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## **Personnel Development for Dissolving Jobs: Toward a Competency-based Approach?**

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## **Resymé**

The traditional HRM system has been job-based and has reflected a bureaucratic model of organising work. Such job-based personnel management systems have shown a tendency to break down when jobs are dissolving under more flexible work organisation. Many writers have called for a competency approach to replace the traditional job-based approach under these new conditions, and we have seen a growing literature on competency modeling. The study reported here suggests that jobs are structured along two independent lines: formal control and complexity of work tasks. Each combination (4) of formalisation and complexity (high and low) gives rise to a different approach to align work and competencies. The job-based approach and the competency approach are only two of these, and an occupational and a professional approach are also identified. While formal company-internal training is related to job-approach and competency approach, training for skilled tradesmen and professionals are combinations of company-external training prior to the work career and informal on-the-job and self-managed training.

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# Personnel Development for Dissolving Jobs: Toward a Competency-based Approach?\*

Geir Nybø<sup>#</sup>

## Summary

The traditional HRM system has been job-based and has reflected a bureaucratic model of organising work. Such job-based personnel management systems have shown a tendency to break down when jobs are dissolving under more flexible work organisation. Many writers have called for a competency approach to replace the traditional job-based approach under these new conditions, and we have seen a growing literature on competency modeling. The study reported here suggests that jobs are structured along two independent lines: formal control and complexity of work tasks. Each combination (4) of formalisation and complexity (high and low) gives rise to a different approach to align work and competencies. The job-based approach and the competency approach are only two of these, and an occupational and a professional approach are also identified. While formal company-internal training is related to job-approach and competency approach, training for skilled tradesmen and professionals are combinations of company-external training prior to the work career and informal on-the-job and self-managed training.

## Introduction

This paper focuses on the apparent paradox that "jobs" are central units of linking work requirements and personnel, while at the same time they (jobs) are seemingly dissolving and losing their status as the basic building blocks of organisations. The job description typically underpins decisions concerning central human resource decisions on how to align competencies and work tasks: selection, training, promotion, and careers. But in order to describe a job in meaningful terms there must be an element of stability and permanence in the position. Several scholars have, however, claimed that *the job* is going to lose its

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importance as a central structural category due to changes in the technological and economic environment and the introduction of new principles for how to organize work (Appelbaum and Batt, 1994, Bridges, 1994, Drucker, 1993, Sparrow, 1998, Sparrow and Marchington, 1998, Rifkin, 1995). The techno-economic development and the corresponding search for cost-efficiency and flexibility lead not only to a destruction of jobs through rationalisation and outsourcing, but also to a radical change *within* firms in the way work is organised, for example: the pyramidal organisation reduced to fewer levels; more emphasis on direct value creating processes; more emphasis on results than on tasks; team and project organisation overtake the hierarchic organisation; and borders between functional departments are disappearing.

Some authors see this development simply as a consequence of current management and organisational strategies for more flexible organisational structures (Volberda, 1998, Sparrow, 1998, Jenkins, 1998). Others see the beginning of the end of mass production and work organisation connected with Industrialism: High-knowledge work is replacing routine industrial work (Bridges, 1994, Drucker, 1993, Howard, 1995). Whatever the driving forces, the effect is that the entire human resource system is often challenged when new principles of work organisation and job design are introduced. According to Lawler and Sparrow the toolbox of most human resource practitioners are based on descriptions of individual jobs (Lawler, 1994, Sparrow, 1998). When new principles of job design are introduced, Sparrow foresees that job based systems and tools now available will break down. He expects a growing gap between the current challenges and the available tools. A new way of thinking and new systems and tools will have to be developed.

Lawler introduced the idea of a *competency-based* approach to replace traditional job-based human resource practices (Lawler, 1994). There are, however, few empirical studies on how competencies are aligned to different kinds of jobs. This study is focusing on how competencies are matched with jobs that have different structural characteristics. If traditional human resource approaches are dependent on clearly defined jobs, it is important to know whether jobs are in fact structurally dissolving, what aspects of structuring that have changed, and how this affects the alignment of competencies and work tasks.

The remaining part of this paper is organised as follows: First I shall discuss some theoretical contributions on how human resource development is related to work organisation. In my approach I build on human resource management (HRM) scholars who recently have advocated a competency approach for matching competencies and work (Athey and Orth, 1999, Dubois, 1998, Green, 1999, Lawler, 1994, Lucia and Lepsinger, 1999, Mirabile, 1997, Mitrani et al., 1992, Schippmann et al., 2000, Sparrow, 1998, Hooghiemstra, 1992), and also on Marsden, who has analyzed similar questions from a theoretical perspective of control and enforcement of employment contracts taken from institutional economics (Marsden, 1999).



Structural job characteristics are brought into the discussion from job design theory (Parker and Wall, 1998, Gael, 1988a, Schippmann, 1999). This section also suggests a set of interrelated research propositions (P) that has been addressed in the study. Then the research methodology underlying our empirical study is described, and next, the research findings of the study are described. Finally the findings are summarised and theoretical and empirical implications are highlighted.

### **Work organisation and competencies**

How to rationally align worker competencies to job tasks is one of the essential challenges of all work organisation (Marsden, 1999). These competencies consist of knowledge, skills and other behavioural dispositions necessary to reach desired standards of job performance, and they are developed through formal education and training or informal work experience.

In principle there are two distinct approaches to align work and competencies: to start with the work and adjust people and their qualifications to work requirements (job or production approach), or, alternatively, to start with the worker, and assign tasks to workers according to their skills (competency or training approach). In *the job approach*, tasks are grouped into individual jobs according to what is regarded a rational division of labour, and workers are recruited and trained to meet the requirements of those tasks. Dividing work processes into individual jobs has traditionally been the basis for aligning work task and workers in modern business enterprises (Gael, 1988a, Gael, 1988b, Fine and Cronshaw, 1999). When jobs are defined, information can be linked to them: about work tasks, authorities and responsibilities, competence requirement, how performance is stimulated and controlled, etc. Such information can be informal, but is often found in a job description and serves as input to a number of important personnel-related decisions on recruitment, placement, training and careers (Schippmann et al., 2000).

How work tasks are grouped together in jobs, how fluid these groupings are, and how firmly or loosely the tasks are structured will affect the amount of information that can be linked to the position. The more static and structured an individual job is, the more accurately the activities in the job can be described and communicated. When jobs are being dissolved or become more fluid, it raises an information problem, and some HRM scholars have argued that the traditional job approach should be replaced by a *competency approach* (Lawler, 1994, Sparrow, 1998, Schippmann et al., 2000). A competency approach has a shift of focus from the job to the individual and his or her competencies. People are not assigned tasks according to the position they hold, but according to the knowledge and skills they possess. One starts by defining groups of qualifications or sets of skills that are required, not in a specific job but in a broader function or in the organisation as a whole, and allocate tasks to those persons who are most competent in doing them (Hooghiemstra, 1992, Mitrani et al., 1992, Lawler,

1994, Mirabile, 1997, Marsden, 1999, Green, 1999, Dubois, 1998, Athey and Orth, 1999, Lucia and Lepsinger, 1999, Schippmann et al., 2000). Training within such an approach seeks to raise personnel to certain professional standards of skills and behaviour.

### **Describing competencies**

To adequately inform decisions on competency development and utilisation, competencies must be described. One way to do so is to link the description to a particular vocation, education or profession. An educational diploma certifies that a person has a certain body of knowledge and skills. Skilled tradesmen, like for example electricians and welders, or professionals such as accountants, lawyers, construction engineers, etc. all have knowledge and skills that are negotiated between various parties in the labour market: educational institutions, business firms, public institutions, occupational organisations and employer organisations. These types of formal trade and professional education are central in Marsden's analysis of a "training" approach for aligning work and workers. For Marsden a "training approach" primarily refers to design of jobs in such a way that they correspond to competencies that are available in the training market, that is, "occupations" in an external labour market ((Marsden, 1999): page 34)<sup>1</sup>.

However, this was *not* what Lawler had in mind when he called for a competency-based organisation and HR management. Although he realised that professional services often have been organised by competencies, competency based management should have a broader application beyond the recognised trades and professions (Lawler, 1994). Formal education will only be part of the picture. The knowledge and skills a person obtains through work practice will often be more important than formal education in the creation of competencies. Knowing the work history and work experience of a person gives valuable information about his/hers capacities and how he/she might contribute in future work assignments. Also, particular work assignments can be deliberately used to develop specific competencies for a future career and assignments.

In addition, to have an efficient tool for many personnel-administrative decisions, it is not sufficient to know what knowledge and skills a person has, it is just as important to know what knowledge and skills he should have to do a good job or to be an expert within his field. For example, to guide decisions on competence development, it is necessary to describe

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<sup>1</sup> ) There is a difference in conceptualisation between the HRM oriented literature and Marsden. While Lawler, Sparrow, Schippmann and others are contrasting "job-based" with "competency-based" approaches, Marsden uses the concepts "production-based" and "training-based". While Marsden's "training-approach" refers to competencies as "occupations" in an external labour market, the HRM-theorists use the term "competency-approach" in a more general meaning including competencies that are "modeled" and developed *within* companies in internal labour markets.

competent behaviour in particular roles or functions. The essence of the recent approaches to competence modelling is therefore to analyse what competent job behaviour really is, and to describe it in behavioural terms.

Conceptualising and measuring competencies in behavioural terms have been around from the 1950's when training of managers and supervisors was the main focus (Flanagan, 1954, Fleischman, 1953). In the 1970's McClelland raised the issue of testing for competence rather than intelligence to guide decisions on recruitment and career for other personnel categories also (McClelland, 1973). But it is only recently that a formalised approach to "competence modelling" has become fashion. This includes a systematic approach to the following questions: How to find the competencies needed in various value creating processes in the organisation? Which indicators should be used to measure these competencies? How to collect data about such competencies? Today, there is a rich and fast growing literature on the subject (Schippmann et al., 2000, Athey and Orth, 1999, Dubois, 1998, Green, 1999, Lucia and Lepsinger, 1999, Mitrani et al., 1992, Mirabile, 1997).

Modeling competencies has its origin in the US and it uses many of the same methods as traditional job analysis and job modeling. It is an empirical and scientific approach following the same tradition that goes back to Taylor and scientific management. Through methods like job analysis interviews, focus groups, questionnaires, critical event analysis and similar methods, one is trying to uncover what kind of behaviour is connected to success for an organisation or a function. On this basis one tries to describe competencies as behaviour profiles for "good" workers or for "experts", and assess competency demands in different work roles.

### **Perspectives and propositions**

A competency-based approach is claimed to be contingent with "the new working life" where flexible work organisation and loosely structured jobs are central characteristics (Lawler, 1994, Sparrow, 1998). However, they do not fully develop the concept of "job structuring". Because work tends to be structured in many different ways, there may very well be other alternatives to the job approach than the competency approach described above.

Previous research has generally found that job structuring is a multi-dimensional phenomenon, with such diverse dimensions as: *formalisation* (of processes and output), *specialisation* (horizontal and vertical), and *autonomy* (Hackman and Oldham, 1975, Pugh and Hickson, 1976, Mintzberg, 1979, Gael, 1988a, Gael, 1988b, Karasek et al., 1998, Parker and Wall, 1998, Nybø, 2000, Nybø, 2001). In addition, *task complexity and knowledge requirements* are also central in conceptualisations of the new working life and are expected

to affect the process of aligning competencies and work demand (Drucker, 1993, Bridges, 1994, Howard, 1995, Lawler, 1994, Sparrow, 1998, Sparrow and Marchington, 1998).

Mintzberg argues that training and formalisation can basically replace each other in their function to obtain coordination. (Mintzberg, 1979, p.101). By standardising skills in extensive training (professionals), behaviour can be made predictable and less arbitrary without formal control mechanisms. This will give a negative relationship between length of professional training and formalised control of jobs. However, formalisation of tasks and procedures on the one hand, and formalisation of output and results on the other, will often be functional alternatives which are contingent with routinised jobs and broader functional jobs, respectively (Child, 1977). This suggests that *complexity of work* and *formalisation* are independent characteristics of jobs (P1).

The previous argument concerns dimensions of job structuring. The next question we will consider is this: If there are different dimensions to job structuring, do the approach of matching work and competencies vary between different combinations of these dimensions? (P2) And is the competency approach contingent on only one of these combinations? By dichotomising the dimensions complexity and formalised control, we get the following four combinations: 1) low complexity and high degree of formalised control, 2) high complexity and high degree of formalised control, 3) low complexity and low degree of formalised control, and 4) high complexity and low degree of formalised control.

**Figure 1** Alignment of competencies and work

	Low degree of formalization	High degree of formalization
High degree of complexity	<b>IV</b> <i>Professional</i>	<b>II</b> <i>Competency based</i>
Low degree of complexity	<b>III</b> <i>Occupational</i>	<b>I</b> <i>Job based</i>

The first combination (low complexity and high formalisation) is expected to lead to the traditional *job-based approach* (combination I). A set of tasks is identified and linked to the position, and is assigned to an individual jobholder who is held responsible for their execution. Typically, a job description forms the basis for most HR decisions. Competency development is likely to be scarce and sporadic, most commonly consisting of on-the-job learning within a company-internal labour market (P3).

Figure 1 suggest, however, that there are more than one possible alternative to the job-based approach when jobs become more fluid, not only the competency approach as it is advocated by Lawler and Sparrow. The *competency approach* described in recent human resource literature is a highly formalised way of aligning competencies to more complex tasks (combination II). Work behaviours in relation to specific work processes or functions are identified, and training is supplied on-the-job or in company-internal formal training programs with well-developed training systems and active leader support (P4).

However, in order to achieve predictable and coordinated work role behaviour, one can also rely on the knowledge and socialised behaviour of professional education (Mintzberg, 1979). This is what Marsden calls an "educational" approach and is connected with low degree of formalisation (Marsden, 1999). Depending on the degree of complexity, it can either be an *occupational approach* (combination III), or a *professional approach* (combination IV) (P5). In both cases a body of knowledge or skills is identified in the training market (occupation or profession) and tasks that fall within these skills are assigned to the person. While skilled tradesmen will get simpler tasks, personnel with a longer professional education will be assigned knowledge-based complex tasks. They will both have employment relationships based on trust with a high degree of autonomy (P6). Competence development for skilled tradesmen is scarce and casual, but also for professionals it is often self-managed and informal, based on own initiatives and on-the-job training (P7).

## **Methodology**

### **Design requirements**

In order to study an organisation's approach to match work and competencies and explore the propositions above, we chose to focus on core work processes in selected companies and avoid more marginal jobs. To explore the propositions we also need to have variation in the two variables *complexity* and *formalised control*. We therefore selected jobs from companies in different industries and of different sizes. We have focused on three information technology companies representing a relatively new industry: a small company with about 20 employees who are developing and selling its own specialised software package, a medium-sized high technology company (250 employees), designing and producing automated

equipment for the oil industry, and a large national software house. They all have a history of less than 20 years. These information technology companies are chosen because they represent "new" industries. The use of information technology in the products and/or in automation of product processes is particularly strong. They are also most often new companies in an industry little affected by a long history in their structures and ways of thinking; the companies are in many ways starting from scratch. If at all, it is here we shall expect first to find a looser job structure. Human resource management is expected to be untraditional and adjusted to fast changes in markets and technology, and not shaped by the practices of traditional manufacturing industries and the epoch of "industrialism".

The other industry is banking/finance, representing an old and traditionally bureaucratic industry whose work processes have been highly transformed by the introduction of new computer technology. Banking/finance has been heavily exposed to global economic changes and the development of modern information technology. This industry used to have a rather rigid and well-defined job structure, but the work processes have been very much changed in a relatively short period of time. If this industry also is characterised by a structural disintegration of jobs, then this is more likely to be a general characteristic of the post-modern society.

### **Data and measurements**

The questionnaire was constructed on the basis of studies of the relevant literature and a preliminary round of interviews of personnel officers, leaders and subordinate employees in one bank and one high tech company. A pilot study was done to evaluate the questions. The questionnaire contained a number of items measuring various aspects of *job structuring* in addition to questions about educational requirements, team organisation, use of projects in the organisation, and the learning climate (Nybø, 2001).

From a short list of potential company candidates (banks and IT companies), eight were contacted and asked to take part in the study. Three companies refused, and we ended up with the five companies mentioned. The questionnaires were administered through an appointed contact person in the company. A sample of departments covering core work processes in the companies was selected. Each supervisor in these departments administered the questionnaires to the members of his group. The questionnaires were returned in closed envelopes to the supervisor who sent them in batches bearing his name to the contact person in the company, who forwarded everything to the researchers. Batches of returned questionnaires were compared to lists of departments and supervisors given to us by the contact person in each company, and with the number of employees in each group given to us by the supervisors and verified by the contact person in the company. Thus we had a fairly good control of the sample. Response rates were in the range from 94% to 51% for the five

companies. When responses were missing, this was mainly because whole offices and their supervisors failed to return the questionnaires. A closer examination of the offices that didn't respond suggests that responses most likely are independent of relevant characteristics of individual jobs or jobholders.

The concepts underlying the empirical part of the study were captured in the following measures of *job structuring*: FTASK (formalisation of job tasks and procedures), FFUNC (formalised measurement of objectives and results), FSUPER (supervisor monitoring and control), APROS (autonomy over work process), ACONTEXT (autonomy over work context, i.e. hours of work and choice of coworkers), SCOMPLEX (complexity of work tasks and decisions), SLEARN (learning opportunities in work context), and SROUTINE (repetitiveness and attention requirement).

The development of these measurement instruments took place in three main phases. In phase one, previous literature on job structuring was studied and preliminary interviews were held in two companies. Four different aspects of job structuring were selected (formalisation of tasks and procedures, formalisation of goals and goals attainment, autonomy and specialisation). These were all expected to affect the individual job as a carrier of information about work activities and the corresponding competency requirements of the job-holder. Based on literature and interviews, items were formulated. Items were also selected from previous research (Karasek et al., 1998, Hackman and Oldham, 1975). Each item is measured on a four-graded ordinal scale<sup>2</sup>). A preliminary questionnaire was tested on 20 persons, and final items were selected. Criteria underlying the selection of items were: 1) that all ideas in the topic description should be represented, 2) duplication of items should be avoided, and 3) incomprehensible and ambiguous items should be discarded. In phase two, formative indexes of these four aspects of job structuring were constructed, and each was analysed by principal component analysis to test for internal consistency. Based on the factor analysis some items were removed from the indexes. We also decided to divide three of the indexes into sub-indexes because the factor analysis of the items of each formative index gave more than one theoretically meaningful factor. The eight indexes above were the result of this procedure, and they were used in the further analyses. A more detailed description of the procedure of measurement construction is given elsewhere (Nybø, 2001) and a summary of the results of the procedure is shown in table 1.

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<sup>2</sup>) The items taken from Karasek's study had a 4-graded scale.

**Table 1** Descriptive statistics for measures for job structuring

Variables	N	Number of items	Mean	Std.Dev.	Skewness	Kurtosis	Cronbach Alfa
<i>FTASK</i> Formalisation of job tasks and procedures	556	4	0.00	0.78	-0.29	-1.02	0.73
<i>FFUNC</i> Formalisation of results and goals	573	4	0.00	0.76	-0.74	0.96	0.73
<i>FSUPER</i> Formalisation by supervisor monitoring and control	577	2	0.00	0.82	-0.44	-0.26	0.52
<i>APROS</i> Autonomy over work process	569	4	0.00	0.59	-0.46	0.71	0.41
<i>ACONTEXT</i> Autonomy over work context	579	3	0.00	0.77	-0.30	-0.33	0.65
<i>SCOMPLEX</i> Complexity of work tasks and decisions	569	6	0.00	0.69	-0.58	0.39	0.78
<i>SLEARN</i> Learning opportunities in the work process	569	5	0.00	0.70	-0.50	0.75	0.74
<i>SROUTINE</i> Repetitiveness and attentional requirement	574	2	0.00	0.81	-0.75	0.43	0.48

### Methods of analysis

All the eight indexes above, which are partly formative indexes, were used in a second factor analysis to construct a structural space of jobs. This will also be shown in graphical form where the indexes are shown as vectors in this structural space. In this structural space, corresponding correlating variables will be inserted: type of company, use of job description, type of work, use of project work, education, etc.<sup>3</sup>). This is done by comparing means of the factor scores for different categories of the correlating variables. This approach is more appropriate than a multiple regression or variance analysis because we are interested in how different characteristics are grouped together and not in their partial "effects" on some explained variables.

## Analysis

### The structural space of jobs

The eight indexes describing the jobs were factor analysed in order to examine the dimensionality of job structuring. All eight indexes are sufficiently close to being normally distributed and therefore acceptable in a factor analysis. All indexes are normalised with mean equalling zero. Standard deviations are between .5 and 1.0 and skewness and kurtosis are all

<sup>3</sup>) The presentations are very similar to those normally found in *Correspondence Analysis*, see for example Bourdieu, P. (1984) *Distinction. A Social Critique of the Judgement of Taste*, Harvard University Press, Cambridge, Mass.



between  $-f$  and  $+f$  (table 1). Common factor analysis was chosen, as the basic objective was to identify latent dimensions.

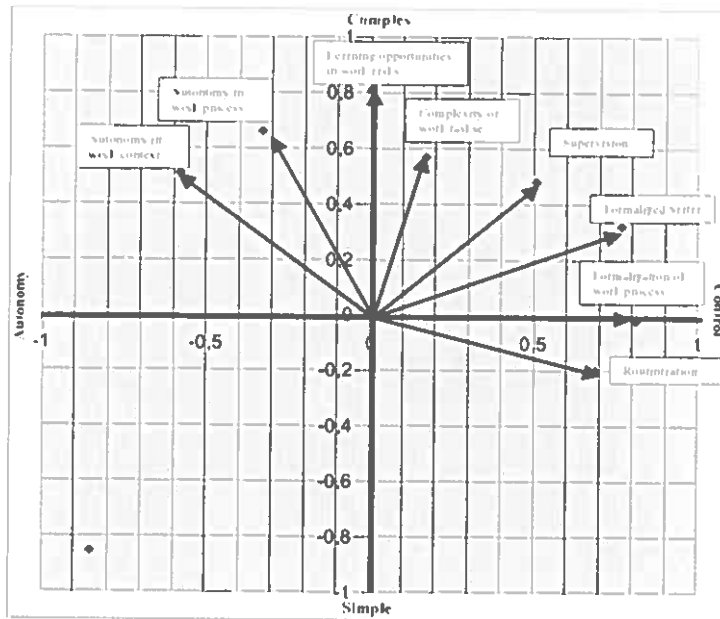
By inspecting the extracted factors, we observed that the first *two* factors have eigenvalues above 2. The two main factors together are explaining 56% of the variance in the variables, and they both contribute quite strongly. A sharp decrease in extracted variance between the second and third factor indicates that there are only two relevant dimensions (P1). Table 2 shows the factor loadings of the variables for these two factors. The first factor has high loadings for variables like formalisation and routinisation and low for autonomy. The first factor clearly refers to a dimension of *formalised control*. The second factor has high loadings for learning opportunities, complexity and autonomy, and low for routinisation, which seems to reflect an underlying dimension of *complexity* of work (P1).

Table 2 Dimensionality of job structuring			
Variables	$b^2$	Formalised control	Complexity and learning opportunities
Formalisation of tasks and procedures (FTASK)	0,66	0,81	-0,02
Formalisation of goals and attainment (FFUNC)	0,69	0,77	0,32
Supervisor monitoring and control (FSUPER)	0,49	0,51	0,48
Autonomy over work process (APROS)	0,55	-0,33	0,66
Autonomy over work hours and choice of co-workers (ACONTEXT)	0,60	-0,58	0,51
Complexity of work tasks and decisions (SCOMPLEX)	0,36	0,17	0,57
Learning opportunities in the work process (SLEARN)	0,66	0,00	0,81
Repetitiveness and attention requirements (SROUTINE)	0,51	0,69	-0,20
<i>Percentage of common variance</i>	<i>56,5</i>	<i>30,6</i>	<i>25,9</i>

To give a better impression of the two underlying dimensions and their indicators, a graphic representation is shown in Figure 2. The two dimensions (factors) are the axis in the diagram. The factor loadings of each variable (index) are shown as vectors (arrows). The direction of an arrow shows how the item is related to each of the two dimensions, and length of the arrow shows how strong the relationship is (theoretical maximum equals 1.0).

**Figure 2** Structural space of jobs

Vectors of factor loadings of eight explaining variables in two factors



**Job structuring in different industries and companies**

We will now see how this structural space of jobs is related to other characteristics such as type of company (industry and size), type of work, and work organisation (project and team work). This is done by comparing means of factor scores of the two factors for groups with different nominal characteristics. Table 3 shows that all data companies have a strong negative score on the first dimension (formal control) and high on the second dimension (complexity) while the banks are high on control and lower on complexity.

The difference between the two industries with regard to formalised control is considerable, while the differences between companies within each industry are small. Figure 3 gives a visual picture of the location of the five companies in the structural space. Considering the difference between the high tech companies with respect to type of products and company size, the similarity in the structuring of their jobs is rather striking<sup>4</sup>). The banks, on the other hand, are high on formalised control.

<sup>4</sup> ) When production work is removed from the medium-sized high-tech firm, the mean location in the structural space of jobs of this firm moves much closer to the other two (moves up in the diagram).

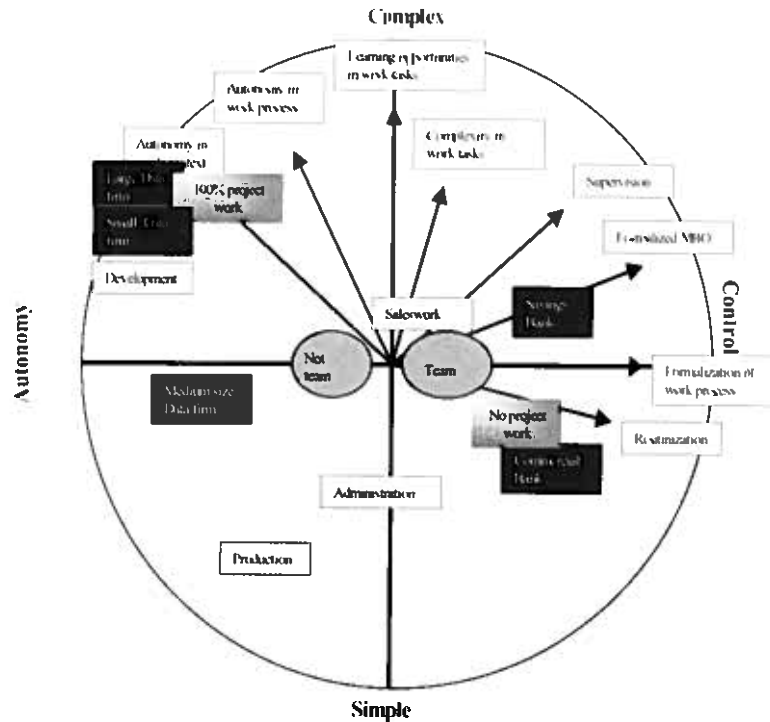
**Table 3** Comparing means of factor scores of dimension 1 (formalised control) and dimension 2 (complexity) for correlating characteristics. (mean, number of observations and significance level in ANOVA analysis)

Group characteristics	Structural dimension 1 (formalised control)			Structural dimension 2 (complexity)		
	Mean	N	Sig.	Mean	N	Sig.
<i>Company</i>			<i>0.000</i>			<i>0.001</i>
Small data company (SD)	-0.97	13		0.53	13	
Medium size high-tech company (MD)	-0.72	41		-0.10	41	
Large software company (LD)	-0.92	123		0.41	123	
Savings bank (SB)	0.35	96		0.11	96	
Commercial bank (CB)	0.52	235		-0.27	235	
<i>Type of work</i>			<i>0.000</i>			<i>0.000</i>
Development work	-0.96	34		0.30	34	
Sales, direct contact with customer	0.11	379		0.09	379	
Production work	-0.48	12		-0.74	12	
Administrative support	-0.02	81		-0.44	81	
<i>Project work</i>			<i>0.000</i>			<i>0.000</i>
No or small part of working hour in projects	0.43	313		-0.17	313	
About ¼ of working hours in projects	0.23	36		0.30	36	
About ½ of working hours in projects	-0.94	19		0.19	19	
About ¾ of working hours in projects	-1.00	31		0.23	31	
About all working hours in projects	-0.83	106		0.35	106	
<i>Team work</i>			<i>0.000</i>			<i>0.847n.s</i>
Member of regular work team	0.28	237		-0.01	237	
Not member of regular work team	-0.25	268		0.01	268	

The commercial bank has organised its work into simpler jobs than the savings bank, but they are more or less the same with regard to control. However, the analysis shows that they use different kinds of control mechanisms; while the commercial bank uses routinisation and formalisation of the work process, the savings bank makes more use of formalised control of goal attainment (MBO) and follow-up by supervisors. Even though there must have been a great deal of change in banking toward more flexibility and autonomy in most positions, these jobs are still highly formalised. They now have other job titles than before, such as customer advisor, customer consultant, company consultant, etc. and the job tasks are broader, but bank jobs clearly falls into another structural segment than high-tech/data jobs, and it is primarily the mechanisms of enforcement that are different: high-tech companies rely on trust in autonomous employees, banks on formal control of some sort.

**Figure 3 Company and type of work located in a structural space of jobs**

(Average factor scores for sub-groups. Company: LD: Large data company, MD: Medium-size data company, SD: Small data company, CB: Commercial bank, SB: Savings bank. Type of work: Teamwork, Projectwork)



If we look at the *type of work* we can see that development jobs are found in the autonomy/complex corner and they are filled with people with a higher university degree (P5, P6). Production work in our sample is a limited number of jobs (13) in the medium size high-technology company. These jobs are all filled with people who have a trade certificate in automation, and they are located in the autonomy/simple corner of figure 3 (P5, P6). Administrative support jobs are simple and independent of the control dimension, and sales jobs with direct contact with customers are very much independent of both dimensions (close to the centre of the diagram).

*Project* based jobs are found in the autonomy/complex corner in the data companies, while jobs in the control/simple corner have little or no project work. *Team* organisation and team-based jobs are independent of both dimensions. The centre of jobs in both team-based organisations and jobs that are not organised in teams, are all located very close to the centre of the structural space.

### Competency descriptions or job descriptions?

We shall now address the questions about competencies and competence development within this structural space. First, we can see from Table 4 that education is related to both dimensions. Jobs requiring a higher university degree are low on formalised control and high on complexity, while jobs requiring only elementary school and high school are high on formalised control and low on complexity. Hence, higher professional education is associated with a low degree of formal control and a great deal of autonomy (P5).

<b>Table 4</b> Comparing means of factor scores of dimension 1 (formalised control) and dimension 2 (complexity) for correlating characteristics. (means, number of observations and significance level in ANOVA analysis)						
Group characteristics	Structural dimension 1 (formalised control)			Structural dimension 2 (complexity)		
	Mean	N	Sig.	Mean	N	Sig.
<i>Education</i>			<i>0.000</i>			<i>0.001</i>
Elementary school	0.48	8		-0.53	8	
High school	0.45	216		-0.16	216	
University - Lower degree	-0.10	173		0.05	173	
University - Higher degree	-0.81	107		0.29	107	
<i>Job description</i>			<i>0.000</i>			<i>0.1500,s</i>
Job description	0.52	299		0.00	299	
Not job description	-0.75	168		0.07	168	
Do not know	-0.71	41		-0.27	41	
<i>Systematic company internal support for training</i>			<i>0.000</i>			<i>0.000</i>
Low support	-0.33	144		-0.33	144	
Medium support	-0.08	172		-0.08	172	
High support	0.32	171		0.36	171	

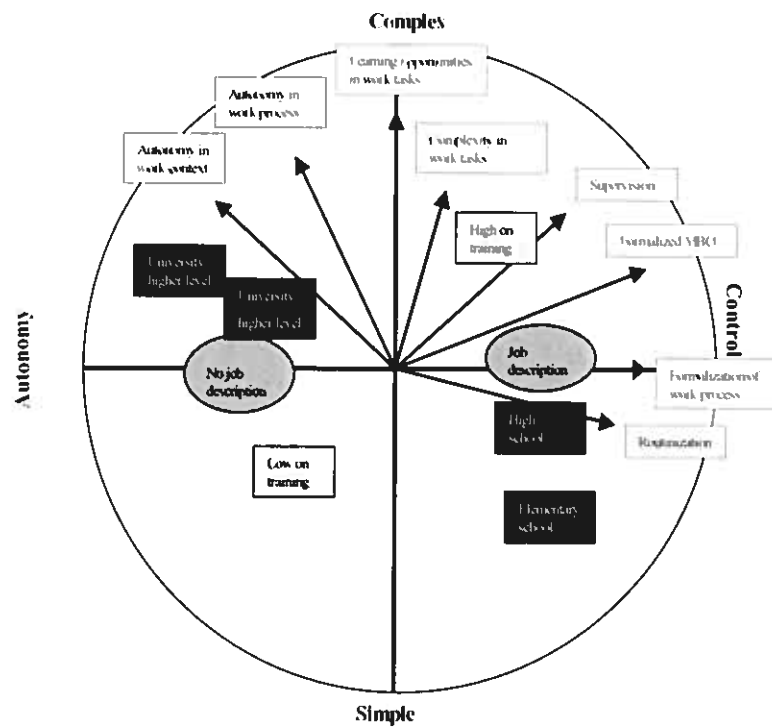
It is also interesting to observe that job description is independent of the simple/complex dimension but not on control. Jobs with a formal job description are high on formal control, while those without are low. Apparently a job-based approach and use of job descriptions is used also for complex jobs (P3).

Then to our key question: Are job descriptions being replaced by competence descriptions, and where are jobs with competency descriptions located in the structural space of jobs? Unfortunately, we are not able to answer that question on the basis of this study because none of the companies in the study made any use of formal competency descriptions or behaviour profiles for specific competencies. The basis for decisions about training, work assignments, careers and salaries are not competency descriptions even for the most complex work tasks, but either job descriptions of some sort, or some informal knowledge held by supervisors or by the employees themselves (P7). In one of the data companies we observed that instead of going from formal job descriptions to competency descriptions, they responded to a more flexible work organisation by abandoning the job descriptions altogether without putting

anything back other than strict follow up of projects (quality and delivery times). The quality of the work is observed and sanctioned more directly by internal and external “customers” making the poor performer loose esteem among colleagues and customers.

**Figure 4 Education level and job description in a structural space of jobs**

(Average factor loadings for subgroups. Education: Ed1=elementary school, Ed2=high school, Ed3=university, lower degree, Ed4=university, higher degree. Job description: No job description)



Looking more closely at the content of the job descriptions, we found that they describe broader work roles for complex work operations. Examples of such roles are: customer advisor, systems consultant, sales consultant, financial consultant, etc. However, there were no attempts to describe behaviour profiles for these categories of personnel. On the other hand, we often found quite detailed descriptions of educational and experience requirements.

Hence, the closest we got to a competency approach in this research, was the finding of an active use of broadly defined job descriptions which focuses very much on formal education and training requirements but not on behaviour profiles. Such an approach is found for jobs that are complex and subjected to formal control. Also the systematic support for training is positively related to complexity as well as formalisation (P4 and P7).

## ***Discussion***

The reported findings call for some further comments. First, this research has shown the importance of the two independent dimensions of job structuring: complexity and formalised control. Complex knowledge-based work is dealt with in two different ways: either a formalised way based on control (in the banks), or an informal way based on autonomy and trust (in the high-tech companies).

We have also shown that task complexity and formalised control together give a structural description of jobs that provides a good explanation for which approach the companies choose to match work with competencies. It has confirmed that formal control and recruitment of personnel with a longer professional education in fact are substitutes in filling the functions of coordination and control. Complex knowledge work is staffed with personnel with long professional education. But we have also seen that complex work can be controlled and followed up by management systems and supervision. This is the situation for complex client-related sales and consultancy work in the banks.

We did not find forms of formal competency modelling in any of the companies. We are therefore inclined to believe that the alternative to job-based HRM is not necessarily a competency approach based on formal behavioural descriptions of competencies. Most of the literature on competence modelling follows a tradition from Taylor and Scientific Management, but with a change of focus and scope: from job modelling based on detailed tasks to competency modelling based on broader functions. However, in the companies in our study, the response to broader work tasks was not competency modelling but a change of the job descriptions so that they cover broader work roles and work processes rather than specific job positions. However, they did not attempt to describe preferred behaviour profiles. In both job modelling and competence modelling, it is the specialist and the supervisor and not the actual job-holder who are in charge. They analyse and manage from a position of “knowing better”. These same persons, who are external to the actual work process, assess competency development needs by comparing actual to described behaviour. Hence, formal competency modelling seems best adjusted to the segment with a high degree of complexity and a high degree of formalised control.

This is quite different from the approach of self-management that we observed in the smaller data companies. The responsibility and autonomy of the employees in the work process were “spilling over” to competence development. Experienced professionals, who were assigned to solve unique problems according to their recognised qualifications, were also responsible for their own competence and career development. Development of new individual and collective

knowledge takes place, to a large extent, in informal local "communities of practice". In the Norwegian context the size of companies as well as general industrial relations, inspire such an informal and trust-based approach. Job modelling in a strict American sense has been something of a rarity in Norway, and one can wonder if competency modelling will be so, too. However, it will take some further research to find out how widespread such informal approaches are and how they work.

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