Developing Praxis in Conflictual Cooperation

A Preliminary Report from a Construction Site

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Abstract: The present and the ensuing chapter argue that change and learning are two related aspects of praxis. The present chapter will investigate the relation between developing praxis and its organization, while the ensuing will investigate the relation between learning and changing praxis.

Praxis serves many purposes as the interwoven actions of many persons. Social development comes around from the arrangements persons must do in order to act. When all the persons in concrete praxis arrange themselves forming the acts of each other, they participate in something which is more than they see. Even though they act with reason and insight, they are forced and surprised by what happens in their coordinated acts, and must constantly work to reproduce the order they know, incorporating the regularities they have just had to take into consideration or have just learned about. Thus the order is always varied. Most often the variation is acknowledged as being the same as the order looked for. Sometimes it becomes evident that something in the coordinated praxis is moving it, and it is sometimes possible to identify what it is.

This notion of coordinated concrete praxis will be discussed and unfolded on the basis of an analysis of some empirical material from a project on conflictual cooperation in the building business. In a university dormitory we shall follow the construction of the shafts for the technical installations of the building. We shall see how planning is understood to take place in one phase and to be followed in others. But upcoming events makes it necessary to continuously reorganize praxis, and the

underspecification of drawings and plans makes it necessary to understand their meaning to modify the elements of the house accordingly. In this way our anticipatory production of the house leaves traces which we must take into account in our ensuing acts. Furthermore, from these observations it becomes clear that we organize praxis according to the way we understand it, and even though the understanding goes against what must be done, what must be done will be done.

The present chapter and the ensuing one are wrtten as a coherent argument on the basis of common discussions on a shared empirical project. The authors' purpose is to argue that learning and changing praxis are two aspects of the same phenomenon. In this chapter I shall discuss changing praxis and in the following one Klaus Nielsen shall discuss learning. The presentations are based on a preliminary investigation in conflictual cooperation and learning when building a house. The two presentations will contain shared problems and perspectives, differences, and a common conclusion.

To state that learning and changing praxis are two aspects of the same phenomenon, is to situate learning in social praxis. Lave and Wenger's "Situated learning" has drawn a lot of attention and discussion in the last decades. This was achieved by criticizing conceptions of learning which simply see it as individual information pick-up. The individual conception was replaced with a notion about learning as an "integral and inseparable aspect of social practice (Lave & Wenger, 91, p.31)". Most often, this idea has been understood as if learning is about how newcomers move into a full participation in a community of practice. In this way the focus has remained with newcomers as learners (e.g Dierkes, 2001), overseeing more or less deliberately that oldtimers learn.

It is ignored that the move does not - in the words of Lave and Wenger - "take place in a static context. The practice itself is in motion. Since activity and the participation of individuals involved in it, their knowledge and their perspectives are mutually

constitutive, change is a fundamental property of communities of practice and their activities (Lave & Wenger, 91, p.116f)".

In the present chapter we shall found the social notion of learning in the acknowledgement of a set of related circumstances. The approach is part of Critical Psychology (Dreier, 2007; Maiers, 1996; Axel, 2003 & 2007). We shall investigate the praxis of work at a building site. Work is what goes into transforming conditions in order to ensure a human life. To work is a human activity and it includes making anticipatory arrangements of conditions in praxis. To arrange conditions of work is to prepare work while working, anticipating eventual break-downs due to difficulties making things work together. To make things work together is the basis for learning as well as developing practice, and it means that change or development is a fundamental property of praxis. Newcomers as well as oldtimers must make their own arrangements in order to get work done. This means that learning is not necessarily connected to the path from peripheral to full participation. Our argument for this conception will be an analysis and discussion of a building activity as observed in a building site in Denmark. In the present chapter we shall see how a building activity must be developed by its participants in order to accomodate concerns involved. In Klaus N. Nielsen's chapter we shall see how this accomodation is the basis of learning for participants.

Let us now see how participants must accomodate concerns involved in the building activity.

The Investigation

The material to be discussed originates from observations and interviews undertaken at a building site at Roskilde University. The dean of the university wanted to meet the challenge of expanding the international exchange of students. He therefore decided to build a dormitory for foreign students. The house was designed and specifications made in 2004 and 5 and construction began on the site in the fall of 2005. Originally it was the intention of the dean to build a duplicate of the house one year after the first, but this was given up.

Our project gained access to the site in the middle of the process in December 2005. At the time the concrete walls had been set-up, and the technical installations were being put in place during our observations in the spring 2006. We observed building meetings until August 2006. Here the main entrepreneur, the architect and three sub-contractors attended. After the meetings we walked around the building site with the participants of the meeting. When our resources allowed we interviewed participants about problems discussed at the meetings and walk-arounds. In the present chapter we shall mainly use some observational material and pieces from the interviews with the engineer, the architect and a subcontractor, responsible for sanitary installations, among other things.

With this material we shall unfold a social notion of learning. To do this we shall see how the building activity must make things work together. To keep things short we shall focus on some parts of the building. We shall study the construction of the vertical shafts of the house. They ran from the cellar to the top floor, and gave room to different pipes and cables. We shall see how the partipants constructed the shafts in a recurring accommodation of upcoming contradictory concerns.

We shall proceed in the following way. We shal discuss different understandings of how to build a house, and by approaching a more and more concrete praxis conception we shall little by little enter into the empirical material in order to sketch out a conception of how learning and change are two connected aspects of conflictual cooperation.

Rational and praxis based approaches to the arrangement of work

To state that learning and developing praxis are two sides of the same phenomenon is to focus on the continuous arrangement of work to make things work. Since work is cooperation either here and now or spread out in time and place, the anticipatory arrangement of work among other things continuously includes providing resources, coordinating activities, controlling results, and reorientating the process according to what comes up (cf. Lave, 88). There are different ways of understanding these aspects of praxis, and they become part of the way it is organized. To get a grip on the relation between praxis and the way it is understood we shall look into some ways of understanding praxis and what cannot be handled therewith.

Normally we think about work at a building site as mostly prearranged. Additionally, we say that work consists of building those things the architects and engineers have conceived of, that it consists of realizing the design which has been thought out in advance. The drawings constitute the basis on which plans for the execution of work are drawn, and work on the building site consists mostly in having workers use their skills to realize the visions of the designers. We also tend to say that the prearranged work process is routinized, and that you cannot find much learning on the building site, since the workers know in advance what is sufficient for the execution. We shall name these ways of thinking as rational or analytical approaches. They are related to the way of thinking Schön (83) termed technical rationality.

But we will argue that plans are not *followed* at work. On a building site many things happen which are unpredicted or unpredictable, and part of the effort at the work place is to accomodate for the unpredicted occurrences in ways which ensure that you arrive at a result, which corresponds fairly to what was intended. It is this process which must be understood, and it implies intrinsically that praxis must develop more or less and that the participants learn accordingly to achieve a variation of the intended result. We shall term this way of seeing things a praxis based approach. In the present chapter we are going to dig out some of the reasons for it.

However, even though a praxis based approach accounts for the continuous provision of resources, and the continouous coordination and controlling, we must also acknowledge that workers are *using* plans at the work site. Since planners tend to claim that everything has been taken care of in planning, and since this is clearly impossible, we must reach an understanding of what people do when they claim they plan at a building site, where unpredicted or unpredictable events must be accomodated. This implies that we must come to an understanding of how people shape praxis with plans, how they become part of the way praxis is organized.

Theoretical and Practical Analysis in a Building Project

By discussing plans we can explore how and how far we can anticipate events when we make arrangements for building a house. Originally, at one and the same time a plan was a drawing of how the building should be laid out in space and a schedule of how building should be laid out in time to construct the house. Now, with a drawing

we specify to a certain degree the details of the house, and with a table of schedule we specify to a certain degree the details of the building process. Thus, to plan presupposes knowing what goes into the building, to make a plan presupposes an analysis of the building.

Further, we normally say that the technical rational approach has made it possible to avoid errors, to obtain maximum control of time, resources, economy. We believe this is achieved by founding the building process on knowledge from the natural sciences. It is, of course undeniable that scientific understandings have changed the building process, the question is in what way. We normally argue that with the rational procedures from the natural sciences we have obtained universal understandings, which hold. Additionally, we believe that if we use similar rational procedures for planning construction activities (like recent versions of PERT), we shall obtain a process which holds during its execution, especially if we follow it strictly. In this way we lend the rational procedures a comforting certainty, they cannot provide (Bernstein, 83).

The procedure we lend so much trust, is the meticulous analysis of the parts of the house into elements to be produced and of the production and construction process into well defined steps. Then the steps can be put together as sequences of parallel activities with which we can secure the final result without failing. This procedure first of decomposing an idea into basic elements, which are plain, obvious and true, and which can be isolated from each other, and second of composing the basic elements into compound ones can be traced back to Descartes (1637). He saw it as a guarantee for obtaining certainty in what we know. Interestingly, when he argued for the use of the procedure, he claimed that one architect could finish a house which was more beautiful, better furnished and in better order, than many architects involved in remodelling a house which was orginally built for other purposes. He had similar arguments for the development of cities. Thus he held rationality, the use of the procedure, and the rational thinking of one man together, and he claimed that the cooperation between many masters did not achieve perfection.

However, as already stated, the use of rational procedures as a quest for certainty and control and the avoidance of errors are belied by the constant possibility of appearing

unpredictable events during the construction process. Since we must modify the method according to occurred, unpredicted events, we must give up the guaranteed certainty of one method. We cannot obtain the stability of given things, be they objects, and concepts. We produce stability, and it can become as stable as our praxis, where objects appear. Since unpredictable things happen, we cannot explain our understanding as constituted by given, isolated, stable and fixed notions to which we add new components (Axel 2002, 2003). Instead, we must take point of departure in our connected life, we must explain how we differentiate things in front of us in order to act on them to finish with a product which corresponds fairly with what was intended. And on this basis we must explain how we are able to deliberate things which are not here now. Both these psychic aspects are deeply practical ones.

This means that analysis and synthesis are psychic aspects of movements in practice. In a chapter on how baker apprentices learn Klaus Nielsen (2006) demonstrates the way a baker master shows an apprentice how a cake is decorated, and then asks him to do it. After having tried it a few times the apprentice is asked to figure out his own way of decorating it, and then he is allowed to do it from the start. While decorating the cake, the apprentice can study the cake, see the things which go into it. The apprentice learns backwards, which is a practical analysis of the cake. We see that learning the process backwards furthers the analysis of the cake in thinking, and making the cake furthers planning its production in thinking. The way the master demonstrates how the cake is produced makes the apprentice able to think in free movements forwards and backwards, deliberate things which are not here now, but have been and may become.

Now we could claim that analysis has identified basic elements like the ingredients of cakes, parts of houses, etc., which are simply put together in the construction process to produce the end result. But we cannot see the elements as obvious, isolated, or fixed and identical from production process to production process and thereby seeing this putting things together as a simple mechanical process. The elements vary with what is available, and the production process and product varies with them. We must make arrangements to maintain a stable product. Since the production process cannot be identical from time to time, we must understand analysis and synthesis as a supple process, which varies with conditions, and re-forms or transforms plans, production

and product. Dewey (1909) has provided us with an understanding of analysis and synthesis which is helpful in our project. He does not talk about analysis as the decomposition of a thing into basic obvious elements, he brings the process back to intentional praxis, and argues that analysis is focussing on what is relevant in a present predicament (p. 267). Likewise, synthesis is not seen as putting basic elements together, but as contextualising what was emphasised, or focussed, e.g. as placing a house, giving it significance in its connections (p. 269). It is a folly to set analysis and synthesis over against each other (p. 270), they constitute one process of emphasising and connecting. We cannot isolate the elements with which we build, as against the house as well as the planned and realised building process; they all appear in their meaningful relations, and they become more to the point the more the person has participated in building processes.

Furthermore, the building project makes it clear that planning with analysis and synthesis is not a process performed by one person. We have seen that Descartes located rational planning in the thinking of one man. But one man cannot know everything, and we all know something, have a perspective on what goes on. The problem is not for one man to find a rational solution and then to recruit others. We are already involved in different ways in the ongoing work, the problem is to develop participants' involvement, to make cooperation coherent, to coordinate different perspectives. To coordinate different perspectives makes us se thinking as an aspect of praxis, like Dewey. We cannot see thinking as isolated, internal contemplation. We may say one thing and think the contrary without saying so, but still this means that thinking is social coordination between us in a conflictual way.

Additionally, planned action as the consequence of analysis and synthesis does not go on in one human being as a specified sequence of action steps. In an observation of an everyday regulation in the control room of a district heating system I found that the operators did not regulate by following rules step by step. Instead they were located in a praxis with many ongoing concerns, where they constantly had to judge the relevancy of different occurring events. It is also evident, that other professions are present in the way things are done (Axel, 2002). Similarly when we participated in a meeting in the architect's drawing room. Many workers were sitting beside each other at long tables with computers, each project in a different stage. Some of the workers

were discussing with each other sometimes because they cooperated on the same project, at other times just helping each other out on each their project. Thus they deliberated the course of their projects, by searching each other's past experiences they tried to find out what may become.

To construct a house means taking many aspects into consideration. There are aspects of materials, engineering aspects, social aspects of use, estetic ones, economic ones, and there are many contradictions between them: To construct a building, which is of good quality and cheap is a contradictory art, which must be performed anew each time. There are many such contradictory processes, and they are never ending. As we shall see - to build a house is contextualising it, is taking all the contradictory concerns into consideration, is acknowledging all the upcoming and unknown aspects, and finding a possible way under the given conditions. It is not simply following a plan, but reproducing the way of building a house each time. To contextualise a house is to acknowledge the consequences of particular connections, our understanding of the building proces must accomodate for this.

However, even though praxis is characterized as reflexive arrangements, it is also true that the analytical approach in a paradoxical way has contributed to its differentiation. Descartes located rational thinking in one man, apparently gathering the regulation of the building process in one man. This has become the common way of thinking in our time. All the same the technical rational way of analysing which isolated basic elements go into a house has contributed to the multiplication of professionals involved in constructing houses. The natural sciences, the analytical method in technical rationality, setting things up in elements to be analysed each on its own, and the ensuing expansion of management in the division of labour has been part of the reason for the growth of professionals. Thus, planning has come to be understood as the combination of the contributions of the professionals. Further, we shall se that professionals differentiate and try to secure their perspective on building a house in relation to each other.

In this way the way praxis is organized takes shape from the way it is understood, and so does conflictual cooperation, but at the same time praxis is following its own course, contrary to the conception.

Professional Perspectives on the Building activity - Conflictual Cooperation

Thus on the building site could be found architects, engineers, and different craftsmen. Among other things the architects stood for the functional and esthetic aspects of the building. The engineers computed the statics of the building and on that basis the size of the balconies, the thickness of floors, they took care of the comfort of the house, etc. The craftsmen and construction workers produced different parts of the building, the concrete walls, the big windows, the insulation of the building, the sanitary installations, the electrical ones, etc.

In these distributed functions the academic professionals tended to understand their professional perspective as isolated from each other. One inspecting engineer argued that his task was simply to list those components which would fulfill the functions as designed by the architect and required by the specifications. As long as the specifications were met, the choice was free. Thus he claimed that floor heating or radiator heating had been deliberated in the design process, arguing that each process would meet specifications and thereby the functions designed by the architect. But adhering to abstract specifications he oversees the concrete effects of the different heatings. Radiators are located by the windows, setting up hot airwalls against possible draft and leaving floors cold. Floor heating opens a stronger possibility of draft, of walking barefooted, of quickly drying floors after being washed. But the way the professionals see their perspectives are not always clear cut and isolated from each other. Whenever some decision on the building site was incomprehensible participants claimed "That's architecture". I used this to ask the architect of the building how he would explain architecture. He referred to the ceiling lights in the building. A craftsman had asked a lamp to be turned 90 degrees so that the light would fall on the kitchen table. The architect had insisted that the ligths stay in the way designed, due to the rythm of the lamps on the ceiling ensuring that the light would be distributed in the room as designed. "That's architecture" he said. Here the architect defends an abstract understanding of the architectural saying, that form follows function by arguing as an engineer, referring to a formula ensuring an evenly distributed light in the rooms. We see that the recurring problem in building a house is the placing or contextualising of the parts. How to emphasize or ignore the different aspects of the parts and their concrete implications is a recurring issue, which can be

handled with professional, abstract or contextual arguments, but never solved once for all. They open possibilities for discussions, disagreements, struggles etc. This is what I term conflictual cooperation, which means that contradictions are handled and regulated, and may end in conflicts.

The Building Site

We must outline how the building site was organized. In Denmark until now engineers, architects, and craftsmen cooperate on a building site from each their firm. The dean at Roskilde University was the client, an architect functioned as his supervisor. An engineer from an engineering firm directed the building activity, the architect who designed the house supervised the architectural aspects.

The activities on the building site were multiple. While the concrete walls were dried in the wet winter, sanitary pipes, electrical and electronic components etc. were set-up in parallel. The different craftsmen moved around the house from floor to floor, coordinating their activity on the building site meetings and from day to day.

As we shall see, this ongoing, coordinated activity in which different professions participated was the basis for the developments and changes found. In Lave and Wenger's "Situated Learning" learning is an integral aspect of social practice in a community of practice. For Jean Lave a community of practice is identified as a grouping of people living across many contexts and reproducing their community, like the English community in Porto. In the present project there may surely have been communities of practice present on the building site. But the ongoing coordinated praxis on the site cannot in itself be termed a community of practice for the following reasons. First and foremost it does not reproduce itself. In Denmark participants in building sites are brought together each time anew. Second, a sense of community may have developed on the building activity as an ongoing concern with specific ways of conducting meetings and other activities, and of using set phrases etc. All the same there were circumstances which pointed to the building site as loosely collected work teams: Some of the leading participants did not know the name of each other. Furthermore, there were Poles on the roof, insulating it in the wet winter. They were not able to talk with the Danes involved. Lastly, some participants knew each other from outside the building site. Some of these relations may have lent a sense of

community criss crossing the concerns of the building site. For example some of them knew each other from other building sites, and the client and the supervisor were both employees of Roskilde University. Such aspects around the organizing og the building site must be taken into consideration when we investigate learning as an inseparable aspect of changing social practice.

The Anticipatory Arrangement of the Cellar

Let us now see how the house was constructed in a recurring accomodation of upcoming concerns. As already stated we shall focus on how the vertical shafts of the house were constructed.

The work activities on the building site were planned in advance. It was a set phrase at the building site to state that there were phases in the building activity. You could hear talks about the first phase as the stage of conceiving ideas and of specifying them, and a second phase as their realization. The supervising engineer even told me that the construction taking place for the specification of ideas would soon be obsolete. He had seen a design program on a computer, where you designed a freeway by placing it in a picture of a landscape, whereupon the freeway and its banks were drawn. The supervising engineer seemed to defend the idea of clear cut phases in the construction process by stressing that the design phase was meant for accomodating possible changes of ideas, while their ensuing realisation followed the directions of the specifications.

However, we shall see that analysis, design and planning was ongoing concerns during the whole process. This means that phases weren't clear cut and that building activity is not well understood as realisation of ideas.

Two architectural drawings may illustrate this. The first one is a sketch of the cellar as originally conceived by the architect. We see some free space in the cellar, and the rest he meant to function as storage rooms for the inmates. By stating that the drawing is the architect's first idea, and the next drawing his second idea we tend to isolate the drawings from the considerations that led to them. This would make us focus on the individual aspects of the process, and talk about the architect's idea being realized. We are better able to follow the development involved by looking into the contextual

aspects of the process, by stressing that the architect wanted to accomodate the inmates with a facility commonly found in houses. Furthermore we note, that the first drawing does not show pipes and cables which would have to be supplied anyway. We also see that the drawing functions as a memory support for remembering a preliminary decision taken at the start of the project to be used in the recurring upcoming of ongoing concerns.

Now, the client had to save money on the building to ensure rents the students could afford. It was therefore decided to leave out the cellar. However, the engineer suggested that the technical installations of the house would be easier to build and service, if a basement passage could be introduced. Setting up vertical shafts from this passage would also ensure that the heating pipes would run in the middle of the house, and not at the outer walls. Thereby heat would not be wasted into the open air, but heat dissipating from the pipes in the shaft would heat the house. The expenses for such a passage were accepted, and the decision registered on the second drawing. There we see the passage and the shafts.

If we state that different ideas were debated and afterwards realized we would ignore what went on. The engineer's suggestion is not a new idea, it is a commonly found device in houses built after the seventies to save heat. The participants therefore debated what they had experienced directly or mediatedly about cellars, they reworked what went on at other times in other places for upcoming purposes. While designing and constructing, based on previous experience they continuously accomodated in a specific way for many concerns: inmates' comfort, technical installations, construction workers, service men etc.. In all this was intertwined the contradictory art of ensuring quality and good economy. They thus set-up anticipatory arrangements based on collected and mediated experiences. They arranged conditions for building and using the house, and the decision was registered in the drawing.

The Building of the Cellar

Furthermore, the drawing and the enclosed specifications were not sufficient information for the construction workers. As part of the savings on the building it was

also reduced in size. To accommodate for regulatives ensuring public financial support the vertical shafts had also to be reduced in size. This made them too narrow in relation to the technical installations they had to carry. The construction workers had to negotiate with each other the order in which the installations had to be set-up, and how to do it, so that one installation wasn't in the way of another.

Thus the workers did not realise the ideas of the designers. They had to relate to the designers' intentions, to codesign, to decide how the installations should be ordered in the shafts, so that they could be set-up and later serviced.

Furthermore, the drawings specified that some vents on the pipes should be inside the shaft. The craftsmen redesigned this feature, put the vents outside the shaft in the passageway, in order to make servicing easier.

We may therefore say that the anticipatory arrangements of the designers are conditions of work for the craftsmen. They use the architectural drawings as recipees, as incomplete specifications of how the house should be built. They do their work by taking more considerations into account than was anticipated and registered with the drawings. Planning is thus based an ongoing concerns, also in what is commonly termed the execution phase.

Conclusion

From the presentation can be seen that a situated approach does not imply that we investigate the present location in isolation. Exploring a located present particular conflictual differentiation and coordination of praxis we discover the connectedness between places spread out in time. Thereby we find that contradictions and conditions for how we arrange social life are distributed. As we shall see in the next chapter, contradictions which were handled cooperatively at one location and point in time may turn into a conflict at another time. This is a central notion in conflictual cooperation.

Furthermore we have seen that praxis is partly differentiated according to how it is understood. At the building site the activity is seen in separate phases of design, specification, planning and construction work. In the text it was argued that the design and planning phases were not individual and ideational, but cooperative, experiential,

and anticipating. It was demonstrated that the construction phase contained reorganizing and replanning aspects. Thus, even though the understanding may go against what must be done, what must be done will impose itself to be done.

The presentation argued that planning cannot be seen as an isolated activity only taking place at the beginning of the building process. It is not us who make a plan and follow it, but our anticipatory way of producing the house leaves traces which we must take into account in our ensuing acts. This includes the fact that the unpredictable and unpredicted events happening in a building process mean that work must be continuously arranged to make things work. Therefore there is a continuous possibility for praxis being reorganized during the whole process. In the next chapter we shall see that the possibility of continuous re-organization also means that a continuous possibility of learning is required.

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Common Conclusion on Erik Axel and Klaus N Nielsen's presentations

- A community of practice is a specific arrangement of social praxis.

- Social praxis must be understood as reciprocally constituted by participants acting on a common concern.

- Social praxis is constituted by contradictions which require coordination and regulation

- Participants have each their partial perspective on the common concern.

- Participants don't know everything about the shared concern, but they get to know what is required to manage.

- Since the participants don't know everything, praxis is full of surprises

- The surprises in praxis, its contradictions and the participants' perspectives and partial understanding must be continuously coordinated.

- Learning and changing praxis are thereby two aspects of the same phenomenon