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Managing universities or self-management and its consequences for motivation – evidence from Germany

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MANAGING UNIVERSITIES OR SELF-MANAGEMENT AND ITS CONSEQUENCES FOR MOTIVATION – EVIDENCE FROM GERMANY

von

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Managing universities or self-management and its consequences for motivation – evidence from Germany

1. Introduction

Universities are one type of knowledge-based, professional service enterprises. German universities partly reflect the ideal of such enterprises, but there are also great differences. Here, we want to analyse the connection between organisational structure and the performance (efficiency) of the members of the organisation. As the efficiency on the level of acting is generated by the university professors, the question analysed here can be specified as the connection between the management system of the organisation "university" and the motivation of the actors "professors". Two different kinds of context steering will be distinguished (direct and decentral context steering), their management-tools will be presented and their effects on the motivation of the professors. These considerations can be confirmed empirically by a poll involving all professors in Northrhine Westfalia (Germany). Finally, goal agreements and their role as central controlling instruments will be analysed.

2. Universities - modern organisations?

The universities in Germany resemble in many respects the ideal of a modern company, as it is postulated in organisational theory. German universities are decentral organisations which are only loosely coupled (Weick 1976) and include systems of various academic disciplines; they have a flat hierarchy and the decentral units are able to act highly autonomously. Formally the autonomy of the individual professors is due to the fact that their superior is not the dean, but the minister. And the minister is "far away". All the decisions are reached in the faculties altogether according to the majority principle. Although the universities are sometimes enormous in size, in the area of teaching and research there are only three hierarchy levels: the (professors') chair, the deanery, and the rectorate. In addition, these three levels do not have an order-execution relationship. Each section, i.e. each subject, each institute, ultimately each professorship maintains independent relations to the environment, to students and people who are interested, and thus it is able to act autonomously within its section and within

the university. It is impossible to coordinate these units by hierarchy, although in many organisations this is the common way of management. This kind of coordination, a "discursive coordination", has been employed in the universities ever since, and many organisations especially in the industrial sector try hard to introduce this type of coordination (cf. Minssen 1999)¹. It resembles the principle of circular organising (Romme 1999). In the case of circular organising the decision rule is consent, in the German university it is a majority decision, which is mostly interpreted to be a consensual decision.

But decentral structures have an unpleasant tendency to develop their own specific, "local" rationalities. A great extent of autonomy of decentral units leads to the negative effect of this decentralised structure, i.e. the lack of steering quality of the organisation as a whole; any decentralised structure produces the problem of coordinating the decentral units. This is especially true for universities, where not only the disciplines and the representatives of the individual disciplines rather feel obliged to the knowledge community than to the university at which they carry out their research and where they teach, but where also the formal structure does hardly exist because of the undeveloped hierarchy.

Thus decision processes in colleges are not characterized by an order-execution relationship, but the decisions are based on complex coordination- and decision processes (not only) in the designated committees, which can also be distinguished from that of other organisations by a high degree of consent-orientation and, as a result, by the amount of time that is involved. The relative independence of faculties, departments, and professors makes it difficult to steer the system university as whole as an organisation.

Organisations which coordinate knowledge-based work are generally described as such loosely coupled decentral units with a flat hierarchy and great autonomy. In recent years, nevertheless, the reorganisation of universities was topic for debates in Germany. The discourse concerning the reorganisation of German universities considers to introduce the structure of classical business companies. In this context especially new steering strategies and instruments have been discussed. The spectrum reaches from measures for quality assurance (Müller-Böling 1995), over balanced scorecard (Hane 2001), benchmarking (Schreiterer 2001), formula-bound allocation of budgets (Ziegele 2001), salary reform (Witte et al. 2003), budgeting (Ziegele 2001), controlling (Brüggemeier 2001), integrated cost accounting (Ambrosy et al. 1997), to personnel reform (Müller-Böling/Sager 1999), global budget (Hener

1 This may be one reason why universities have made extraordinary successful efforts in the past; the number of staff which is below the number of that of the 1970s has dealt with a number of students which is more than twice as high as that of the 1970s. These figures show for themselves that the "lazy professor" criticized by the media is rather a caricature than reality.

2001), ranking (Berghoff 2002) and goal agreements (Fedrowitz et al. 1999, Nickel 2001, Schult/Ziegele 2002). In most cases these measures are taken over from the Anglo-American context and then presented as exemplary best-practice ideals. But there is very few empiric research concerning the results and effects of these instruments. Both the theoretic and political discourse have focussed on the question of steering by using financial incentives. At first sight this seems to be an easy to handle and efficient management factor, but this is a premature assumption.

German universities seem to have a lot in common with modern knowledge-based organisations. Nevertheless, there are still some differences:

The first important difference is the fact that it is impossible to plan human resources in the organisation 'university'. The university career is not dependent on the respective university, i.e. the organisation where one studies/works, but on the peer-group of all scholars in the respective subject. Their evaluation is the foundation for a future career; the assessment of the superiors in the organisation itself is irrelevant. In addition, in Germany it is only possible to obtain a professorship on the basis of a professorial thesis at a different university. An offer of an appointment to a chair cannot be made by the university where the professorial thesis was written. Therefore there is little loyalty towards one's "own" university. It neither has a decisive influence on the career nor on the reputation as a scientist.

The second grave difference between a German university and a business enterprise is the lack of rewarding or sanctioning capacity of the organisation. In addition to his undismisable position every professor received until only recently the same amount of money for materials every year. The amount of money was dependent on the negotiations which he had conducted during his appointment. If he was able to negotiate a large amount of money during appointment procedure, he received a large amount of money until his retirement, if he did not succeed, there was no possibility to increase the amount. The only way to obtain additional means was and is by receiving grant money (third-party funds).

3. Context steering of universities

In what way is it possible to manage partly autonomous, decentral, loosely coupled organisations, like German universities, but also any knowledge-based services? German discourse concerning the management of this kind of organisations is dominated by the term of context steering. Two kinds of context management are distinguished: direct and decentral context steering (Teubner/Willke 1984). Direct context steering works by means of the symbolically

generalised communication media money, rights, and power. In our case study of indicatorised allocation of funds (see below) the state uses the medium of rights less, but instead focuses on the medium of money. In public discussion the symbolically generalised communication medium money has a high controlling value, as it is meant to make the "lazy professors" leave their long hibernation by paying them according to the number of their students, the number of their examinations, the amount of grant Money (third-party funds) etc.. Money as an extrinsic motivation is to control the professors and thus the production level of the organisation university. In our case study the payment does not have an effect on the salary of the individual, but on the non-monetary assets which every professor receives. As a result the total amount and thus also the controlling function is much lower, but it becomes clear on a logical level that malfunctions are to the fore. The reason for this is the fact that the tasks of the professors can be described as multiple tasks: not only do they have to teach and to attend to students during their examinations, they also have to try to gain grant money (third-party funds), to publish their research results, to engage in administration etc. If only one of these tasks is rewarded, a rational actor will concentrate on rising the output of this factor and he will neglect everything else. In the course of the paper we will analyse the empirical question whether an action-controlling effect can be observed in the case of the professors.

As direct context steering raises this kind of problems, it has to be analysed whether decentral context steering can be applied more effectively. According to Willke decentral context steering takes place in negotiation systems: "Context steering can only result from the interaction of autonomous and reflecting actors in autonomously organised negotiation systems."² Negotiation systems serve the purpose to adjust and coordinate superior and inferior levels (vertical coordination). Instead of simply having to accept decisions negotiation systems enable the actors concerned to reach compromises in a discursive process before decisions are taken and also to influence the way decisions are made (cf. Willke 1997, p. 134f.). In addition to the vertical coordination it is necessary to coordinate equal-ranking systems (horizontal coordination), because the individual systems in modern societies have developed a high degree of autonomy and own momentum (Willke 1997, p. 136). Scharpf (1992) has shown that the structure of a negotiation system influences the results which can be reached. This has implications for the management of organisations, because a steering mechanism which allows a high degree of participation supports intrinsic motivation. Intrinsic motivation is defined by

² "Kontextsteuerungen können sich nur noch aus dem Zusammenspiel autonomer und reflektierter Akteure in selbstorganisierten Verhandlungssystemen ergeben." (Willke 1997, p. 142).

Heckhausen as follows: "Action is intrinsic if the means (the act) thematically corresponds to its ends (the action goal); in other words, when the goal is thematically identical with the action, so that it is carried out for the sake of its own objectives. For example, achievement behavior is intrinsic if it is engaged in merely to accomplish a desired outcome, because it solves a problem or leads to a self-evaluation of competence. Here, the outcome, a particular accomplishment, is not a means toward some other nonachievement-related end." (Heckhausen 1991, p. 406)

Thus both forms of context steering lead to different expressions of motivation (Table 1).

Governance of universities	method	motivation
direct context steering	money	extrinsic
decentralized context steering	goal agreements/MbO	intrinsic (with goal commitment)

Table 1: relationship between governance structures and individual motivation

4. Action orientation: motivation of the actors

We will show which effects the different types of steering methods have on the motivational conditions of the actors by using an example from Northrhine Westfalia. This is decisive, because on this level the production, i.e. teaching and research, takes place. In Northrhine Westfalia the Ministry for Science and Research (MSWF) began to distribute funds for teaching and research, i.e. funds of the "Titelgruppe 94" (TG 94), according to a so-called formula-bound attribution of funds between the universities in 1993. At first, the criterion for the distribution was the number of graduates; later the criteria "grant money (third-party funds)" and "doctorate" have been added, and finally the parameters "number of academic staff" and "students of the first to fourth semester"³. In addition, there is a weighting system within the parameters according to the subjects Arts and Humanities, Engineering and Sciences⁴. It is the aim to limit the calculations to very few parameters in order to keep the formula transparent⁵.

³ Since the year 2002 the number of female staff is also part of the calculations ("Frauenquote"). When our research was carried out, this criterion did not exist yet; hence it is not analysed in the following.

⁴ For example, grant money (third-party funds) in the Arts and Humanities "count" seven times the grant money (third-party funds) in Engineering, while the academic personnel in the Arts and Humanities is weighted with the factor 2 and in Engineering with the factor 5 (Andersen et al. 2001, p. 19 f.).

⁵ This system is totally different to the „academic earmarks“ in the USA (de Figueiredo/Silverman 2004). In Germany it is a general rule with the aim to produce a just outcome.

This makes the formula very attractive on the one hand, on the other hand this has been criticized because the criteria define, like a decree, what kind of science and research is "good", and they do not exclude negative effects: the number of doctorates, for example, could be increased by lowering the demands.

The universities reacted to this changed mode of distributing funds according to their own liking; there were no orders from the Ministry as to how to deal with this change, but it uttered the hope that the universities would also introduce internally an indicatorised way of allocating funds in order to enhance the wished for behaviour of the professors, i.e. of those people who produce the output of the university. But ultimately the universities could decide for themselves whether they wanted to develop an indicator system for the internal allocation of funds or continue to distribute the money as they did before.

The governing bodies of the universities only have limited influence on steering the behaviour of the professors; the motivation of the staff is of greater importance here than in other organisations. As mentioned above, professors have to perform multi-tasks. They have to accomplish duties in research projects, teaching, and administration, all of which comprise complex bundles of assignments (Wilkesmann 2001). Traditionally, intrinsic motivation of the researchers is taken for granted. As daily research and teaching work can hardly - or only with high transaction costs - be observed and thus be controlled, the scientists are left alone with their endogenously produced motivation. This is supported by the career. The qualification phases of promotion and habilitation are periods of working alone, which usually are only mastered by people with a high degree of intrinsic motivation. In industrial psychology the connection between great intrinsic motivation and free scope of action could be verified (Hackman/Oldham 1980). The free scope which academics have supports the appearance of intrinsic motivation in principle, and empirical studies (cf. the summary by Enders/Schimank 2001) show that the intrinsically motivating aspects of the job are a basic source for the professors' job satisfaction.

Whether actors perceive their actions as being intrinsically or extrinsically motivated is a question of attribution. Motivation research has shown that the relation between intrinsic and extrinsic motivation is not necessarily additive, in contrast, existing intrinsic motivation can be destroyed by extrinsic incentives, i.e. amplification as well as crowding-out effects can appear (Frey/Osterloh 2002). External factors in the form of rewards always have two aspects, an informing and a controlling aspect. The informing aspect increases the experienced competence and thus the internal control conviction, while the controlling aspect increases the external control conviction, i.e. a feeling of external control (Frey/Osterloh 2002). A crowding-out

effect is produced as soon as external factors are perceived as an external control. They reduce self-governance, self-assessment and possibilities to express oneself, and intrinsic motivation in the controlled area is limited. Intrinsic motivation is increased, however, when external factors are perceived as being supportive. Self-governance is developed by self-assessment and the closely linked greater scope of action (Frey 1997).

Whether at all and when a crowding-out effect or an amplification effect is produced in an individual is dependent on his or her subjective perceptions. The same extraneous factors can have supportive effects for one individual and have a crowding-out effect for the other (Frey 1997). The crowding-out effect is greater with respect to material rewards than with respect to symbolical rewards, greater with respect to expected ones than to unexpected, and it is greater with respect to complicated problems than with respect to simple ones. A bonus and malus system like the indicatorised allocation of funds can thus increase motivation in principle, but it can also have the effect that they lose touch with the immediate goal (a good performance in teaching and reasearch) (Frey/Osterloh 2002).

Hence it is possible that although all the universities distribute the funds internally according to indicators, i.e. that the context steering was employed successfully by the ministry, this does not necessarily mean that the way of producing results has changed. In the universities the results are produced by the professors: ultimately they are responsible for the number of graduates, the number of doctorates, and for receiving grant money (third-party funds), i.e. those parameters which, according to the indicator system, define the success of teaching and research. It has been shown (see, e.g., Eckardstein et al. 2001) that the use of monetary incentives in universities is at least problematic. It can lead to a discrepancy between the levels of organisation and of the actors. Anything which has proved to be a successful context steering on the level of the organisation because it has changed the inner-university communication code, might have no or even non-intended effects on the level of the actors. Even if the universities have introduced internally an indicatorised allocation of funds, this does not necessarily imply a change of behaviour of the professors; they might not be influenced by this change or they might even show a behaviour which in fact contradicts the goals of the indicatorisation. This question has to be answered by an empirical analysis which is presented in the following.

5. Empirical evidence from a case study of Northrhine Westfalian universities

The following observations are based on a project which was carried out in the years 2000 to 2002, funded by the Northrhine Westfalian Ministry for Education, Science and Research. During this project all rectorates, deaneries, and all the professors in Northrhine Westfalia were interviewed with a standardized questionnaire. 732 of the questionnaires which had been filled out and sent back could be evaluated⁶.

After the Ministry for Science had introduced the formula-bound allocation of funds in 1993, the majority of the universities' rectorates in Northrhine Westfalia also very soon introduced a parameter model for internal use. Seven years after the introduction of the formula-bound allocation of funds two thirds of the faculties distribute the funds between the professors in an indicatorised way, in every third faculty even the total amount. Thus the change of the allocation of funds by the Ministry has had effects on the individual departments and chairs. Obviously the parameters have not simply been taken over from the rectorate or from the Ministry (MSWF), but they have been adapted according to the respective faculty by further developing already existing parameters. This was mainly carried out by the faculty board or rather within the faculty commission for structural and financial questions. And even every third deanery claims to have developed independently the faculty's allocation model.

Altogether 49 % of all interviewed professors consider the formula-bound allocation of funds to be positive in general⁷. The assessment is the better, the more informative and participative the introduction process has been running; this seems to be the case in very many faculties. But the introduction process alone does not explain every detail. There are significant differences in the professors' assessment of the situation which cannot be explained only by information and participation in the decision process for the introduction of the indicatorisation. The group of professors can be subdivided into two clearly different sections. This is the result of a factor analysis of the variables with which we have asked for an individual assessment of the orientation towards parameters (cf. Backhaus et al. 1996, p. 189ff). The analysis reveals two main components which can explain 56 % of the variation⁸ (Figure 1, see appen-

⁶ For the design of the survey, further results, and remarkable experiences when carrying out the project see Minssen et al. 2003.

⁷ A survey among professors and scientists of the 'Freie Universität Berlin' has brought about very similar results; cf. Hübner/Rau 2001.

⁸ Main component analysis without rotation, selection of the main components according to the Kaiser-criterion with a value of more than one; with a quite good KMO-value of 0,83. The original items as well as the values of the individual items are listed in Figure 1 in the appendix. These assessment questions have been asked according to the seven Likert scale.

dix). The first main component has got a high value with respect to those items which emphasize the performance in research, teaching, and administration as well as transparency as a result of the indicatorisation. Here, economic steering criteria are stressed which are not considered to be contrasting to the idea of freedom of teaching and research. Therefore we call this group "economists". It includes 33 % of all the professors interviewed.

The second main component has a high value with respect to those items which highlight the professors' control, the limitation of freedom in teaching and research as well as the material control of behaviour by the parameter-based allocation of funds. Hence in this case the traditional values of a self-regulation of science are emphasized which are clearly contrasting to an indicatorisation of the allocation of funds; we thus call this group "traditionalists"⁹. This group comprises 67 % of all professors.

For further calculations the four items "supports achievement-oriented behaviour in research (1), in teaching (2), in administration (3) and supports transparency (4)" have been integrated in the dimension "economists" (Cronbach's α ,840). Similarly, the four items "only supports behaviour which is rewarded financially (1), financial rewards of certain activities are superfluous because of the results achieved so far (2), it is impossible to combine it with the freedom of research/teaching (3), only serves to control the professors' activities (4)" have been comprised in the dimension "traditionalists" (Cronbach's α ,699).

The differentiation between these two groups is also reflected in the answers to the question why the MSWF has distributed the funds according to parameters. At a KMO-value of 0,77 both main components explain a variety of 51 %. Here, again, the two groups of "economists" and "traditionalists" can be distinguished (Figure 2, see appendix)¹⁰; the "traditionalists" think that the indicatorisation is basically an attempt of the MSWF to make its work easier (and, it might be added: to burden the universities with this task) and that it simply follows a fashionable trend, while the "economists" emphasize that the reason for the change of the allocation method is the creation of more competition and economic efficiency as well as a fairer alloca-

⁹ The differentiation between "economists" and "traditionalists" does not suggest any preferences, e.g. in the sense of "traditionalists" versus "modernizers". "Economists" are characterized by the fact that they consider the formula "payment by results" to be also attractive for academic teaching and research. Nevertheless they do not become "modernizers" right away who are open for changes in every area. "Traditionalists", on the other hand, are not against changes in general or even belong to the group of "lazy professors". They rather emphasize that it is necessary to keep up Humboldt's educational ideals in the course of innovation processes – a position which can be justified by several good reasons. – We are aware of the provisional nature of our terminology and therefore we use it with inverted commas only.

¹⁰ Also in this case a main component analysis without rotation was carried out, the selection of the main components was made according to the Kaiser-criterion with a value greater than one. The original items as well as the value of the individual items are listed in Figure 2 in the appendix. These assessment questions were asked on the basis of a seven Likert scale.

tion of funds. As could be expected the "economists" assess the parameter-oriented allocation of funds very positively, while the members of the group of "traditionalists" show indifference or disapproval.

The evaluation of the formula-bound allocation of funds divides the professors into two camps: one group emphasizes the achievement-oriented incentive effect, the other sees this rather as a threat of their free scope of action. This can have lasting effects for the work motivation. If it is assumed that professors were intrinsically motivated until now because there were no other incentives, then it is very unlikely that the group of "traditionalists" will be motivated in the direction of those criteria which have gained additional weight through the indicatorisation; on the contrary, their motivation might even be reduced. There is the danger that external incentives destroy intrinsic motivation, because the external incentives crowd-out intrinsic motivation.

An increase in intrinsic motivation might be observed for those professors who can be counted among the group of "economists" and who have already shown a highly intrinsically motivated behaviour in research, teaching and administration processes; they will perceive the incentives of the formula-bound allocation of funds as additional support and they will continue to be highly motivated. If it is assumed that professors from both groups have been motivated intrinsically so far, then the new way of allocating funds will have few effects for the group of "economists", because they have already shown the behaviour which is to be triggered, and even a negative effect can be expected for the group of "traditionalists", because they will interpret the indicatorisation as an obvious critique of the behaviour they have shown previously. Only if one member of the "economists" group did not have any intrinsic motivation before – a case which is very unlikely to occur in an empirical analysis – the new method of allocating funds may have a motivational effect. Thus the motivational steering effect of a parameter-based allocation of funds is very low, especially as the group of "traditionalists" is much larger than the group of "economists"¹¹.

Now, who are the members of the groups of "economists" and "traditionalists"? According to the president of one university they can be found in any faculty, but in the Humanities there are more "traditionalists" than in the other faculties and departments. This is a very likely assumption which seems to be supported by other studies according to which the members of the Humanities and Social Sciences are more sceptical about an efficiency-bound allocation

¹¹ This is even true for our sample. The differences are probably much greater when the total amount is taken into consideration, for it has to be assumed that many "traditionalists" did not take part in the survey in the first place.

of funds (Hübner/Rau 2001). Our data, however, does not support this view: there are no statistically verifiable differences between the subjects; both "economists" and "traditionalists" can be found in the faculties of the Sciences, Engineering and the Humanities. The members of both groups cannot be differentiated according to sex, salary grade, type of university or amount of information about the changes received. Only the number of people of more than 60 years of age is a little greater in the group of "traditionalists"; however, no significant differences can be found, and thus the hopeful expectation uttered by a chancellor that the "traditionalists" would "die out" when the new generation has taken over, seems to be a bit premature (cf. the documentation of the data: Minssen et al. 2003).

Accordingly, the overall assessment of the formula-bound allocation of funds is neither dependent on age, nor sex or salary grade, but it depends positively on the attitude of the "economists", negatively on the attitude of the "traditionalists", and positively on the background information concerning the changes in the allocation of funds. This has been proved by regression computing (cf. Backhaus et al. 1996, p. 3ff) (Figure 3, see appendix).

In short: there are no sociodemographic criteria or other differentiating factors which distinguish the two groups. Therefore it can be assumed that both groups mainly represent attitude patterns. According to the classical definition by Rosenberg and Hovland attitudes can be described as "predispositions to respond to some class of stimuli with certain classes of response" (Rosenberg/Hovland 1960, p. 3). They are relatively stable patterns which are acquired during the professional socialisation process (Stroebe/Jonas 1990). This is also true for academic socialisation processes, because "the construction of an academic personality happens [...] in discussions with other scholars in a social game"¹² (Engler 2001, p. 43) in the course of which attitudes are formed. In the course of time the attitudes grow stronger which also structure the perception of changes, in our case: the changes in the academic system. Those people who have always been rejecting new management devices, and especially a steering mechanism using financial incentives, and who have always been promoting freedom of research and education also reject a parameter-based allocation of funds. But those people who always have had a positive opinion of this kind of innovations are in favour of this new mechanism for allocating funds. Our data, however, does not reveal how these different atti-

¹² "[...]die Konstruktion der wissenschaftlichen Persönlichkeit geschieht (...) in Auseinandersetzungen mit anderen WissenschaftlerInnen in einem sozialen Spiel [...]"

tude patterns are generated, which specific "games" and which specific experiences are relevant in the forming process¹³.

These attitude patterns determine the professors' actions. Financial gains or losses for equipment are interpreted as an argument in favour of their attitude and hence they are obviously not able to change the very rigid patterns. This also explains why the indicatorisation has received a better assessment from those professors who had a positive financial development at their chair, i.e. from the winners, although the financial development had nothing to do with the method of allocating funds. The winners are the "economists", who are not "economists" because their financial equipment has had a positive development, but they are winners, because they have always been fulfilling their duty with an attitude of "economists". We do not want to exclude in general the possibility that in the course of time the indicatorisation of funds will lead to a change of behaviour; because "independent of the attitude patterns the amount of funds will be relevant for a change of attitude"¹⁴, according to the chancellor of one university; also at a university Liza Minelli's motto "money makes the world go round" could be applied. Although in our opinion the latter is true in general, we are very sceptical whether the attitude patterns could be changed – especially, as the amount of funds which have to be distributed can hardly have lasting effects.

Consequently, a parameter-based allocation of funds in its present form does not have a steering effect which reaches all the professors. The "economists" feel supported and continue to work as they did before; and those who were to be reached by the new method especially, the "traditionalists", are not only not moved to change their behaviour, because they are not reached by the new methods of allocating funds as a result of their attitude, they might even lose motivation: the commitment which undoubtedly also the "traditionalists" show "could be demotivated, if the professors were confronted with controlling and sanctioning deans, amateur evaluations, competition pressure, salary reduction, and the loss of the status as a public official"¹⁵ (Enders/Schimank 2001, p. 175). It has not yet come to it, but the arising danger of

¹³ This is a different question which still has to be analysed empirically. It would be interesting to do research following Moscovici's studies (1985) in order to find out how also minorities are able to get through new beliefs and attitudes in their peer group. For the question of games and decisions in universities cf. v. Lüde (2002).

¹⁴ "[...] unabhängig von Einstellungsmustern wird das Finanzmittelvolumen für eine Veränderung von Einstellungsmustern ausschlaggebend sein [...]"

¹⁵ "[...] könnte sehr leicht demotiviert werden, wenn die Professoren mit kontrollierenden und abstrafenden Dekanen, stümperhaften Evaluationen, ruinösem Konkurrenzdruck, Gehaltseinbußen und dem Verlust des Beamtenstatus konfrontiert werden würden [...]"

a crowding-out effect of intrinsic motivation (Frey/Osterloh 2002) and a resulting "work-to-rule" cannot be ruled out completely.

Every third professor points out that the formula-bound allocation of funds has influenced his perception of his duties. Although these are fewer people than the rectorates and deaneries had assumed, but, as most of the professors are opposed to changes of controlling mechanisms, these are more than could be expected. These people are mainly the "economists" who did not change their behaviour because of the introduction of the indicatorisation, but who have always shown a behaviour which corresponds to the goals which have been stressed by a parameter orientation. This self-assessment is also independent of structural conditions; we could not find any differences with respect to the type of university or faculty membership, age, sex or wage group. Instead, also in this case the procedures in which the new allocation method was introduced seem to be important – in addition to the general attitude. This can be assumed, because the group which was influenced in its perception of its duties can be distinguished from the others on account of two basic aspects: on the one hand the members of this group mention significantly more often that they had informed themselves actively about the background of the formula-bound allocation of funds and that they had received extensive information from the dean. On the other hand the members of this group have taken part in discussions and negotiations within the university and their faculties significantly more often. In addition, information and participation are not only very important for an assessment of the parameter-bound allocation of funds, but also for their willingness to alter their behaviour because of these changes.

We assume that this is a self-enforcing spiral: the "economists", who have a more positive attitude towards these changes than the "traditionalists" any way, feel to be better informed and probably also try to receive information more eagerly, they hence consider themselves to be deeply involved – and assess the indicatorisation more positively than the "traditionalists", who probably did not accept all the information offers as they have had a critical attitude towards the introduction of an indicatorisation from the beginning.

6. Goal agreements as instruments of decentral context steering

As a consequence, decentral, loosely coupled, partly autonomous organisations like universities also need further management tools. We want to discuss goal agreements as an alternative management tool, which makes it possible to steer decentral organisations in a better way and which, at the same time, does not produce dysfunctional effects on the level of the actors, the

professors. We will also analyse the question whether this kind of management supports an equivalent quality of teaching and research.

Goal agreements are defined here in distinction to Management by Objectives. In contrast to MbO goal agreements are more oriented at participation. The goals are defined by the two sides working together. A differentiation between the various levels has to be made: there are goal agreements between the university direction and the faculties as well as between the faculties and the individual professors. Here, as well, the problem of operationalisation, which had been hinted at above in connection with extrinsic incentives, is present: on the one hand the goals have to be defined clearly, on the other hand a mere quantification with respect to multi-tasks can lead to dysfunctional effects. It is necessary to carry out a good operationalisation also taking into account qualitative goals. It is important to define the goals with an output orientation. The advantage of a participative goal agreement is its high amount of self-obligation. Those goals which one aims to reach oneself produce a high level of commitment. It is well known from the Goal-Setting-Theory (Locke/Latham 1990) in motivational research that those goals which a person has defined himself and which are not very easy to reach create a great amount of motivation. The three central ideas of the goal theory are:

1. The more difficult the goals are to reach, the more do they support motivation and performance.
2. The more specific the goals are, the more do they have motivation and performance supporting effects.
3. In order to produce these effects a close linkage between individual and goals is necessary, i.e. the individual has to feel committed to the respective goal.

Goal commitment especially appears – as experiments show (Wegge 1998) – when the goals have been defined autonomously. If there is a great commitment because the goals have been defined individually, the differentiation between means and effects of the action will not be present any longer – this is exactly the definition of intrinsic motivation by Heckhausen (1991). Thus aiming high does not destroy intrinsic motivation, but it is the basis of intrinsic motivation. The advantage of intrinsic motivation lies in the fact that it is also effecting actions in those cases where it cannot be always controlled. Whenever objectives are defined in a participative negotiation process it is guaranteed that they correspond to the general objectives of the organisation, that they are appropriate, and that no dysfunctional effects are produced – as they could appear when extrinsic incentives are employed. In this negotiation process the output is coordinated altogether by means of "discursive coordination" both bottom-up and top-down. The great commitment to the goals which have been defined by this

process, i.e. ultimately the great intrinsic motivation combined with a feedback when the goals are reached, guarantees a high quality of education as well as of research.

But the professors must be able to plan everything autonomously. In accordance to their goal agreements they have to receive their own budget which they can use independently without any restrictions. This is the only way to provide the means which allow them to reach their goals. In addition, a regular feedback concerning the question whether the goals have been reached or not is necessary, otherwise the motivation will break down again.

7. Summary

Although German universities correspond to the ideal picture of modern, knowledge-based businesses, they are different from the ideal with respect to human resources development and sanctioning capacity. We have discussed two different types of context management and revealed the dysfunctional effects of direct context steering. These effects could be verified by an empiric study carried out with Northrhine Westfalian professors. The study has shown that the socialisation of professors has a great impact on their behaviour. Influencing the socialisation of scientists are long-term processes which are relevant for motivation. Goal agreements are controlling instruments which on the one hand are linked to the previous socialisation patterns and which on the other hand support intrinsic motivation and thus exclude dysfunctional effects on the level of action. Future research has to analyse in detail the effects of the different steering methods on the socialisation of academic personnel. But it has become clear that there is a recursive process (in the sense of Giddens 1984) between the organisational structure or the steering methods of a university and the socialisation or the action orientation of the professors.

8. Bibliography

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Appendix

How do you evaluate a formula-bound allocation of funds?	main components	
	mc 1: "economists"	mc 2: "traditionalists"
supports achievement-oriented behaviour in research	,764	,325
supports achievement-oriented behaviour in education	,773	,347
supports achievement-oriented behaviour in administration	,655	,426
supports transparency	,721	,240
only supports activities which are rewarded financially	-,327	,504
financial rewards of certain activities are superfluous because of previous performance and results	-,635	,404
financial rewards of certain activities do not correspond with the freedom of research/teaching	-,602	,580
financial rewards of certain activities only serve to control the professors' activities	-,593	,475
does not change anything	-,492	-,170
individual value	3,597	1,473

main component analysis without rotation; number of main components chosen according to Kaiser-criterion with a value greater than one; left column = original items
N = 469; KMO-value = ,827; stated variety = 56,34%

Figure 1: Factor analysis: Evaluation of the formula-oriented allocation of funds by the professors

In your opinion, why does the Ministry allocate funds according to a formula?	main components	
	mc 1: "economists"	mc 2: "traditionalists"
public funds become less	2,399E-02	,621
MSWF is under justification pressure	3,806E-02	,637
MSWF wants to relieve itself	-,324	,710
MSWF wants to make administration easier	,300	,437
MSWF wants to introduce a general budget by this means	,290	,542
MSWF follows a fashion in an uncritical way	-,615	,391
competition between universities is to be supported	,720	,146
universities are to act efficiently	,793	,165
funds are allocated fairer according performance and results	,858	-7,928E-02
funds are allocated more equally according to workload	,740	-3,231E-02
individual value	3,090	1,989

main component analysis without rotation; number of main components chosen according to Kaiser-criterion with a value greater than one; left column = original items
N = 477; KMO-value = ,768; stated variety = 50,78%

Figure 2: Factor analysis: reasons of the Ministry for the introduction of the formula-oriented allocation of funds according to the professors

	Beta
parameter	(1,902)** (.593)
sex ^x	,039 (.424)
salary grade ^y	-,064 (.163)
age ^z	,003 (.183)
economists	,515** (.056)
traditionalists	-,246** (.060)
looking for information actively	,137** (.040)
R ²	,472
corr. R ²	,458
F	34,203**
N	237

dependent variable: general assessment of the formula-bound allocation of funds

standard deviation in brackets

** Significant on the level of 0,01.

* Significant on the level of 0,05.

^x female = 0; male = 1

^y Reference C4 (= highest salary grade)

^z Reference more than 60 years of age

Figure 3: Multiple linear regression: assessment of the formula-bound allocation of funds