing: overtaking other traffic (if possible); driving alongside obstacles, e.g. parked cars; being overtaken by other traffic (if appropriate);
- 7.4.8. Special road features (if available): roundabouts; railway level crossings; tram/bus stops; pedestrian crossings; driving up-/downhill on long slopes;
- 7.4.9. Taking the necessary precautions when alighting from the vehicle.

Paragraph 11 “Location of the test”:

The part of the test to assess the special manoeuvres may be conducted on a special testing ground. Wherever practicable, the part of the test to assess behaviour in traffic should be conducted on roads outside built-up areas, expressways and motorways (or similar), as well as on all kinds of urban streets (residential areas, 30 and 50 km/h areas, urban expressways) which should represent the various types of difficulty likely to be encountered by drivers. It is also desirable for the test to take place in various traffic density conditions. The time spent driving on the road should be used in an optimal way to assess the applicant in all the various traffic areas that can be encountered, with a special emphasis on changing between these areas.

varying degree of reference to the overarching categories and usually also serve test and error documentation.

A closer appraisal of the different national models for observation categories reveals firstly that, as in Germany, the methodically desirable precise distinction between observation categories and assessment criteria is generally neglected. Secondly, a highly varied degree of differentiation within the observation categories is to be ascertained. Thirdly, again as in Germany, it is to be criticised from the methodical perspective that driving-task-independent and driving-task-specific observation categories are mixed (see Annex 10 PrüfRiLi and Chapter 5.5), without clear indication of any methodical system behind this fact. Fourthly, finally, the driving-task-independent observation categories frequently include the categories “Vehicle control”, “Traffic observation”, “Vehicle positioning” and “Speed adaptation”, use of which was also recommended for further development of the German driving test in Chapter 5.5. These categories have received very similar designations in a few of the countries (e.g. Norway and Sweden); elsewhere, it is rather the case that an adequate description of their contents is given. The fifth observation category proposed in Chapter 5.5, namely “Communication and adaptation to traffic”, is only rarely specified explicitly (e.g. in Norway, see Chapter 7.3); it has already been pointed out, however, that the necessity for this category has only arisen in more recent times due to the increasing density of traffic on the roads, with the result that the legal and methodical systems are probably still to be amended accordingly in reaction to the changing practical traffic circumstances.

In more than half of the countries reviewed, the demands on observed behaviour include references to an environment-aware and energy-saving manner of driving. This raises the question as to whether a special observation category should be developed for this attribute of driving behaviour.

It must be added at this point that the above presentation of national observation specifications is based on the descriptions communicated to us by representatives of the countries concerned within the framework of the aforementioned surveys. It was not possible, within the scope of the present report, to determine whether and, where appropriate, to which extent these specifications are also reflected in the national examination guidelines, and it would no doubt require very extensive research to answer this question. This notwithstanding, one definite result of the international comparative analysis of observation specifications is the recognition that, with Annex 10 to the Examination Guidelines of 2004, Germany stands on a par with most of the other countries in this respect, though it is still not to be found among the group of methodically innovative countries. To close the gap to these countries, it would be expedient to adopt and pursue the critical methodical approaches presented in Chapter 5.5.

Assessment criteria and decision rules

In Chapter 5.5, it was explained that both (1) rating scales and (2) forced-choice scales can be used to assess the candidate behaviour described in the observation categories, and furthermore that Germany has to date given preference to the coarser forced-choice scales in the sense of error catalogues. From an analysis of the international assessment practice, it is conspicuous that a number of countries also use the methodically superior rating scales, which provide more informative statements than a forced-choice scale and also permit good performance to be taken into account. In Belgium, for example, the candidate’s performance in respect of each driving task is assessed on a four-level scale with the ratings “satisfactory”, “with reservation”, “poor” and “inadequate”. The use of a four-level scale is considered meaningful from the methodical perspective; a corresponding solution was also

recommended as further development of the German assessment system, albeit with different labelling of the individual levels (see Chapter 5.5).

A similar four-level rating scale is used in a further eight European countries to assign the individual elements of test performance to an acceptance category and three error categories. In France, for example, the error classifications used are “permissible errors”, “tolerable errors” and “intolerable errors”. In Great Britain and Northern Ireland, on the other hand, driving errors are classified as simple (“driving fault”), significant (“serious fault”) or decisive (“dangerous fault”). The remaining countries generally use two-level error classifications, in other words a three-level assessment system overall.

Some countries also operate with “error checklists”: In Great Britain and Northern Ireland, for example, a corresponding list of driving errors leading to failure comprises 22 items. In connection with error checklists, it can be noted that they may prove especially valuable for the description of scale levels: The specification of readily observable behaviour-related indicators raises the objectivity and reliability of an observation process like the practical driving test immensely, at least for a proportion of the scale levels used to assess the criterion performance. On the other hand, where the content reference of the assessment criteria is reduced to a single scale level, as in the case of the exclusive use of error checklists, and behaviour-related error descriptions are thus foregone through the assumption that each user knows what is meant by a particular error, the purpose granted to an error classification in terms of psychological testing is lost.

In almost all countries where driving error classifications have been elaborated, guidelines exist to define the maximum permissible number of errors within the individual error categories, as in Norway (see Chapter 7.3), Russia and Ireland. In some cases, the driving errors are also converted into a corresponding number of “error points” according to a specified system: The test candidate collects a certain number of points for each error, dependent on the categorisation of the driving error concerned. If the permissible total number of errors or error points is not exceeded, the candidate passes the test. In Ireland, the overall assessment of the test, and thus the test decision, also takes into account whether the errors recorded were wholly distinct errors, different errors from the same assessment category, or possibly even repeated occurrences of the same error. Where such “calculation systems” are used, the driving test examiner is often also bound to the “calculation result” when determining his test decision. One exception in this respect is Norway: Here, the test decision may deviate from the mathematically calculated test result. Under the Norwegian system, moreover, outstandingly good candidate performance is explicitly taken into account in the test decision.

Austria is a special case among the European countries covered by the study. The standards applied to the assessment and documentation of the practical test here go far beyond a mere listing and aggregation of driving errors. After each test, the Austrian driving test examiner must submit also a professionally founded expertise as to whether the candidate performed the prescribed vehicle checks properly before commencing the drive, whether he masters the required driving exercises and used the vehicle controls correctly during the test drive, whether he possesses the necessary calmness, presence of mind, independence and understanding for different traffic situations, and whether he is in a position to observe the relevant traffic regulations when driving a motor vehicle.

The international comparison shows that efforts to enhance the objectivity of the practical driving test are often expressed in an overly detailed standardisation of driving errors and their weighting as factors contributing to the test decision, rather than in structuring of the observation situation and the description of observation categories. The latter two alternatives, with their foundation in psychological testing, are naturally much more difficult to

accomplish than the first approach; on the other hand, they are also to be viewed as more significant from the methodical point of view, as the driving error classifications and assessment criteria – figuratively speaking – otherwise possess no reference point and fail to achieve their objective. Compared with other European countries, there is need for more precision definition and structuring of the assessment and decision criteria in Germany, though this shortcoming could be rectified quite easily (see Chapter 5.5).

7.2.4 Test documentation

Test report and examiner advice

In more than half of the 28 European countries considered, the test candidate always receives a written test report at the end of the practical driving test; such reports contain information on the candidate's performance of the test tasks and any driving errors which were observed. The Austrian test report even gives details of the test route. In all these countries, the assessment sheet serves as feedback to the candidate on his test performance and gives pointers to the potential for further improvement. In Germany and two other countries, the test report is only handed out to the candidate if he fails the test. The German report is in this context an "error report", in which the errors made by the candidate are marked (see Chapter 5.6).

In most countries, the candidate is offered a brief conversation with the examiner after the practical driving test, in the course of which the examiner will usually mention the driving errors which have been observed and explain the test result; in addition, he may give the candidate advice regarding the improvement of his driving competence. In eight European countries, no such conversation takes place and the candidate receives exclusively a written report. There is only one country in which the candidate receives neither a test report nor an offer of advice.

Overall, only six countries satisfy the quality expectations which are in our view desirable objectives with regard to test documentation and test follow-up, namely the presentation of a test report and a conversation with advice from the examiner as standard procedures. Among these countries, it seems appropriate to give special mention to the Netherlands, where, in addition to a follow-up conversation, a conversation takes place before the practical driving test in a special room at the test centre and in the presence of the driving instructor: This advance conversation can be understood as a "warm-up phase" in the sense of psychological testing and serves to establish a trustful, relaxed and anxiety-free atmosphere between the examiner and the candidate. The international comparison with the methodically advanced national licensing systems in Europe thus indicates a certain backlog of development work in Germany, above all in respect of the test report.

7.2.5 Evaluation and further development of the test

The present research provides only sparse information on the evaluation and further development of the practical driving test in other European countries, as no particular focus was defined within the project in this direction. The evaluation aspects concentrated instead on the trial implementation and methodical assessment of test question formats for the theoretical driving test. The practical driving test was addressed above all via details of the qualification measures and further training for driving test examiners; these findings have already been presented elsewhere (Dietrich & Sturzbecher, 2008) and are only relevant to the present topic in respect of quality assurance within the test system.

Nevertheless, the authors attempted, at least in individual cases, to obtain corresponding information on the procedures by which the practical test is evaluated in other countries.

These attempts were not particularly fruitful and indicate that the necessary insights are not to be gained via research and written surveys, but rather by way of personal exchanges.

To add detail to the preceding European overview, a closer look is to be taken at the implementation of the practical driving test in Norway, Sweden and the Netherlands.

7.3 Detailed appraisal of the practical driving test in Norway, Sweden and the Netherlands

Fundamentals and overview

Norway, Sweden and the Netherlands are three of the European countries in which intensified efforts have been undertaken in recent years to further develop the systems of novice driver preparation. Consequently, it is deemed expedient to give a brief overview of these systems, as possible sources of inspiration for optimisation of the test contents and observation categories, assessment and decision criteria and test documentation in Germany. First of all, however, it is necessary to outline the traffic-specific pedagogical foundation of novice driver preparation in the three countries.

One aspect common to the three aforementioned countries is the attempt to integrate also a number of competence components which cannot be derived directly from observed driving behaviour into their driver training and testing. Such training objectives, for example a driver's ability to correctly assess his own driving competence or understanding for the influence of motivation on driving behaviour, were investigated within the framework of the EU project GADGET⁵⁸ (Siegrist, 1999). On the basis of the analyses of training contents conducted in the context of the project, a system for categorisation of the training objectives was derived, the so-called "GADGET matrix" (Hatakka, Keskinen, Gregersen & Glad, 1999). This matrix is founded on the assumption that the process of competence acquisition can be structured hierarchically. Consequently, four levels influencing driving behaviour can be distinguished, with circumstances on a higher level co-determining the demands, decisions and behaviour patterns on all lower levels. The first level refers to "Vehicle manoeuvring", and the second level above that to the "Mastering of traffic situations". The third level then addresses the journey-related "Goals and context of driving", while the fourth level is reserved for the driver's personal "Goals for life and skills for living". These four levels are combined with three vertical dimensions describing the essential training contents achieving safe participation in traffic. These dimensions are given the headings "Knowledge and skills", "Risk-increasing factors" and "Self-evaluation". The individual cells of the resultant 4 x 3 matrix represent a definition framework for driving competence and permit the specification of corresponding training objectives, training contents and test elements for novice driver preparation.

The analysis of training contents in the various countries of Europe within the GADGET project revealed that the traditional forms of driver training and testing concentrate mainly on the lower two levels. The topics assigned to the so-called "higher levels" of the GADGET matrix (e.g. "Attitudes towards others", "General social behaviour" or "Acceptance of driving risks"), on the other hand, are rarely taken into account. This applies similarly to the methods to promote self-evaluation and exchanges among peers. In the final report on the GADGET project, therefore, the authors recommend that previously neglected topics from the GADGET matrix also play a role in novice driver preparation. The

⁵⁸ "GADGET" stands for "Guarding Automobile Drivers through Guidance, Education and Technology".

following sections describe how Norway, Sweden and the Netherlands are attempting to implement this recommendation.

The practical driving test in Norway

Although novice driver preparation in Norway is based on the GADGET matrix, the examination of its higher-level contents within the framework of the driving test is considered problematic, firstly because the experimenter effect will always raise questions as to the validity of the results of such attitude assessment, and secondly because it is feared that the associated extension of the examiner's scope of judgement will detract from test objectivity. In view of these difficulties, particular attention is paid to the contents of the higher levels of the GADGET matrix during driver training: Norwegian learner drivers are obliged to take part in a series of mandatory, class-based group discussions at the beginning and end of their driver training, in other words in each case before taking their theoretical and practical driving tests. A basic course at the beginning of the training defines a general framework of behaviour for the overall process of training, while the concluding meetings in advance of the tests address specific risks for novice drivers.

As far as the test contents are concerned, the Norwegian test comprises the same elements as in Germany (see Chapter 5.4). The scope of the basic driving manoeuvres, however, remains minimal; there are no special rules governing their realisation and assessment. The driving tasks for the test drive are not described in detail, but rather specified in the form of a general framework. The particularities are added through the elaboration of pre-defined standard test routes⁵⁹ by a specifically responsible member of staff at the organisation designated to conduct testing. The density of individual driving demands is kept relatively low at the beginning of the test route, so as to ensure a gradual increase in demand complexity over the course of the test. The specified driving tasks are:

- Turning right and left at crossroads,
- Driving straight on at crossroads,
- Driving between crossroads,
- Changing lanes and positioning the vehicle on the road,
- Speed adaptation and vehicle positioning ahead of crossroads, and
- Driving in different traffic environments (hilly rural areas, residential areas, urban areas, roads with dense traffic, roads outside built-up areas, motorways).

One of the advantages of a predefined test route is that the examiner is able to concentrate fully on his task of observing and assessing the test candidate, as he is no longer required to devote attention to either route planning or time-keeping. From the perspective of the candidate, a predefined test route gives reassurance that the examiner cannot examine and assess him at his arbitrary discretion. At the same time, it offers better possibilities for a uniform application of assessment scales and documentation standards and thus for verification of the psychometric quality parameters of the practical test. Last but not least, the route descriptions permit simple control over the balance of different traffic demands, and confirmation that a route actually serves the overall objective of the test.

It could be considered a disadvantage of predefined test routes that they may come to the public knowledge, and furthermore that their lack of flexibility could stand in the way of an adaptive test strategy. The Norwegian "Public Roads Administration" combats the dan-

⁵⁹ A graphics program is used to produce a series of route drawings, which dictate the individual route to be followed during the test, including the instructions to be given by the examiner at relevant points.

ger that test routes could become known and consequently that driver training could be reduced to practice on these routes, by maintaining a large pool of different routes, by rotating the available routes, and by providing for the route for a particular test to be selected at random⁶⁰; these routes are also modified at regular intervals⁶¹. In the final analysis, however, it can be said that a test candidate who has prepared himself to successfully complete a 60-minute test drive on one of six different test routes will have necessarily achieved a certain level of competence, irrespective of whether the six routes are known to him in advance. The apparent inflexibility of a predefined test route is compensated by the scope of judgement granted to the examiner in Norway: If it is not feasible to follow a certain route at a particular time of the day, for example due to rush-hour traffic, the route selection will automatically consider only those routes which are practicable for the purposes of a test at the given time of the day. If a need to modify the route arises nevertheless during the course of the test drive, then the examiner is still entitled to amend the route accordingly.

Six categories are stipulated for observation of the candidate's behaviour by the examiner: (1) "Observation", i.e. the candidate must gain an early overview of different road environments and traffic situations, including visibility in front of, behind and to the side of the vehicle; (2) "Signalling", i.e. signals must be given at the correct time and at the correct place to communicate traffic-relevant information to other road users; (3) "Positioning", i.e. observance of the road lanes and road markings, safety margins to a preceding vehicle and other road users, and standing in traffic; (4) "Speed adaptation", i.e. selection of a speed appropriate to different traffic environments; (5) "Traffic adaptation", i.e. the ability to adapt to a traffic situation and the environment, for example by making use of gaps in the traffic flow or allowing other road users to join the road from a side lane; and (6) "Vehicle control", i.e. handling of the vehicle.

The decision as to whether a candidate has displayed the required behaviour in the aforementioned observation categories is determined according to certain assessment criteria based on the learning objectives of the training curriculum. A distinction is made here between "Required performance" (e.g. giving signals at the correct time), "Environment-related performance" (e.g. speed appropriate to the current environment) and "Dynamic performance" (e.g. appropriate positioning of the vehicle within the road lane). In addition, "General vehicle control" is defined as an overarching assessment criterion and is intended to reflect the fact that the candidate's behaviour in traffic situations is also to be judged in its entirety and not on the basis of single aspects. Candidate behaviour which is to be deemed an error is classified according to a three-level scale which differentiates (1) "Minor errors", (i.e. insignificant deviations from the criteria and/or laws, rules or other regulations), (2) "Fundamental errors", (i.e. substantial deviations from the criteria and/or laws, rules or other regulations) and (3) "Decisive errors" (i.e. situations in which the examiner must intervene verbally or physically to avert damage or danger).

The candidate fails the test, firstly, if the examiner observes several "minor errors" in one observation category. In this case, the examiner is granted a certain scope of judgment to decide on the level of risk entailed by the individual situations. If the candidate makes "fundamental errors" in four or more traffic situations, then he will similarly fail the test. If only one to three "fundamental errors" are recorded, then the number of "minor errors"

⁶⁰ A route is selected by computer immediately prior to the test, i.e. neither the examiner nor the candidate know the route to be taken in advance.

⁶¹ At least one of these test routes must be replaced by a new route every six months.

must be taken into consideration to reach a test decision. The test is also failed if the candidate makes a “decisive error” in one or more traffic situation. Not only the candidate’s incorrect behaviour, but also outstandingly good performance is documented and assessed in a detailed test report with consecutive references to the route section concerned. The examiner is thus offered a total of four categories to assess the test performance. As both positive and negative assessments are recorded, no particular psychic stress is placed on the candidate through the examiner’s note-taking. At the end of the test, the examiner totals up the errors recorded in the six observation categories.

For test documentation, the examiner uses a test route file with a route plan for the selected test route and an assessment table. Neither the number of errors nor the error categories are revealed to the candidate at the end of the test, as it is feared that this could devalue the targeted holistic and competence-oriented approach to driver training in favour of schematic error-prevention training. Instead, the candidate receives a test report containing the overall result of the test and a written category-independent assessment. The examiner enters the test result and the number of errors in a PC, whereupon, in case of a successful test, a member of the administrative staff issues a temporary driving licence to the candidate; the actual card driving licence is received by post approximately a week later.

The standardised test documentation permits statistical evaluation of the error reports from all examiners and can supply pointers to possible misuse of the system or individual assessment categories, for example. Despite the very high level of detail in the documentation, it is not possible to reconstruct the specific traffic situation in which an assessment was made from the report: The report merely assigns the individual assessments to a certain route section, and thus serves rather as a memory aid to recall particular traffic situations.

Viewed overall, the practical driving test in Norway displays a high degree of standardisation both in the form of predefined test routes and examiner instructions and in terms of the test assessment and documentation; an adaptive testing concept thus appears impossible. On the other hand, there is no intention to pursue such a concept in Norway, as preference is given to a high level of objectivity, to be achieved through formal standardisation. This is made evident, for example, by the stipulation of standard test routes, whose detailed representation in the route plans establishes a precise framework for the course of the test. Even upon closer inspection, however, questions as to the planning criteria for the elaboration of standardised test routes remain unanswered, not least because the demands placed on a test route are formulated very generally. The overall scope of judgment granted to the route planner when defining the driving tasks somewhat relativises the impression of a high level of route standardisation suggested by the detailed route drawings. This notwithstanding, the predefined test route does relieve the examiner of the task of route planning and facilitates thorough observation and assessment of the test candidate. The highly standardised test assessment and documentation, furthermore, reduces the outlay for test evaluation.

The practical driving test in Sweden

In March 2006, Sweden introduced a new training curriculum for the Class B driving licence. It serves as the basis for both driver training and the driving test, and thereby places the candidate’s behaviour and his attitudes to safety, the environment and mobility in the foreground. One goal of the Swedish reform was development of an objective, but nevertheless flexible test; the focus was directed at standardisation of the assessment criteria rather than the standardisation of test implementation. At the end of 2007, the practical driving test for Class B vehicles was similarly reformed. The test now takes into account the higher levels of the GADGET matrix and incorporates topics such as “Situation aware-

ness” and “Self-evaluation” by the candidate into the test contents. At the same time, a new digital test report was devised and matched to the curriculum.

The assessment of “Situation awareness” is realised by the examiner asking the candidate an open question relating to a specific traffic situation during the test, whereupon the candidate is able to present his own view of the situation concerned. In this way, the examiner draws information on the candidate’s motivation and self-reflection with regard to his corresponding behaviour. This examination of situation awareness need not necessarily refer to a driving error, and is also not used systematically in every test; it is rather a diagnostic aid for the examiner, and enables him to optimise the basis for this assessment of the candidate’s competence.

Sweden is furthermore one of three countries (alongside the Netherlands and Finland) which have developed a self-evaluation sheet to be filled out by the candidate before taking the test. The candidate’s own assessment of his knowledge and abilities relating to safe participation in road traffic is then compared with the assessment of the driving test examiner at the end of the practical test.

All candidates are required to complete a course of skid training before taking the practical driving test. The driving tasks to be mastered within the framework of the practical test are assigned to one of five categories (see below) and the examiner must select at least one traffic situation from the categories (1) to (4) for each test drive; at the same time, each individual situation must be included in at least every fourth test:

1. “Vehicle handling” embraces safety checks and use of the technical vehicle features (turning indicators, lights, windscreen wipers), as well as parking, reversing, driving off on an incline and effective braking. This section also integrates the basic driving manoeuvres, even though they are not specified more closely (e.g. demand descriptions or assessment guidelines).
2. “Driving within built-up areas” includes passing stationary vehicles, driving in residential areas and due consideration for pedestrians and/or cyclists, as well as lane changing and the use of signal-controlled junctions and roundabouts.
3. “Driving outside built-up areas” covers right and left turns and driving on narrow and winding roads, as well as cross-country driving and the use of motorways (in particular joining and leaving motorways).
4. The category “Driving within and outside built-up areas” addresses driving manoeuvres which are relevant both within and outside built-up areas. This includes following signs while driving, crossing railway tracks, passing road works and behaviour towards weaker road users, as well as turning the vehicle to face the other way.
5. “Special conditions” refers to driving in the dark or on slippery roads. The category is not required to be completed in every test, however, and is furthermore assessed only by way of a note in the test report.

Regarding the individual driving tasks, various minimum requirements must be met by the accompanying circumstances: The task of passing a junction controlled by traffic lights, for example, is only deemed to have been mastered if the situation included changing of the signals or some other necessity of communication with other road users. If the candidate simply passes over such a junction with the traffic flow, by contrast, the minimum requirements are not met. Such specifications serve to standardise the test conditions to a certain extent; at the same time, however, the driving routes normally differ significantly. In Sweden, it is the factors flexibility and unpredictability, in particular, which are considered the most important demands placed on a chosen test route.

Since the introduction of the aforementioned reform in 2007, the Swedish practical driving test for Class B also assesses “environmentally sound driving”, in addition to the previously described driving tasks. Driving with an awareness for the environment has been defined as an element of the test, but is not given priority over any other elements when judging the driving performance of the candidate. There are no special criteria for the assessment of environmentally sound driving; it is instead taken into account within the framework of the overall assessment of test performance. In other words, the practical test must provide evidence that the candidate drives in a generally energy-saving manner and applies the corresponding driving techniques. If, however, the candidate displays no awareness for the environment whatsoever in his driving during the test, then this is treated as an enduring error and leads to failing of the test.

The Swedish test system contains no special rules for the examining of either road driving tasks or the basic driving manoeuvres within the framework of the practical driving test, and instead merely provides general assessment principles as guidance for the examiner. The required behaviour in the specific situations is not defined in the form of individual observation categories, and it is thus taken for granted that the examiner possesses the necessary competence to plan a high-quality and fair test. There are similarly no assessment standards describing correct completion of the basic driving manoeuvres. It is intended that the competence to apply uniform assessment standards on the part of the examiner be secured through appropriate qualification and further training for the examiners.

The following five areas of competence are specified for the assessment of the candidate’s driving behaviour in the different situations – also to be considered observation categories in the methodical sense: (1) Speed adaptation, (2) Vehicle control (also in the context of the basic driving manoeuvres), (3) Vehicle positioning, (4) Traffic behaviour (observance of the rules of the road, communication with others, etc.) and (5) Attentiveness (e.g. perception of hazardous situations), with the individual aspects being structured hierarchically. The observation is to be made in as many situations as possible. The five applicable competence criteria are explained to the candidate before the test.

Turning to the test documentation in Sweden, one general requirement is that the examiner should make as few written notes as possible during the test drive, so as not to unsettle the candidate. Consequently, most examiners make no assessment notes whatsoever during the test, and record – if anything – merely the driving situations covered. The errors which may have been observed in respect of the five aforementioned competence categories are only documented at the end of the drive, together with a reference to the relevant driving task. Positive behaviour is similarly not recorded, but can be taken into account to compensate errors. At the end of the test, the candidate receives a verbal assessment of his behaviour and receives a corresponding test report from the examiner. As the driving instructor does not participate in the driving test in Sweden, he also obtains feedback on the candidate’s test performance from this conversation.

To summarise, it can be said that the Swedish practical driving test places its focus not on the assessment and documentation of errors, but rather on an overarching judgement of the candidate’s driving competence. It is even conceivable that a serious driving error could be compensated by generally positive behaviour. The assessment is based exclusively on the overall impression which the examiner gains of the candidate: The driving test is not failed as a result of a single error, but as a result of a poor overall performance. The reasons for dispensing with continuous documentation during the test, which, after all, would be desirable from the methodical point of view, do not seem fully convincing. The subsequent test documentation serves as a basis for evaluation of the test system.

The practical driving test in the Netherlands

New test elements were introduced in the Netherlands at the beginning of 2008, placing the independent responsibility of the novice driver more firmly in the foreground and at the same time implementing demands to integrate also the higher levels of the GADGET matrix. Although driver training is not regulated by law in the Netherlands, and there is thus no obligation to undergo organised training, the majority of test candidates nevertheless attend a driving school. The training and driving test are methodically integrated by way of a common catalogue of observation categories and assessment criteria, and furthermore coordinated in their content, as the training contents naturally follow the test contents.

As preparation for the practical test, it is possible to take a preliminary driving test in the Netherlands; the basic driving manoeuvres are then no longer examined in the actual test, insofar as they were demonstrated successfully during the preliminary test. In addition to the evaluation conversation at the end of the test, a further introductory conversation is held in a common room of the test centre before the test begins, serving to establish a personal atmosphere between the test candidate, the examiner and the driving instructor. The task catalogue comprises seven driving tasks: (1) “Driving off after stopping and parking”, (2) “Driving on straight roads and crossroads”, (3) “Approaching and passing crossroads and junctions (including left and right turns)”, (4) “Joining and leaving motorways”, (5) “Overtaking other road users, passing obstacles and changing lanes”, (6) “Roundabouts, level crossings, pedestrian crossings and bus stops” and (7) “Special manoeuvres”. These driving tasks structure the course of driver training, but are not demanded explicitly in the driving test, as the test locations are designed such that the completion of all driving tasks can be expected to be possible and probable.

The form in which the test contents are implemented in the Netherlands, namely by way of a modern and precise description of the test location (“test environments”), is by all means to be considered a source of reflection aimed at modernisation of the test location concept in Germany. Where the test demands are operationalised via a test location concept, the examiner must be able to rely on the structuring of the local circumstances as a venue for his observation of the required behaviour. The test locations in the Netherlands are defined through the categorisation of five road types on the basis of the maximum permissible speed. The candidate must show competence on each of these road types during the test:

- (1) Urban residential access roads (30 km/h),
- (2) Urban collector roads (50 km/h),
- (3) Rural residential access roads (60 km/h),
- (4) Rural collector roads (80 km/h) and
- (5) Main roads or motorways (100 / 120 km/h).

In addition to the previously described test contents, further aspects have become explicit test demands since the reformation of the new practical driving test in the Netherlands; these new aspects include, among others, “Independent driving”, “Hazard perception”, “Behaviour in traffic jams / Environmentally aware driving” and “Self-assessment”. The integration of these elements is seen to attach greater significance to the higher levels of the GADGET matrix.

Under the heading “Independent driving”, the candidate is required to drive independently to a destination specified by the examiner, and thus to demonstrate his driving competence over a certain period of time without further intermediate instructions. During this time, the candidate must find his own way and make all corresponding decisions himself. This task category may be realised in various forms in the context of a Class B driving test:

- Drive to a “known destination” (e.g. railway station or hospital) without further instructions from the examiner,
- Drive to a destination defined by a “set of instructions” (three to five instructions) given by the examiner, or
- Drive to a specified destination using a navigation system.

The examiner selects one of these three independent driving tasks during the test; each task is designed such that it occupies approximately 10 minutes of the test time.

A similar element of independent action is built into the new method by which the required basic driving manoeuvres, are examined during the practical driving test in the Netherlands. After the examiner has specified which of the so-called “Productive special manoeuvres” is to be performed, it is left to the candidate to decide on the precise location and the form of realisation of the manoeuvre (parking manoeuvres, for example, comprise an independent search for a parking space on a car park or street and subsequent parking of the vehicle). The possibility to reduce the candidate’s test anxiety by defining the basic driving manoeuvres in this manner has already been discussed (see Chapter 5.4).

Through the aforementioned test element “Self-assessment”, the candidate receives feedback not only on the strengths and weaknesses of his driving competence, but above all on his capacity for self-reflection. On the day of the test, the candidate must bring a previously completed self-assessment sheet comprising seven situation descriptions, each of which requires a personal judgement of his abilities in respect of the five competence fields “Vehicle control”, “Traffic flow”, “Environmentally aware driving”, “Safety” and “Social traffic behaviour”. These five fields of competence are then also observed and assessed by the examiner during the test drive; they are thus similarly observation categories in the methodical sense. The assessment is based on a five-level scale ranging from “1” (“poor”) to “5” (“excellent”). At the end of the practical test, the self-assessment by the candidate is compared with the examiner’s assessment. This form of test evaluation is shown to be very useful, as the examiner can take the candidate’s own beliefs as a basis for his hints on the important areas for improvement in case of a failed test, or equally on points which should nevertheless be kept in mind, even if the test is passed.

In the past, the assessment of a candidate’s performance in the practical test was in the Netherlands – as in Germany – based exclusively on the examiner’s behaviour observations. Today, however, the examiner is also able to analyse the background to the behaviour demonstrated by the candidate by asking targeted questions⁶² after observing a particular traffic situation and can in this way determine, for example, whether the candidate acted intentionally or was uncertain. Contrary to the situation in Sweden, the questioning of situation awareness is incorporated systematically into every practical test. The questions on situation awareness also serve to give an insight into abilities regarding hazard perception and avoidance, and furthermore provide a reference to the five fields of driving competence which were to be judged in the self-assessment. From the point of view of content, the questions may also address the behaviour of other road users, traffic signs or vehicle properties. Despite the fact that no specific assessment criteria exist for this test element, the result still plays a role in the test decision.

⁶² This test element is also used in Austria and Ireland: In Ireland, the examiner asks questions on traffic rules and traffic signs during the practical driving test; in Austria, the examiner is required to immediately discuss with the candidate any experienced situations in the context of “Hazard perception” where doubts arise during the test drive as to the candidate’s adequate traffic awareness, and in this way to analyse the appropriateness of the displayed behaviour sequences.

Since 1st January 2008, the practical driving test in the Netherlands has also included an element “Environmentally aware driving”. Provided a candidate displays otherwise excellent performance in terms of safe driving behaviour, he cannot fail the test merely due to an insufficiently environment-aware manner of driving. If the overall test performance was rather weak, on the other hand, a complete or partial lack of environment awareness may contribute to a negative test result.

The Dutch system currently defines 13 assessment criteria for the assessment of the driving tasks. These assessment criteria are also to be found in the test report, enabling the candidate to reconstruct the assessments of his driving performance. The following criteria are taken into account in the assessment: (1) “Vehicle control”, (2) “Environment-friendly manner of driving”, (3) “Adapted and defensive manner of driving”, (4) “Social traffic behaviour”, (5) “Traffic observation”, (6) “Vehicle positioning”, (7) “Right-of-way”, (8) “Safety margins and clearances”, (9) “Speed”, (10) “Traffic signs and signals (traffic lights, traffic signs, other conditions such as police-controlled traffic)”, (11) “Other signs”, (12) “Communication and reaction” and (13) “Braking and stopping”. The assessment refers to an overall estimation of the candidate’s competence and is thus highly dependent on the personal judgement of the examiner. Even a serious error may be compensated by otherwise good performance; the test is only terminated if danger arises. No definitions for the decision rules are available.

Concerning the test documentation, it is to be noted that the driving test examiner acts as the responsible vehicle operator in the Netherlands and thus sits in the front passenger seat. This practice holds both advantages and disadvantages (see Chapter 7.2) and means that documentation of the test is only possible after completion, i.e. after the evaluation conversation with the candidate. The test is documented using a PDA system (personal digital assistant); the candidate receives the report by e-mail within a few days.

Evaluation of the new test model is already in progress in the Netherlands; results, however, are yet to be presented. The voluntary preliminary tests are used as the basis for evaluation studies and as an opportunity to test new options in conjunction with the further development of the practical driving test. Viewed overall, it would seem that above all the consistent implementation of pedagogically sophisticated test contents in the Netherlands, together with the uniform system for the assessment of candidate performance at both the training and test stages, offers a number of starting points for further development of the practical driving test in Germany. Moreover, there are already signs of further methodical innovation in the Netherlands, the implementation of which will most likely provide interesting empirical data, for example in connection with the balancing of demand standards, relating on the one hand to the driving tasks, and on the other hand to the test locations.

7.4 The practical driving test within the framework of graduated licensing systems

The following chapter is now to review international developments and trends in driver licensing in the light of “graduated licensing systems”, both in general and with special consideration of the integration of the practical test into such systems.

The prime essence of novice driver preparation within the framework of a graduated licensing system is that the learner driver develops the necessary driving competence gradually and over an extended timescale defined and structured by way of legislative provisions. This manner of competence development is offered to the learner driver in the form of a graduated driver training programme, which begins with straightforward driving tasks in simple, low-risk traffic situations and subsequently increases the level of difficulty until, by the end of the training, complicated traffic situations are mastered. This approach takes

particular heed of the inevitable lack of experience at the beginning of the competence-building process and the positive effects of ever greater driving experience on the development of driving competence. The distribution of the different practical driving exercises over hierarchically structured phases of driver training, and thus the progression from simple to complex skills, is the fundamental pedagogical principle implemented in a graduated licensing system (Waller, 2003).

The process to obtain a graduated driving licence generally begins with a “preliminary phase”, during which a formal and/or informal programme of training is possible and desirable. This preliminary phase is usually completed with the passing of a theoretical test. The next stage is then the “learning phase”, which enables the learner to gather his first practical driving experience under the supervision of an experienced driver and promotes the development of basic driving competence. It is followed by a transitional or “first probationary phase”, during which independent driving begins, albeit still subject to strict limiting conditions. The conditions applicable to independent driving at the early stages of training within the framework of a graduated licensing system (e.g. special speed restrictions, absolute zero blood alcohol concentration when driving, no driving at certain times of the day or on particular days of the week) correspond to the particular risk factors for young novice drivers which are known from traffic and accident research. In some countries (e.g. Canada and New Zealand), the first probationary phase is succeeded by a “second probationary phase”, whose modified restrictions extend the possibilities for independent driving compared to those of the first probationary period. In a graduated system, the attainment of a new level is dependent on sufficient practice and thus the gathering of experience, and is always linked to an extension of privileges (Grattenthaler, Krüger & Schoch, 2007).

New Zealand was in 1987 the first country in the world to introduce the concept of graduated driver licensing. It was also here that the first three-phase system for the obtaining of a driving licence by novice drivers at ages from 15 to 24 years was put into practice. Since the reform adopted in 1999, New Zealand is one of the few countries in the world to subject novice drivers of all ages to a second driving test (final test) at the end of the probationary period as a prerequisite for the granting of a full licence. In Canada, the first graduated licensing system was introduced in 1994. In the meantime, each Canadian province maintains its own scheme for the granting of graduated driving licences. There is no uniform national scheme, however. The introduction of graduated licensing in the USA began in Florida in 1996; today, a corresponding system of graduated novice driver preparation is to be found in all 50 states (IIHS, 2006). In some cases, this novice driver preparation includes legally prescribed formal or professional driver training.

The individual stages of a graduated licensing system and the implementation of a practical driving test are to be explained in greater detail in the following by taking the example of the currently practiced system in the Australian state of Victoria. The learning phase, which begins at earliest at the age of 16 years, there comprises at least 12 months of “supervised driving”, but always lasts at least until the driver’s 18th birthday. The conditions to be observed include a zero-alcohol rule, no use of any kind of a mobile telephone, and a ban on the towing of other vehicles or trailers. Furthermore, the learner driver must not collect more than five demerit points for traffic offences during this period, and the vehicle used must display “L (learner) plates”. As a prerequisite for admission to the subsequent tests (see below), a learner driver under 21 years must present evidence of at least 120 hours of supervised driving practice by way of an official logbook. At least 10 hours of this driving must have been done at night. In a number of regions of New Zealand and in some Canadian provinces, a similar requirement is stipulated for all learner drivers, i.e. irrespective of age.

After the learning phase, the novice driver must take two tests, namely the new on-road practical driving test which was introduced on 1st July 2008 and a hazard perception test. Candidates must have reached an age of at least 18 years before they are permitted to move on from the learning phase and, after successfully passing the two aforementioned tests, begin a two-stage probationary period of independent or solo driving. For the first of these two probationary stages, the novice driver exchanges his “learner permit” for a so-called “P1 probationary licence” and must display red “P plates” on his vehicle. This first probationary stage lasts one year. The special conditions applicable during this period again include a zero-alcohol rule, no use of a mobile telephone and no towing, as well as a ban regarding the use of high-powered vehicles; the limit of five demerit points also remains effective. Furthermore, the driver is only permitted to carry one “peer passenger”, i.e. a passenger aged between 16 and 21 years. The observance of these conditions and the presentation of corresponding evidence are prerequisites for progression to the second probationary stage, which lasts a further three years. The driver must here carry a so-called “P2 probationary licence” and must display green plates on the vehicle; the conditions imposed are still a zero-alcohol rule, a ban regarding the use of high-powered vehicles and the five demerit point limit.

To conclude, a brief outline is to be given of the procedure and essential contents of the practical driving test in Victoria. Before the test drive, the candidate must perform a series of prescribed tasks in the sense of safety checks on the test vehicle. If these tasks are not completed satisfactorily, the candidate is not admitted to the test drive. The test drive is conducted on fixed test routes in real traffic, and is divided into two parts so as to guarantee the safety of the test candidate, the accompanying driving instructor, the examiner and other road users.. The first part lasts approximately 10 minutes and comprises relatively simple, low-risk driving tasks in a quiet traffic environment on roads with a maximum permissible driving speed of 60 km/h. It is necessary to pass this first section to be allowed to continue to the second part of the test; potentially unsafe candidates are thus excluded from the remainder of the test so as not to endanger themselves and others. The second part of the test lasts a further 20 minutes and takes place in normal daily traffic on roads on which speeds in excess of 60 km/h are permitted.

The driving tasks to be completed along the test route can be divided into two groups. The first group contains simple driving tasks which can be assessed unambiguously, such as turning the vehicle to face the other way, changing lanes, driving in a straight line or reverse parking; this group thus includes also the “basic driving manoeuvres” which are examined in Germany (see Chapter 5.4). The second group covers more complex driving tasks, the so-called “compound assignments”, which involve combinations of the individual driving tasks of the first group as elements of a continuous drive.

For the realisation, observation and assessment of the practical driving test, the examiner is provided with a set of defined demand standards, observation categories and assessment criteria. The demands are structured on the basis of standards relating firstly to individual driving tasks (“task assessment items”) and secondly to the test stages (“stage assessment items”), while the assessment criteria distinguish between “critical errors”, on the one hand, and errors which lead to automatic failure (“immediate termination errors”). The foundations for observation of the individual driving tasks during both sections of the test are described by way of observation categories such as “Traffic observation”, “Signalling”, “Vehicle positioning” and “Speed choice”. The observation categories thus embrace a multitude of driving tasks and refer to diverse aspects of driving behaviour; they are designed to relate to both individual tasks and stages of the test route, as a means to reflect the different functions of the test sections.

As already indicated, the assessment criteria are defined in the sense of error categories and are recorded continuously over the whole course of the test. “Critical errors” may lead to termination of the test if they are observed repeatedly; examples of such critical errors are driving too slowly, insufficient observation of the traffic, failure to signal driving intentions to other road users, blocking pedestrian crossings, mounting the kerb or stalling the vehicle. The serious errors which, as they constitute an endangering of other road users, lead to immediate termination and failing of the test include, among others, a necessity for intervention by the examiner, disobeying an instruction, collisions, exceeding the speed limit, failing to give way, and stopping in a dangerous position on the road.

This example shows that there are few systematic differences to be found in the contents and methods of the practical driving test if we compare the pedagogically ambitious systems of novice driver preparation typical for Western Europe and Scandinavia with the characteristic graduated licensing systems in North America and Australia: The practical driving test as it is conducted in Victoria possesses many of the content- and method-related attributes which have been described as accepted or desirable for Germany. The methodical structuring and the level of concretisation in the standards, in particular, contain many interesting aspects and are therefore seen as a worthwhile topic for further research and corresponding exchanges.

The differences – in respect of practical testing – between the two typical systems of novice driver preparation thus seem to lie in the position and function of the practical driving test within the overall system, rather than in its methodical realisation. The differences become particularly evident with regard to the numbers of (practical) tests and the times at which candidates take the tests. Unfortunately, it was not possible to pursue a deeper analysis of the different implementation of the practical driving test in a graduated licensing system within the scope of the present project.

7.5 Summary

Despite having been limited to just a few other countries, this brief overview of the national variants of novice driver preparation already illustrates the international differences in approach when it comes to equipping licence applicants with the driving competence they need to master modern road traffic. The paths taken differ in respect of the diversity and number of their intermediate stages, not least as a result of their combining different training and test elements. Tests, and in particular the practical driving test, generally mark important transition points in the candidate’s mobility career, and serve to structure the continuous lifelong process of knowledge and skill development.

Life-course transitions are always linked to particular opportunities and risks, which in turn triggers an enhanced necessity of support (Elder & Caspi, 1991). The individual balance between wishes and resources is often disturbed at such transitions, leading to loss of control and to an alternation between competence expectations (self-overestimation included) and fears of failure. The handling of life transitions, furthermore, may be promoted or equally impaired by the social environment. Last but not least, transition research in developmental psychology shows that the individual also remains “true to himself” at the points of transition in his development: He adapts the previously acquired knowledge and attitudes to the new situation, but does not become a different person in the process. Expressed in other words: A lazy learner with a high risk-taking disposition will not simply develop into a competent and responsible motor vehicle driver.

The transitions on the way to becoming an experienced driver thus demand systematic preparation, and establish a particular need for both support and corresponding monitoring. Pedagogically adequate and protective novice driver preparation here extends far beyond

just a short-time programme of basic training with only minor didactic differentiation: The examples of (school-based) driver training and driving test serve to demonstrate to the novice driver that, in the context of road traffic, learning is a continuous process and not a case of stockpiling knowledge, that theory and practice are in their contents and time bases indivisible elements of this process, and that the participation in road traffic involves the handling of hazardous situations, for which an acceptance of social values is a prerequisite. The correspondingly necessary education process requires time, because it must follow the psychological mechanisms of competence development, and because the conveying of mature skills or reliably founded value systems cannot be accomplished in just a few weeks. The duration of this process, furthermore, places demands on the individual's motivation, because he must not falter in his efforts to develop into a safe driver. This aspect is one of the benefits of a graduated licensing system: Such systems extend and structure the period of state-monitored competence development, and at the same time maintain learning motivation with judicious, reward-like increases in driving privileges. On the other hand, the pedagogically ambitious driver training systems in Western and Northern Europe are better able to provide the aforementioned support at the transitions from one stage of development to the next. A future system of innovative protective novice driver preparation cannot afford to ignore either of these merits!

How can the practical driving test in Germany be developed further as a component of a modern system of protective driver training? The international perspective has indicated a series of starting points for an answer to the question: Firstly, it was made clear that the practical test is an indispensable, central element of novice driver preparation. Secondly, it was shown that those European countries which are recognised as the most progressive with regard to their approaches to driver testing are currently focussing attention on the elaboration and evaluation of new forms of test content, referring – in simple terms – to the higher levels of the “GADGET matrix” (e.g. self-reflection and independence, risk awareness and concern for the environment). This course is also to be recommended for Germany, notwithstanding the difficulties to be expected for methodical operationalisation of these contents in detail. Referring specifically to the methodology of the practical driving test, as the core topic of this report, finally, it could be seen that efforts at international level are directed at a balancing of standardisation aims and the scope of judgement to be granted to the examiner, whereby quality assurance and test evaluation are also placed under the spotlight.

To summarise, it remains to be noted that no country has yet completed the methodically elegant derivation of demand-referenced and psychologically systematic demand, observation, assessment and decision standards. The conclusive determination of a professionally founded and methodically optimum balance between standardisation and examiner judgement is still to be achieved. Implementation of the recommendations presented in Chapter 5, however, would enable Germany to catch up to progressive international developments.

Jürgen Bönninger, Dietmar Sturzbecher, Jörg Biedinger, Arne Böhne, Gerhard v. Bressensdorf, Peter Glowalla, Marcellus Kaup, Christoph Kleutges, Gerhard Müller, Reinhard Müller, Wilhelm Petzholtz, Rolf Radermacher, Mathias Rüdell, Andreas Schmidt & Winfried Wagner

8 Possibilities for optimisation of the practical driving test in Germany

The present project report is aimed at further development of the methodical foundations of the practical driving test and is to be measured against the extent to which it has been successful in attaining the following objectives (see Chapter 1):

1. Critical appraisal of the relevant state of knowledge in testing methodology and didactics regarding the practical driving test,
2. Description and evaluation of the special features of the practical driving test in Germany,
3. Development of proposals for optimisation of the traditional practical driving test,
4. Elaboration of proposals for continuous scientific evaluation of the practical driving test.

The overall yield of this report is thus first to be summarised in the light of the aforementioned objectives; in doing so, points 2 and 3 are to be considered together. On this basis, it will then be possible to describe the remaining open issues and the next objectives and steps serving further optimisation. As a conclusion, we would finally like to outline the starting points and road ahead on the way to a scientifically founded, promotion-oriented and safety-referenced driving test.

Results of the present project

(re 1) The critical appraisal of the relevant state of knowledge in testing methodology and didactics regarding the practical driving test has revealed that, from the methodical perspective, the practical test is to be viewed as a work sample which is assessed by way of systematic behaviour observation and ends with a binary test decision. This methodical categorisation provides a foundation for the content and method systems of the practical driving test.

From the point of view of content, a work sample comprises a series of tasks which reflect the scope of a given demand profile (“domain”) and are considered representative, in other words demands which are encountered regularly and are thus of particular significance within the domain. Consequently, the practical driving test should also comprise tasks which are derived from the demands faced when driving a motor vehicle in road traffic, i.e. demands which are to be mastered frequently in the contemporary traffic environment and display a high safety relevance. These test tasks can be divided into three groups: Preparation and completion of the drive, the drive itself and special driving manoeuvres.

As regards the methodology, the basic assumption is that the observation situations for systematic behaviour observation must be structured by way of sufficiently standardised demands; this represents the first step towards a guarantee of objectivity. Furthermore, systematic behaviour observation is dependent on a catalogue of observation categories serving to focus the observer’s perception on specific aspects of the test candidate’s behaviour, as well as assessment criteria by which to evaluate the observations. The observation categories and assessment criteria must also be adequately standardised; this can be seen as the second step with a positive influence on objectivity. Finally, a set of decision criteria is required to enable the individual task assessments to be condensed and translated into a test

decision; the standardisation of these decision criteria is the third factor contributing to objectivity.

The previously described methodical correlations are applicable for all work samples, and thus equally for the practical driving test. The questions as to how the relevant demand standards, observation categories, assessment criteria and decision criteria are to be formulated, and the degree of standardisation which they need to possess, by contrast, are determined by the individual content particularities of the practical driving test, i.e. by the nature of the domain “Motorised road traffic”.

A domain, as already mentioned, is to be viewed as a field of demand profile content in which similar problem solution strategies, knowledge assets and experiences can be applied and for which common normative orientation patterns exist (see Chapter 2). A distinction is made between “well-defined” and “lifeworld” domains. In lifeworld domains, problems can only be defined with vague contours, and there are neither clear-cut solution strategies leading reliably to success, nor a priori rules with which to determine whether an attained solution status is acceptable as a target status. Competence is the ability to solve problems successfully in a given domain, and it appears evident that the operation of a motor vehicle in public road traffic is to be viewed as a demand profile in the sense of a lifeworld domain: The problems to be solved here, which result from the particular traffic situation and can also be termed “driving tasks”, display a high level of complexity and dynamism, and vary in accordance with the infrastructure circumstances (e.g. junction of roads with one traffic lane each, junction of roads with several traffic lanes each), the traffic density, the visibility and weather conditions, the test vehicle, and also the driver’s experience and other personality traits. These varying test conditions do nothing to simplify adequate examination of a candidate’s problem-solving capacities in road traffic, i.e. his driving competence, because they essentially exclude the methodically desirable standardisation.

If driving competence is nevertheless to be assessed in a professionally acceptable manner under such variable conditions and in an observation context which is subject to constant change due to the moving test vehicle, then it is necessary to develop a special test concept. This test concept is characterised firstly by its “coarse” standardisation, which is based not on the detailed external attributes of a traffic situation, but instead on its psychological significance: A road junction is in this sense always a singly defined observation situation which demands no further differentiation, irrespective of the specific building environment or visibility conditions, provided that no circumstances of particular safety relevance require otherwise. The driving test examiner must thus continually decide whether a certain traffic situation or driving task is an appropriate embodiment of the defined task category (e.g. “Passing crossroads”). Accordingly, he must also weigh up whether the problem-solving or driving behaviour displayed corresponds to a specified assessment standard. These subjective decision processes, which are always related to the conditions of defined demand and assessment classes, can be described as “scope of judgement”: Without scope of judgement on the part of the examiner, it is not feasible to conduct tests in lifeworld domains!

The second significant property of the necessary special test concept – alongside an adequate level of standardisation – is an adaptive test strategy. By principle, systematic behaviour observation requires that a certain observation situation be realised several times, so as to be able to recognise observation errors. In the lifeworld domain “Motorised road traffic”, however, the observation situations vary quite conspicuously, even where they actually belong to the same demand class: As already mentioned, crossroads and junctions will not always take an identical form, and so the demand class “Passing crossroads” must be

considered several times during the course of the test. The repetition is thus here not geared merely to a reversal of observation errors in the narrower sense, but is above all a source of exemplary verification that the demand situations of a demand class are mastered irrespectively of their specific form (content-related component), and that the observed behaviour falls reliably within the definitions of a particular assessment category (methodical component). In this manner, an adaptive test strategy structures the examiner's information searches and information processing during the test and establishes correlations between the displayed performance and the further test planning. It comprises the action components "Planning and structuring", "Observation", "Assessment", "Verification" and "Decision", which could be arranged in a circular model with feedback and action loops (see Chapter 5.5). An appropriate level of standardisation in combination with a defined scope of judgement, on the one hand, and an adequately described adaptive test strategy, on the other hand, thus represent inseparable methodical foundations of the practical driving test: The limitations for standardisation result from practicability demands in respect of the adaptive test strategy and from the necessity to be able to react flexibly to the prior course of an individual test.

An adaptive test strategy places high demands with regard to the test competence of the driving test examiner, as the examiner must not only possess a precise awareness of his scope of judgement, but must also cope with the uncertainties arising from its application. A certain relief – in the sense that limits are placed on the examiner's scope of judgement – and the prerequisites for a high methodical test quality are achieved by defining a general framework of demand standards, observation categories, and assessment and decision criteria. The elaboration of these standards must be based on an analysis of the actual demands of road traffic (see Chapters 4.3.3 and 5.4); from this demand analysis, it is then possible to derive the demand standards (test tasks), to which all other standards (observation categories, assessment and decision criteria) refer. At the same time, the examiner must not only possess corresponding knowledge of the described standards, but must also be in a position to apply these standards in the relatively cramped conditions of the test vehicle and in accordance with the adaptive test strategy. What does that mean?

The implementation of an adaptive test strategy not only excludes the use of standardised test routes, it also requires the examiner to handle tasks relating to planning of the driving route during the actual course of the test, thus occupying a proportion of his cognitive capacities. As such continuous test planning is based on the performance displayed by the candidate during the test so far, the observed behaviour must also be assessed immediately. Finally, the candidate must be offered substantial feedback on his driving performance at the end of the test, and the whole process must be evaluated; both expectations are dependent on (at least coarse) parallel documentation of the course and result of the process (Kanning, 2004). For reasons of practicability alone, the simultaneous realisation of route planning tasks, behaviour observation, behaviour assessment and test documentation forces the acceptance of methodical compromises in the sense of limitation and prioritisation of the demands placed on the examiner. In other words: The demand standards must be limited unambiguously to a readily manageable number of safety-relevant items or driving tasks. The same applies to the observation categories and assessment criteria, where it must be asked, for example, whether the safety relevance of an environmentally aware manner of driving or of an obstruction of the traffic is sufficient to warrant the definition of special categories and criteria for their observation and assessment. In the end, it is necessary to use assessment scales which embrace only a few rating levels and thus supply only an ex-

emplary behaviour reference (e.g. “excellent” performance versus errors)⁶³. The documentation requirements, finally, should be weighed up carefully and limited accordingly, as the documentation is not needed for a subsequent performance assessment.

(re 2 and 3) A description and evaluation of the special features of the practical driving test in Germany, and likewise any derived proposals for optimisation of this test, must be guided by a comparative analysis of the implementation conditions, demand standards, observation categories, assessment criteria, decision criteria and test documentation in the light of the systems in place in other countries. This was accomplished comprehensively in Chapters 5 and 7; it is thus only necessary to give a brief summary at this point.

From the methodical perspective, Germany appears to be moving in the right direction with its efforts to describe the demands to be placed on test candidates as a set of specific driving tasks, albeit in the form of a standard demand profile relating to the test location; many European countries forego such precise demand standards. The table of driving tasks presented in the Examination Guidelines (Annex 11 PrüfRiLi), however, has not been derived from the general demands of road traffic according to the principles of psychological testing, but is instead essentially the product of expert opinions canvassed more than three decades ago. It is thus not to be overseen that the contents of the driving task list are in part outdated. Furthermore, the list seems to be too long and too detailed – in the methodical sense – to be implemented universally as a candidate-oriented minimum demand standard. It is also to be remembered that the standard must be suitable for implementation at every test location, which means that the individual driving tasks must be formulated with a similar degree of complexity and sufficient generalisation; driving tasks elaborated on this basis can then be varied and adapted by the examiner within the defined framework of his scope of judgement (see above).

A starting point for the necessary streamlining, restructuring and modernisation of the contents of the table of driving tasks is offered in the present report (see Chapter 5.4): By way of an initial content analysis and methodical appraisal of the list of driving tasks, a number of redundancies and methodical inconsistencies were uncovered. These findings can now be taken as the basis for both expert ratings and a traffic-psychology-oriented demand analysis, leading in turn to an improved driving task list which can then be verified empirically in respect of its practicability at a representative selection of test locations. Should it prove possible, in this way, to realise a dual (i.e. by test location and driving task), but nevertheless mutually referenced structuring of the observation situations for the practical driving test, this would represent a first major step towards further improvement of its methodical quality.

With reference to the demand standards, the future handling of the basic driving manoeuvres is still to be clarified. From our point of view, in respect of the driving test for a Class B licence, it should be considered whether the examination of the basic driving manoeuvres could not be shortened, or else the test duration increased, so as to extend the time available for actual driving. For this licence class, the basic driving manoeuvres could

⁶³ The question as to how many demand and observation categories are practicable for a participatory observation in a motor vehicle is difficult to answer, as there has been hardly any critical methodical analysis to date. Sturzbecher, Hermann, Kammler & Schellhas (2004) achieved an internal consistency (Cronbach’s alpha) of .96 among 16 observers with an observation report and checklist (“Beobachtungsinventar und Checkliste zur Erfassung der Qualität der praktischen Fahrschulausbildung”) based on seven demand categories and a four-level assessment scale, and were even able to increase this figure further by way of observer training. A value of .70 is already considered an acceptable level of observer agreement (Fassnacht, 1995).

also be conceptualised as inherent elements of the test drive, and thus assessed by the examiner by way of the same observation categories as the driving tasks. It is furthermore necessary to streamline the assessment criteria applicable to the basic driving manoeuvres and to reduce their significance for the test decision to the level and handling defined for simple errors.

The observation categories currently applicable in Germany, as specified in the Examination Guidelines (Annex 10 PrüfRiLi), were also analysed with regard to their contents. The result which emerged was a streamlined category list (see Chapter 5.5) which corresponds essentially to that which was already shown to be expedient over thirty years ago (see Chapter 4.3.3), was used by a number of Technical Examination Centres in very similar form and to methodical advantage within the framework of their test reports up to 1996 (see Chapter 4.4), and is above all still used almost with exception by today's methodically innovative European countries (see Chapter 7.3). It is again recommended to take the corresponding findings as a basis for expert ratings and a traffic-psychology-oriented demand analysis, in order to further perfect this list of observation categories. This can be viewed as the second major step serving an optimisation of the quality of the practical driving test.

Once observation categories have been determined and after the required behaviour patterns for each driving task (including the basic driving manoeuvres) have been described, it is possible to elaborate a correspondingly referenced catalogue of assessment criteria. This work has apparently already been done in a number of methodically progressive European countries, and that in respect of both driver training and the driving test (see Chapter 7.3). This approach appears desirable, but will require a certain time, because – if a sound result is to be achieved – studies are necessary from the perspectives of developmental and traffic psychology to derive the characterisation of novice driver behaviour which is to be considered the minimum standard with regard to driver and traffic safety, and to ascertain whether this standard is typically achieved by the training (see below). As soon as this has been completed, the assessment levels “Excellent”, “Simple error” and “Serious error” (see Chapter 5.5) must be defined, together with a clear algorithm for determination of the test decision. In this way, the third and fourth steps will have been accomplished on the road to improved test quality.

Finally, the defined driving tasks, observation categories and serious errors must be arranged expediently in a corresponding test report, alongside a provision for specification of the test decision. This report could be a written form or – better still – a software solution for the examiner's PC. This is a matter of software design rather than a task for psychological testing, and should be flanked by studies of practicability. The successful completion of this task and an optimised test report, which can then serve as a basis for a concluding conversation with the candidate, for the continued learning of the novice driver and for evaluation of the test process, represent the fifth stage in the improvement of test quality.

Lest the point has not been elaborated clearly enough in the course of the above discourse, it is to be emphasised once more that all the aforementioned standards must possess direct cross-references in terms of content (Mietzel, 1998)! This has already been achieved more or less successfully in the methodically progressive European countries.

(re 4) The fourth objective of the present project was to elaborate proposals for continuous scientific evaluation of the practical driving test. How has this objective been achieved? The different methods of quality assurance which are currently implemented with regard to the practical driving test were already described in Chapter 5.7. It was revealed that the focus of empirical evaluation of the practical driving test has to date been placed on expert observations in the form of internal and external audits. Furthermore, the Technical Examination Centres have in the past conducted isolated customer surveys, for which a sys-

tematic methodical foundation is now provided with completion of the present project. After all, the accreditation requirements stipulate that the Technical Examination Centres must provide for evaluative studies of the psychometric quality of the (practical) driving test; such studies have been neglected to date. The reasons were also presented in Chapter 5.7, namely a lack of coordinated demand, observation, assessment, decision and documentation standards which are then applied uniformly in practice.

It can now be assumed that evaluation studies inspired by psychological testing will begin to deliver correspondingly founded analyses of the quality of the practical driving as soon as the aforementioned standards are made available and implemented in practice. It is furthermore to be expected that the Technical Examination Centres will in future conduct customer surveys which are systematic (i.e. regular, cross-referenced and comparable), multi-perspective (i.e. from the perspectives of the test candidates, driving instructors and authorities) and multi-method in character (i.e. on the basis of different forms of questioning). Once this is achieved, the next question will be to consider whether a new balance should be sought between the three mentioned forms of empirical evaluation of the practical driving test.

How does this question come about? It is beyond doubt that expert observations, i.e. internal and external audits, play a justified role in the overall system of quality management, and this significance is also not to be questioned here. On the other hand, the statement value of external audits, in particular, is limited with regard to the product quality of the service “Practical driving test”: After all, they are not intended to realise a specific verification of product quality, but rather to monitor the corporate system of quality assurance. The latter, however, has itself comprised mainly audits to date (see above) and is thus focussed strongly on expert observations. This focus is not without consequences from the perspective of psychological testing, as was already described in Chapter 2: Work samples – and this is essentially the nature of the situation when an auditor supervises an examiner during a driving test – are good indicators for the maximum performance capacity of the person observed, but not for the person’s typical performance in everyday situations with no special motivation to achieve maximum performance (Schuler, 2001). In other words: It is to be feared that the potential contribution of audits to a safeguarding of the quality of the practical driving test is limited.

At the same time, it must be taken into account that the participation of an additional auditor during a real practical driving test distorts the test conditions (see Chapter 5.7). The costs of audits – not only economically but also from the point of view of psychological testing – are thus high in the case of the practical driving test. It would thus be expedient to take up the described proposal of preliminary tests as a source of random sampling data for the purposes of test and evaluation studies. The scope and the conditions under which such preliminary tests are to be conducted must be discussed further once an evaluation concept has been presented.

Further objectives and steps on the road to an optimised practical driving test

Further objectives and steps serving optimisation of the practical driving test are to be derived from the latest stage reached by work in conjunction with the present project, and here in particular from those questions which remain open and the further development of medium-term objectives within the framework of the project. The next steps are to be taken in the context of independent, but nevertheless thematically linked projects commissioned by both the Federal Highway Research Institute BASt (see Chapter 1) and the Technical Examination Centres.

1. It is first of all to be noted that the practical driving test fulfils various functions and differs greatly in appearance, depending on how it is integrated with driver training and embedded into an overarching system of novice driver preparation. This is illustrated by the many forms which the practical driving test takes in the different national driver licensing systems. It thus appears advisable to pursue more detailed international research to investigate innovative forms of practical testing or innovative combinations of traditional testing with other training and test elements. When selecting the countries to be considered, it must also be kept in mind that, at international level, two trends are emerging with regard to optimisation of the systems of novice driver preparation: On the one hand a pedagogically ambitious driver training model with a focus on the GADGET matrix (e.g. Western Europe, Scandinavia), and on the other hand a model based on graduated licensing (e.g. Victoria/Australia). The next step is thus to analyse the effectiveness of the different practical testing models, and thereby to take into account the level of standardisation defined for the test and driving tasks, observation categories and assessment and decision criteria in the individual countries. It is furthermore necessary to clarify the scope of judgement to be granted to the driving test examiner in respect of the test assessment, and the prerequisites to be met for the implementation of such personal judgement. Last but not least, information should be sought on the possible correlations between the test quality in the countries concerned and the frequency of accidents involving novice drivers.
2. One objective which could not be achieved within the present project on account of the determined complexity and outlay was to analyse whether the incorporation of regionally typical risks and local accident black spots as test contents could help to reduce the numbers of accidents involving novice drivers. This topic is in the meantime a focus of the follow-up project “Regio-Protect 21”, which was already introduced in Chapter 5.4,
3. Another outstanding objective is to clarify how the advances in vehicle technology, and thus the technical features of the test vehicle, should be taken into account in the further development of test standards. The ever more widespread driver assistance systems and their growing diversity, in particular, must be reflected in the further development of the contents and methods of the practical driving test. This diversity is characterised by ever shorter innovation cycles. Consequently, knowledge of the driver assistance and accident avoidance systems offered by the test vehicle should be operationalised within the framework of practical testing.
4. It was already explained in Chapter 4 that a driving test candidate cannot yet be viewed as a well-versed driver at the time of his driving test, and that the responsible task of the examiner is thus to ascertain, on the basis of the test performance, whether the attained level of competence (still) precludes unaccompanied driving, or whether it permits independent further learning in the real traffic environment without significant risks for the public. The driving licence thus represents a “licence to continue learning”, and the test is in this sense both an evaluation of the candidate’s learning progress to date and a source of starting points for the planning of continued learning in the sense of “promotion-oriented diagnostics”. “This requirement can only be satisfied if the demand standards of the test are not formulated in the sense of demands to be met by an elaborated manner of driving, but instead derived from [... the answers to] the fundamental questions [...] (1) which components of driving competence are necessary for participation in motorised road traffic, (2) which of these components can be evaluated by a driving test, (3) which level of maturity of the verifiable components must be viewed as the minimum standard with regard to novice driver safety and can this level typically be at-

tained during driver training, and finally (4) how can these minimum standards be operationalised in a methodically meaningful manner in the context of a driving test?" (Hampel & Sturzbecher, see Chapter 4.2). The next step towards optimisation of the practical driving test is thus to review and reformulate the catalogue of driving tasks on the basis of the existing Examination Guidelines (Annex 11 PrüfRiLi); at the same time, appropriately referenced assessment criteria are to be elaborated with a sound foundation in developmental psychology in the sense of the aforementioned questions.

5. Once the demand standards, observation categories, assessment and decision criteria and test reports have been revised and cross-referenced, finally, a scientifically based concept for continuous maintenance, quality assurance and further development of the practical driving test must be developed. This concept should be discussed with all those involved in the driver licensing system, and the results then incorporated into the licensing system manual ("Handbuch zum Fahrerlaubnisprüfungssystem") already mentioned in Chapter 5.7. That would conclude the next stage of optimisation of the practical driving test: The driving test in Germany would then stand on a sound methodical foundation.

Outlook: Possibilities for a scientifically founded, promotion-oriented and safety-referenced driving test

The (practical) driving test is to be developed further as a future-oriented system, and it is becoming an ever more frequent demand that this further development be realised on a scientific foundation. But how is this demand to be interpreted; does it not contain more than a mere trace of helplessness? And which scientific foundations are actually meant?

In our view, the demand for scientific reinforcement is on the one hand a call to apply general scientific procedures. This includes, for example, the regular reappraisal of existing solutions, even those of proven past value, as a means to confirm their justification under changing conditions. A scientific approach is furthermore characterised by the striving to deepen existing knowledge and thus to prepare the ground for optimisation through new ideas. And these new ideas, in particular, entail a certain duty to seek proof of their superiority, even if there seems to be no doubt as to the convincing benefits. The evaluation of an existing system in the light of new alternatives requires not only experience, but also verifiable hypotheses and methodically sophisticated empirical routines to achieve an unbiased result free of preconceived notions. Finally, the outcome of the research must be presented independently of any professional interests and taken into account in the optimisation of current practice. Without due consideration of all these fundamental scientific principles, targeted continuous further development of the driver licensing system will also not be feasible.

At the same time, the demand for a scientific foundation for the driving test means that we should not lose sight of the underlying basic research disciplines, and must pursue their further development as a basis for test optimisation. This demand has already been heeded in the present report: The role of (driver licensing) legislation and the influence of the legal system on test organisation have been discussed; furthermore, the significance of technology advance, and above all technical innovations such as driver assistance systems, was reflected; and last but not least, the doctrines of psychological testing were applied for critical analysis of the methodical design of the test. Two further disciplines with subject references to the driving test have only been taken into account marginally to date: Representatives of pedagogical psychology (e.g. Renkl, 2001; Mietzel, 1998) and vocational pedagogy (e.g. Muders, 2000; Schmidt et al., 2000) are also undertaking efforts to improve examination design on the basis of the competence concept (see Chapter 2).

What has been triggered by these efforts, and how are they to be characterised? In pedagogical psychology, recent attention has been directed increasingly to the problem of “inert knowledge”, which refers to the situation in which acquired information is not used in practical demand situations, or at least cannot be used by the learner. This phenomenon is significant for the further development of the practical driving test in that the test contents and methods are necessarily reflected in the training and learning processes, and it should thus be asked, how an optimised test design could discourage the formation of such inert knowledge. This aspect appears even more important in the context of the theoretical driving test, which is occasionally described as a (mere) “test of knowledge” and thus runs the risk of becoming a test of inert knowledge. According to Renkl (2001), the acquisition of applicable knowledge is promoted by the new pedagogical approaches of “situated learning”. This means that learning takes place in the context of the complex, authentic problem situations in which it is to be applied; if this is to be achieved, then the theoretical test must also be application-oriented. Does it already meet this requirement today? This justified question must be left for discussion elsewhere.

Inspiration for further development of the driving test is to be found in the field of vocation pedagogy. The elaborated approaches to new forms of examination gain relevance for the driving test because they are similarly geared to an evaluation of action competence. According to Muders (2000, p. 5), vocational action competence relates to an individual’s “ability and readiness to tackle vocational demands independently and purposefully on the basis of knowledge, experience and own ideas, to evaluate the solutions and to develop his personal action capacities further”. The latter two demands already point to the significance of self-reflective knowledge and ability in the examination situation; consideration of these aspects, as an important overarching (“key”) qualification alongside central subject-specific qualifications, was also demanded by Schmidt et al. (2000). Tests and examinations in their current forms, which concentrate on isolated knowledge sampling and in their practical sections examine predominantly basic skills, are according to Muders (2000) unsuitable as instruments to mirror the qualification of a candidate in respect of actual vocational demands. He thus proposes integrated and action-oriented examinations, for which Schmidt et al. (2000) suggest simulation of the vocational demands in as realistic a manner as possible; correspondingly, within the framework of the vocational training process, less importance is to be attached to early examinations of exclusively theoretical knowledge, and the learning progress in later phases of practical “on-the-job” training is instead to be taken as a basis for assessment of the trainee. It remains to be discussed whether these proposals could also be applied meaningfully in the context of the driving test.

The above insights indicate that, following the necessary steps to optimise the practical driving test as outlined in the previous section, the future objective can no longer be simply to determine further sequences of suitable measures to improve the manner of testing. It is rather the case that the whole system of the driving test – to remain with the metaphor of the Technical Examination Centres – must be placed on the test bench, and that alongside the training system with which it comprises the overall process of novice driver preparation.

A second stage in the optimisation of the practical driving test, though one which today still lies far ahead of us, will be to provide for better integration into an innovative system of protective novice driver preparation. The benefits of such systems arise from the fact that they overcome the limitation to a short period of basic (professional) driver training and essentially selective intermediate and final tests. They instead comprise a diversity of interlinked learning modules, which are spread meaningfully and according to didactic principles over a training duration corresponding to the period for development of mature driving competence. Driver training in this form must be complemented by test elements

which focus on the level of driving competence to be expected at the particular stage of the training process, and which provide pointers to an optimum design for the further course of training in the sense of promotion-oriented diagnostics. It is in this context necessary to review current standpoints and to enter an unbiased discussion of the possibilities to arrange proven and innovative training and test elements in a new order and along a new timescale. One particularly important and in future still indispensable test element will be a professionally and methodically optimised practical driving test.

At international level, the discussion of innovative protective novice driver preparation has long since begun. In Norway and the Netherlands, for example, test elements to assess hazard perception are being elaborated and evaluated, and are then to be incorporated into improved models for novice driver preparation (Sagberg, 2005; CBR, 2005). The Dutch draft for such a model envisages delaying the theoretical test until the candidate has demonstrated his competence in the handling of simple traffic situations in a first test of practical driving abilities. Within the framework of the theoretical test, it is then planned to examine not only knowledge of traffic rules and signs, but also the candidate's traffic observation and risk perception in the sense of an ability to anticipate hazards and react appropriately to complex traffic situations (SWOV, 2007). No such future visions have been presented in Germany to date, also because the necessary fundamental scientific analyses of the theoretical and practical driving tests are yet to be completed (see the previous section and Chapter 1). On the basis of the present report, however, the critical discourse on such models is herewith opened!

Bibliography

- Achatz, M. & Tippelt, R. (2001). Wandel von Erwerbsarbeit und Begründungen kompetenzorientierten Lernens im internationalen Kontext. In: A. Bolder, W. R. Heinz & G. Kutscha (Hrsg.), *Deregulierung der Arbeit – Pluralisierung der Bildung?* (pp. 111-127). Opladen: Leske + Budrich.
- Anderson, J. R. (1987). Skill acquisition: Compilation of weak-method problem-solutions. *Psychological Review*, 94, 192-219.
- Anderson, J. R. (1993). *Rules of the mind*. Hillsdale, NJ: Erlbaum.
- Anklam, G. (1990). *Die Geschichte der Fahrschul Ausbildung in Deutschland bis 1945 und danach auf dem Gebiet der heutigen DDR*. Berlin.
- Barthelmeß, W. (1999). Fahrerlaubnisprüfung – eine Bilanz und ein Entwurf für morgen. *Zeitschrift für Verkehrssicherheit*, 45, 4, 159-163.
- Baumert, J. (1993). Lernstrategien, motivationale Orientierung und Selbstwirksamkeitsüberzeugungen im Kontext schulischen Lernens. *Unterrichtswissenschaft*, 21, 327-354.
- Beiner, F. (1982). *Prüfungsdidaktik und Prüfungspsychologie. Schriften der Bundesakademie*. Cologne, Bonn: Heymanns.
- Bergmann, B. (2003). Selbstkonzept beruflicher Kompetenz. In: J. Erpenbeck & L. v. Rosenstiel (Hrsg.), *Handbuch Kompetenzmessung* (pp. 229-260). Stuttgart: Schäffer-Poeschel.
- Bernien, M. (1997). Anforderungen an eine qualitative und quantitative Darstellung der beruflichen Kompetenzentwicklung. In: QUEM (Hrsg.), *Kompetenzentwicklung '97* (pp. 17-83). Münster: Waxmann.
- Bien, W. (2003). *Risiko – Gefahr oder Chance. Ist das Risiko jung und männlich?* Unpublished paper presented 21.11.2003. Bad Boll: Evangelische Akademie.
- Bönninger, J., Kammler, K., Sturzbecher, D. & Wagner, W. (2005). Theoretische und praktische Fahrerlaubnisprüfung in Europa. *Recherchebericht*. Dresden: TÜV | DEKRA arge tp 21.
- Bönninger, J. & Sturzbecher, D. (2005). Optimierung der Fahrerlaubnisprüfung. Ein Reformvorschlag für die theoretische Fahrerlaubnisprüfung. *Berichte der Bundesanstalt für Straßenwesen, Heft M 168*. Bremerhaven: Wirtschaftsverlag NW.
- Bönninger, J. & Sturzbecher, D. (2005). *Qualität der Fahrerlaubnisprüfung. Ein Reformvorschlag für die theoretische Fahrerlaubnisprüfung*. Bergisch-Gladbach: Wirtschaftsverlag NW.
- Borchers, W. (1976). Entwicklung des Fahrerlaubniswesens, insbesondere der Fahrerlaubnisse der Klasse 1, 2 und 3 (a und b). *Verkehrsdienst Nr. 60*, Heft 9, pp. 261-269.
- Bortz, J. & Döring, N. (2002). *Forschungsmethoden und Evaluation für Human- und Sozialwissenschaftler*, (3. Aufl.). Heidelberg: Springer.
- Brauckmann, J., Hähnel, R. & Mylius, G. (2006). *Der Kraftfahrersachverständige*. Bonn: Kirschbaum.
- Breuer, K. (2003). *Diagnostik kaufmännischer Bildungsstandards. Entwicklungslinien und Ansprüche aus wirtschaftspädagogischer Sicht*. Universität Mainz. www.wipaed.uni-mainz.de/breuer/Dateien/HBB2004-Diagnostik_kfm_Standards.pdf [05.04.2005].
- Bronfenbrenner, U. (1981). *Die Ökologie der menschlichen Entwicklung. Natürliche und geplante Experimente*. Stuttgart: Klett-Cotta.
- Brown, I. D. & Groeger, J. A. (1988). Risk perception and decision taking during the transition between novice and experienced driver status. *Economics*, 31, 585, 597.
- Brunstein, J. C. (1986). *Gelernte Hilflosigkeit, Depression und Leistungsverhalten in Misserfolgssituationen*. Dissertation. Gießen: Justus-Liebig Universität.
- Bundesanstalt für Straßenwesen (2003). *Anforderungen an Träger von Technischen Prüfstellen (§69 FeV i.V. mit den §§10 und 14 des KfzSachVG) der Akkreditierungsstelle Fahrerlaubniswesen der BASt vom 10.10.2003*.
- CBR (2005). *Bessere Prüfungsergebnisse bei weniger Unfällen*. (Online). Available at: http://www.cieca.be/ciecanews2005_du.pp [2007-06-13].

- Clifford, M.M. & Walster, E. (1973). Research note: The effect of physical attractiveness on teacher expectations. *Sociology of Education*, 46 (2), 248-258.
- Crick, N. R. & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin*, 115, 74-101.
- DEKRA (2004). *Kompendium zur Durchführung von Fahrerlaubnisprüfungen*. Dresden: Technische Prüfstelle des DEKRA e.V.
- DEKRA (2007). *Kompendium für aaSoP im Fahrschulwesen*. Klettwitz: DEKRA Automobil GmbH.
- Dietrich, P. S. & Sturzbecher, D. (2008). *Weiterentwicklung der Professionalisierung der Sachverständigen auf dem Gebiet der Fahrerlaubnisprüfung*. Dresden: TÜV | DEKRA arge tp 21.
- Dion, K., Berscheid, E. & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology*, 24 (3), 285-290.
- Dorsch, F., Häcker, H. & Stapf, K. H. (Hrsg.). (1994). *Psychologisches Wörterbuch* (12. überarb. u. erw. Aufl.). Berne: Huber.
- Drösler, J. (1965). Zur Methodik der Verkehrspsychologie. In: C. Graf Hoyos (Hrsg.): *Psychologie des Straßenverkehrs*. Berne: Huber.
- Ebbinghaus, M. & Schmidt, J. U. (1999). *Prüfungsmethoden und Aufgabenarten*. Bielefeld: Bertelsmann.
- Elder, G. & Caspi, A. (1991). Lebensverläufe im Wandel der Gesellschaft: soziologische und psychologische Perspektiven. In: A. Engfer et al., *Zeit für Kinder! Kinder in Familie und Gesellschaft* (pp. 32-60). Weinheim, Basle: Beltz.
- Erpenbeck, J. (Hrsg.). (2004). *Handbuch Kompetenzmessung in Unternehmen*. Stuttgart: Schäffer-Poeschel.
- Erpenbeck, J. & Heyse, V. (1999). *Die Kompetenzbiographie*. Münster: Waxmann.
- Fack, D. (2000b). *Automobil, Verkehr und Erziehung. Motorisierung und Sozialisation zwischen Beschleunigung und Anpassung 1885-1945*. Opladen: Leske + Budrich.
- Fassnacht, G. (1995). *Systematische Verhaltensbeobachtung. Eine Einführung in die Methodologie und Praxis*. Stuttgart: Reinhardt.
- Fisseni, H.-J. (2004). *Lehrbuch der psychologischen Diagnostik*. 3. Auflage. Göttingen: Hogrefe.
- Fittkau, B. (1969). Dimensionen des Lehrerverhaltens und ihre Bedeutung für die Auslösung von Angst und Sympathie bei Schülern. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie*, 1, 77-92.
- Fittkau, B. (1978). Ratingskalen in der pädagogischen Beurteilung. In K. J. Klauer (Hrsg.), *Handbuch der Pädagogischen Diagnostik, Band 3* (pp. 727-747). Düsseldorf: Schwan.
- Fournier, H. (1901). Wie man fahren soll. *Allgemeine Automobil-Zeitung*, 2, 47 pp. 6-7.
- Franke, G. (2005). *Facetten der Kompetenzentwicklung*. Schriftenreihe des Bundesinstituts für Berufsbildung. Bielefeld: Bertelsmann.
- Frey, A. (1999). Aufbau beruflicher Handlungskompetenz – Theoretische Vorstellungen und diagnostisches Instrumentarium. *Empirische Pädagogik*, 13 (1), 29-56.
- Frey, A., Balzer, L. & Renold, U. (2002). *Entwicklung, Diagnose und Darstellung beruflicher Kompetenzen in der Grundausbildung*. Ergänzungen zur Fachzeitschrift für Berufsberatung, Berufsbildung und Arbeitsmarkt. www.Panorama@web.
- Fricke, R. (1974). *Kriteriumsorientierte Leistungsmessung*. Stuttgart: Kohlhammer.
- Glowalla, P. (1999). *Die Fahrerlaubnisprüfung*. Unpublished paper presented 20.02.1999. Hamburg: Jahreshauptversammlung des Fahrlehrerverbandes Hamburg.
- Grattenthaler, H., Krüger, H.-P. & Schoch, S. (2007). *Berichtsentwurf Bedeutung der Fahrpraxis für den Kompetenzerwerb beim Fahrenlernen*. Unpublished concluding report presented February 2007 on the BASt research project FE82.232/2002 "Fahrpraxis und Kompetenzerwerb beim Fahrenlernen / Literaturstudie". Würzburg: Interdisziplinäres Zentrum für Verkehrswissenschaften an der Universität Würzburg (IZVW).

- Gruber, H. & Mandl, H. (1996). Das Entstehen von Expertise. In: J. Hoffmann & W. Kintsch (Hrsg.), *Enzyklopädie der Psychologie, C/II/7*, (pp. 583-615). Göttingen: Hogrefe.
- Gruber, H. & Ziegler, A. (Hrsg.). (2002). *Expertiseforschung. Theoretische und methodische Grundlagen*. Opladen: Westdeutscher Verlag.
- Guthke, J. (1990). Grundzüge der Testkonstruktion und Testauswertung. In: J. Guthke, H. R. Böttcher & L. Sprung (Hrsg.), *Psychodiagnostik* (pp. 201-324). Berlin: Deutscher Verlag der Wissenschaften.
- Hacker, W. (1998). *Allgemeine Arbeitspsychologie – Psychische Regulation von Arbeitstätigkeiten*. Berne: Huber
- Haider, H. & Frensch, P. A. (1997). Lernmechanismen des kognitiven Fertigkeitserwerbs. *Zeitschrift für Experimentelle Psychologie, 44*, 521-560.
- Hampel, B. (1976). Die Führerscheinprüfung als Maßnahme der Selektion. *Sektion Verkehrspsychologie im BDP, 8*, pp. 100-111.
- Hampel, B. (1976b). Möglichkeiten zur Objektivierung der praktischen Fahrprüfung. *Referat 21. Fortbildungsveranstaltung Sektion Verkehrspsychologie*, Bund Deutscher Psychologen, Hannover 1.10.1976.
- Hampel, B. (1977). *Möglichkeiten zur Standardisierung der praktischen Fahrerlaubnisprüfung. Bericht zum Forschungsauftrag 7516 der Bundesanstalt für Straßenwesen*. Cologne: Technischer Überwachungs-Verein Rheinland e.V.
- Hampel, B. (1977a). Erprobung eines audiovisuellen Prüfungssystems des TÜV Rheinland – Ergebnisse und Konsequenzen. Schriftenreihe des Medizinisch-Psychologischen Instituts des TÜV Rheinland: *Mensch – Fahrzeug – Umwelt, Bd. 4*, Entwicklung und Konzepte für die Fahrerlaubnisprüfung (pp. 57-91). Cologne: TÜV Rheinland.
- Hampel, B. (1985). Neuere Entwicklungen der Fahrerlaubnisprüfung aus psychologischer Sicht. In A. Schorr (Hrsg.), *Bericht über den 13. Kongress für angewandte Psychologie*, (pp. 307-310). Bonn: Deutscher Psychologen Verlag.
- Hampel, B. & Küppers, F. (1982). Ermittlung der an Fahrprüfungsorte zu stellenden Anforderung. *Bericht zum FA 7516 der Bundesanstalt für Straßenwesen*. Cologne: TÜV Rheinland.
- Hampel, B., Sturzbecher, D., Mönch, M., Trautsch, J., Wagner, W. & Weiße, B. (2008). Die Fahrerlaubnisprüfung als wissenschaftliche Gestaltungsaufgabe. In: D. Sturzbecher, J. Bönninger & K. Kammler (Hrsg.). *Die Geschichte der Fahrerlaubnisprüfung in Deutschland*. Dresden: TÜV | DEKRA arge tp 21.
- Hampel, B., Sturzbecher, D., Mönch, M., Trautsch, J., Wagner, W. & Weiße, B. (2008). *Optimierung der praktischen Fahrerlaubnisprüfung. Methodische Grundlagen und Möglichkeiten der Weiterentwicklung*. Dresden: TÜV | DEKRA arge tp 21.
- Hannan, P., Hartje, W. & Skreczek, W. (1998). Beurteilung der Fahreignung nach Hirnschädigung. *Nervenarzt, 10*, 864-872.
- Hatakka, M., Keskinen, E., Gregersen, N.P. & Glad, A. (1999). Theories and aims of educational and training measures. In: S. Siegrist (Hrsg.), *Driver training testing and licensing- towards theory based management of young drivers injury risk in road traffic* (Results of EU Project GADGET, Work Package 3, BFU Report 40, pp. 13-48). Berne: Schweizerische Beratungsstelle für Unfallverhütung.
- Havighurst, R. J. (1982). *Developmental Tasks and Education* (7th ed.). New York: Longman.
- Heiler, G. L. & Jagow, J. F. (2002). *Führerschein. Aktuelle Informationen über das Fahrerlaubnisrecht*. Munich: Vogel.
- Heinrich-Böll-Stiftung (2004). *Selbständig lernen – Bildung stärkt Zivilgesellschaft*. 6 Empfehlungen der Bildungskommission der Heinrich-Böll-Stiftung. Weinheim, Basle: Beltz.
- Heller, F. (1973). *Die Entwicklung der Straßenverkehrsunfälle in der Bundesrepublik Deutschland*. Summarising report of the research group “Entwicklung der Straßenverkehrsunfälle in der BRD 1970/71.” Cologne: Bundesanstalt für Straßenwesen.

- Hirschberger, M. (1975). *Vortrag auf der Jahreshauptversammlung des Fahrlehrerverbandes*. Unpublished paper. Cologne: TÜV Rheinland.
- Höder, J., Tausch, R. & Weber, A. (1979). Die Qualität der Schülerbeiträge im Unterricht und ihr Zusammenhang mit drei personenzentrierten Haltungen ihrer Lehrer. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie*, 11, 232-243.
- Hofmann, G. (1975). Ergebnisse der elektronischen Datenverarbeitung von Fahrerlaubnisprüfungen. In: *Kraftfahrer und Führerschein*, 17: TÜV Bayern.
- Ingenkamp, K. (1997). *Lehrbuch der Pädagogischen Diagnostik*. Weinheim: Beltz.
- Jacobs, B. & Strittmatter, P. (1979). *Der schulängstliche Schüler*. Munich: Urban & Schwarzenberg.
- Janiszewski, H. (2007). *Einführung in das Straßenverkehrsrecht* (in StVR, Beck-Texte)
- Jensch, M., Spoerer, E. & Utzelmann, H. D. (1977). Verkehrsverhaltenslehre. *BAST-Bericht FP 7515 Didaktische Verknüpfung von StVO und Gefahrenlehre zur Verbesserung des theoretischen Fahrunterrichts*.
- Kanning, U. P. (2004). *Standards der Personaldiagnostik*. Göttingen: Hogrefe.
- Kauffeld, S. & Grote, S. (2002). Kompetenz – ein strategischer Wettbewerbsfaktor. *Personal*, 11, 30-32.
- Kirchler, E. (1999). *Wirtschaftspsychologie: Grundlagen und Anwendungsfelder der ökonomischen Psychologie*. Göttingen: Hogrefe.
- Kötter, S. & Nordmann, E. (1987). Diagnostische Beobachtungsverfahren. In: M. Cierpka (Hrsg.), *Familiendiagnostik*. Berlin: Springer.
- Krohne, H. W. (1996). *Angst und Angstbewältigung*. Stuttgart: Kohlhammer.
- Kroj, G. (1977). Führerscheinprüfung – Differentialdiagnose oder lehrzielorientierte Messung. *Entwicklungen und Konzept für die Fahrerlaubnisprüfung*.
- Kroj, G. (1999). *Akkreditierung von Fahrerlaubnisprüfstellen in Deutschland*. Vortrag auf dem CIECA-Kongress, Berlin.
- Kroj, G. & Pfeiffer, G. (1973). Der Kölner-Fahrverhaltens-Test (K-V-F-T). *Faktor Mensch im Verkehr*, Heft 21.
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: Mc Graw Hill.
- Lazarus, R. S. & Cohen, J. B. (1978). Environmental stress. In: J. Altmann & J. F. Wohlwill (Eds.), *Human behavior and the environment: Current theory and research* (90-128), New York: Plenum.
- Lazarus, R. S. & Launier R. (1978). Stress-related transactions between persons and environment. In: L. A. Pervin & M. Lewis (Eds.) *Perspective in interactional psychology* (287-327), New York: Plenum.
- Leutner, D. & Brünken, R. (2002). Lehr-lernpsychologische Grundlagen des Erwerbs von Fahr- und Verkehrskompetenzen. In: *Zweite Internationale Konferenz "Junge Fahrer und Fahrerinnen"*, pp. 76- 87. Bergisch-Gladbach: Wirtschaftsverlag NW.
- Lienert, G. A. (1961). *Testaufbau und Testanalyse*. Weinheim: Psychologie Verlags Union.
- Lienert, G. A. (1969). *Testaufbau und Testanalyse*. Weinheim: Beltz.
- Lienert, G.A. & Raatz, U. (1998). *Testaufbau und Testanalyse*. Weinheim: Psychologie Verlags Union.
- Logan, G. D. (1988). Toward an instance theory of automatization. *Psychological Review*, 95, 492-527.
- Maycock, G. & Forsyth, E. (1997). *Cohort study of learn and novice drivers*. Part 4. Novice driver accident in relation to methods of learning to drive, performance in the driving test and self assessed driving ability and behaviour (TRL Report 275). Crowthorne: Transport Research Laboratory.

- McKenna, F. P. & Farrand, P. (1999). The role of automaticity in driving. In: G. B. Grayson (Ed.): *Behavioral Research in Road Safety IX. PA 3524/99*. Transport Research Laboratory. Crowthorne.
- McKnight, A. J., (1971). The Development of Instructional Objectives for Driver Education through Analysis of Driver Task. *Psychological Aspects of Driver Behaviour, Vol. II*.
- McKnight, A. J., & Adams, B. B. (1970). *Driver Education Task Analysis, Vol. I: Task Descriptions*.
- Mietzel, G. (1998). *Pädagogische Psychologie des Lernens und Lehrens*. Göttingen: Hogrefe.
- Mörl, S., Kleutges, Ch. & Rompe, K. (2008). Die Entwicklung der Fahrerlaubnisprüfung in der Bundesrepublik 1989. In: D. Sturzbecher, J. Bönninger & K. Kammler (Hrsg.). *Die Geschichte der Fahrerlaubnisprüfung in Deutschland*. Dresden: TÜV | DEKRA arge tp 21.
- Mowrer, O. H. (1939). A stimulus-response analysis of anxiety and its role as a reinforcing agent. *Psychological Review*, 46, 553-565.
- Muders, W. (2000). Handlungskompetenz als Prüfungsinhalt. *Der Ausbilder*, 6, 4-7.
- Muthig, K.-P. (1990). Informationsaufnahme und Informationsverarbeitung. *Enzyklopädie der Psychologie, D III, 2*, 92-120.
- Ostwald, K. (1931). Jung-Deutschland und die Kraftfahrt. *Allgemeine Automobil-Zeitung* 32 (8), p. 40.
- Rasmussen, J. (1986). *Information processing and human-machine interaction. An approach to cognitive engineering*. New York: North Holland.
- Renkl, A. (2001). Träges Wissen. In D.H. Rost (Hrsg.), *Handwörterbuch Pädagogische Psychologie* (pp. 717-721). Beltz: PVU.
- Rogers, C. R. (1973). *Die klientbezogene Gesprächstherapie*. Munich: Kindler.
- Roth, H. (1971). *Pädagogische Anthropologie Band II. Entwicklung und Erziehung*. Hannover: Hermann Schroedel Verlag.
- Sacher, W. (1996). *Prüfen – Beurteilen – Benoten*. Bad Heilbrunn: Verlag Julius Klinkhardt.
- Sackett, P.R., Zedeck, S. & Fogli, L. (1988). Relations between measures of typical and maximum job performance. *Journal of Applied Psychology*, 73, 482-486.
- Sagberg, F. (2005). Practical use of hazard perception tests for drivers. *TØI report 772*. Oslo: TØI.
- Schellhas, B. (1993). *Struktur und Entwicklung von Ängstlichkeit in Kindheit und Jugend*. Berlin: Sigma
- Schmidt, F. L. & Hunter, J.E. (1998). The validity and utility of selection methods in personnel psychology: practice and theoretical implications of 85 years of research findings. *Psychological Bulletin*, 124, 262-274.
- Schmidt, J. U., Leibenath, N., Kiel, K.-H., Frank, I., Schlaf, A., Polifka, B., Backhaus, J., Köster, L., Kowalewski-Brüwer, A., Helmold-Koch, J. & Ebbinghaus, M. (2000). Auf dem Weg zu einer neuen Ordnung im Prüfungswesen? *Berufsbildung*, 65, 3-34.
- Schneider, W. (1977). *Bestandsaufnahme und Entwicklungsaspekte der Fahrerlaubnisprüfung*. In: *Entwicklungen und Konzepte für die Fahrerlaubnisprüfung*. Cologne: TÜV Rheinland.
- Schubert, & Edler (1965). Die Auswirkung von Konstitution und Persönlichkeit auf die Unfallgefährdung im Verkehr. Methoden zur Begutachtung des Fahrverhaltens. *FA des Bund.Min. f. Gesundheitswesen*
- Schuler, H. (2001). *Lehrbuch der Personalpsychologie*. Göttingen: Hogrefe.
- Schwarzer, R. (1987). *Streß, Angst und Hilflosigkeit. Die Bedeutung von Kognitionen und Emotionen bei der Regulation von Belastungssituationen*. Stuttgart: Kohlhammer.
- Schwenkmezger, P. (1985). *Modell der Eigenschafts- und Zustandsangst*. Göttingen: Hogrefe.
- Seiler, R. (2000). The intentional link between environment and action in the acquisition of skill. *International Journal of Sport Psychology*, 31, 496-514.

- Sekretariat der Ständigen Konferenz der Kultusminister (2000). *Handreichungen für die Erarbeitung von Rahmenlehrplänen der Kultusministerkonferenz (KMK) für den berufsbezogenen Unterricht in der Berufsschule und ihre Abstimmung mit Ausbildungsordnungen des Bundes für anerkannte Ausbildungsberufe*. www.kultusminister-konferenz.de/doc/publ/handreich.pdf [04.05.2005]
- Seligman, M. E. P. (1979). *Erlernte Hilflosigkeit*. Munich: Urban & Schwarzenberg.
- Shiffrin, R. M. & Schneider, W. (1977). Controlled and automatic human information processing: II. Perceptual learning, automatic attending, and a general theory. *Psychological Review*, 84, 127-190.
- Siegrist, S. (1999). *Driver training, testing and licensing – towards theory-based management of young driver's injury risk in road traffic (Results of EU Project GADGET, Work Package 3, bfu-Report 40)*. Berne: Schweizerische Beratungsstelle für Unfallverhütung.
- Snyder, M., Tanke, E. D. & Berscheid, E. (1977). Social perception and interpersonal behavior: On the self-fulfilling nature of social stereotypes. *Journal of Personality and Social Psychology*, 35 (9), 656-666.
- Spielberger, C. D. (1975). Anxiety: State-Trait-Process. In C. D. Spielberger & I. G. Sarason (Eds.) *Stress and anxiety*, Vol.1 (115-144). Washington: Hemisphere.
- Statistisches Bundesamt (2007). *Verunglückte bei Straßenverkehrsunfällen 2006 nach Art der Verkehrsbeteiligung und Verletzungsschwere*.
- Statistisches Landesamt des Freistaates Sachsen (2004). *Fehlverhalten der Führer von Kraftfahrzeugen nach Dauer der Fahrerlaubnis, Ortslage und Unfallkategorien 2003*.
- Strittmatter, P. (1993). *Schulangstreduktion: Abbau von Angst in schulischen Leistungssituationen*. Neuwied: Luchterhand.
- Strothmann, D. (2008). *Lenkerschule für Pioniere*. Rhein-Sieg-Rundschau, 30.7.2008.
- Sturzbecher, D. (2004). (Hrsg.). *Manual für die pädagogisch qualifizierte Fahrschulüberwachung*. Potsdam: Universität.
- Sturzbecher, D. (2008). Methodische Grundlagen der theoretischen Fahrerlaubnisprüfung. In: D. Sturzbecher, J. Bönninger & M. Rüdell (Hrsg.). *Optimierung der praktischen Fahrerlaubnisprüfung. Methodische Grundlagen und Möglichkeiten der Weiterentwicklung*. Dresden: TÜV | DEKRA arge tp 21.
- Sturzbecher, D. & Freytag, R. (1999). Ein Vergleich elterlicher und kindlicher Einschätzungen der Eltern-Kind-Interaktion und ihres entwicklungsprognostischen Wertes. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie*, 31 (1), 32-44.
- Sturzbecher, D., Bönninger, J. & Kammler, K. (Hrsg.). *Die Geschichte der Fahrerlaubnisprüfung in Deutschland*. Dresden: TÜV | DEKRA arge tp 21
- Sturzbecher, D., Bönninger, J. & Rüdell, M. (2008), *Optimierung der praktischen Fahrerlaubnisprüfung. Methodische Grundlagen und Möglichkeiten der Weiterentwicklung*. Dresden: TÜV | DEKRA arge tp 21.
- Sturzbecher, D., Hermann, U., Kammler, K. & Schellhas, B. (2004). *Beobachtungsinventar und Checkliste zur Erfassung der Qualität der praktischen Fahrschulausbildung*.
- Sturzbecher, D., Kammler, K. & Bönninger, J. (2005). Möglichkeiten für eine optimierte Aufgabengestaltung bei der computergestützten Fahrerlaubnisprüfung. *Zeitschrift für Verkehrssicherheit*, 51, 3, 131-134.
- Sturzbecher, D., Mönch, M., Kissig, S. & Marschall, M. (2008). Die Entwicklung der Fahrerlaubnisprüfung in Deutschland von den Anfängen bis 1945. In: D. Sturzbecher, J. Bönninger & K. Kammler (Hrsg.). *Die Geschichte der Fahrerlaubnisprüfung in Deutschland*. Dresden: TÜV | DEKRA arge tp 21.
- Sturzbecher, D. & Mörl, S. (2008). *Methodensystem zur Erfassung der Zufriedenheit mit der Fahrerlaubnisprüfung*. Dresden: TÜV | DEKRA arge tp 21.

- Sturzbecher, D., Petzholtz, W., Liebermann, F. & Westphal, J. (2008). Die Entwicklung der Fahrerlaubnisprüfung in der DDR bis 1989. In: D. Sturzbecher, J. Bönninger & K. Kammler (Hrsg.). *Die Geschichte der Fahrerlaubnisprüfung in Deutschland*. Dresden: TÜV | DEKRA arge tp 21.
- Swoboda, G. (2001). *Das Kraftfahrt-Bundesamt und seine Vorgängerbehörden im Wandel der Zeit*. Flensburg.
- SWOV (2007). *SWOV Fact Sheet Hazard Perception*. Leidschendam: SWOV.
- Tinnefeld, T. (2002). *Prüfungsdidaktik: Zur Fundierung einer neuen wissenschaftlichen Disziplin – am Beispiel der modernen Fremdsprachen*. Aachen: Shaker.
- Tischendorf, F. (1984). Zur Effektivierung der Fahrschul Ausbildung in den Phasen Fahrtrainer und Autodrom. In: *Forschungsheft zur Verkehrssicherheit*. Hochschule für Verkehrswesen “Friedrich List” Dresden, 15, pp. 77-85.
- TÜV | DEKRA arge tp 21 (2004a). *Ergebnisprotokoll der Fachtagung “Praktische Fahrerlaubnisprüfung” am 18. Mai 2004 in München*. Unpublished paper. Dresden: TÜV | DEKRA arge tp 21.
- TÜV | DEKRA arge tp 21 (2004b). *Qualität der Fahrerlaubnisprüfung. Konzept zur Optimierung der praktischen Fahrerlaubnisprüfung*. Unpublished paper. Dresden: TÜV | DEKRA arge tp 21.
- TÜV | DEKRA arge tp 21 (2008). *Handbuch zum Fahrerlaubnisprüfungssystem (Theorie)*. Dresden: TÜV | DEKRA arge tp 21.
- Twisk, D. A. M. (1996). *Bedingungen der Fahrerlaubnis für Fahranfänger/Fahranfängerinnen und ihr Beitrag zur Verkehrssicherheit im Rahmen der psychologischen, sozialen und kulturellen Entwicklung von Jugendlichen*. Leidschendam, Netherlands.
- Website of the European Parliament (2005); http://www.europarl.eu.int/news/public-story_page/062-1004-255-9-37-910-10050819STOo1003-2005-12-09-2005/default_de.htm
- Weinert, F. E. (1998). Neue Unterrichtskonzepte zwischen gesellschaftlichen Notwendigkeiten, pädagogischen Visionen und psychologischen Möglichkeiten. In: Bayerisches Staatsministerium für Unterricht, Kultus, Wissenschaft und Kunst (Hrsg.), *Wissen und Werte für die Welt von morgen* (Dokumentation Bildungskongress. pp. 101-125). Munich.
- Weinert, F. E. (1999). *Konzepte der Kompetenz*. Gutachten zum OECD Projekt “Definition and Selection of Competencies: Theoretical and Conceptual Foundations (DeSeCo)”. Neuchâtel, Switzerland: Bundesamt für Statistik.
- Weinert, F. E. (2001). Vergleichende Leistungsmessung in Schulen – eine umstrittene Selbstverständlichkeit. In: F. E. Weinert (Hrsg.), *Leistungsmessungen in Schulen* (pp. 17-31). Weinheim, Basle: Beltz.
- Wickens C. (2000). *Engineering psychology and human performance*. Upper Saddle River, NJ: Prentice Hall.
- Willmes-Lenz, G. (2004). EU-Projekt BASIC – europäische Standards für die Fahrausbildung. *Zeitschrift für Verkehrssicherheit*, 50, 4, 204-205.
- Wine, J. D. (1980). Cognitive-attentional theory of test-anxiety. In I. G. Sarason (Ed.), *Test anxiety: Theory, research, and applications* (pp. 349-385). Hillsdale: Erlbaum.
- Zuschlag, B. (1977). *Reliabilität von Fahrprobenmerkmalen*. Hamburg: Böttger.