

International Library of Technical and Vocational Education and Training

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# Handbook of Technical and Vocational Education and Training Research



### (5) Objectifying Effect

This effect is achieved by confronting the relevant actors with their statements and behavioural patterns.

### (6) Video Editing

This procedure allows to evaluate and accentuate the cinematic raw material by applying different analytical methods.

In psychoanalytical hermeneutics the production of feature films has gained some significance. The interaction practices captured in these films are perceived as a drama.

Hans Dieter König claims that affective comprehension is achieved by the reader/viewer getting emotionally involved in the text/film – a view that is in line with Freud's theory of psychoanalytical understanding (KÖNIG 2000, 556 ff.).

And finally: Visual sociology (cf. DENZIN 2000) defines itself by the media of images and films. The interpretation of visual and audiovisual material is at the core of its methodical tools.

#### 5.2.7.5 Concluding Remarks

In vocational ↑training research there is a wide field of methodical applications in which the film as a medium – in particular the situation film – can be used. The few research and development projects carried out so far have supported this view. Methodically, the production of situation films follows on from the use of films in empirical social research (cf. ELLGRING 1995; SCHERER/EKMAN 1982; HARPER 1994).

Vocational training programmes and learning in ↑work processes are of central importance to ↑organisational development in industry. There is an interplay of education/learning and technological/organisational processes of change. Traditionally these are the fields which are analysed in industrial science, in ↑engineering science and in economics. The studies carried out on 'labour and technology' are part of an ↑interdisciplinary study programme which is the first of its kind that is designed to develop and subsequently implement a comprehensive integrated ↑research approach which also includes vocational training research. In this respect the situation film may also turn out as a medium which is suited to exceed the boundaries of sin-

gle sciences, which facilitates mutual understanding and helps to justify and implement interdisciplinary research projects. This shows that the scientific potential of using cinematic material in vocational training research has so far only been touched on.

## 5.2.8 Studies of Work

*Jörg R. Bergmann*

Outside and independent of the established research in occupational sociology and sociology of work a new approach known as the ↑Studies of Work has emerged in Anglo-American sociology over the past 25–30 years. For many observers this approach still seems to be somewhat enigmatic. It has emerged from the ↑research programme of ↑ethnomethodology (GARFINKEL 1986) and since a few years it is being received in the German-speaking countries, albeit hesitantly (cf. for research in the ↑vocational disciplines RAUNER 1998b, 23 ff.). This approach escapes an easy reception because the theory on which it is based is sophisticated and complex, its thematic orientation must be confusing for German-speaking sociology, and its methodological – and practical – consequences are radical and appear to be unpredictable. In what follows the basics of the Studies of Work approach are depicted systematically and historically. The major research themes are then outlined and illustrated by the presentation of some empirical studies. In a concluding section the approach is discussed with a view to its potential and its perspectives.

### 5.2.8.1 Basic Idea and Conception

The ↑Studies of Work aim at investigating, by means of detailed documentation, description and analysis of real ↑work processes, the situated, ↑embodied practices in which the constitutive knowledge and skills of this work materialise. Work activities in their material, temporal and social organisation are thus in the focus of attention. It is a characteristic feature of the Studies of Work that they do not presuppose normative or idealised versions of work but rather concentrate on real work processes in their rich details. The top-

ic of the Studies of Work is the embodied knowledge that materialises in the mastery of professional practices and that is constitutive for the successful performance of a particular job. The Studies of Work thus aim at the empirical analysis of competence systems (LYNCH/LIVINGSTON/GARFINKEL 1985, 182) that are characteristic for a particular type of work and define its identity. These competences are taken for granted by experienced practitioners. Therefore they can hardly be made explicit in retrospective, interview-elicited descriptions of work processes, and they escape a depiction in training manuals and textbooks. In labour studies and in the vocational disciplines the great importance of these practical competences and implicit knowledge has been recognised already for some time and associated to the Studies of Work (RAUNER 2004a, 8 f.).

According to their ethnomethodological orientation proponents of the Studies of Work assume that the performance of work tasks cannot be explained as rule-abiding actions. Rules, instructions, norms etc. are, by their formal status, general propositions that have to be interpreted and adapted by the actors. They have to be transferred into the situation, i.e. situated (cf. HERITAGE 1984, 293 ff.; SHARROCK/ANDERSON 1986, 80 ff.). Actions therefore have, as Garfinkel puts it, an inevitably *indexical* character because they unavoidably refer to the context in which they are localised. Due to this indexicality there is a principal gap between official textbook descriptions of the rules of work, which can only deliver idealised versions of work processes, and the actual, practical work performance in situ – a gap that common experience knows as the difference between theory and practice.

Each kind of work – from driving a truck to playing the piano to accomplishing a mathematical proof – has to be learned, beyond theoretical instruction, as a practical activity as well. In this learning process the future professional acquires the ability to identify and to handle situative contingencies and to make decisions on the course of work not schematically, but on a case-by-case basis; he learns to deal with imponderabilities and local constellations so as to somehow maintain the adequacy and efficiency of his activities. This *somehow* has been systematically left out in the descriptions giv-

en by labour experts and sociologists. The Studies of Work take this *somehow* as their primary research object and ask in a praxeological manner *how exactly* it is that the specificity and logic of a particular work is constituted in the details of the embodied performance of practical tasks. The Studies of Work therefore are in some sense connected to research in the vocational disciplines on work process knowledge (cf. as an example NIETHAMMER/STORZ 2002; BECKER 2004).

One of the major difficulties is that these practices can neither be identified by a pre-given catalogue of criteria nor can they be determined by attempting to capture them under some external ‘aspect’, e. g. as variables or motivational factors. Like other actions, work activities generate in their developing course an autochthonous order that is characterized by a “natural accountability” (GARFINKEL 2002, 173, 190), which is to say that the work’s intelligibility, describability and meaningfulness is generated through the ways it is realized and is not merely the result of scientific representation and analysis. The endogeneous practices of generating order and meaning in the performance of work are the core topic of the Studies of Work.

### 5.2.8.2 Genesis and Development

The Studies of Work emerged as an approach of its own from the research programme of ethnomethodology which was inaugurated in the 1960s by the American sociologist Harold Garfinkel (1967a). Based on the assumption that actors pursue the meaningful structuration of what they see and do in the social interaction with others, ethnomethodology has the objective to identify and analyse the principles and mechanisms by means of which social order is accomplished in the course of action. With this programmatic research question Garfinkel builds on the works of Alfred Schütz (1971) on a phenomenological foundation of the social sciences. Like Schütz, Garfinkel criticises the then dominant paradigm of structural functionalism by Talcott Parsons for neglecting the actors’ specific practices of acquisition, interpretation, translation and decision-making as irrelevant or for equalling these achievements with the model of scientifically rational behaviour. Garfinkel’s claim is that the solution to the problem of

social order can be found only in the elementary processes of the constitution of meaning in everyday life. Research has therefore to focus on how actors in their day-to-day activities transform the cultural values and norms into the situation, coordinate them with others and make them practically relevant.

Although the name may invite such a misunderstanding, ethnomethodology must not be understood as a plan for a scientific methodology. Ethnomethodology is rather a term for the situative techniques and procedures (“methods”) by means of which actors in everyday life (“ethnos”) jointly generate meaningful social order and rationality for all practical purposes. With the shift towards the methodical procedures of actors, through which social phenomena are constituted, Garfinkel implements a constitution-analytical programme as the main venture of ethnomethodology. At the same time he criticises traditional sociology and social research for using, without further clarification, everyday knowledge and common sense practices as resources instead of making them a topic of research. Whilst the criticism of the *normative paradigm* (WILSON 1973) of traditional sociology played an important role in the early stage of ethnomethodology (cf. CICOUREL 1970), later on the focus shifted more and more to the empirical realization of the ethnomethodological ↑research programme. An approach that emerged from Garfinkel’s original programme in the early 1970s, but was also strongly influenced by Erving Goffman’s (1971) studies on interaction order, is ↑conversation analysis (cf. BERGMANN 2004; SACKS 1992). Conversation analytical studies pursue the mechanisms of situated order production within the domain of verbal and non-verbal interaction and show how actors, in the local context of their interaction, generate the “natural accountability” of actions and events.

Besides the research in conversation analysis, which soon found international dissemination and recognition, studies were carried out during the early development of ethnomethodology that were concerned with the local production of ↑work processes and professional tasks. An example is the study by Don Zimmerman (1969) on the practical foundations of ↑work tasks in a public social

service agency. However, the decisive momentum for the development of the ↑Studies of Work was another research domain to which Harold Garfinkel and other ethnomethodological researchers turned: the work of scientists.

From an ethnomethodological point of view science must not be identified with its models and representations in methodological and theoretical textbooks. It has rather to be regarded as something that emerges from the situative practices of scientists and that finds its social order and rationality in these practices. In such a perspective, science loses the character of being something immaterial, purely ideal, even ethereal and becomes a concerted social achievement (LYNCH/LIVINGSTON/GARFINKEL 1985). In order to find out in detail through which practices scientists produce in their cooperative work the characteristic features of their discipline (↑objectivity, consistency, standardisation etc.) it is necessary to study scientific work the same way as anthropologists studied tribal societies: at close ↑distance, by participant observation, through the collection of various data and materials. In this methodological spirit several ↑field research studies were done in the late 1970s, which later became famous as “laboratory studies” and which exercised considerable influence in the sociology of science (cf. for an overview KNORR-CETINA 1995; as exemplary study cf. LYNCH 1985). Almost in the manner of a “fractal sociology” these laboratory studies reconstruct in fine-grained detail on a micro-level – e. g. on the basis of some laboratory shop talk on the magnified and coloured photograph of a tissue sample or by reference to the different versions through which a scientific manuscript iterates before its final version – how the institution *science* is continuously constituted in every moment through artful work practices.

Since the late 1980s the ethnomethodological ↑Studies of Work found broad reception in another domain – the research area in which various disciplines are concerned with the foundations, but also with the development, application and effects of the new ↑information technologies. Here, an important part was played by the study of Lucy Suchman (1987), in which the author – then a researcher at the Xerox Palo Alto Research Center (PARC)

– convincingly demonstrates what kind of problems can emerge in human-machine interaction when in the development of such systems the situated, local character of human action is not taken into consideration. The study which is strongly indebted to the work of Harold Garfinkel is based on detailed empirical observations and audiovisual recordings. It is also due to this study that some researchers in cognitive science and AI research, which used to operate with a rigid model of action, nowadays conceptualise cognitive processes more closely to communicative processes and take their situative and emergent quality into consideration when formalising actions (cf. ENGESTRÖM/MIDDLETON 1996).

Today the influence of the Studies of Work is most clearly visible in the domain of technological sociology (BUTTON 1993; HEATH/LUFF 2000), especially in the studies on “↑Computer Supported Cooperative Work”. In CSCW research and in the development of software systems it was realised that work activities and interaction with computers are inevitably of a situative character and do by no means follow the ideas and prescriptions of systems developers. The consequence is that systems designers who strive for “usability” need to have knowledge about the ways these systems are actually used and about the contexts in which users work with the systems. For the acquisition of this knowledge systems designers who are concerned with “requirement engineering” and “participatory design” have to rely on detailed ethnographic observations in local work environments. In the last years the so-called “Workplace Studies” developed as a special ↑research field (LUFF/HINDMARSH/HEATH 2000; KNOBLAUCH/HEATH 1999; HEATH/BUTTON 2002) in which the Studies of Work programme figures prominently and additional perspectives are brought in by various other ↑research approaches (such as ↑Activity Theory, Actor Network Theory, Distributed Cognition Approach). The “Workplace Studies” are the result of joint efforts of social scientists and information scientists to investigate how situative professional work practices and new information technologies interact with each other.

### 5.2.8.3 Object Relation and Exemplary Studies

A central ethnomethodological theorem that is also a starting point for the Studies of Work asserts that actors continuously employ techniques and procedures in their actions in order to render these very actions accountable to others. The actors thus continuously generate for each other the factual character of social facts and the ↑objectivity of objective state of affairs. This meaningful construction of reality is an essentially reflexive process: actions become identifiable, accountable and *meaningful* through the meaning they convey, and the meaning is in turn communicatively confirmed time and again through the performed actions.

The conception of the Studies of Work radicalises this idea of the meaningful generation of reality. It does no longer distinguish between descriptions, representations and accounts on the one hand and objects and facts on the other, but postulates the undivisibility and irreducibility of the local production of social order in the actors’ ↑embodied practices. The meaning and reality of social objects are therefore no longer viewed as the product of (isolated) practices of representation. Object and representation are rather understood as a unity, as a whole that realises itself in the accomplishment of sensual-material activities. (For exemplary studies on how objects emerge from discursive practices cf. GOODWIN 1996; GOODWIN/GOODWIN 1997). This idea was heavily influenced by Maurice Merleau-Ponty’s studies on the ↑phenomenology of the body. His efforts to overcome the distinction between the body as “mechanism-in-itself” and the mind as “being-for-itself” are continued in a sociological way by the ↑Studies of Work and their way to approach the ordering/ordered character of work activities..

Given these considerations it is quite clear why the Studies of Work are not limited to analysing verbal and non-verbal events within ↑work processes. The direction taken is quite different from ↑conversation analysis:

Although recent conversation analytic studies predominantly took conversations in institutional, professional settings – in court, in medicine, at schools – as research topic (cf. as a representative collection DREW/HERITAGE 1992), a certain prior-

ity is assigned to everyday conversation not influenced by institutional constraints. The Studies of Work, on the other hand, take into account everything that occurs in the ↑performance of work activities even over a longer period of time. This includes not only the verbal interaction of workers, but also for instance the technical handling of instruments, the manipulation and spatial organisation of objects or the visual and written documents that are generated in the work process.

A particularly instructive example is the case study by Garfinkel, Lynch and Livingston (1981) on the work of a team of astronomers who discovered an optical pulsar in 1969. On the basis of the tape recorded work discussion of the scientists during their observations as well as on the basis of their log entries and their ultimately published scientific article the authors analyse the “discovery work” of astronomers in an observatory. Their ↑central question was: “What does the optically discovered pulsar consist of as Cocke and Disney’s [the astronomers involved] night’s work?” (GARFINKEL/LYNCH/LIVINGSTON 1981, 132). The authors thus dissolved what they called the “Independent Galilean Pulsar” into actions and transformed it into a cultural object that was made up of an ensemble of work specific objectifying practices (cf. also SUCHMAN/BLOMBERG/ORR/TRIGG 1999). Another case study (HEATH/HINDMARSH/LUFF 1999) is concerned with the isolated and apparently non-social work situation of a train driver in the cab of a London underground train. Based on ethnographic observations, tape and video recordings of the normal work routine the authors demonstrate that the practical intelligence and social sensibility of the drivers are an indispensable condition for the safe and reliable transport of passengers. There are several formal procedures and clearly specified tasks for the drivers to limit the range of their work activities and to constrain their discretionary power. But these formal prescriptions, according to the authors’ conclusion, do not themselves guarantee trouble-free operations, but rely on the social and interactive organisation by means of which the drivers steer the trains and maintain the service for the passengers.

In the context of the Studies of Work numerous studies on a variety of professional work contexts

were carried out in the past years. All these studies concentrate on the description and identification of the specific practical competences on which the accomplishment of a (professional) activity is founded. No professional activity has to be principally excluded in advance – even the establishment of the *intelligibility* of a mathematical demonstration, which is normally supposed to take place independently of any context and in a purely ideal sphere, is deconstructed in an ethnomethodological view into situated sequences of action of a mathematician working with chalk on a blackboard (LIVINGSTON 1986).

#### 5.2.8.4 Methods

In an ethnomethodological manner the Studies of Work, identify as their ↑research object what is mostly taken as unquestioned resource and condition in the traditional sociology of work and occupations. David Sudnow, who has himself presented an ethnomethodological study on the improvisational work of jazz piano playing (SUDNOW 1978), criticises that studies in the sociology of music reveal a lot about the role model, the income, the work situation, the drug consumption etc. of jazz musicians, but that the *work of making music* itself remains unmentioned in these texts. This “missing what” (Garfinkel) is the topic of the Studies of Work. But since it cannot be determined in advance what these taken-for-granted practices of a specific type of work consist of, it is methodologically impossible to simply draw upon the established procedures of data collection, data processing and theory building. When a social object is methodically processed through coding and numerical-statistical transformation it is lost for ↑ethnomethodology since the situative practices of its generation are eliminated. Furthermore, these practices cannot simply be surveyed by interviews, since they remain, as Garfinkel (1967a) puts it, “seen but unnoticed”.

In ethnomethodology there are great reservations against explicating the procedural rules prior to the actual research and to fix these rules in a mandatory methodological catalogue. According to the conviction underlying this position methods must never be allowed to dominate the ↑research object and have to be abandoned if they limit access to

the specific nature of a research object. Garfinkel (2002, 175 f.) goes so far as to postulate a “unique adequacy requirement” as an ideal for ethnomethodological ↑research methods. In its weak version this ideal stipulates that a researcher has to be deeply familiar with the mechanisms of meaning and order production in his field of research in order to investigate it. In its strong version the postulate means that the methods for investigating a field should be seen – and found – as part of the field itself. An example would be a field observation that takes up the methods of observation already practised in this field. In the ideal case the methods of investigation should be uniquely adequate to the object – but since this can be decided only when one already has obtained knowledge about the object or when the researcher is part of the ↑research field, a formalisation of methods is impossible. (The very claim that the researcher needs to be a competent member of the field he investigates is, of course, highly unrealistic. In fact it was only in a few cases that this claim could be fulfilled, cf. LIVINGSTON 1986; BURNS 2000 and, for a German example STÖY 2001).

A ↑Studies of Work researcher cannot decide a priori in what details and structural features the “lived order” (Garfinkel) of a ↑work process becomes observable and how a practitioner’s situative competence becomes apparent. Therefore the researcher needs first of all to gain ethnographic access to the field of investigation and to record the work process as exactly as possible in its temporal and spatial course, its material shape and its documentary traces (written material, diagrams etc.). Given its orientation towards the local practices in which work is constituted as an intelligible phenomenon, ethnomethodology depends on “data” whose representational form is such that the practices it focuses on are conserved. Accordingly ethnomethodology is committed to a “registering” conservation mode (BERGMANN 1985) by means of which social events are preserved in their raw appearance regardless of plausibility and behavioural expectations. This is the background for the ethnomethodological interest in tape and video recordings of social interactions in *natural*, i.e. unarranged contexts and in the development of transcription rules that allow for the written fixation of a conversa-

tion without orthographic standardisation and reduction that ethnomethodologists and conversation analysts have shown since the 1960s.

For the analysis of this material no standardized methods were developed by the Studies of Work or ethnomethodology as a whole. The closest approximation to such methodological standards can be found in ↑conversation analysis (BERGMANN 2004). A first analytical access to the data can often be gained through one of the following two strategies. One possibility is to use the work-related statements of practitioners during the ↑performance of a work activity to become attentive to the specific task constellations and problem-solving procedures that are embodied in the work routine and that reveal the orientational patterns and relevance structures of a particular work. Another possibility is to look for “disruptions” or “trouble-makers” that may come up during a particular work and that offer the researcher an opportunity to observe the practical employment of order-generating activities and the work specific competence that is necessary for their performance.

According to their complex research objects and the heterogeneity of their data the Studies of Work employ a variety of methods for analysis and do not hesitate to borrow from other methodological approaches (↑ethnography, conversation analysis, text analysis). It is not the application of a particular method that is crucial for the Studies of Work, but the ability to use the general theoretical considerations (on the indexicality of actions, on the concern for “accountability” etc.) such that the practices that generate the identifying features of some work activity become accessible and visible.

### 5.2.8.5 Perspectives

Undoubtedly the ↑Studies of Work are a provocation for the sociology of work and occupations. Traditional sociology of work hardly can make anything of the claim to take the constitutive practices of work activities as the central ↑research object, to abandon any interest in typologies and to concentrate instead on the particulars of the work in question (but cf. BARLEY/KUNDA 2001). In his programmatic texts Garfinkel persistently talks of the “haecceitas” of the social, identifying it as the focus of ethnomethodological interest. This term

is meant to express the idea that everything that is social exists only as an singular, unique phenomenon. When the social is described in general concepts and subsumed under pre-given, theoretically deduced categories this feature of uniqueness is eliminated and lost (GARFINKEL 2002; cf. also LYNCH 1993, ch. 7). Nevertheless in the meantime this ethnomethodological provocation was productively received in labour studies and in research in the ↑vocational disciplines, and it gave rise to thematic and methodological innovations (cf. RAUNER 2002d).

To insist upon the *haecceitas* of all social objects, which must not be neglected in scientific treatment, entails some danger for the Studies of Work. Some of the studies that follow this approach are characterized by an exaggerated reservation against any generalisation. Instead they move through more and more detailed loops of description, which ultimately leads to a descriptive duplication of the research object. In this case taking *haecceitas* into account leads to a kind of scientific agnosticism and paralyses any strive for generalised statements. Along this road the Studies of Work would develop into an empty and futile provocation of the modell building social sciences.

Garfinkel's reminder to consider the *haecceitas* of all social objects can nevertheless be of high value especially for the study of professional work practices. The scientific investigation of professional activities is very often in danger to neglect the lo-

cal, reflexive process in which its object is constituted. The situative demands, the practical skills and the embodied knowledge of professional work gets frequently ignored with reference to the necessary scientific formalisation and generalisation. It is not seldom that scientists encounter "practitioners" with a certain epistemic arrogance while practitioners in turn can only shake their heads about the ignorant observers who apply some external categories to their work. At this point the potential of the Studies of Work becomes evident, which strive to study ↑work processes according to their own internal logic.

However, such an analysis delving deeply into the internal logic of work processes cannot be achieved by a researcher who permanently maintains a ↑distance to his object. Consequently Harold Garfinkel (2002, 100 ff.) pointed out that ↑ethnomethodology has to be *applied* ethnomethodology through and through. It has to develop into a *hybrid discipline* in which different ↑professions are jointly engaged in the analysis of work processes. In the area of ↑CSCW research the Studies of Work already stood the practical test to a large extent. Should they also succeed in other areas of work in gaining access to the constitutive sub-structure of practical skills and embodied professional knowledge, their findings would be of inestimable value and have a revolutionary impact – for practitioners as well as for scientists.

## 5.3.0 Experimentation and Development

*Peter Röben*

### 5.3.0.1 Conceptual Clarification and Definition of Key Issues

The two terms ↑experimentation and development have a highly positive connotation in the scientific field. Experimentation is a key tool for obtaining knowledge and insight in the natural sciences and development is a central feature of the ↑engineering sciences. The success of these two divisions of science have led to a higher regard for its methods.

However, one does not learn anything about the role that experimentation and development can and should play in vocational ↑training research by examining natural and engineering science. First it is necessary to take a closer look at the adaptation of these methods in the social sciences and ↑humanities, particularly in educational theory and ↑vocational education theory. The approach pursued by Gerald Straka *inter alia* represents an attempt in this direction.

One of the major results is the contradiction between internal and ↑external validity of laboratory