Valuing freedom and standardization when working at the construction site

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The individual interpretation of the word freedom has to some extent been focused upon in the literature. Individual freedom is often related to uniqueness, which is suggested to hinder standardisation, especially in the construction industry. However little research regarding how production managers in the construction industry actually understand freedom has been explored. Participants in the construction industry often claim that they enjoy the freedom in their work but what they mean by freedom is somewhat unclear. Questions about whether it could be the freedom to influence; when to work, where to work, what project to work on, what pace to work in, with whom to work or the freedom to work outside without the boundaries of office walls, still remain. Also if it is one or all of these aspects of freedom has not yet been sufficiently focused on. The purpose of this paper is to increase the understanding of how production managers value freedom when working at construction sites and what aspects they include in the term when valuing. By interviewing production managers from three Swedish construction companies and discussing the subject with actors from Swedish construction companies during a workshop a picture of reality is developed. The paper employs a deductive interpretivist approach where open-ended interviews with 15 production managers and answers from a workshop with 18 are actors from the Swedish construction industry are analysed. Field notes and recorded interview answers were analysed using a comparative method from all participating researchers. To increase the understanding of what is included in the freedom concept as used by production managers may enable construction companies to increase their competitiveness and flexibility in their projects by increasing standardisations to reduce costs without decreasing what production manager’s value as freedom. Some key elements of how production managers value freedom and standardization are identified and presented.

Keywords: Standardization, construction projects, production management, individual freedom.
**Introduction**

It is suggested that construction projects include uncertainties. These uncertainties do not only regard the products (what is produced) but also the processes (Egan 1998; Winch 2002) and the organizational structures (Josephson and Saukkoriipi 2005). Production managers handle these uncertainties continually in their day-to-day practice. Some examples of uncertainties faced by production managers are: the number of specialists that are needed in a project (Egan 1998); availability of labour; labour related resources such as tools and equipment (Ballard and Howell 1998; Fearne and Fowler 2006); relations to customer; relations to suppliers (Vrijhoef and Koskela 2000; Gadde and Häkansson 2001); construction components that do not fit; new regulations (Winch 2002); weather conditions (Josephson and Saukkoriipi 2005) and ambiguity in the priorities of top management (Djebarni 1996; Styhre and Josephson 2006).

When focusing on the literature that focus on uncertainties related to production in the construction industry, the answer to avoid increased uncertainty is often to increase standardization (Egan 1998; Josephson and Saukkoriipi 2005). Different suggestions of how to standardize the construction industry can be found. As some examples of standardization that is suggested in the literature that can reduce uncertainties but also the production managers work, Santos, Formoso, et al. (2002) suggest that standardized management approaches such as visual management, total productive maintenance, time-based competition and value based management should be more integrated in the construction industry. Hiyassat (2000) agree to the same point but argue that the implementation of ISO 9000 standards could be used as a means to increase standardization.

Alongside with the debate regarding increased standardization in the construction industry a new debate concerning the individuals feeling of freedom is on the rising. The perceived needs of freedom on the level of middle managers in organizations has been identified and to some extent analyzed in the literature e.g (Djebarni 1996; Styhre and Josephson 2006). Little research that focus on the construction industry or especially on the production managers' role and their view of increased standardization or need for freedom has been found. It is further interesting to explore if production managers perceive freedom as means to find value in their work. If production managers value freedom how do they perceive the increased standardisation presented in the literature. The main question for this article is if the two terms standardisation and freedom have to be mutually exclusive, and if what organisations include in standardisation must exclude what production managers perceive as freedom?

Based on qualitative open ended interviews with follow up questions and an open discussion during a workshop with a group of 18 actors from the Swedish construction industry a picture is created that shows that standardisation does not have to decrease the individuals feeling of freedom. However it is suggested that the standardisations have to be adopted and agreed upon by the participants in the organisation.
Production managers
In line with Schaufelberger and Holm (2002) foremen, site-managers, projects-managers and project-engineers are referred to as production managers. They are of specific interest in this article. Production managers are key players in the construction projects and project processes, in charge of procedures and assess the conditions and uncertainties in their projects often without consulting with superiors (Winch 2002). They are in this article distinguished from production managers from other industries even though all are, in some literature referred to as middle managers. Styhre and Josephson (2006) compare site managers with production managers from large hierarchical originations and suggest that they may be viewed as middle managers. However when comparing middle managers in the classical line manager system to production management in construction originations differences in work roles are identified, both concerning how originations have implemented standardization and how much freedom the individuals are given.

To further stress on why the roles of production managers from construction should be distinguished from production managers from industries the different organizational structures can be evaluated. Large hierarchical organizations often adopt line management as their origination structure where the task and responsibilities of the middle managers are defined (Holden and Roberts 2004). Organizational structure, the individual's responsibilities, and connection to the larger organization vary between these two types of organizations. The built in controllability of the different production managers’ roles also vary dependent on in what organizational structure the role is implemented.

Another clear difference between production managers from construction and production organizations is that the production managers from construction often describe their role as “running their own firms” while production managers from production originations e.g. car or furniture manufacturers instead view their roles as part a bigger organization. Holden and Roberts (2004) argue that the middle managers often feels trapped in their roles with the organization; superiors, permanent subordinates and people on temporary contracts. This is not perceived as the case in construction originations since production managers are given responsibility and freedom. Simu (2009) argues that site managers are made responsible for making projects succeed with

“legal responsibility for the work environment and built environment, financial responsibility representing the main contractor, quality and functional objective set in the contractual document and responsibility for keeping to the timeframes” (Simu, 2009, p.5).

The responsibility given to production managers from construction differs too much from other production managers to equate them in this article. The importance of freedom may be increased with increased responsibilities and thus a means to
decrease the individual integrity among production managers from construction. Before the freedom concept is further analysed the organisations perceived need for increased standardisation is developed.

**Standardization and standardized approaches in construction**

Standardization is in the Encyclopædia Britannica Online defined as “... the development and application of standards that permit large production runs of component parts that can be readily fitted to other parts without adjustment”. The definition of standardization continues with defining standards as “selected as a model to which objects or actions may be compared”. Encyclopædia Britannica Online (2009) concludes:

> “The international body that serves this function is the International Organization for Standardization (ISO). Developing an international standard presents the greater challenge because of the breadth of representation and the diversity of needs and viewpoints that must be reconciled”.

When interpreting the definition of standardization given above little specifically related to construction can be identified. Even though ISO 9000 - and ISO 14000 series to some extent have been implemented in the construction industry (Gluch, Brunklaus et al. 2006) few standardized approaches have been implemented on production management level. Standards are mainly implemented in construction organizations through designated roles for project personnel, standardized contracts, governmental rules, standard procurement methods and standardized work processes. However few standardized approaches of procedures to deal with the presented uncertainties have been identified in the literature. Since little standardization has been implemented the backgrounds and experiences of each individual production manager is reflected in their way of dealing with these uncertainties. The difference in assessment results in that production managers from construction run projects differently (Styhre 2007). This non-standardized approach to construction projects may lead to misunderstandings between subcontractors and on-site workers. Misunderstandings can lead to unnecessary waste (Womack and Jones 2003; Liker 2004; Josephson and Saukkoriipi 2005). The individual differences in project approaches may also lead to that what a production manager may encourage a subcontractor to do on a project may not be acceptable for another production manager in another project of a similar nature. Much depends on individual preferences and on the contingencies that arise. This means that the production managers’ background, experience and style have considerable effect on the final product and its impact on customer satisfaction (Josephson and Saukkoriipi 2005; Simu 2009). That there exists few standardized approaches to deal with uncertainties on production manager level can partly be blamed on that the construction industry consists of many different kinds of projects, that every project is viewed as unique and that every project has its own organization with few connections to the larger organization (Winch 2002). That little standardization in the construction industry could be blamed on the common belief that every
A strategy to increase customer satisfaction could be to reduce the uncertainty and to increase the predictability and continuity of construction processes. This means efforts to reduce the variability of materials, processes, procedures and organizational structures - in short increased standardization (Gadde and Håkansson 2001; Santos, Formoso et al. 2002). However neither the managers’ influence on projects nor their impact on customer satisfaction have been clearly focused on in the literature (Styhre and Josephson 2006). In order to increase the reliability of projects increased standardization of products; processes and project organizations have been suggested (Santos, Formoso et al. 2002; Josephson and Saukkoriipi 2005; Josephson and Saukkoriipi 2009).

When implementing standards in the construction industry the balance between standardization of activities and the need for motivation of the employees through their influence on the creation of the standards must be emphasized (Womack and Jones 2003; Liker 2004). If standardization principles are to be incorporated in construction projects the production managers have to adapt to them and accept them. This means moving away from their own ways of assessing the uncertainties. The question if this move would affect what makes the individuals motivated to continue working in the industry. If increased standardizations are implemented the feeling of freedom might be lost. In the next section the focus is on freedom and how production managers in the construction industry may perceive as freedom.

**Freedom in the eyes of Production managers**

Freedom is a complex term with many meanings and interpretations. According to Encyclopædia Britannica Online freedom is defined as “... the quality or state of being free”. The word freedom is further divided into physical, mental and political freedom. 1. “the absence of necessity, coercion, or constraint in choice or action” 2. “Restraint from the power of another” 3. “the quality or state of being exempt or released usually from something onerous” 4. “the quality of being frank, open, or outspoken” 5. “mean the power or condition of acting without compulsion”. Encyclopædia Britannica Online states that the word freedom can have applications “from total absence of restraint to merely a sense of not being unduly hampered or frustrated”. As can be understood from the above it is difficult to create a truism about what freedom really is. However in this article the focus is production managers in the construction industry, which can somewhat, narrow the definition of the term.

In a study conducted by Sthyre and Josephson (2005), partly presented in their paper; Revisiting site manager work: stuck in the middle (2006), 13 out of 13 site managers claimed that they “appreciated their jobs and the freedom entailed by the work role” (p.524). Further in the study the site managers “pointed to the creative part of their work, that they actually contributed to a real building” (p.524).
According to Djebarni (1996) production managers need some freedom for assessing uncertainty, assemble the project organizations, making judgments and taking decision as work proceeds. He claims that this is relevant in order for them to find value in their work. Djebarni 1996; Chen and Partington 2006; Styhre and Josephson 2006; Styhre 2007; Simu 2009 all view the production managers as individuals in charge of the operation who carry responsibility for the on-site activities during the production phase. The production managers are assumed to ‘create value’ for the customer and thus also for the end user of the product (Josephson and Sakkoriipi 2009). Simu (2009, p.12) describes the site manager and their efforts as “vital to the production process”.

The managers’ need for freedom and independence could to some extent be interpreted as a natural reluctance to change. This conservative bias among managers and coworkers is common as explained by Bruzelius and Skärvad (2004). An unwillingness to change may not be specifically directed towards increased standardization or reduced freedom. Chen and Partington (2006) have suggested that a number of well-established standards that reduce variability have already been implemented in the production managers practices regarding tools, appropriate techniques and acceptable concepts. If Chen and Partington (2006) were correct in their suggestion it would indicate that production managers are not more unwilling than other managers to accept changes that lead to less variability in the procedures to make their work easier. Chen and Partington further argue that production managers may even be more willing to accept changes because the existing standards presently used have been recently implemented and are not as well established as in other industries. Simus (2009) study of risk awareness among site managers agree to the reasoning of Chen and Partington (2006). It suggests that site managers have a greater need for rules and supervision than other project managers from other industries but in similar positions Simu (2009 p. 114). She continues her argument (p. 114) by stating that production managers from construction are more confident in their professional role than project managers from other industries and maintains that production managers from construction have “a higher threshold for working at the knowledge base level” (ibid. p. 114). Simus results stand in conflict with the understanding that production managers require more freedom in their role than other individuals in managerial positions.

**Methodology**

The study presented in this paper is part of a more extensive study that focuses on production managers work situation in three Swedish construction companies based in the Gothenburg region. After conducting 15 open ended qualitative interviews with follow up questions it was realized that the importance of freedom was often mentioned and presented as an important reason to why individuals choose to work as production managers in the construction industry. Simultaneously a need for standardization was presented. Mikael Frödell, who have participated in most of the interviews (14), Per Erik Josephson who have participated in the two initial interviews and myself Pim Polesie (12 of the interviews) have analyzed the
results focusing specifically on the perceive need for freedom and increased standardization in the individuals work roles.

The analyses for this study have been undertaken as four half-day workshops. Each company has been dealt with individually in the first three workshops and the fourth has been undertaken as a summery and discussion of the previous to identify similarities and differences between the organizations. To initially treat the companies individually has been important in order to find factors that are specific for each organization and for the individuals within the organizations. The process of expanding the scope to include all three organizations in order to indentify differences and equalities have also benefited from this mainly interpretive and deductive method.

Before the workshops each interview has been analyzed and recapitulated by the researchers. Significant observations and statements from the interview, mainly with regard to standardization and freedom, were written down on notes, one observation per note. Then the observation was discussed and put on a whiteboard. The researchers took turns to put up the notes so that individual bias is avoided as much as possible. Each interview resulted in approximately 10 - 15 observation from each researcher. After each interview the researchers individually on a scale from one to five estimated the credibility of the interviewee and the researchers individual understanding of how the interviewee 1) today thinks of the industry in regards of standardization and need for freedom and 2) how s/he would prefer the industry to become. In this article the results of these assessments are in focus.

After the five interviews from each the case had been put up on the whiteboard, characteristics for that specific case was sought after and discussed. The whiteboard was divided into sections according to fig 1 to the left, freedom, and standardization, positive and negative aspects.

After all three organizations where analyzed in the same way different categories were identified as more often reoccurring. Examples being: The importance of working communication, Building teams and building long-term relations.

However after discussing the bigger picture after the fourth workshop the previous whiteboard categorization was regarded as obsolete since it was realized that freedom and standardization didn’t have to be mutually exclusive as was previously expected and assumed. Instead the whiteboard was divided dependent how easy the issues can be addressed. Moreover the researchers observation of the individuals
demand on standardization and individual freedom has been analyzed in an excel document where the trends and perceived needs of the interviewees have been visualized.

After visualizing the trends for the three construction organizations in focus the terminology regarding freedom and standardization has been further focused on in workshops and by simply asking participants in the industry how they perceive and interpret the words and their importance to the industry. As an example individuals from the construction industry have in groups been asked to write three words that they come to think of when focusing on freedom. After they are asked to do the same when thinking of standardization. The results from the notes are visualized on a whiteboard and the differences and similarities between the two terms are discussed.

Before interpreting these results from the interviews it is important to remind the reader that it is the researchers views of what they think was the interviewee’s expectations of future scenarios for their originations. The words freedom and standardization where avoided in the interviews since the terms where assumed to impose either positive or negative feelings from the respondents.

**Results**

In the interviews the importance of maintaining the high level of freedom was often presented as a key issue for the interviewed production managers in the study. However it was interesting to note that also a higher degree of standardization in their work role was also often suggested. The interpretation can be that there exist different levels of standardizations and freedoms that do not have to affect each other. E.g. increased standardization of scheduling was as an example by some interviewees viewed as a trespass on their integrity and ability to control their projects. Others interpreted it as a relief of responsibility and also as freedom to focus on the teambuilding of the project organization. Another example was the purchasing of goods. Some production managers viewed it as important to purchase from non-standardized suppliers since the best prices could be found there, and argued that the prices from suppliers differs. Other interviewees perceived a central purchasing organization as the most beneficial system since you know where to call and what to expect. They argued that the cost of the time it takes to try to find the cheapest gypsum boards or windows could easily exceed the cost of using a central material supplier with sometimes slightly more expensive goods.

The figures below shows 1; how the individuals in the interview study have been perceived and how they individually want their work role in the organization to be develop. 2; How the same individuals in the companies are perceived to want to develop their organization. 3; How all interviewees views put together are presented in this study.
In figure 3 to the left the individuals perceived perceptions are presented. When moving from present to desired case a clear movement towards the right half of the figure is showed. This would imply that there is a motion towards increased standardization in the work role of the interviewed production managers. It can also be identified that few of the individuals are perceived to demand more freedom than they already have in their present work roles. Even though some exceptions can be recognized a rather consistent picture is presented.

In figure 4 the individual perceptions of how to develop their roles are presented to be exclusive for each company. It is shown that only the production managers from AF seem to whish for more freedom in their work. Both the personal from WB and FO are perceived to desire less freedom and more standardization. It is especially interesting to focus on WB in this case since the personal that have been interviewed from this organization are perceived to desire to reduce the freedom in their role with 30 percent.

These results can naturally be interpreted in different ways. WB could have little control or support of the undertaken projects and leave many responsibilities to the production mangers. The trend that could be interpreted in the movement of the arrow from AF can on the other hand be interpreted as if the organization manages to control the production managers to an extent where they feel restrained. The results can also arguably vary some dependent on how the projects are proceeding and at which stage the production process was when the interviews took place.
Finally fig 5 shows how the perceptions from all 15 interviews are summed up in one arrow. The figure shows that some lesser freedom in the future work-roles of production managers is desired. What is more obvious from the figure is that a clear trend towards increased standardization is expected and desired. The question whether or not the increased standardization has to exclude increased freedom is not answered by this image. However, since so much standardization is perceived to be desired it could be expected that the little desired need for decreased freedom presented is already included in the desired roles of the future.

As mentioned in the method a study that focuses how the terms have been interpreted among actors in the construction industry not singularly focusing on production managers have also been carried out. The terms that follows are the terms referred to when focusing on standardization and freedom in a workshop held from 17th to 18th of November 2009. The terms have been translated from Swedish to English and the core value and meaning of the terms can thus vary slightly from the initial intention.

Table 1. The main words related to freedom and standardization that came up during a workshop with actors from the construction industry.

<table>
<thead>
<tr>
<th>Standardization</th>
<th>Freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatibleness</td>
<td>Be listened to 2</td>
</tr>
<tr>
<td>Easy to follow</td>
<td>Responsibility 7</td>
</tr>
<tr>
<td>Simplicity 3</td>
<td>Controllability of own and others time</td>
</tr>
<tr>
<td>Order</td>
<td>Defining goals 2</td>
</tr>
<tr>
<td>Control</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Comfort/safety</td>
<td>Comfort/safety</td>
</tr>
<tr>
<td>Agreement</td>
<td>Good coworkers 3</td>
</tr>
<tr>
<td>Good fit</td>
<td>Be able to delegate</td>
</tr>
<tr>
<td>Stability</td>
<td>Be heard</td>
</tr>
<tr>
<td>Enable knowledge management</td>
<td>Ability to Influence 8</td>
</tr>
</tbody>
</table>
What can be interpreted from table 1 is that different focuses can be seen in the use of the terms. The words related to standardization can be more related to the product and the likeness and simplicity of having similar tools and materials to work with in construction processes. The terms related to freedom is more focused on the individuals work environment and the mind process. An interesting point that can be noticed is that both freedom and standardization is related to the word comfortable. Also the many positive words surrounding standardization should be noticed. 12 of the 42 words can be perceived as positive while 14 of the words can be perceived as negative, the remaining words related to standardization is more difficult to asses. When considering freedom all terms can be perceived as positive.

**Discussion and conclusion**
The discussion if increased standardization in construction projects has to decrease the production managers feeling of freedom is interesting but difficult to undertake. The study that this article builds on can arguably not be representative in giving a full picture of the construction industry. Only 15 interviews and a few workshops with actors from the Swedish construction industry can hardly represent a global picture. The debate is still valuable since it raises some interesting questions.

The words freedom and standardization can both to some extent be regarded as negative or positive. When exploring the terms from the perspective of production managers from Swedish construction, standardization does not have to be viewed as a threat to their work situations. In some situations standardizations can be viewed as a means of avoiding too much responsibility or a too heavy workloads.
The Interpretations presented regarding freedom is also represented in a similar way. Too much freedom may arguably be perceived as unbeneﬁcial for the processes and the projects. Further it can be identiﬁed that the picture presented regarding standardization and freedom by the actors from the construction industry involved in this article is somewhat different from the image created from Encyclopedia Britanica (2009). As can be expected the terms are related more to the individuals work situation but also interpreted in a more holistic way than presented in for instance Styhre and Josephson (2006) and Djebarni (1996) in regards of freedom and as presented by Santos, Formoso et al. (2002) or Ungan (2006) in regards of standardization.

It could after interpreting the views of what is interpreted during the interviews and the workshop be argued that the terms standardization and freedom should not be viewed as antagonists to each other as can be perceived when focusing on the literature presented in this article, as visualized in figure 6a.

![Figure 6a. The view of standardization and freedom as antagonists](image)

Instead of the picture of the two terms as presented in figure 6a, the two terms are suggested to have the ability to complement each other to some extent. The organizations need for increased standardization as presented by Josephson and Saukkoriipi (2005) does not have to hamper with the production managers need perceived for freedom.

As presented in the results from the workshop performed with actors from the construction industry “comfort/safety” are seen as key terms when focusing on either freedom or standardization. It is recognized that the similarities between the terms presented in table 1 are few but so are also the direct contradictions when. Some direct contradictions could arguably be restrictions and predictability that are connected to standardization to ﬂexibility that is related to the freedom concept. I however hold the opinion that different categories of ﬂexibility and predictability may have been considered when dividing the terms freedom and standardization into the terms presented in table 1. I further do not believe that this difference has to exclude one term or the other in the construction process.

This view is also strengthened when considering the result from the perceptions of the original study with the 15 production managers. The view presented in figure 3, 4 and 5, that increased standardization is necessary in the production manager role could be connected to that decreased freedom is desired. In fig 5 where the overall picture of the perceived desires are presented this is also the case. If the production managers involved in the interview would have desired more standardization and to an equal amount less freedom the picture would have been easy to interpret. Since much more standardization (40%) and so little decrease in freedom (less than 10%), conclusions could be drawn that other factors that standardization are dependent on the perception of freedom in the production managers work roles.
The reasoning above would indicate that the two terms standardization and freedom does not have to be mutually exclusive in the minds of production managers. However the production manager role includes much responsibility (Josephson and Saukkoriipi 2005; Simu 2009). Individuals who have these positions in construction companies are arguably the ones who actually creates value for the costumer or at least the ones who ensures that the constructions are being built on time and on budget. Production managers are generally highly competent and have great knowledge in their field. I argue that it would be unjust to compare them to middle managers in large hierarchical organizations as Styhre and Josephson (2006) does. I think that production managers in constructions acts mainly on own authority and that they are more likely to take own decisions in critical situations.

With increased standardization the need for taking critical decisions may be decreased. Even so the production managers will still be managing alone on the work sites and their role will not be of less importance if increased standardization is implemented. It is thus important that the production managers are encouraged to find value in their work and if the feeling of freedom is a means of finding this value it should be maintained. It becomes more important to understand what aspects of freedom that production managers appreciates and thus what aspects of standardization should be focused further on by the construction organizations. I think the most effective way of implementing the “right” standardizations would be to simply involve the production managers in the standardization processes as suggested by (Ballard and Howell 2003). Also if production managers are involved in the actual implementation process the standardizations are more likely to be accepted and to succeed on the work sites.

References


