Toe-eigening van innovaties in het arbeidssysteem omgaan met spanningen tussen standaardisatie en zelfregulering bij werkstroombesturing

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Summary

Appropriation of innovations in the work system
How teams handle tensions between standardisation and self-regulation in workflow management

Introduction
Many social-organisational aspects of the new phenomenon 'Workflow management systems' (WFMSs) are still unknown. These include: (1) Why do companies choose to implement WFMSs; (2) how does the implementation of the systems occur; (3) can the implementation and use of these systems be improved to achieve the goals of management? WFMSs can be defined as systems that automate the co-ordination and control of the workflow and support (one or more of) the following functionalities: routing of work; monitoring and control; notification; actor assignment and authorisation; and procedure management. The implementation of WFMSs in the preliminary research phase of this research project in many cases was combined with the introduction of semi-autonomous teams. These teams have access to relevant information, possess relevant competence and other resources, and have the authority to independently make some decisions with regards to the work process.
It is expected that the effects of these two innovations contradict each other, specifically the conflict between the underlying principles of standardisation versus self-regulation. Two fundamental strains with organising a work system are distinguished in the literature. First of all there is the need for commitment of the workers and the need to control the behaviour of these workers. Secondly, there is the need for differentiation which results in the need of integration.
In both fields of tension, the application of WFMSs and of semi-autonomous teams seems to contribute to opposite intentions. When both innovations are implemented in a work system at the same time, there is the question whether their effects will be complementary or contradictory. This research project is an attempt to develop a better understanding of this matter.

Theory
Two scientific approaches investigate the relationship between technology and organisation. The classic contingency theory implies that the best organisation model depends on the situation in which the organisation operates. The technology used is part of this situation. On the level of the unit (teams), features of the task environment are the most important contingency factors to determine fit.

Within an interpretive research approach, groups of people (including teams) ascribe meaning to their task environment and their roles in this environment over time. There is mutual influence between task environment and organisation because of the meaning authors give to both concepts. The fit, which is realised between aspects of the work system, the task environment and the team features, can be analysed from the perspective of a structural contingency theory ('fit'). The appropriation process of innovations, on the other hand, can be described and explained with appropriation theory ('fitting').
This study has looked at the appropriation of technology, which was combined with the concept of semi-autonomous teams, as a process of team learning. Team learning is defined by Cook and Yanow as the acquiring, sustaining and changing, through collective actions, of the meanings embedded in the organization's cultural artefacts.
The study consisted of a preliminary and a main research phase. The preliminary research phase, involving eight cases, explored the field broadly and in an open design on: what were the intentions for implementing WFMSs, in what way is this implementation linked to semi-autonomous teams and which social organisational factors are playing a role during the implementation? With the results of the preliminary research, and additional theoretical hypothesis generated from analysis of the preliminary cases, the main case was selected. This main case consists of four nested sub cases. Within these sub cases the combined appropriation of the WFMS-concept and the concept of semi-autonomous teams have been studied.

Preliminary research
The preliminary research has resulted in the following propositions about the effect of implementing WFMSs: (1) these implementations are often part of a Business Process Redesign effort, and (2) these implementations often coincides with the introduction of a horizontal-oriented organisation structure. A key motive for the management choosing WFMSs and a horizontal organisation structure is found in changes within the environment of the organisation. These changes are pushing the management to give more attention to customer satisfaction. A result of the preliminary research is that the increased transparency of the work process by using WFMSs does not result in a more decentralised fit. Besides that, the control function of WFMSs appears to be felt by the workers as imperative and pressuring. The ability of a WFMS to assign tasks continuously (push), and not periodically or on demand (pull), is being perceived by the users as an increase of work pressure.
In the selected cases where WFMS were implemented, two patterns occurred. In the first pattern a WFMS is being used to respond to the dynamics of the environment of the organization. For the team members, new tasks could be created because a WFMS automates and informates a number of time consuming tasks. In the second pattern

companies also use the WFMS to automate and informate a number of tasks, but in this case the team members didn't get additional tasks and the application of the WFMS is not intended to respond on dynamics in the environment of the organisation. For the main research, Nuon was chosen, because the first pattern occurred in this case and the need for team learning during the appropriation of the innovations seems to be greater in this case.

Main research

During this study, ethnographic research methods were adopted to follow the teams in-depth for one year. Observations, informal conversations and semi-structured interviews, some group discussions and short questionnaire were the main sources of data. The main research took place at a utility company Nuon Infra. Due to the liberalisation of the energy market, Nuon was being spilt in two units: Nuon Infra and ContiNuon. Nuon Infra was responsible for maintaining the gas- and electricity network and ContiNuon for the supply of energy. Nuon has over the years expanded due to mergers and take-overs of a great number of public and regional utility companies. This explains the huge variation of the background of the team members of the four teams that were studied. This part of the study tackles the question: In what and by what varies the appropriation processes from central applied innovations (WFMSs and semi-autonomous teams)? This question is answered in the following sections on (1) differences between the teams; (2) appropriation as a learning process and; (3) the interaction between the innovations (WFMSs and the semi-autonomous teams).

Differences between teams

The innovations resulted in a new fit where the use of the WFMS and the way the teams were using the concept of 'semi-autonomy' differed very much between the four sub cases. This can – partly – be explained by differences in composition and the history of the teams. The physical vicinity differs much, as does the experience of the teams with their own working routines and the co-operation in their teams. These differences in team features resulted in variation of the use of WFMSs and the concept of semi-autonomous teams; from being able to track 'smoothly' the formal work process to 'muddle' and 'work around the system'.

Appropriation as a learning process

Three learning patterns are distinguished in the appropriation itself ('fitting'). 'Sustaining-appropriation' occurs when the process of team learning results in the sustaining the existing inter-subjective meaning making 'Fitting-in-appropriation' occurs when the new working method is being incorporated in the existing meaning making

framework of the team. 'Full appropriation' occurs when the team learns to appropriate the innovation in line with the intentions of the management and the developers.
To explain why this appropriation, as a process of fitting, differs between sub cases, the impact of WFMSs and the concept of semi-autonomous teams on the work system, the task environment and the team itself, are assessed. The differences in resulting learning patterns (fitting) by the teams can be explained by five features of team learning: (1): the opportunity for reflection; (2) the opportunity for interaction; (3) the opportunities for use and storage of inter-subjective meaning-making; (4) the extent of focus on meaning-making; and (5) the similarity between the existing construction of meaning and the need to change after the implementation of WFMSs and semi-autonomous teams.

Interaction between the innovations
It became clear that the interaction between WFMSs and the use of semi-autonomous teams will not lead to problems, in spite of conflicting principles on which the two innovations are based. The introduction of WFMSs has resulted for all teams in a fit between work system, task environment and team features. This proves that self-regulation in all teams is possible. But an important difference must be made between actual self-regulation and experienced self-regulation.
The results for experienced self-regulation across the teams differ strongly. Only one team has experienced more extensive possibilities for self-regulation. The other three teams experience little self-regulation due to the constraining character of the WFMS. This lack of self-regulation is partly due to the fact that the teams give a broader meaning to the concept of 'self-regulation' than intended by the management of the organisation.
Contingency theory says that teams in an uncertain task environment are in need of more self-regulation and the management should also give this to them. It is expected that due to this, these teams also experience more self-regulation.
Against such expectations, in the team with the lowest uncertainty in the task environment the experienced self-regulation is the highest. Teams with a more uncertain task environment do not seem to experience this self-regulation, but these teams make use of the liberty to 'neglect the innovation'. The research has shown that teams are able to work around the formal work process or to incorporate the innovation in their actual working routine. In this manner, the teams appropriate innovations to realise their desired output. In other words, implicitly and informally there is a local fit is created.
Finally, it became clear that only sufficient slack in the team organisation results in an increased team development due to the fact that a WFMS works like a 'liberating harness'. In environments where there is sufficient slack – a team can develop more quickly. This results in an appropriation process (implicitly or explicitly) that contributes to a fit based on the local situation.

Teams without slack are very well aware of the contrast between the two innovations (WFMSs and the semi-autonomous teams). This is because, from a functional perspective, the structural effect of WFMSs hampers self-regulation in the teams. Also, from a social perspective the teams feel frustrated in their attempts to use the two innovations as intended.

Conceptual conclusions

The case in the main research has shown that even for information technology with a strong structuring effect, the appropriation of one and the same system differs between teams in the same organisation. These differences include the process of fitting taking place and the result (fit) of the appropriation process. These outcomes of research confirm 'appropriation theory'.

This research also proves that the combination of the structural contingency theory with an interpretive approach is appropriate for the study of WFMSs implementation in the context of semi-autonomous teams. Structural contingency theory and an interpretive approach are complementary and together they can explain the outcome of this study. The combined perspectives explain more than one of the perspectives separately. This is why a distinction could be made between actual and experienced self-regulation. The differences between the task environment and the team features played an important role in explaining the process of 'fitting' and the final 'fit'. The task environments in the teams studied were not the same, but the structural intervention was identical for all teams. Because of that, implementations of the innovation fitted perfectly for one team but did not for another team. The learning patterns, which became clear during the research, showed that the teams locally worked towards a better fit.

The combination of perspectives in the analysis made it clear not only which conditions must be met to let the WFMS act as a liberating harness, but also the hindering effect of WFMS-harness –under the given circumstances – became clear.

Also the interaction between disciplinary and self-regulation effects in team development courses is made visible. And to conclude, the combination makes it possible to handle the historical definition of team learning: it became clear that team features play a crucial role in the way the appropriation of innovations is taking place. The benefits for collective learning due to the existence of slack have already been stated in previous research. This study showed that slack is also needed in an appropriation process in a work system. Slack should be allocated temporarily to prevent a situation where the actual work process unintentionally differs from the intention, as seen in the case study of the main research. In this case, there was no extra slack attributed to the teams. In the teams who (by any chance) had enough slack, the WFMS functioned as a liberating harness. These teams suffered relatively little nuisance of the structural functionalities of the WFMS, and these teams were enabled to develop

faster. The teams, who did not have slack, did not experience these benefits, and they used their possibilities of self-regulation (which always are present, but not always legitimate) for sustaining the appropriation or fitting-in the appropriation in the existing work routine.
The phase model for team development is modified with the observation that the team development can make a leap when technology innovations imposed by management – like a WFMS – supports the primary work process. The first two development phases (job enlargement and job enrichment) are more or less being 'realised' in the design and implementation of the innovation. This creates a straight jacked or harness for the team because these subjects of discussion are already settled. But at the same time this limitation gives the opportunity – for teams with sufficient slack – for WFMS to act as a 'liberating harness': the team develops itself faster in phases three and four (cooperation and double-loop learning) in the team development model. This faster development shows up especially in the experience and use of the potential of self-regulation. This resulted in a pattern of 'full appropriation' of the semi-autonomous team concept.

Practical conclusions
Local differences prove to be the main reason for variations between teams in the appropriation of the two innovations. One of the practical implications of the findings of this research project is the need to incorporate local differences in the design and implementation process. A second practical implication is that the intention of management and designers, to introduce the same 'standardised work process' at several business units and/or teams with WFMSs, is not realistic if actual working methods and team features differ. The drive to unify local different situation seems to leads in those cases towards an increase of different working methods, and not to a decrease.
This seems to be linked with the absence of slack. To encourage an appropriation according to the intentions of the system it is recommended to look after a sufficient amount of slack.
This research also gives suggestions for better future implementations of innovations in the team organisation. Based on theory is becomes clear that team learning – and the concept of appropriation - is hindered (1) by 'stable knowledge structures' and (2) by teams that have difficulty with reflecting on their own work situation. Depending on the situation an existing team finds itself in, there can be a decision to keep the team as it is (in the case of a fragile consensus) or to decide to build a new team (if the knowledge structures are stable.

Recommendations for further research
In future research, the results of this study should be explored further in a broader framework. Among others the checking of the relevance of team features and team

processes during the implementation of innovations. More specifically, the way innovations are appropriated in the work system.
The relationships identified in this research project should be explored further by future longitudinal research projects. The learning patterns found should be studied more closely. Particular in a case where one of the teams – just as in the main case - is involved in much shared meaning, and where extra slack is attributed to optimize the appropriation of the innovation in the work system.
Two issues from the preliminary research are left aside in this study. One of which is: Why is the WFMS not contributing - in spite of increased transparency - to more decentralisation of the decision making, but rather leads to an increased centralisation? It is remarkable because a WFMS makes the work process more transparent and increases the control over it. The question why management chooses to use these WFMS-features in this centralised way is opportune, especially when the process is organized in process and product oriented teams. These team concepts suggest a more decentralised way of working.
The second issue concerns a difference in the notion of time - that is being introduced with the implementation of the WFMS. This changed experience of time is illustrated in the examples in chapter 3 where users of the WFMS feel rushed by the system. A question for further research would be: How this effect could be reduced in order that the work pressure is not increased?
Stohr and Zhoa (2001) stated that within one WFMS, it is not possible to execute very efficient repetitive actions as well as to complete a flexible process. The research results concerning the 'liberating harness' effect from a WFMS seems to contradict this. What is the consequence of this insight in situations where production WFMSs or ad hoc WFMSs are being used? This question is interesting because in these instances, the contradiction between specificity and flexibility are much bigger than in this research on administrative WFMSs.
It would be also interesting to study to what extent this knowledge can contribute to improving the implementation of innovation in work systems. How can local differences be better taken into account during the implementation processes? A specific question would be: In what manner learning could be facilitated in a better way during the appropriation process? Particular attention should be given to the political dimension of the learning process.
Further research should also examine whether the same principles and theory of appropriation of innovations, as found in this research project, applies to ad hoc WFMSs, Customer Relationship Management systems in Enterprise Resource Planning systems, as different, but partly comparable and overlapping, forms of innovations of the work system.