

# The Office: Form and Space for Action

A frame of reference for research

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## Abstract

Does the development towards an increased standardisation of office premises reflect the existence of general solutions which are adapted to the purpose of different types of operations in offices? Or is standardisation instead the answer to the needs of property owners to expand the market for their products and a less appropriate compromise for the tenants as a consequence? In studies two main categories of office work have been distinguished, on the one hand, thinking processes that demand concentration and, on the other, interaction for which influence is a precondition. In the border area between these activities, practical work exists, which to different degrees can be done individually or in a social context. According to Space Syntax tradition the configuration of the spatial system is of great importance for how the number of potential meetings are distributed throughout the system. The principles for the placing of joint functions strengthen or weaken the facilities of the space. As thought processes seem to a high degree be integrated with interaction, the positioning of an individual's workstation in the spatial system relative to work associates is of great importance to the extent and content of the interaction. Experience reveals the existence of a contradiction between self-determination and self-sufficiency on the one hand and, on the other, interaction with other groups. One conclusion is that knowledge about how the spatial system can support interaction both within and between groups in different types of operations needs to be developed. If this knowledge becomes discursive, more conscious choices can be made in the work of architecture and in the discussion between those who build and maintain office buildings and those who use them.

## The "new" office - a relevant solution?

How should office organisations know which physical-spatial concepts are useful to their operations? How ought a property owner who wants to improve an office building distinguish between stable changes and more ephemeral expressions of fashion? In which ways do needs differ between different types of office operations?

In an earlier study we investigated these questions in interviews with people who work in offices of different fields. We selected people who were as different as possible in respect to role, work situation etc. to get a distribution of conceptions. We had two main strategies for the design of the interviews: a) we decided to begin by capturing the nature of the work, the tasks of the group and the individual, and then to pose questions concerning the relationship between the work and the means of production - among which it was assumed that the premises and spatial conditions would be central; b) we would attempt to identify what was problematic in relation to the operations - the physical-spatial - our assumption being that

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the work of change in an office is directed at the obstacles to a more effective, or in some sense better, production. To identify what the problems are today is thus one way of approaching the future.

### **Difficulties in problematization the office**

Studies within industry had learnt us that it is difficult for people to tell other people about their work. Nevertheless, where goods are produced it is possible to look at the flow and processing elements and on this basis to get information from those who work there about how, why and when different actions are taken and in what context of knowledge they occur. For the office worker comparable material flows exist, but these are seen as being far too trivial to form the point of departure for a discussion about the actual “refinement” in the work. It is, quite simply, difficult to talk about what one does in one’s work. Needless to say, there are a number of general concepts that capture whether one is working with personnel matters or finances etc. - but these do not express either the content of the work or the social organisation in a way that increases knowledge about their relation to physical-spatial relationships.

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This means that formulating problems about the physical-spatial relationships became more a question of opening up to the more-or-less spontaneous views of the interviewees. If we look at the opinions we collected at a more general level, three relationships are noticeable. In the first place, there are not many critical views. This appears to be largely related to people’s ability to adapt to given conditions. It is certainly also connected to the complexity of the preconditions, even if one would prefer to have things differently in certain respects, one is usually aware that there are both advantages and disadvantages to any solution. Often one is unable, or believes oneself to be incapable of, pointing out how pressing demands can be met in a co-ordinated and better manner.

Secondly, at an overall level it is clear that, despite everything, the views put forward are concerned with physical proximity to and to some degree control over common functions. A high degree of self-sufficiency is clearly assumed to be the equivalent of efficient work. Only in exceptional cases is there a glimpse of a need to relate to other parts of the operation: “Sometimes I use a photocopier that stands a little further away so that I can meet other people”. This remark is not made in connection with self-sufficiency. It appears that people are not aware that fewer meetings with other sections of the operations is the downside of increased self-sufficiency.

Thirdly, among the people we interviewed there was considerable agreement in their opinions of different conditions. The differences between people were primarily concerned with how different qualities were weighted in relation to one another. There were, however, exceptions, when conflicting opinions were expressed and the analysis revealed that they were concerned with what is called relations that produce meaning in architecture. An example is a public utility that used nineteenth century buildings previously used by the military. One opinion was that “It’s terrible to sit in such premises, as the public is reluctant to visit us”, while another was “I think it’s wonderful to be in a building that really expresses that we are a public authority”. In functional respects, opinion on adaptation to the purpose of operations is not so divergent.

### **Standardisation facilitates organisational changes**

If it is difficult to formulate problems relating to office workers' work and spatial conditions, answers ought to be available from those responsible for the various operations. We asked people in management positions how they would describe the work and the demands made on physical-spatial relationships.

If we permit ourselves to make a gross simplification of a limited number of interviews, we can say that management was also not able to describe production in a way that interested us. These conditions did not, however, seem to perturb management personnel, they expressed trust in their co-workers doing what was expected of them. What, however, appeared to be something that took up management's thoughts were the dynamics of the operations, that is whether the dynamics were adequate: Are the office personnel open to changes in the surrounding world, are they oriented towards renewing ways of working and products to meet new demands?

Our conclusion was that at the point where there are no unambiguous answers to the question of what is the "correct" renewal in operations, the method used to develop the operations becomes a more general principle about regrouping personnel and creating new relationships between members of staff. These new relationships change both the way knowledge is built up and the social structure (thus influencing motivation etc.). The spatial task thus becomes not merely a housing of given operations, but must permit changes, i.e. movements. It is in this context that the frequent talk about the need for flexible offices should be seen. What one above all appears to search for is a standardisation of the individual work place. Such a standardisation may give management substantial space for action in relation to the opportunities for reorganisation and regrouping. We suspected that the relations-building function of space is very important in management's perspective.

This enabled us to note that in principle management's demands on new office premises is of two types: Strategies to increase income lead physical-spatial to standardisation of work places, while strategies to decrease expenses lead to smaller areas per workstation and per employee.

### **Space for action also from below?**

Standardisation and the reduction of the area of individual workstations creates problems for those office workers who have need of larger or more specific areas/volumes than the norm offers. All are concerned, as the minimalisation of workstations limits the space for individual action to form the physical-spatial conditions into effective means of production. Is there a spatial solution to this dilemma, a model that gives both management and personnel freedom of action in the use of the premises?

In principle such a solution exists. If, instead of using standardised work stations at the individual level, one used a standardised "room" for a group of people, the subdivision and use of space within the walls of the room could be determined by the co-workers, at the same time as the group room would become a module in management's restructuring plans. This requires a certain amount of extra space for each person, compared to the smallest possible workstation, to make space for the refurnishing and more specific solutions intended. In addition to the direct usefulness of being able to adapt every workstation to different people's particular needs and thereby create good working conditions, there can be of particular value

in “forcing” the group to handle the problems concerned with the physical-spatial relationships as means of production and as the working environment. This should lead to more conscious choices and priorities.

In practice there are problems with this model. For instance, it is difficult to find the right, in the sense of well-balanced, size for a group room. This is particularly so if those who sit in the room are meant to be organisationally linked with each other to a greater extent than the people in the room are with those who are outside. To create shifting boundaries to groups that are close by moving the boundaries of the room and to change areas does not solve the problem as this creates dependent links to other areas and not to the module that permits interchange.

There is, however, an objection of a more theoretical nature which is concerned with a group’s relationship to other groups. We have previously mentioned that increased self-sufficiency leads to a reduced need of contacts with one’s surroundings and that this leads to fewer spontaneous and unplanned meetings. The predictable contacts according to the programme thus risk acquiring a too dominant position. Bill Hillier and his colleagues in Space Syntax research have taught us that the configuration of the spatial system is of great importance for how people move around and thus for the potential of the various parts of the spatial system for meetings of various kinds. In this context Hillier’s analysis of the concept of knowledge (Hillier, 1996, pp 246-250) is interesting. He speaks of “social knowledge” and of “scientific knowledge”. The character of social knowledge is that it is automatically used and that one usually learns it through actions. The character of scientific knowledge is concerned with the learning of abstract principles and we are conscious of using these principles when we apply them. Without engaging in this argument we can note that social knowledge has a reproductive and scientific knowledge a productive function. If we turn to physical-spatial conditions, Hillier uses the concept of long model - short model (Hillier, 1996, pp 250-255) to capture the knowledge aspect.

The term long model refers to the space being specified in several aspects, that is the form of the room is adapted to and steers certain actions. We understand it is reproductive in the sense that one acts and behaves in given and predictable ways. In addition, one finds it self-evident to act in this particular way, that is to say that the artefact teaches us the social knowledge, which is one of the points made by Hillier. The term short model refers to the few aspects of the space being specified, that is to say, the room is usable in many different ways, one usually calls it general-purpose, even if this concept must also be related to certain uses to be meaningful. Furthermore, in a study by Allan Penn and others (Penn et al., 1999) it has been shown that a group with greater influence over its territory in an open office plan organised the furniture etc. so that the boundary to passages and other units became more enclosed.

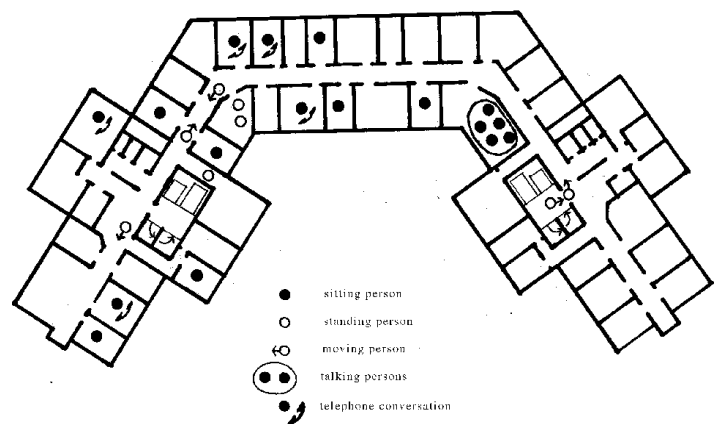
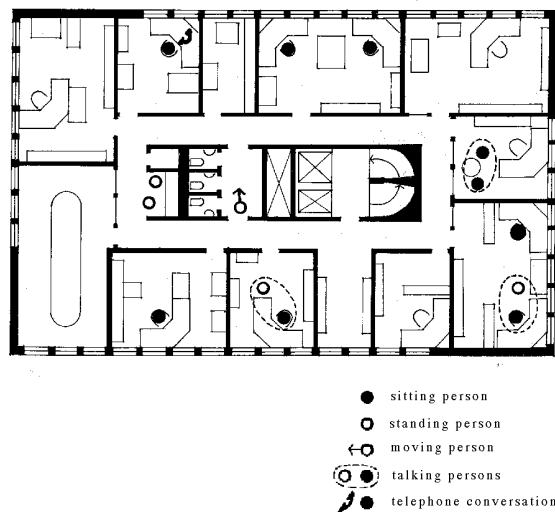
Against the background of this argument, we can note that there are risks involved in strengthening a group (as a social sub-system) if one looks at the development of the operations as a whole:

- increased self-sufficiency reduces the need for contact with other parts;
- the group’s “room” becomes too specified and thus exercises a conserving influence on the process of work;
- the functions the group executes jointly are given a central position in the group’s area for “practical” reasons, which makes it less natural to move within or pass over the boundaries of other groups.

### The three components of office work

In a new project (Steen, 2000), we were given the opportunity to study a firm of technical consultants which works throughout Sweden and had six different offices in and around Stockholm. The six offices were situated in different commercial areas, spread out for historical reasons. The programme for a new centralised location for the work in the Stockholm region was in the process of being worked out. The company was interested in getting help with understanding in which ways the different sectors of the work - from electrical and heating, ventilation and sanitation installations, bridge construction and public building to project management and environmental impact studies - posed different demands on the physical-spatial conditions. Nearly all of the 350 employees in Stockholm had their own rooms and the intention was that in the new office most would sit in more open plan conditions.

This time we began to make observations according to the “snapshot method”. The figures show two examples from the records of two offices/departments.



**Figure 1. Left. A snapshot from one floor of department A.**

**Figure 2. A snapshot from department B.**

In the compilation of the registered activities six groups were used. Below find the percentage distribution of those who were present at the same time at each office/department; observations during coffee breaks were avoided:

On the basis of this information, we deduced that on average, half the time one is at the office one is “on one’s own” at one’s workstation. A fifth of the time one is in face-to-face contact with others, a tenth of the time is spent talking on the phone and about the same amount of time is spent moving around the office doing certain tasks. The remaining tenth is spent in organised meetings.

	Individual work	Telephone conversation	Conversation	Moving	Meetings	Coffee
Mean	48%	9%	20%	12%	9%	2%
Average spread for different departments	38-54%	4-23%	5-30%	6-18%	2-19%	0-4%

The differences between the various offices can, to some extent, be explained on the basis of the varied nature of the operations. (The differences between various roles/positions is not dealt with here.)

To give us an impression of how the interaction within the offices was structured, those who worked in each office noted every contact with a colleague during the particular day with observations (below this is recalculated per hour present).

	<b>Looked for colleague</b>	<b>Colleague popped in</b>	<b>Spontaneous meeting</b>	
Mean:	1.0 meetings/hr	0.9 meetings/hr	1.0 meetings/hr	
Average spread for different departments:	0.8-1.1	0.7-1.0	0.6-1.5	

On average thus, each person has three face-to-face meetings during the passage of an hour. These meetings correspond with the 20% of time spent in conversation noted on the previous table. On average then, three meetings occur during twelve minutes every hour. The differences between the offices are surprisingly small - is this because the contact pattern is basically socially determined and is less dependent on content?

To get information on a range of conditions that could be of interest for the new office - and in addition might provide interesting material for comparison in the future if another questionnaire is set in the new office - a questionnaire with about a hundred questions was distributed. Here we limit ourselves to some of the questions that are concerned with social and professional (knowledge) interaction.

How many people regularly give you

- professional (knowledge) support in your work?
- moral support when it comes to setting norms for what is desirable company culture and correct business morals?
- social support and personal reinforcement?

	<b>1-2 pers</b>	<b>3-5 pers</b>	<b>6-10 pers</b>	<b>over 10</b>	<b>hard to say</b>
Knowledge support:	53%	25%	4%	5%	12%
Moral support:	45%	19%	3%	1%	31%
Social support:	30%	23%	7%	9%	30%

It appears that that a small group of people were concerned. Then the question was asked where the people who give support have their places of work:

	<b>In the vicinity</b>	<b>Greater distance but same floor</b>	<b>On another floor</b>	<b>In another department</b>	<b>In another company</b>
Knowledge support:	1.8 p	0.6 p	0.5 p	0.4 p	0.7 p
Moral support:	1.7 p	0.5 p	0.5 p	0.1 p	0.2 p
Social support:	2.4 p	1.0 p	0.7 p	0.3 p	0.8 p

About half of the people who provide various kinds of support have their workstations very close to the person in question. This says something about the effect of proximity. Penn and others (Penn et al., 1999) has described how the consideration of a person's usefulness corresponds to the frequency of seeing the person. The table shows that a small number of people give support and work at a greater distance. According to Hillier's reference to Granovetter's work (Hillier, 1996, pp 255-258), the precondition for development is that both strong and weak links exist in the social network. By strong links is meant relationships

to people who know each other, by weak links is meant that those with whom one has relations do not know each other. According to Hillier, the latter links are less dependent on spatial proximity. Perhaps one can add that it may be a previous spatial proximity that led to the weaker links.

So as not to confine the questions relating to social interaction only to people within the same company, questions were put about contacts with clients and with other consultants. Here large differences between different employees were revealed. In this case the differences reflected the vertical division of labour, that is to say, that higher positions were related to more contacts with the surrounding world. About half of those who answered the questionnaire never have had a visit from a client or another consultant, nor did they pay such visits themselves.

To gain a picture of how similar or different the work is of those with whom one is in contact the following questions were put:

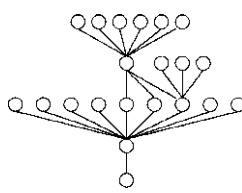
<i>Of the eight people who sit closest to you, how many of them work with:</i>			
	the same tasks as you do	similar, or tasks that lie close to yours	quite different tasks compared to yours
Mean:	2.6 p	2.6 p	3.0 p
<i>What kind of problems do these eight people struggle with at work?</i>			
The number of people I know:			
	well which issues concern them at work	more-or-less which issues concern them at work	not which issues concern them at work
Mean:	3.1 p	3.3 p	1.2 p

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One thus feels that one is sitting in a mixed environment and is fairly well acquainted with what the people around one are working. The major difference, which is not apparent here, is between the engineer and the administrator. Within each unit people generally work with similar tasks, but the sense of similarity/difference is naturally relative. In principle differences, or “discovering” the differences develops one’s knowledge, we think, and thus leads to changes. For several reasons we do, however, have difficulties in predicting which difference will help develop a specific person in a particular situation.

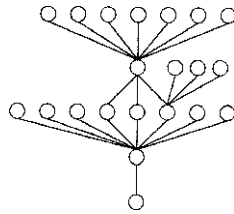
Based on the observations and the answers to the questionnaires, we drew the following conclusions about office work:

On the level of principles, office work consists of two main activities: thought processes and interaction. Thought processes presuppose that one can concentrate and follow a particular chain of ideas for a certain time, it requires being shielded from disruptions from one’s surroundings. Interaction, on the other hand, assumes that one is influenced by others and reacts to what they are saying and doing. Between these main activities there is the practical work, that is the sorting of papers, leafing through files and copying documents. The practical work can to different degrees be done in connection with the thought processes or the interaction and can be said to form an interface between the two main categories. One experience that is about this is when, as described by Allan Penn and others (Penn et al., 1999), a person standing at her/his desk is perceived as being more accessible/possible to disturb than when s/he is sitting at the desk.



From Left to right.

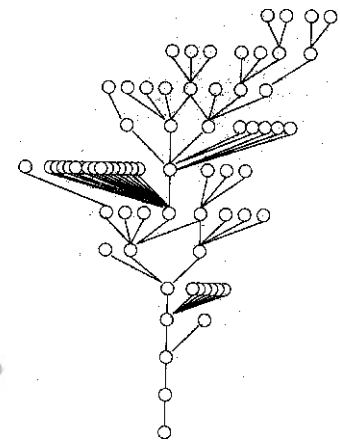
**Figure 3. J-graph of the most integrated workstation of department A.**



**Figure 4. J-graph of the most segregated workstation of department A.**



**Figure 5. J-graph of the most integrated workstation of department B.**



**Figure 6. J-graph of the most segregated workstation of department B.**

Is it possible to identify a particular time for the thought processes or the interaction? This assumption underlies the building of special rooms that can be booked for individual work or the suggestion that work that demands concentration should be done at home. In our limited study, it appears that these activities are intertwined with each other: Our interpretation is that a continuous process of checking with one another occurs among colleagues. People do not talk with their colleagues primarily to satisfy social needs, but talk to others to check their knowledge and their attitude. The process of work is formed in and by this interaction. We see here clear links to Hillier's (Hillier, 1996, pp 258-271) description of the way in which social knowledge is developed and reproduced. This is so, although the work we have studied contains so much engineering science.

### The spatial analysis

All the offices studied were composed of corridors and individual working rooms - only in exceptional cases were there rooms for two or more people. The configuration in several cases was ring-shaped with a double system of corridors describing one or more circles. In two cases there were single corridors, and the two flights of stairs lay some way from the ends.

The office plans were analysed with the Axman program and using j-graphs. The purpose was to arrive at values that could be compared to qualitative data from observations and questionnaires. As the observations and questionnaires were anonymous in the sense that we did not know who in each office/department had completed which form, we were unable to relate the values to any particular individual. One thesis, for instance, was that an office that had major differences in the spatial integration of workstations- which implies that there are workstations at great "depth" relative to the main corridor - would have lower values in relation to social interplay and social integration. We did, however, not find such relations. This may be a function of it not being possible to use the mean values in such a way, particularly not when it comes to the value of spatial integration, which is an "internal" measure of relations. In addition, it may be connected with several of the spatial systems that we studied being relatively small, both when it comes to surface area and the number of people, and there being other factors that affected the social patterns in an important way.

The configuration of communications systems determines how movements are spatially organised, we have learnt, in such a way that a workstation that is positioned near a more integrated corridor is passed by more people compared to the number who pass a workstation that lies by a passage that is less well-integrated. This steering effect of a spatial system is strengthened or weakened by the positioning of the common functions in the space. We



permit ourselves to include staircases and lifts in what we call common functions, although they are important spatial components in a building's flow system. In this way we can understand that there are common functions of a more permanent nature, in the sense that is difficult or demands resources to change. In addition to staircases, toilets and possible other functions requiring vertical shafts are of this character. More mobile/flexible common functions are for instance space for making photocopies, plotters, faxes as well as rooms for meetings and breaks.

Without going into too much detail about what separates the more permanent from the more mobile common functions, we can note that there are several different concepts about the positioning of the functions. One variable is the degree to which different common functions are centralised or spread throughout a building or placed on another floor. Another variable is whether there are many or few sets of each function.

A more decentralised concept spreads movements more equally in the spatial system and thus contributes to there being more potential meetings in connection with each and everyone's workstation. Workstations that are far away in relation to the main corridor, that lie in the furthest branches of a tree-like system, do of course not benefit from this alternative dispersal of movements, unless common functions are placed in the branches. The strongest reason for not decentralising in this way is that it is less likely that these common functions will be used at all.

Another physical-spatial dimension that is important for the likelihood of meeting others is the density, that is the surface area per workstation or per person (also focused on in Penn et al., 1999). This is partly directly as number of the people who are "close" increases, partly because the base for the common functions increases presupposed it is the walking distance (to/from the user who is furthest away) and not the base of the number of people that affects dimensions.

In this discussion we have focused on interaction, and to some degree, practical work. If we view the other primary activity in office work - thought processes - there is reason to comment on the clear tendencies seen today to reduce the area per office worker and to prefer more open plan solutions. Increasing density increases the risk of being disturbed when doing the work of thinking. If we look at walls it is clear that their basic function is to make it possible to pursue different human activities close to but without disturbing one another.

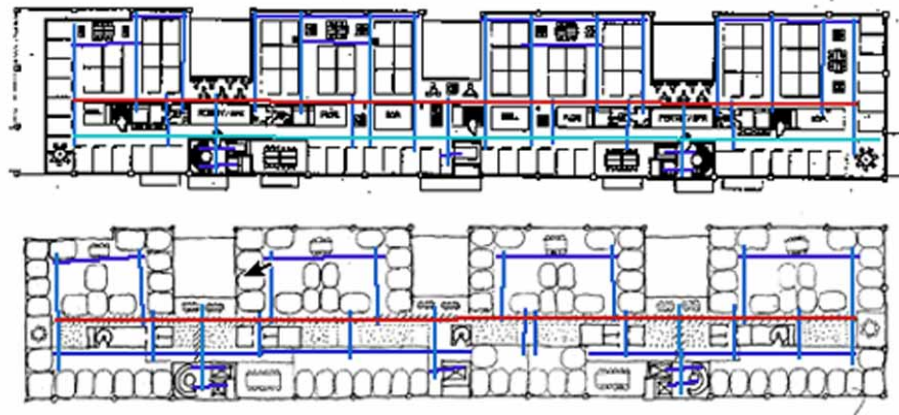
Below is a table that shows the spread of values for the six different offices studied:

	<b>Work rooms with the greatest depth relative to mean value</b>		<b>pers/floor</b>	<b>pers/stairwell</b>	<b>m2/pers</b>	<b>pers/dept</b>
<b>A</b>	6%		11	11	33	70
<b>B</b>	65%		30	15	35	30
<b>C</b>	42%		60	60	35	106
<b>D</b>	17%		13	13	40	26
<b>E</b>	32%		20	20	28	80
<b>F</b>	5%		32	32	30	32

The great differences in values for the different offices seem not to correspond to differences to the same extent in the social outcome. According to the data from the observations and the questionnaire the pattern of interaction in the offices were very much the same.

**Figure 7. Top.**  
**Proposal for the new**  
**joint office.**

**Figure 8. Bottom. An**  
**alternative proposal.**



### Proposal for a new joint office

The company studied decided on centralised premises in a projected new building a little outside central Stockholm. The company would occupy several storeys in the building, each floor being about 20m x 100m. Common functions were to be gathered in a central zone with a corridor on each side.

To some extent we participated in the design process of the new office. Especially data from the observations were put into the programming discussions. Three questions from the early proposals will be mentioned here. First it was discussed whether the double corridor system would contribute to an unwanted thinning out of people who would use the passages. Secondly the architects did not want to place workstations along the facade with an appreciated view in order to not privatise the view. One result was that the area for communication grow. Thirdly, the architect wanted to make a strict differentiation between workstations that were limited by walls and those that were not, so that the facade with the view was reserved for workstations without walls, while individual rooms were placed along the other facade.

Changes were made to the proposal in the continuing process. In a late stage in the process we interviewed two of the responsible architects. We above all asked about the knowledge-base for the work of architecture. For the discussion we used an alternative plan for one typical floor. In this we had removed one of the double corridors and combined this area with a number of the individual rooms. In this way all the longer movements and the movements between the stairwells and the workstations would take place in a single main passage. In addition, a number of group rooms were created within which one (in the group) would have the freedom to distribute and utilise the space according to current needs.

In the interviews it appeared that it was not always easy for the architects to motivate different standpoints in their work of design. To a great extent one referred to one's own experiences (from architect's offices) and own thoughts and said that the lack of follow-up of completed projects leads to a lack of certainty about the impact of different measures. They stated that also our alternative seemed to be appropriate for the consultants firm, they did not think the two proposals (shown here) were so different.

Our question is how an architect, with this knowledge-base, can argue for a suggestion for a new office - a suggestion in which one attempts to express the future's way of working - in a dialogue with the coming users, who, of obvious reasons, have their frames of reference stamped by their experiences of former offices.

## **General spatial structure permitting a larger space for action for changes**

Let us summarise in some critical points as a frame of reference for further research:

### **The nature of office work**

It is obvious that the office work we studied is dominated by what Hillier terms social knowledge (Hillier, 1996, pp 246-250), that is to say, something that develops through actions and that one normally does not reflect upon. This means that it is not easy to formulate the problems involved in the relationship between the working process and physical-spatial conditions. At a more all-embracing level, it appears however to be possible to differentiate between the main categories of office work, namely, thought processes for which a precondition is concentration and interaction for which a precondition is openness to influence. Between these two it appears as though activities of a practical nature make up a relatively fluid boundary in the sense that practical tasks can be done in connection with either thought processes or interaction.

### **The significance of the space**

The spatial configuration is clearly significant for how office workers move and which potential is created for interaction. The placing of common functions in the spatial system can strengthen or weaken this controlling influence. Furthermore, the density of work places affects the total extent of the interaction. If it were possible to separate the time for thought processes from the time for interaction, it would be possible to allocate particular rooms for thought processes without paying attention to the spatial context. As it appears that thought processes and interaction can to a great extent be integrated activities, the positioning of the workstation in the spatial system is of great importance for potential interaction and development of knowledge.

### **Independence creates specific conditions**

The desire to increase efficiency in a given production process may lead to the physical-spatial conditions as the means of productions will be given a very specific design. This holds, not least when a flat organisation of work is introduced and the respective groups within office work acquire greater independence. In addition it appears that increased independence will be expressed in increased self-sufficiency, the responsible for common functions will be kept within the group. Both of these conditions, that the space becomes more specific and that contacts with other groups are reduced can have a conserving effect on the work.

### **Standardisation for change**

Workstations are increasingly designed as standardised modules. This applies both within an office and within the office building as a whole. This leads to an exchangeability which gives the operations management room for action when it comes to opportunities to reorganise and regroup the work. It appears that such building of new relations is an important method for creating dynamism and contributing to increasing income. The desire to reduce costs leads, however, to an adaptation of the surface area per workstation by a minimalisation of the workstation. It limits the office workers' space for action to design their workstations into efficient means of production on the basis of their current needs.

### **Generality through a flat spatial structure**

The same insight is not found in the spatial system's design and qualities as in those of the different parts', that is to say the individual workstations', designs and qualities. That the workstations which are less accessible are both more undisturbed and more isolated is an

experience that develops among those who use these environments but does not appear to be dealt with in the design process. The desire for space for action for change seems neither have any effect on the design of the spatial system. The trend towards an increasingly open office concept without walls appears to create greater flexibility or space for action, with regard to the way one can move on the floor and the way workstations can be placed. In many cases, however, the central positioning of stairwells and common functions creates a hierarchical spatial structure that gives the various workstations specific positional qualities.

#### **Knowledge about the interaction patterns of different types of work**

In a simplification, one could say that the interaction between a group that in some sense is working together is less problematic, the need for contacts that exists is at least to some extent predictable. Communication in a horizontal direction between different sections and different areas of competence in an operation are for natural reasons less well-developed and their internal usefulness is more difficult to predict. This entails a risk that no attention is paid to the conditions for unplanned and random interaction. An important step is to increase knowledge about this interaction on a level between the interaction within small units and the interaction between companies. It is particularly interesting to study in which way established respectively potential contact patterns vary depending on the nature of the operation in the offices. This creates preconditions for a categorisation of work on the basis of its relationship to the physical-spatial conditions. Penn and others mention especially the interaction in between the local and the global to be of great importance (Penn et al., 1999). Concerning the interaction between companies in the urban context we will refer to Marcus research in Stockholm (Marcus, 1999; Marcus, 2000).

#### **To make conscious choices of the spatial form of office work**

With new knowledge about the interaction patterns of different types of work, it becomes possible to formulate problems about office buildings and office premises on the basis of the usefulness of the spatial structure. In this process three actors exist, who have partially different requirements: The Property Owner who wants a building that is in demand by a broad group of clients who can afford to pay; the Tenant who wants a specific solution to his needs, which nevertheless is general enough to adapt to future changes within the tenants organisation; the Architect who ought to have knowledge about how differences in form are related to function and usefulness, that is to say has knowledge about what are physical-spatial characteristics of a more general and a more specific kind. By making this knowledge discursive, preconditions are created for an increased competence among the customers - both those who own and those who use the premises. This may in turn lead to built forms which balance between the specific and the general in a productive way.

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