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The Application of Narrative Grid Interviews in Psychological Mobility Research[1]

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Abstract: It is the aim of this article to justify the use of a cooperative research method, the narrative grid interview, within the framework of a research project on experience of mobility. The crucial characteristic of this method is to guarantee universal transparency from data collection to the description of generalized results and models. Thus, two requirements are met: The appropriateness is based in the narratives of the participants on their respective lifeworld, the ability to generalize is based on rules for data-analysis and -interpretation in agreement with legitimate paradigms (for the purpose of KUHN). Thereby greater closeness between theoretical groundwork research and concrete applications, be it in planning or counselling, should be guaranteed. After a concise introductory glance on the psychological and interdisciplinary understanding of mobility, the requirements on the concrete research project 'Psychological basis of mobility behaviour' are deduced. In the articles' core quality (komma) criteria are formulated and examined in a concrete description of the methodological approach.

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1 The research groups consists of the author, Katja DEUBEL, Nikolaus HILDEBRANDT, Kai GLIESMANN (all Technical University Hamburg-Harburg) and Theo WEHNER, who have supported me in the writing of this article. Currently we work on a research project on 'the psychological foundations of mobility activity' within the consortium 'Intermobil Region Dresden, Beitrag der TU Hamburg-Harburg', sponsored by the BMBF (Ministry for Education and Research) (Förder KZ 19 B 9907 H 7). Special thanks for the translation go to Martina JARNUSZAK.

1. Mobility as a Research Topic

1.1 The term 'mobility' as psychological construct

Mobility can be considered as interdisciplinary subject, worked on particularly in designing disciplines (transportation planning, town planning, regional planning). Psychology took up the subject only hesitantly, like the environmental psychology (FLADE 1994; SCHMIDT 1995; GEIGER 1996; HEINE 1998) or single studies on, for example, choice of transportation mode (HELD 1982), abstention from cars (BURWITZ, KOCH & KRÄMER-BADONI 1992) or on the situation of specific groups of the population (SCHLAG, ENGELN, DEUBEL & KÖPKE 1998). Phenomenological approaches have a longer tradition (LINSCHOTEN 1954; LENNEP 1987; SCHÖNHAMMER 1991; cf. GRAUMANN 1990), which fundamentally make the nature of human motion subject of discussion and broaden the subject matter on everyday environment. Phenomenology is taken up mainly interdisciplinary (SEAMON 1979; APPLEYARD 1981). The psychology of transportation shrinks back from such a broadening of its subject matter and restricts itself to a great extent on the subject of human-machine-interaction (HOYOS 1991; cf. KROJ 1995; COHEN 1996). [1]

The dominant metaphor of environmental psychology research is that of the *gap* ('the ecological-psychological gap', FUHRER 1990; FUHRER & WÖLFING 1997; cf. MANDL & GERSTENMAIER 2000). On one hand it points to the classical dilemma that a big difference gapes between attitudes and corresponding behaviour (PRASCHL & RISSER 1994; LITTIG 1997; from a socialpsychologist view FUHRER 1995). In fact, the current environmental psychological development which regards mobility behaviour as part of superior activity contexts and aims wants to bridge this gap conceptually, but still this often happens within a behavioural paradigm (GIESE 1997) or a half-hearted understanding of action, continuously dividing inner and outer aspects of acting analytically, (FLADE 1994b). With this, a distinction between situational and personal aspects of acting is implied, whose integration of a variable-oriented perspective can not be successful (KAISER 1998; cf. FUHRER 1990b). The environmental awareness[2] presumed here corresponds to a great extent with a stereotype set of attitudes, which suffers from a lack of differentiation (DE HAAN & KUCKARTZ 1996) or fails in is concretion the abstract knowledge inventory on the environmental crisis (LECHER & HOFF 1997; cf. KAISER & FUHRER 2000). As a second gap the one between theory and practice, thus between research and planning on the one hand and application and everyday activity on the other hand has be described (GARDNER & STERN 1996; FLADE 1999). [2]

2 In German the term "Umweltbewußtsein" is used for both, environmental and ecological awareness, but refers generally to an ecological perspective. Its meaning as a collective name includes environmental/ecological concern as well as knowledge, attitudes, values and evaluation.

1.2 The interdisciplinary research on mobility

Interdisciplinary mobility is studied under its spatio-temporal aspect and therefore particularly in its realisation as traffic. At the same time the significance of subjectivity is quite well seen (WZB 1997; CANZLER 1999; BMBF 2000). In principle there is a great extent of consensus on the necessity to complete methodical and conceptual foundations of the research on mobility with qualitative components. Also, customs and routinisation—the dimension of experience—has to be integrated much more and the daily choice of transportation mode has to be assessed in the context of long lasting decisions. *The integrating metaphors of interdisciplinary research on mobility on which a lasting development of mobility is only possible are those of understanding and the connected participation of acting protagonists.* [3]

The discussion, however, seems to be strangely referring to objects and therewith specified on the alternative between motorised individual traffic and public transportation (network). The headword of intermodel traffic (modal split) points to the necessity of synchronisation, but the technological developments ready to go into production (telematic) still optimise the individual systems. Comprehensive attempts can merely be seen with regard to *data processing on traffic*. At the same time it is overlooked that different means of mobility from the point of view of the subject create different horizons of experience and expectation, that they require different frames and outlines of activity and that change between them consequently constitutes less a virtual but rather a concrete problem. [4]

2. Starting Point and Guide Lines of our Empirical Approach

2.1 The re-gain of the question on mobility from everyday life

We meet the central problem of environmental research, the separate examination of awareness (attitude) and action (behaviour) by understanding everyday acting of mobility as an ongoing application of experience based knowledge. The protagonists are regarded as experts in their respective mobility situation. Their central criteria for everyday mobility experience shall be brought out and on this basis the conditions for possible influence on mobility acting under ecological criteria shall be formulated. [5]

The first step will be to explore through *explorative short interviews* how, i.e. with which objects, in which situations etc., mobility realises itself in everyday life and what the participants interviewed understand when referring to mobility (thematic topography).[3] Thus we try to collect all aspects of experience which are linked to the term in an associative way, because the subject in question is a theoretical construct without sensuous-material quality. The informants instruction for such an interview has to make sure that the understanding of the subject is open and answers can be given freely and spontaneously. Furthermore the reference to

3 A presentation of this study in the journal 'Harburger Beiträge zur Psychologie und Soziologie der Arbeit' is in preparation.

personal experience should be as successful as possible and the answer mode chosen free by the questioned—in contrast to the narrative interview which requests narration. In this state of the research process we not yet know if or how mobility is represented as a narration. The interview question run as follows: "Mobility is an urgent subject of public interest we are working on. If you regard your own life—which experiences, situations, and objects are related to it?" Only in the second step these experiences and concepts will be related to each other systematically, only then Narrative Grid Interviews will be processed. [6]

2.2 The relation between research issue and method

The use of qualitative and or explorative research methods can be legitimised by the relation of the subject to the life-world. This aims at the appropriateness with respect to the context in question. As essential validating strategies the following can be distinguished: *the dialogical approach* as defined by reporting back and verification of the results with the interviewed participants (for example SCHEELE & GROEBEN 1988; GROEBEN & SCHEELE in this issue), *the collective approach* implying the participation of several researchers in data preparation (for example MAYRING 1983, in this volume; OEVERMANN, ALLERT, KONAU & KRAMBECK 1979) and *the theory led proceeding* in the sense of a deduction of processing heuristics and goal categories for empirical analysis, lets say of psychoanalysis (LEITHAEUSER & VOLMERG 1979) or biography theory (SCHUETZE 1984). Unfortunately methodological reflection often stops at legitimation without reflecting the procedures themselves. Therefore, in the following we will deal less with the *relation between method and subject matter* and the *validity problem* resulting from it (see HUBIG 1989; TERHART 1995), but with the quality of the methods used in the more strict sense, classically described as reliability and objectivity. It refers to the *relation between a scientific method and its application*, the craft, and appears mostly as *problem of transparency*. [7]

2.3 Quality criteria for methodical work

In short, the classical methodical quality criteria in their mutual conditionality can be reformulated for qualitative approaches as follows (see STEINKE 1999).

- Instead of objectivity the *explicity of the method* guarantees its traceability and intersubjective validity. The question is which representations are suitable for the findings.
- Instead of reliability the *functionality of the method* guarantees the control over the application. The question is how the transformations of the subject matter appear. [8]

The main point with the explicity is the external control over the research process, the main point with functionality is the method immanent control. With regard to the knowledge gain explicity guarantees the imparting of the research results to the different application contexts (scientific, political, planning, every-day etc.) and

therewith reaches into a *communication oriented and hermeneutic dimension*. The functionality is a bridge between the subject matter in question and the theoretical statements and therewith reaches a *phenomenological dimension*. Both are the more important the more the examined participants are affected by or have a share in the utilization of the scientific findings. As with the quantitative or probabilistic procedure they are prerequisite to validity and relevance of the findings, but in contrast to them they cannot be determined independent from the subject matter. Explicity as well as functionality are means of *transparency* of the scientific procedure which should consequently be seen as the *real quality criteria*, since a functional method makes the explication considerably easier and conversely a neat explication can ennoble even the simplest procedure. To us it seems central concerning the assessment of these criteria to what extent they are *general* between question formulation respectively cognitive interest on one hand and theoretical statements and findings on the other hand. Next we will show how the Narrative Grid Interview tries to meet these criteria. [9]

3. The Narrative Grid Interview: Reason and Realisation

3.1 Classification of the Repertory Grid procedure

The procedure known as 'Role Construct Repertoy Test', short 'Repertory Test' by George A. KELLY was introduced 1955 (1991) in his main work and can be seen as of constructivist origin in the widest sense. However, KELLY is not to be spoken of in one breath with other prominent constructivists, even if he shares the clinical-psychological background with BATESON or WATZLAWICK and with that differs from more scientific exponents like von FOERSTER, von GLASERSFELD or MATURANA. KELLY himself describes his teaching as 'alternative constructivism', but hardly relates to constructivistic authors. His reference point and way of thinking is more an *universalistic psychology*, above all of William JAMES, psychoanalysis, phenomenology or the non-directive psychotherapy of Carl ROGERS. [10]

The fruitfulness of KELLY's work consists of an independent, creative and exceptionally differentiated *theory of personality* (which again distinguished him from other constructivists, who look more closely at the social or systemic dimension). Some outstanding basic assumptions are freely summarised as follows (see BANNISTER & FRANSELLA 1981):

- The active construction of reality by the acting being (man the scientist);
- the possibilities of choice, development and change of human beings in their constructions and behaviour;
- the individuality and incomparableness of the individual personality. [11]

With this, KELLY stands for an image of man which in its dynamic evades the predominant research methods of academic psychology. The individual in its personal world is at the centre, not a supposed average organism in a controlled context. Epistemological KELLY rather puts himself in the tradition of *empirism*

and *pragmatism* (1991, p.12). Following this claim, he led the *theory of personal constructs* to the operative stage of a diagnostic method, whose realisation he described in detail. Other good introductions into the methods were provided (in German) by FROMM (1995) or SCHEER and CATINA (1993). [12]

In the meantime this method has made an exceptional career, today it is often referred to and used detached from KELLY's theoretical foundation—and thereby in the most cases proves itself in the best pragmatic intention. It would lead to far to name specific studies; a German bibliography with emphasis on clinical applications can be found on the homepage of the German working group on psychology of personal constructs (DPPK 1999). The developing *object-sign-matrix (the Grid)* which is the result of a multi-step inquiring process is the focal point (see chap. 3). Mathematical procedures for evaluation and visualisation of this matrix unfortunately receive much more attention than the question for their accruement in data gathering. Our developmental work centres round the latter. [13]

When we talk of the *Narrative Grid Interview*, a narrative interview is meant, in which the interviewee recounts experiences he lived to see him/herself as separate situations without being interrupted by interviewers questions. In direct connection we use these situations as objects and ask the interviewee in dependency on the Repertory Grid procedure to generate personal constructs (the features of the matrix). This phase is also transcribed and in this way treated as verbal material. The following transformation of the matrix into maps follows mathematical algorithms, which serve only as interpretations and mediations heuristics. With this, the gathering process complies an open interview procedure, the evaluation follows hermeneutic under application of mathematical measures. Hermeneutics has precedence over mathematics in the evaluation (TAYLOR 1990). *The Narrative Grid Interview is not in the centre of qualitative and quantitative procedures, but gains quantitative heuristics for qualitative work.* [14]

3.2 The foundation of the Grid in personal experience: narration and construction

The narrative foundation of a Grid allows the junction of experience (praxis) and reflexive construction (theory). The data gathering takes place in three steps, which are the gathering of *elements*, of *constructs* which make up the matrix and a *rating* in which the applicability of the constructs on the elements is assessed. While the elements represent entities of experience, for example people, events or objects, the personal constructs serve as description and assessment of these experience units. In short, they are interpretations, perceived by individuals: "By construing we mean 'placing an interpretation': a person places an interpretation upon what is construed" (KELLY 1991, p.35). For the most part the gathering strategies operate with a prescribed set of elements which is presented to several individuals. The interviewees are asked to remember and name situations exemplary for these elements. In the following the elements are systematically compared by the interviewee. The situations are disposed by the interviewee in such way that two fit to one another and differ from the third. The similarities and differences discovered this way are named with terms—*personal constructs*. A

construct is dichotomous, it consists of an initial pole (the term found first) and a contrasting pole. Finally each element is set in relation to each other construct found and rated on a simple rating scale. The matrix thus developing is basis for the evaluation following (see FROMM 1995; RIEMANN 1991). [15]

In the majority of explorations on the basis of Repertory Grids a set of elements is given. It can be assumed that, basing on the effort which comes with the procedure (individual interviews instead of testing batteries), in most cases only a scant description of the elements is evaluated. Altogether, this evaluation stage is hardly ever reflected in the literature, although controversies are led on the question whether elements should be given or chosen freely (see FROMM 1995, pp.74ff.). [16]

To make sure that elements are relevant for the interviewees we have them chose most of them by themselves. Only within this frame it is possible that choice and portrayal including their subjective interpretation follows contextual relevance (see HOFFMANN-RIEM 1980). All situations should be recounted by the interviewee, so that their inherent drama is expressed. The narration is said to be the representation which is closest to personal experience (SCHUETZE 1977). In contrast to autobiographic narration in which one single general story is evaluated (WIEDEMANN 1986), every situation chosen is a stature of its own. Meaning and connection have to be created not for the general story, but only within each episode, which means that the reference frame is made up mosaic-like around the subject matter of the narrations. Contradictory or incomplete terms and interpretations can thus more easily stand side by side, the pressure on the narrator to produce a coherent stature is reduced. There's a tendency that the *episodical* in comparison to the *autobiographical narration* supports rather a *descriptive* than an *analytical* evaluation. Episodical narrations have been used in a similar way by Uwe FLICK (1996, pp.147ff.). For us the embedding of personal constructs in the reliving of concrete experiences is significant: The instance of probation for the validity of the terms formulated is the situation you underwent yourself. [17]

3.3 The coherence semantics of the elements and constructs

The frame of thoughts of the chapters 3.3. to 3.5 goes back to Arne RAEITHEL, who pressed ahead both with the epistemological foundations and the creative derivative of the application and evaluation of Repertory Grid procedures far beyond the 'psychology of personal constructs'. He introduced generations of students at the University of Hamburg into the procedure, substantiated a freeware for calculation and visualisation of Repertory Grids[4] and unfortunately published his exceptionally complete, precise and creative thoughts on this only remotely (RAEITHEL 1989, 1990; for his latest work on activity theory see RAEITHEL 1996 and RAEITHEL & VELICHKOVSKY 1996). We have been so lucky to co-operate with him in a research project on subjective representations of driving before he suddenly passed away on December 1, 1996. His concept of

4 GRIDSTACK, a Macintosh programme basing on Hypercard, which we have used for the examples shown here, is available as freeware.

Cooperative Model Production (kooperative Modellproduktion) is the foundation of the following considerations (RAEITHEL 1995). [18]

Strictly speaking, any element is already a construct, because as a verbal designation of a situation gone through it is already a symbolic representation. Through the episodic narration it becomes visible what is represented, which is the actual element. [19]

The construct found in an inquiry phase, however, is the result of a comparison of at least two situations and therewith presents a secondary abstraction. A construct has judging and classifying character, even if with different emphasis. [20]

A construct is always applicable on several elements. This results in the fact that conversely several of the constructs found have to fit one element. The application consists in composing a matrix (Grid) from elements in columns and constructs in lines in which each element (object, O) is set in relation with every construct (attribute—Merkmal, M) (fig. 1). The relation expresses, if an element is described or evaluated properly by a construct, and is named by the interviewee in a rating procedure. [21]

The interviewee has several possibilities to correlate a construct pair with an element:

+	initial pole is correct
-	contrast pole is correct
B	both poles are correct
K	no pole is correct, construct does not fit the element
0	element is between both poles (both poles are correct, element lies in between)

With this, a strictly symmetrical bipolarity of constructs, which would allow neither the judgement 'both' (B) nor 'none' (K), is disavowed. Between the choices 'both', 'none', or 'in the between' could not be distinguished. This degeneration of constructs leads to a more complex matrix, because both construct poles can no longer be represented in one line, but one line is needed for each construct pole, but altogether this mode is much closer to our use of constructs in everyday life. [22]

The result is that each element can be described by the application of the constructs and each construct through its application on the elements. *Through this mutual reference of elements and constructs (coherence semantics) the intertwining of experienced situations and their interpretation respectively evaluation is expressed.* The Grid "carries the vital characteristics of the context of its origin within itself" (RAEITHEL 1995, p.15, orig. in German). [23]

A visualisation of this matrix, which gets by without mathematical or textual transformation, is the *Bertin-Display* (fig. 1). Matches a construct with an element, the corresponding field is blackened, does it not match, it is whitened. Grey fields are relations in which the element lies undecisible between two contrasting poles (0-coding). A formal and textual analysis is already possible on this basis. Because of the colour codes the Grid can be rotated by hand by moving elements similar to each other (objects in columns) and constructs similar to each other (attributes in lines) close to each other. Lines or columns which cannot be classified in such a structure (Residuen—residuents) can be pushed to the Grids sides and thus keep their informative values (remaining complexity). *Such a similarity based classification without prerequisite resembles the matrix of the original data matrix and represents the construct system of an interviewee in such a way, as the individual itself uses it for the interpretation of its own experience.* [24]

3.4 The formal analysis of a Repertory Grid

The information contained in a Bertin-Bild can also be won by the application of formal rules. Here this shall be demonstrated exemplary and for clearness' sake we will renounce the textual elaborateness and recourse on the narrative material. The example originates from a research project on subjective representations of driving (DICK & WEHNER 1999; FORSCHUNGSGRUPPE FAHREN 1997), which centered around the driving experience of car and motorcycle drivers (male and female).[5] In the case following, Greta, 41-year-old driver of a luxury class car, told and assessed a series of situations about driving and her vehicle with the method described. [25]

The distribution of white and black fields says something about the constructs validity range. If black fields dominate, the constructs apply to relatively many situations. The construct system on the one hand is suitable to the subject, but perhaps too general or not dichotomous. Also, situations can be chosen too homogeneously. If on the other hand white fields dominate, a greater part of the constructs does not fit with the situations. In this case, a construct fits the situation for which it was found but does less good in other situations. Possibly, the construct system is situative and little meaningful for the whole subject. Also, situations can be chosen too heterogeneously. The number of hatched fields also is important: They indicate that the constructs match the situations, but do not differ between initial and contrast pole. If it is hard for the interviewee to definitely assign the constructs they possibly consist of contrasts which are inappropriate to the subject. It could also point to the relative little importance of the constructs or elements for the interviewee. [26]

5 We have completed eighteen Narrative Grid Interviews in a research project on subjective driving experience. Currently we are preparing an analogous field research as second empirical phase—after the short interviews as described in 2.1—of the subsequent project on mobility pictured here.

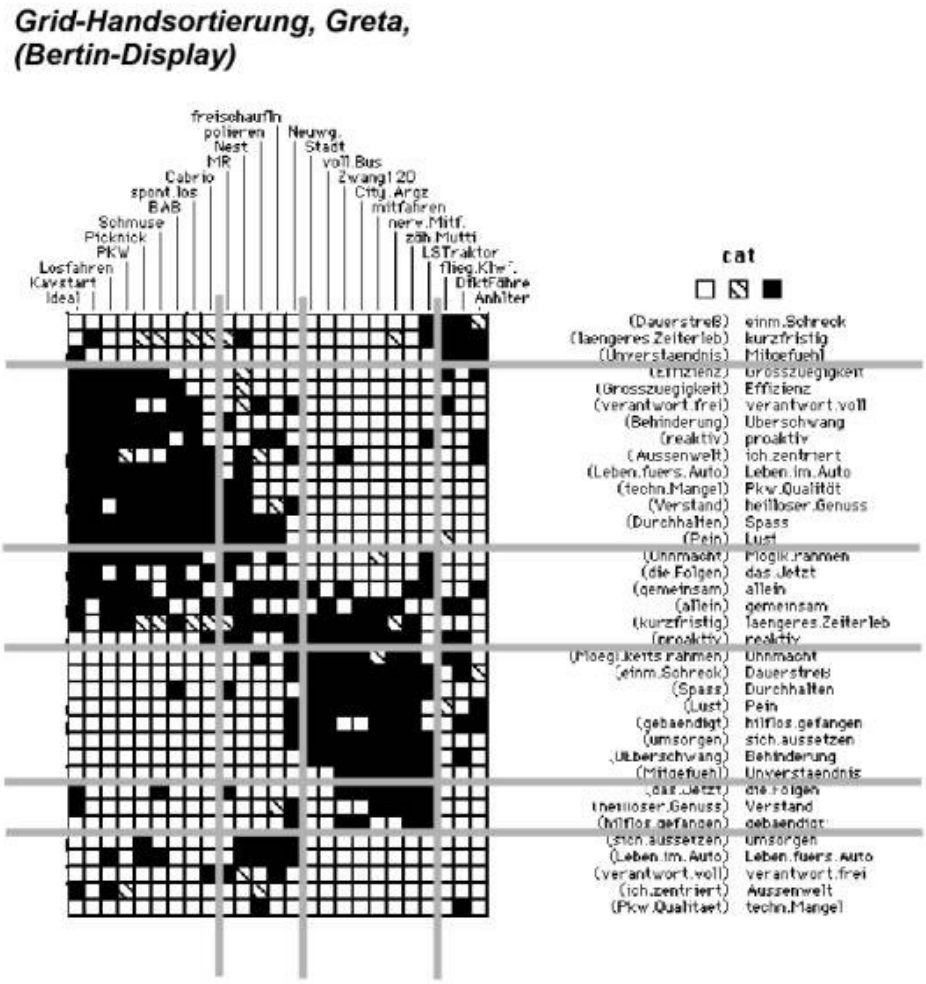

Fig. 1: classified Bertin-Display 'Greta' [27]

In Greta's case, the white fields outweigh a little, which points to a situational way of construction. The overhang of white fields affects only a few constructs, so we can assume an adequate validity of the constructs. Furthermore, only a few grey fields are visible which additionally stands for the applicability of the chosen constructs. [28]

With sorting element columns and construct lines *patterns* appear, which give important information. For example, homogeneous blocks can emerge in which groups of situations emerge which have almost the same meaning. In most cases, such homogeneous clusters appear without overlapping. This points to a superior dichotomy in the interviewees construct system, the subject is experienced 'black and white' in the real and literal sense of the term (one dimension dominates). The beginnings of such a structure are shown in our example, whereby the blocks are fractured within themselves. Within two contrary experience qualities differences persist. Furthermore, there is a transition between both blocks which indeed has an unclear structure, black and white

fields can not be brought into a clear pattern (the fields in the middle of the Bertin-Display). Here one additional dimension is suggested, even if its content cannot yet be defined. Also, a little block in the upper right corner of the display can be seen, which consists of three elements ('fliegender Kleinwagen' / flying compact car, 'Defekt auf der Fähre' / defect on the ferry, 'Anhalter' / hitch hiker) and three constructs ('einmaliger Schreck' / unique alarm, kurzfristig' / short-termed, Mitgefühl' / sympathy) and represents an additional sub-dimension. Finally there are elements as well as constructs which can be integrated into the cluster only with difficulties or not at all (here moved down and to the right). They refer to aspects included with the—for the most part—fairly homogeneous constructed subject matter but possibly affect subsidiaries or less integrated parts. These residuents remain visible and are not neglected as remaining variance, because they contain valuable indications for interpretation. [29]

In the Greta case we can summarise on the basis of the formal evaluations as follows: Beyond a dominating polarity which includes two contrasting experience areas two sub-dimensions exist which are either inconsistently constructed or contain a small and clearly defined experience area of exceptional cases. These sub-dimensions expose the less integrated or contradictory interpreted aspects of driving experience and prevent the evaluation from reducing the cluster to a single and relatively clear structured dominating experience dimension. [30]

3.5 The visualisation of the Grid

The deciding reason for the mathematical transformation of the Grid with the aid of the separate Eigenstructure Analysis (ESA, RAEITHEL 1995)[6] is the visualisation which it makes possible. Semantic similarities between driving situations and constructs are depicted spatially in a joint coordinate system (common space) and thus appear optically close. The closer two elements respective constructs lie to each other the more similar they are in their significance. The exceptional feature lies in the projection of objects (elements) and attributes (constructs) into one coordinate system. Thus they become visible in their mutual references true to their relation—which is impossible in a factor analysis. "The mutual determination, above called coherence semantics, is also found in the mathematical structure of the Grid" and "the reference system is not taken to the matrix from outside but is inherent in it" (RAEITHEL 1995, p.21, orig. in German). [31]

So we are in a position to carry out a densification and abstraction without having to go back to deductively (logically, theoretically) won derivation, the general follows from the specific, the life-world remains visible in the models. It is true that the hypothetical co-ordinates (dimensions, *not* factors) permit an orientation in this space of similarities which facilitates a statement on contents. But in evaluating we are not merely dependent on artificial orientation but can go back

6 The Eigenstructure Analysis refers to SLATER's *Dual Principal Components Analysis* (PCA) (1976), but does not require a transformation of the original data. Naturally, other procedures can be applied as well, for example multi-dimensional scaling or vector analysis (see RAEITHEL 1989, 1993, FROMM 1999).

directly to element-construct-conglomerations lying at close quarters. Just as instructive as the co-ordinates themselves is an examination of the spaces of experience (quadrants) divided by them. *The analysis of a Grid does not consist of a hypothetical inferring but is a descriptive condensation of the original data* without sacrificing the intuitively understandable graphical cluster. [32]

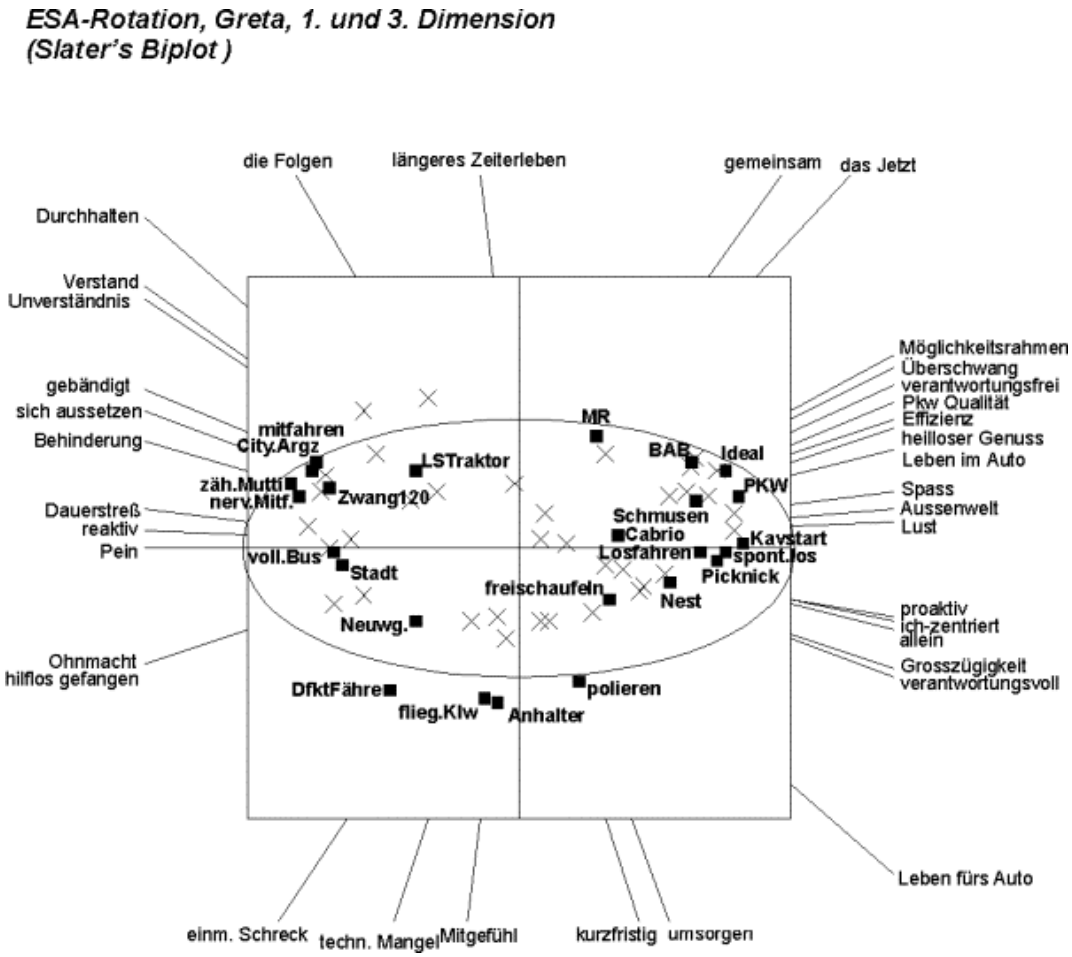

Fig. 2: ESA- diagram 'Greta' [33]

In Greta's case, the horizontal is dominated by the valency dimension which runs with the x-axis. Situations as well as constructs show a distinct differentiation of both experience qualities (effusive action full of relish versus painful obstruction). This polarisation corresponds with the block formation we have brought out of the Bertin-Dosplay. In that respect this conceptual frame resembles those of the majority of interviewed drivers of both sexes, but is in contrast to those emotionally biased. Here the third dimension is represented on the vertical where we find the small block consisting of three situations and constructs ('fliegender Kleinwagen' / flying compact car, 'Defekt auf der Fähre' / defect on the ferry, 'Anhalter' / hitch hiker; 'einmaliger Schreck' / unique alarm, kurzfristig' / short-termed, Mitgefühl' / sympathy) from the Bertin-Display again. The counter pole consists of the constructs 'Durchhalten' (hold out) and 'die Folgen' (the consequences). First signs of a dimension in between an anticipative, long-term orientation and short-term, sudden and surprising experience become visible, but

it is not coherently construed. Because the second dimension (not shown here) also shows no clear structure, a piece of not elucidated complexity remains in the subjective space of experience. This could refer either to subjectively not integrated aspects of driving or reflect the formulation of the subject from the introductory instruction. A further evaluation can go back to the narrative material. [34]

The ESA-diagram has central significance for the mediation of different perspectives on a phenomenon like driving or mobility. This in twofold respect: on one hand it facilitates the comparison of different individual cases because of the general application of formally identical orientation guides. Thus, differences and similarities in subjective models can be condensed into more general statements. On the other hand perspectives of different target groups, like every-day *protagonists and planers*, can systematically be set in relation referring to each other and reported back to the respective groups. The visualisation creates intersubjectivity in mediation of research results by equal understanding of the visual representation of similarity relations for all observers. *The Esa-diagram, as it were, is a consensus frame which transforms common grounds and differences between different perspectives and possible approaches to a visual level.* [35]

4. Transparency Instead of Independence—Reflection on the Research Matter 'Mobility'

Mathematical similarity is no guarantee for common grounds regarding contents. For a transformation of the raw grid- matrix it has to be made sure that the basic elements and constructs stem from a reasonably defined subject field. Comparisons between elements and constructs can only make sense before the background of a common frame of reference (FROMM 1999b). For that, the subjective coherence of the reference frame is crucial and can only be guaranteed by the interviewee. The initial question of a narrative Grid interview supplies a subject frame within which the interviewee chooses situations for representation. Through the narrating presentment an inherent connection results between the situations which refer to each other. The generating of personal constructs follows the traces of this reference structure, so the stretched system of relations is not left. The theoretical pre-structuring by the researcher is limited to formal operations. The thematic coherence of the Grid thus mirrors the quality of a subjective system of relations which is always meaningful without abandoning breaks and contradictions to an artificially forced symmetry. [36]

An epistemological criterion of objectivity in the sense of contextual independence cannot exist for empirical science. The taking up of an objective point of view means "to bind yourself to something, which can be described without reference to specific individuals" (RORTY 1988, p.11, translated from German). General validity can only be understood in the sense of common ground of all involved individuals, that is *intersubjectivity*. This does not mean the relinquishment of formal criteria in general though they are based on agreements within legitimised paradigms in KUHN's sense on one hand and in the controlled and rule-led application of methods on the other. The formal process stands in the service of visibility of experience and does not play it off. Mathematics is secondary to

hermeneutics. Transparency of the transformation of the subject understanding and the data necessary for it is aspired. The limited validity of theoretical propositions has to be brought out offensively instead of dissolving into metaphysics in the end, because "the clearness of the term 'true' is guaranteed through its flexibility" (RORTY 1988, p.15, translated from German). [37]

In the current stage, this means for our research project on mobility to already reflect on the cultural and historical conditions where such a question is raised in general. Who formulates the cognitive interest and how is it redefined by those participating in the research process? In the first empirical phase of our project interesting indications are already singling out: If the financier (Bundesministerium für Bildung und Forschung) is interested in an effective securing of mobility overtones of a positive assessment of the construct are implicitly contained—mobility has to be maintained, even if traffic is reduced or transferred. This assessment is already partly questioned by the interviewed participants. To them mobility also appears as a normative postulate of allover attainability. The participation in mobility technologies (especially internet, mobile phones and—still—the car) becomes an obligation. Not the use of technology has to be legitimised but its non-use. On the other hand the increased personal mobility is adopted by the environment, especially the working environment. The individual orientation and legitimacy pressure is heightened by the diffusion of mobility technology and social postulates of flexibility. [38]

To exert these different reference and assessment frames determines our research style. Therefore the contradictions and disturbances of understanding cannot be bridged formally or logically but have to be confronted with each other. On this background transparency is the pragmatic and only criterion for the quality of the research process—with regard to the textual development of statements and the application of the methods. [39]

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