

## **ANMELDELSE**

Chaiklin, Seth & Lave, Jean (Eds.), (1993). Understanding practice - Perspectives on activity and context, Cambridge University Press, Cambridge.

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Seth Chaiklin and Jean Lave's presentation of essays covers research into social contexts of work with technology, and offers alternatives to cognitive conceptions of learning and activity. Such a social science approach is increasingly relevant for cognitive oriented researchers in industry, who acknowledge the necessity of relational accounts for understanding people's practice - not as an add-on to task analyses for function allocation, but as the means to explain and explore people's learning on work.

The book contributes to the analysis of learning in doing with interesting portraits of work and theoretical reflections, and furthermore it contains one of the quite few social accounts of learning maritime navigation from the hand of a social scientist, though there are a number of publications on the topic from people with a maritime background. At the same time the book indicates principal problems, partly general problems in the social analysis of learning in doing, partly problems with the authors' use of the analysis on specific fields of practice. After a summary of selected essays, I will try to discuss these principal problems and their possible solutions.

### **Summary**

The book is presented in a series of foreword as one in a series of publications with the aim of contributing to the understanding of the situated nature of learning, remembering and understanding, which is said to change dramatically due to new technologically media such as networks and CD-rom. So the reader may expect the essays to mention these technologies in some way.

In the introduction Jean Lave concludes that the book is about questions of learning, presented in a diversity of theoretical approaches with the social and situated nature of learning as the common factor. She then goes on to say that the new approaches overcome problems in existing mainstream cognitive theory, partly by making the practice of cognitive theorising an analysis object itself. The examples of practice singled out in the book, she says, lie at the heart of the production and reproduction of social order.

Edwin Hutchins describes in chapter two how his study of navigation has evolved from having the focus on the individual Polynesian navigator influenced by culture to focus on the joint accomplished and technologically mediated in cognition on board a naval helicopter carrier running into San Diego harbour. Four developmental lines are presented; the century long technological innovation represented in navigational instruments; the years of a quartermaster career; the minutes of performing the task of navigation, and finally, the moments of innovation in the practice of navigation. Hutchins describes the navigation task

setting as "the microstructure of maintaining the readiness of the human component of the war machine", and provides the reader with some details on the specific ship. Hutchins considers the process of fixing the ship's position in restricted waters, and identify the tasks, tools, communication patterns and crew members involved in the "sea and anchor" process. In the sea and anchor process and the steam watch Hutchins sees the quartermaster's carrier development follow the path of the information, from monitoring instruments to plotting and projecting the position. Hutchins analyses the navigation as a system with distributed and overlapping knowledge, at the novice level much overlapping and at the expert level less overlapping. In such a system the distribution of tasks has effects on the efficiency of performance and knowledge acquisition. Each team member has a horizon of observation, limited to what he or she can hear or see. He or she gets feedback on performance from peers and other sources depending on the task structure, but the overlapping knowledge makes the system robust and flexible. Hutchins discusses the novices learning in a system of this kind as the social formation of navigation competence. He argues that the transformation of knowledge in Vygotsky's notion of the social formation of higher mental functions is more critical with regard to educated adults' working for success, than for children; that society has an architecture different from individual minds and that perhaps some psychological processes are not transformations occurring in social interaction. Hutchins argues that human cognition is observable, and that one should not attribute too much knowledge to the individual actors, but also consider the context of cognition.

In chapter three Yrje Engestrøm analyses primary care medical practice in line with the traditions of Vygotsky's Soviet marxist psychology today called activity theory. The focus is on the individual's contribution to societal, cultural and historical cognition, and Engestrøm criticize cognitivist, phenomenological and etnomethodological views for using actions as entities of analysis and for seeing the context as something which the individual cannot influence. Activity systems shall be modelled with a focus on change and multiple viewpoints, and historicity must be used as basis for classification. Inner contradictions in the system characterizes activity, which takes form according to the specific system of interest. The categories are applied in an analysis of medical practice and the conclusion is that the application of the products of activity theoretical research - conceptual tools for practitioners - in the self-organising of medical practice is a rigorous test of the validity of activity theory.

The other essays in part II of the book (part I was the introduction) explore psychoterapeutic, blacksmithing and artificial intelligence research practices, and the practice of arriving in new settings. Together the essays in part II are dubbed "learning craftwork" and the author's focus is on adults' learning in doing. Part III of the book consist of portraits of examination of students, representing students, acquisition of a child, scaffolding in mother-child problemsolving dyads, solving everyday problems in schools and giving directives in classrooms; all essays with a focus on learning as the social production of institutional arrangements.

Independent of Jean Lave's introduction to the essays, Seth Chaiklin concludes the book by analysing the practice of the research represented

by the contributors to the book (minus the editors contributions). The essays are seen as contributions to the scientific understanding of individuals engaged in practice, and Chaiklin classifies them according to central questions in the authors' research traditions, characteristics of the practices in terms of tasks involved, empirical methods used, the tactical goals of the chapters and whether or not the authors want to contribute to the practice, which they analyse. The clearest results are that political aspects are relevant in the studies represented in the book, and that political aspects may be incorporated explicitly in the design and conduct of research by the inclusion of historical and structural aspects in the analysis of practice.

#### The social in the context

The editions most important theoretical problem emerges in the conception of context as learning-in-practice and of institutionalised arrangements' generation of learners and failure to learn. Learning in practice is what goes on when you learn craftwork - such as psychotherapy or artificial intelligence research - while learning in institutionalised arrangements - such as school classrooms - are social production.

One of Yrje Engestrøm's conclusions can be used as an illustration of the theoretical problem. Jean Lave refers to Engestrøm's research on primary care medical practice as a contribution to understanding adults' learning of craftwork. Engestrøm's own conclusion of his essay is:

"Developmental work research may thus be regarded as a testbench of activity theory. However, this testbench is not just the "applied end", receiving theoretical propositions and hypotheses from the height of the basic research. The epistemology of activity theory transcends the dichotomy between the basic and the applied. I see developmental work research, and other serious attempts at empirical activity-theoretical research, as a laboratory in which new theoretical concepts and methodological principles are created, not only tested. In this sense, the testbench is in the center of the theoretical endeavor." (p. 98).

Seth Chaiklin says in his conclusion that Engestrøm was quite explicitly in that he wanted his work to contribute to the improvements of societal practice. Social improvement in the practice studied, Chaiklin says, shall be expected from social scientific research. An alternative interpretation can be that Engestrøm wants to contribute to cost effectiveness of the medical practice; Engestrøm and his research group were expected to satisfy the needs of the sponsor of the study - to provide conceptual tools for the practitioners. If cost effectiveness then is the most important feature of social improvement, then perhaps medical doctors shall be trained as social scientific practitioners.

Jean Lave's most general conclusion is that context is characterized by learning (eg p. 17, p. 28). All the essays provide analysis of learning as situated practice. The cause to this she locates in the author's treatment of dominant theories as unmediated alternatives to own positions, instead of specific historical conceptions. One should note, she says, that the assumptions and beliefs (not the jargon) in current dominant theory are difficult to distinguish from folk beliefs and practices (p. 29). The everyday, situated practices that the authors want

to describe, may be intertwined with the theory, the authors want to transcend.

Inside the editors' theoretical practice and own premises this conclusion is doubtful.

For example does the argument about the immediate and the historical in the theorising of one of the founders of activity theory (Leontjev 1983) not only have to do with the development of historic, cultural and societal specific practices. Also a clear vision of an ideal person, the (Soviet) human of the humanities, is represented in this theory (Leontjev, 1983, p. 229). In Jean Lave's conception of context it is not possible to explore the differences between the approaches in "Understanding practice" and conventional cognitive theory, especially not the differences between process oriented cognitive theories (eg the theory of the processing of numbers and letters in Schifffrin & Schneider, 1977) and the activity approach to theory development (eg Engeström's work on improved medical practice), for example their different selection of practice, unless you want to claim a myth of the power of western culture - that some empiricist, rationalist and individualist researchers insist on decontextualise phenomena, while other Scandinavian, anthropologists, female researchers know that their work is contextualised and allow themselves to study significant social practices. The concept of learning becomes too general.

An alternative interpretation becomes possible if context as learning is reduced to a theory of implicit learning (Berry & Dienes, 1993). The alternative can be summarised with an example of a paradigm for studying implicit learning: the control of complex systems. Studies made during the past 15 years prove that there exists some form of dissociation between people's ability to control complex systems and their associated verbalisable knowledge. Different experts tell different stories about identical topics, e.g. on learning maritime navigation, which is Hutchins' topic - these stories are what current explicit knowledge is. What they do not verbalise is learned as implicit knowledge, and people do learn without verbalisations, or more often, with a mixture of verbalisation and non-verbalised conditions. The explicit learning takes place in institutions, but also the implicit learning in institutions can be analysed. A significant purpose with the interpretation of studies of understanding practice would in this theory be to explain context and learning as points on a scale, whose structure depends on what is verbalised about a topic. Then it must be the task of studies of understanding practice to explain the relation between what is verbalised and what is not, between practice, task and the person, and between levels of detail in that process.

The bedrock for Jean Lave's and Seth Chaiklin's interpretation of context is a collective (of researchers) inquiry into several theoretical approaches to understanding practice. Here emerges another, methodical problem, which is a general weak point in the understanding practice research, that is the (lack of) focused, centralised analysis of data, which makes it easy to agree or disagree with the authors. The description of the method is held on a behavioural level, without discussion of analytic procedures, not to mention examples of how the collective did inquire into the theoretical approaches. That is not to say, that the editors should have given full descriptions of the

conferences held or letters exchanged, but the many methods referred to throughout the contributions could have been introduced better, e.g. the protocol analysis used by many authors, Kvale's reconstruction of typical remarks, Levine's count of task frequencies, etc. So, though I agree on many of Jean Lave's comments on the commonality of the contributions, I am not always sure on why I agree with her.

#### New approaches, old problems

Even though a lot of the edition is used on the discussion on how to study understanding practice, neither the editors' documentation of own methods nor their discussion of traditional cognitive conceptions of system, change or actions are quite comprehensive. Simultaneously, it is the editors' contribution that these ideas are discussed at all, since cognitive studies of practice often take them as points of departure.

Jean Lave denies the traditional cognitive concepts and redefines, with support in most of the authors in the book, the meaning of the concept's system, change or actions. This is a very interesting activity, though certain aspects are weak, not at least the one Jean Lave herself illustrates in the introduction, where she discusses different approaches to the study of learning.

Systems, i.e. the domain for analysis, should in an investigation into understanding practice cover both the practitioners and the analysis of their work. This can imply that, e.g. the editor's analysis of the research approaches should consider the economical conditions for the different research made. Instead, Seth Chaiklin argues that an advantage of considering the historical development is that it enables an understanding of the logic of which the research traditions expect to satisfy society's expectations. In the long run these historical analyses can show how the knowledge produced by research traditions can accomplish the goal of social improvement. But this is only fair if the research traditions do have similar economical conditions, or if the cognitive variables have no interest. This is only partly true in the present case, as the point of departure for many authors in the book, including Jean Lave, is in cognitive oriented theories. Just because of that it is very important, that the differences in the approaches to cognition, which they identify, not are the result of the different economic conditions for the research.

When it comes to change, which traditionally has to do with transitions from one state to another, Seth Chaiklin argues that the contributions' common ground with other social sciences does not entirely provide a basis for understanding these specific theoretical traditions, rather the expanded focus is what distinguishes the work from other social science research. But it remains unclear, how one is to judge the results, if one does not judge the transitions, which led to the expanded focus. Seth Chaiklin does want to see the question of actions as units of analysis as a part of change. Here he puts forward the authors' selections of practice as socially significant ones as an alternative to the social science traditions that have typically studied individuals. Criteria for a significant practice is 1) concrete meaningful societal practice is the direct object of the study, 2) the practice takes place in relation to societal institutions, 3) the study has a definite theoretical interest, 4) societal and social factors are taken into account, and finally 5) the

practice selected shall have significant consequences for the people studied. But what separates these criteria from well-known demands to applied cognitive studies? Furthermore there is an implicit risk for superficiality and self-sufficiency, if one try to fulfil onesided these demands. Let us assume, that criteria 1) "meaningful social practice selected" is fulfilled, but that it does not take place in relation to an institution (criteria 2), does not have a definite theoretical interest (criteria 3), but social and societal factors are taken into account (criteria 4) and the practice studied does have significant consequences for the people studied (criteria 5). According to Seth Chaiklin, then this is not a study of societally significant practice, and the investigation is not a study of practice.

This does imply in practice that new knowledge is difficult to create through the study of "societally significant practices". Here it is more traditional cognitive theories which hold a potential for revolution. Well documented experimental research can lead to new theories, which are accepted and used in many different practices in the society. However, there is reason to discuss how to speed up this process in applied cognitive investigations. The cooperation between theoretical researchers and practitioners in other fields can, which is emphasized by Engeström, be more important than theoretical predictions.

Does this mean that one shall avoid theoretical predictions in such a collective investigation? Jean Lave and Seth Chaiklin do consistently avoid putting forward any predictive results. But also here there are conflicting and partly misleading aspects of the edition. The editors do repeatedly emphasize that the studies "might contribute", help illustrate", "highlight some general problems", "are necessarily sketchy", and "coherent account", "strong common argument", "resources of diversity", "strong beginnings" of the study of understanding practice. Because it is not written, which of the editions many research papers, is in focus in each of these cases, it is very difficult for the reader to judge the results. This is particularly problematic, when one considers the structure of the collective inquiry. The contributors include psychologists, sociologists and anthropologists from Sweden, Denmark, Finland, France, Switzerland, and the United States, and both editors do regularly refer to commonalities and differences between groups of contributors. But somewhere you should decide the borderline for how many criteria needs to distinguish the authors, before you can postulate that there are differences or commonalities. Otherwise there will be too great a risk that you let the borders be floating, so that you can reach results, which are according to predetermined beliefs, or it can lead to inconsistent results.

In the introduction Jean Lave does discuss learning in practice and argue that some authors focus on learning and understanding activity (part two), while others focus on learning identities (part three). Criteria such as the practice being craftwork, takes on meaning from broader activity systems, consist of partial and open-ended process etc. are mentioned, but only applied for the contributions in part two. Other criteria are applied for the contributions, which are classified as belonging to part three. A simple table of criteria would have made it more clear, whether there are such differences between the authors.

Jean Lave and Seth Chaiklin have chosen to thematise the edition as social contributions to understanding practice, which is a relevant and important perspective. There are relatively few social science studies of practice. However, in other parts of cognitive research there are lots of investigations of practice with the focus on the practitioner. For example there is the "control task" research. There are lots of parallels between the studies of practice in the edition and the studies of practice done by control theoretical researchers. For example has Heinke Schuffel from the Dutch Institute TNO, Human factors division, investigated navigators control of the ships systems. Inspired by system ergonomic approaches used in military research he found that the operator's practice can be understood on several dimensions, of which one covers mission, operation, function, task, and another mission phases and decomposed functions, and that these dimensions are incorporated in the action repertory of the individual operator. The societal and social aspects of work are something that is often noticed in military research. Concepts like course of action and event also have clear parallels in the understanding practice approaches, and newer control task research has indicated the complexity of human system management. An important strength in Jean Lave and Seth Chaiklins edition is that they, against the control task studies, do indicate the necessity to incorporate political aspects on all levels of an analysis of understanding practice.

### **Conclusion**

Understanding practice research has become a meeting point for social psychology and cognitive anthropology, not to mention the other practices studied under this heading. This contains a dilemma for the researcher. In the crusades between different traditions, the individual researcher must fight with the problems of linking different practices research ideals and values. It is probably an impossible task to unite different practices in a common study, which also is reflected in the edition, but simultaneously there lies a potential for human, scientific development, what the edition is an example of.

I conclude by returning to my impression of the editions qualities. This first coherent edition about understanding practice shows a long tradition for focussing on the specific practice, many very interesting discussions and some readable accounts of craftwork. The edition has produced new knowledge about cognition in practice, and about the researchers in that domain, and it has identified important areas for further research and for the appliance of historical, societal, social and individual analysis in understanding practice in craftwork and institutions.

### **References**

Berry, D.C. & Dienes, Z., (1993). Implicit learning, Lawrence Erlbaum, UK.

Leontjev, A., 1983. Virksomhed, bevidsthed, personlighed (Activity, conscience, personality). Sputnik/Progress, USSR.

Schneider, W. & Schiffrin, R. (1977). Controlled and automatic human information processing: 1. Detection, search and attention. Psychological Review, 84, 1-66. 1977

Schuffel, H., (1993). Human factors in bridge operations: Decision support at future ship bridges. TNO, Netherland.