Bra = hit the rest of
1) Case, hospitals & cultural activity
2) Having & a holy urge

Problem = aquiries

ONMI
SKD
products

V10
produce or online

What?

Somebody, like "us seg i land"
CMN fungerer på 6 måter: 
- Tar selv (= mål) 
- Vitenskapsmåte (= mål)

Feedback: hendt ill.

Care, hospital, culture = min oppgave

Metode kap 3.
Ciboula uppm.,
Pensei:

1) Come ele é bondoso e sábio
2) Sua voz enche o ar e o espaço
3) Nossas conversas eram como se estivéssemos em um mundo paraíso.
In search of a “Ciborra strategy” for CMM-based process improvement

Author(s)
Affiliation(s)
Email address(es)

Abstract. Ciborra articulated the point of view that academic contributions to industry in terms of models and methods has an unfortunate side-effect in managers confusing models with reality, alienating them from the moral aspects of business life and leading organizations into a crisis. Process improvement frameworks like the capability maturity model (CMM), partly based on Deming’s quality improvement theories, were some of his prime examples. The aim of this paper, however, is to reframe some of these critical comments into constructive advice for more successful ways of doing CMM-based process improvement, drawing attention to the similarities between Deming’s belief in academia as a model for industry and Ciborra’s belief in care, hospitality and cultivation. The theoretical argument is supported by a longitudinal case study from industry and academia, indicating how design of quality circles (quality improvement discussion groups) in CMM and non-CMM industrial environments can learn from success and failure in designing academic discussion groups. The conclusion is that a “Ciborra strategy” based on values like care, hospitality and cultivation through networking with academia can play a pivotal part in making CMM-based process improvement succeed in industry.

1 Introduction

Management science [and operations research] (MSOR) is based on the idea that organizations can be investigated in a systematic manner, similar in principle to how natural scientists study the world (Beer, 1968). The scientific process (as used in MSOR) generally starts by identifying relevant parts of the organization as a system, and then to develop mathematical models for the problem to be investigated and methods for solving the problem (Churchman et al, 1957). Quality improvement (Deming, 1994) can be seen as a special case of management science, using statistical methods (e.g. statistical process control, SPC) for designing, implementing and evaluating improvement interventions.

Even though quality improvement theory, quality standards and total quality management models have been developed as general frameworks, independent of any particular industry, there is a body of quality improvement literature specifically for the software industry. The capability maturity model (CMM) (Humphrey, 1989) is one of the most well-known software process improvement frameworks, but like many cases of quality improvement in other industries, CMM efforts often fail (Standish Group, 2003).

Ciborra (1998) suggests the problem has to do with managers confusing scientific models with reality. Believing dogmatically in theoretical models rather than treating them in a scientific way can have unfortunate consequences when it turns out ot be a gap between model and reality. The gap causes a breakdown, and believing dogmatically in models and methods
leads to false assumptions, wrong ideas and wrong decisions rather than using the opportunity for gaining insights about the social world. This, Ciborra argues, leads to a spiral of confusion and crisis, specifically seeing the SPC-driven logic in improvement models like CMM (Deming, 1986; Humphrey, 1989) as a major source for bad decision-making. The way to turn this spiral, he argues, is to build the foundation of knowledge on moral values like care, hospitality and cultivation.

Although Ciborra's comments are written as a critique of management science in general, particularly as practiced within the fields of information systems (IS) and software engineering (SE), the purpose of this paper is to propose how these anti-scientific ideas can be understood and used within the context of conventional (pro-scientific) quality improvement. The framework is taken literally from Ciborra's article, interpreting his ideas about care, hospitality and cultivation as intervention designs.

The structure of the paper is as follows. The theoretical argument is presented in section two, followed by a section that describes how the ideas have been implemented and evaluated in an empirical setting of discussion groups needed to meet with CMM requirements. The case study is presented in section four. The empirical section is followed by a discussion in section five, interpreting aspects of the various groups in the context of Deming and Ciborra. The paper concludes in differentiating between a shallow interpretation of CMM and a deep interpretation of CMM, where the latter case is based on seeing the philosophies of Deming and Ciborra as more or less identical, the way towards successful CMM implementation being built upon care, hospitality and cultivation through the process of networking with academia.

2 Literature review

The literature review is structured to show how the ideas presented in Ciborra's viewpoint fit with views expressed by pioneers within the quality improvement movement and how the strategy of focusing on values like care, hospitality and cultivation can be seen as both a natural and important aspect of working with the CMM framework, especially when it comes to challenges like how to design quality circles (quality improvement discussion groups).

2.1 Challenges with the CMM framework

Although Ciborra uses the CMM framework as an example of a type of thinking that leads to wrong conclusions, his analysis is on a philosophical level, not going much beyond the surface of how Humphrey describes the principle of the model in the first four pages of the first chapter of his book (Humphrey, 1989, pp. 3-6). It is possible, however, to make much deeper analysis of the managerial and organizational assumptions in what has now become a family of CMM frameworks (e.g. Rose, Aaeen & Nielsen, 2008).

Nevertheless, the purpose of this paper is not to go beyond the level of analysis that Ciborra defines in his viewpoint, namely the non-hidden rationality of the model. Having said this, beyond the fact that Humphrey (1989, p. xii) is stating that the conceptual framework for the book is built in part on the pioneering work of W.E. Deming and J.M. Juran, it should be noticed that the only formal reference Humphrey makes to Deming are to the first and second version of "Out of the crisis" (Deming, 1982; 1986), and although Deming was very much concerned with management misuse of evaluations, benchmarking and statistics, he (Deming, 1994, p. 26) was fiercely against measurement and ranking of people and blamed management
for more or less all problems that had to do with quality in the organization, none of these reflective and polemic sides to Deming’s writing are referenced in the CMM framework.

On the other hand, while Ciborra (1998, p. 10) states that CMM is “far from being a mechanistic or Tayloristic methodology”, others have argued that there are strong tayloristic elements in the CMM family of standards (Rose, Aaen & Nielsen, 2008). Although the tayloristic system is often associated with a “command and control” management style, it is interesting to notice that Taylor (1911, p. viii-ix) was rather critical of management and managers in general, just like Deming, like Juran and also like many of the people involved in developing operations research (Beer, 1968; Jackson, 2000).

The tension between the managers and the developers of management science is an interesting point in trying to interpret the significance of Ciborra’s comments about management, models and methods from the viewpoint of trying to use his ideas about care, hospitality and cultivation as a strategy for making management science work. One of the major concerns expressed by people like Taylor and Deming was the difference between how the “scientific management” ideas were formulated and intended to be used, and how they were misused in practice. Both Taylor and Deming blame scientific illiteracy (statistical illiteracy) among managers, causing the problems that Ciborra warns against.

2.2 A CMM strategy based on care, hospitality and cultivation?

The viewpoint expressed in Ciborra’s 1998 paper is a rearticulation of the founding ideas of phenomenology as expressed by Husserl in his 1936 lectures (published in English in 1970). One aspect that makes Husserl interesting from the viewpoint of quality improvement is that Husserl was a mathematician, and his philosophy of phenomenology remains one of the major positions in today's philosophy of mathematics (Mac Lane, 1986). In other words, phenomenology does not have to be “anti-method” (Ciborra, 1998, p. 8) as much as it has to be a search for understanding of mathematical models in a structural sense (how the vast space of concepts, models and methods is structurally composed), a goal that links science with religion in the way that interpreting mathematical theories can be read as a “spiritual activity” like that of interpreting sacred texts (Husserl, 1970, p. 297). This idea also resonates with applied science, like computer scientist R.W. Hamming’s famous statement of “the purpose of computing is insight, not numbers” (Davis & Hersch, 1984, p. 154).

One way of interpreting Ciborra’s article is to state that organizations are generally run on belief rather than science, and the introduction and emphasis on scientific methods has a tendency for confusing managers and workers who misinterpret scientific frameworks as religious systems rather than frameworks for doing organizational research. This perspective, incidentally, fits with Brunsson’s theories of quality management standards in organizations (Brunsson et al, 2000).

One way that has been suggested for helping organizations break out of dogmatic beliefs, that lead to spirals of bad decisions, is to make total quality management interventions based on critical systems theory (Flood, 1993). In this theory, critical thinking is seen as the outer loop of triple-loop-learning (Flood & Romm, 1996), meaning that even though double loop learning may question and change the governing variables of a cybernetic learning loop (Argyris & Schön, 1978), updating the goal variables may still be done within the “dream reality” that Ciborra describes in his case of managers confusing the “real” with the “ideal”. 
The question then, is whether a process of care, hospitality and cultivation is sufficient for breaking out of the self-inflicted prison of irrational misuse of scientific models. Checkland (1981, p. 285) argues that a phenomenological approach “will not appear to determinists, dictators or demagogues” while it may appeal to “people in all disciplines who are knowledgable enough to know that there is much they do not know, and that learning and re-learning is worth-while”.

<table>
<thead>
<tr>
<th>Ciborra</th>
<th>Deming/Taylor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fears</strong></td>
<td>Disastrous decisions and catastrophe due to managerial scientific illiteracy (statistical illiteracy in particular).</td>
</tr>
<tr>
<td>Alienation, wrong decisions and crisis</td>
<td></td>
</tr>
<tr>
<td>due to managerial belief in ideal models</td>
<td></td>
</tr>
<tr>
<td>rather than messy reality.</td>
<td></td>
</tr>
<tr>
<td><strong>Hopes</strong></td>
<td>Joy in learning, joy on the job through contributing to improvement and optimization of a system in which everybody wins.</td>
</tr>
<tr>
<td>A new foundation built upon the moral values</td>
<td></td>
</tr>
<tr>
<td>of care, hospitality and cultivation.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Fears and hopes as expressed by Ciborra and Deming/Taylor

Although Flood (1993) mostly focuses critical systems theory as a lens and method for using Deming, Taylor and others for his own brand of critical thinking, some of the rhetoric of Deming has a taste of critical theory in itself, like “we are living in a prison, under tyranny of the prevailing style of interaction between people, between teams, between divisions. We need to throw overboard our theories and practices of the present, and build afresh. We must throw overboard the idea that competition is a necessary way of life. In place of competition, we need cooperation” (Deming, 1994, p. 121).

What he suggests instead of tyranny and imprisonment is that “there will be joy in work, joy in learning. Anyone that enjoys his work is a pleasure to work with” (idib, p. 123) and “joy in learning comes not so much from what is learned, but from learning. Joy on the job comes not so much from the result, the product, but from contributing to optimization of the system in which everybody wins” (idib., pp. 145-146).

Taylor uses a similar type of reasoning in “The principles of scientific management”, praising the joy of doing improvement research and complaining about what has later been known as “taylorism”, i.e. vulgarization or misuse of scientific management (Taylor, 1911, pp. 113-114).

### 2.3 Quality circles in the context of CMM

Humphrey (1989, pp. 363-388) discusses the concept of quality circles (quality improvement discussion groups) in the context of defect prevention as a part of the fifth and final maturity level of the CMM model, describing defect prevention as “the essential element of the optimizing process” (ibid, p. 363). He also comments (ibid) that “concepts of error cause analysis and defect prevention seem almost too simple to bear discussing, they are not easy to implement because they require that a precise process discipline be used by everyone in the software organization”, and makes a comment about the success of quality circles in Japan has not corresponded with a similar success in other parts of the world.

In his writing about quality circles and Japanese quality management in general, Ishikawa (1985) argues that although most of the quality management ideas came from people like Taylor, Shewhart, Deming, Juran etc., the key to Japanese success had more to do with how
these ideas were interpreted and implemented consistently with local culture, making severe doubts about whether “Japanese quality” would function in western society (ibid, pp. 23-41).

Ciborra does not discuss quality circles in his 1998 paper, and quality circles do not explain the rationality of CMM as a whole. Nevertheless, Shingo (1987), in his explanation of how “Japanese quality” had an equal emphasis on the theories associated with Taylor and those of Deming, quality circles were invented in Japan in order to make scientific management fit with Japanese culture. Deming also saw quality circles as one of the foundation for quality management (Deming, 1986). Quality circles consequently seems like a relevant starting point for discussing the possibility and possible implications of a “Ciborra strategy” for using care, hospitality and cultivation for CMM-based process improvement.

Details about the operational definitions of quality circles and discussion groups follow in section 3.2 as the list of quality circles and discussion groups is presented.

3 Methodology

When using the CMM framework in consistence with the Deming quality improvement principes, as articulated by Humphrey as a foundational idea behind CMM (Humphrey, 1989, p. 3), one should remember that the Deming approach was not a set of fragmented models and methods but a systematic philosophy of combining four areas of (1) systems thinking, (2) statistical literacy, (3) epistemological foundations and (4) certain aspects of psychology (Deming, 1994).

One way of interpreting Deming is to see his quality improvement framework as a way of doing organizational research in an action research-related style, following a cyclic plan-do-check-act (PDCA) research approach (Tripp, 2005). Indeed, as Deming (1986, p. 88) explains, the PDCA cycle is based on Shewhart (1938) description of statistical quality control framework of specification-production-inspection in mass production as similar to a cyclic research process of hypothesis-experiment-evaluation. Ishikawa (1985, p. 59) pointed out that the Shewhart/Deming PDCA process can be interpreted as a way of making the research cycle in Taylor’s scientific management more scientific. If we then see how Lewin (1946) defines action research as a measurement-driven hypothesis-experiment-evaluation approach, explained by Gold (1999) as Lewin’s concern with some of the consequences of the tayloristic system while on the other hand believing in Taylor’s scientific approach for creating valid results (cf. Lewin, 1920), then the foundational ideas of scientific management research, quality improvement research, action research along with a string of other intervention-driven cyclic research frameworks are all basically the same.

The reason for making this detour into the history of scientific methods is that the current use of the term action research is usually associated with particular ontological and epistemological concerns that are often expressed as contrary to those of scientific management (Reason & Bradbury, 2004). As the aim of this paper is to investigate how ideas like care, hospitality and cultivation fits within the context of CMM, quality improvement research within the domain of health care provides examples of research designs based on the PDCA approach (e.g. Grol et al, 2004; Speroff & O’Conner, 2004).
3.1 PDCA research design

There are various interpretations of the PDCA framework (e.g. Ishikawa, 1985; Deming, 1986; Hoyle, 2006). Figure 1 will be used for explaining how the science in scientific management theory and quality improvement theory can be aligned with the standard "research wheel" (Newton & Rudestam, 1992, p. 5) for describing a clockwise process of inducing hypothesis from theory to experimental design that results in evaluation and deductive reasoning that contributes to theoretical insights.

![Diagram of PDCA cycle as a research cycle]

Figure 1: PDCA cycle as a research cycle

The first stage in the PDCA cycle is the PLAN stage where current insights are used for designing an improvement intervention. As we are interested in finding out whether the improvement intervention works or not, the null hypothesis is that the intervention will have no effect. The use of statistical process control (SPC) charts play an important role in PDCA research design in terms of describing the process prior to the improvement intervention and describing the process after the improvement intervention. If it is possible to use the SPC diagrams for showing that the process was statistically stable prior to the intervention (PLAN), and has also reached a level of statistical stability after the intervention but corresponding to a different probability distribution (CHECK), then the null hypothesis can be rejected.

A critical point in the loop is the link from CHECK to PLAN, marked as ACT. In some interpretations of the PDCA framework (e.g. Hoyle, 2006), ACT is seen as corrective action based on the evaluation found during CHECK. However, when we align the PDCA process with the research wheel, Deming's statements of "adopt the change, or abandon it, or run through the cycle again, possibly under different environmental conditions, different materials, different people, different rules" (Deming, 1994, p. 133) is a theoretical action in terms of making sense of the results from the evaluation stage and providing input for a new stage of planning. In other words, the type of actions that make sense at this stage are things like publication of research results or redesigning the quality management system.
3.2 Empirical design

Despite the explicit explanations of statistical methods in the paragraphs above, only a small part of empirical research has been designed in order to analysed by SPC charts and statistical hypothesis testing. However, as the logic of CMM follows the logic of PDCA based improvement research, the general idea is to use the PDCA cycle as a structure for analysing data with the aim of figuring out whether the empirical data will both fit with the care, hospitality and cultivation strategies and the way of thinking that is implied by the PDCA logic in CMM-oriented improvement research.

Aligning the PDCA research design with the principles of “doing action research in your own organization” (Coghlan & Brannick, 2001), the empirical research design will consist of a continuous narrative as I try to give a detached account of my personal experience of designing interventions for discussion groups with the aim of a better understanding of how to design successful quality circles. The narrative spans 13 years and a total of seven discussion groups spread over three organizations.

<table>
<thead>
<tr>
<th>Year</th>
<th>Group</th>
<th>Type</th>
<th>Organization</th>
<th>Duration (months)</th>
<th>Number of meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-99</td>
<td>Automatic weather stations</td>
<td>Quality circle</td>
<td>Meteorology</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>2000</td>
<td>Software maintenance</td>
<td>Quality circle</td>
<td>Tax</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>2004</td>
<td>Project management</td>
<td>Quality circle</td>
<td>Tax</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2006</td>
<td>Writing I (spring)</td>
<td>Discussion group</td>
<td>University</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>2006</td>
<td>Writing II (autumn)</td>
<td>Discussion group</td>
<td>University</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>2006-07</td>
<td>Reading</td>
<td>Discussion group</td>
<td>University</td>
<td>12</td>
<td>37</td>
</tr>
<tr>
<td>2009-</td>
<td>Writing III</td>
<td>Discussion group</td>
<td>University</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 2: Overview of discussion groups

The first discussion group consists of a quality circle made up of two engineers, one climate research scientist and myself (in the role of change agent), all people involved with automatic weather stations under the administration of a Scandinavian meteorological institute.

The next two discussion groups were also designed as quality circles, but this time consisting of software engineers, executives and technical operatives trying to improve one of the core software processes within one of the Scandinavian tax administrations.

The final four discussion groups consisted of information systems researchers at a Scandinavian university, three of the discussion groups focusing on discussing papers in progress by researchers within the group while the fourth group focused on selecting, reading and discussing papers of mutual interest from IS literature.

Only in the case of the tax administration was a CMM assessment conducted, making this setting the main target of investigation. However, as neither of the two quality circles established in this setting lasted very long, emphasis has been put on describing success and failure in intervention design for the other two organizations for the purpose of using these ideas and insights for new interventions in the tax administration.

The number of people participating in the discussion groups, interventions and change in the number of people participating will be described as a part of the empirical research.
Although there are ways to formally define quality circles (e.g. Ishikawa, 1985), for the purpose of the argument in this paper, a quality circle is a quality improvement discussion group where people either collaborate on improving a process or where they work on similar processes and discuss in order to share insights and learn. The writing and reading groups at the university are not defined as quality circles, as the purpose of the groups is to discuss products (research papers). Nevertheless, as discussing research papers also can contribute learning and sharing on how to discuss, how to read, how to write etc., these discussion groups can also be seen as quality circles, an important issue when trying to use these groups for gaining ideas and insights on how to improve the circles in the upper half of table 2.

4 Empirical results

4.1 Designing a quality circle with researchers and engineers

The first story is a simple story of success based on the fact that the monthly quality control report worked as an intervention in order to bring together the climate research scientists that were using the data with the engineers that were responsible for installing and maintaining the automatic weather stations. Although the agenda was focused on identifying and discussing problems, meetings were conducted in a friendly manner based on trust and focus on how to solve problems regardless of which person in the group was responsible for the problem.

The improvement strategy was framed as improvement research, following the PDCA design explained in section three, using statistical process control and the type of logic Ciborra identifies with CMM (Ciborra, 1998, p. 10), although not made to fit with CMM or any such framework. The research resulted in a series of research reports, technical reports and administrative reports containing the data and statistics for monthly discussion. The quality circle lasted from February 1995 to August 1999, a period of almost five years.

4.2 Designing quality circles with software developers

In the case of the tax administration, the story starts with external quality management experts from a CMM/5 company in India carrying out a CMM assessment, requested by IT management. The assessment resulted in the organization identified to be on the initial CMM level, and the company also provided a suggested road map for climbing the CMM ladder. One of the main issues on the road map was building quality awareness, so the author tried to design a quality circle based on the successful experience explained above (section 4.1).

Similar to the previous approach, the role of the author was to function as a change agent in terms of stimulating discussion, while people from various departments, all working on different parts of the same software process, were invited together in order to discuss the results of last years "experience report" and figure out ways to improve the system. After some time, after the forum was created and running, the engineers said that they did not see any point in having a change agent present, as that person did not contribute to the technical solving of the problems. The author accepted this as a reasonable argument, withdrew from the forum, only to discover that the forum fell apart a few weeks later.

A few years later another quality circle was designed. Based on the two previous intervention designs, the change agent (author) saw the use of the quality control documents
as a way of both stimulating discussions and also contribution something to a community where he did not have the competence to analyse the problem from a technical point of view nor the competence to come up with technical suggestions on how to solve it. The intervention design consisted of benchmarking software development projects against the CMM-compliant PO11 standard from the CobiT audit standard.

The approach was initially successful in bringing together who performed the same type of tasks but were located in isolated islands within the organization. After a few rounds of successful learning and sharing, however, the circle folded due to reorganization and change of personell.

4.3 Designing discussion groups with fellow IS researchers

4.3.1 First writing group

In the spring of 2006, members of faculty initiated a writing group in order to encourage discussion and collaboration between PhD students. The initial idea was to give support for novice students planning their first papers for the IRIS 29 conference.

The writing group started on the 16th of February and lasted until the 6th of April. On average there were about four students attending the writing seminar (about 20% of the total PhD student mass at the time) with at least one faculty member, often two faculty members. The discussions were carried out in a style similar to the group discussions on the IRIS conferences, an atmosphere of care, hospitality, and encouragement although critical in a constructive manner in order to cultivate improvement and academic maturity among the participants.

Participation in the discussion group was voluntary. Some students were occupied with field research in distant locations, others chose not to attend the forum due to conference deadlines and other matters. Among the colleagues of the author attending the seminar, all were extremely happy with the arrangement, but there was no discussion or initiative among the students of continuing the group on their own.

4.3.2 Reading group

Based on the success of the writing group, at the beginning of the autumn semester 2006 faculty asked the students to arrange their own reading and writing seminars in order to share insights, learn from each other and generally mature as researchers. It was evident to all that the number of students outnumbered the faculty members by far, so from a practical point of both students and supervisors, it was not a bad idea if the students would supervise and guide each other.

The initial design of the reading group consisted of ideas and actions partly done by faculty and partly by the students. Based on an observation that some of the novice foreign students seemed a bit reluctant to participate in discussions when senior members of faculty were present, one of the senior members decided that faculty members were not allowed to participate in the reading group.

The student contribution to the design of the group consisted of assigning responsibility for one person to take care of administrative issues, another student developed a wiki for making plans and papers up to date and available for all to read and update, an specific email group was established in order to inform and discuss issues that was only relevant for the students and to extent reading discussions by email discussions. In order to stimulate continuous
improvement of the group, the author of this paper kept and distributed an attendance list, using SPC and Pareto analysis in order to monitor the process stability in terms of people attending the discussion group, and use the statistics in case there would be any need for designing interventions according to the PDCA research principles from the methodology section above.

![Attendance graph]

Figure 2: Monitoring group attendance by use of SPC

The SPC results for the total life span of the discussion group is shown in figure 2, including four updates in control limits based on a phenomenological understanding of how the group was developing rather than a strict mathematical analysis. The first period of high attendance corresponds with the initial enthusiasm. This period lead to a period driven by hard-core enthusiasts. This group made some partly successful attempts in trying to bring others along, represented in a short third period with higher attendance. This short period was terminated to do an unintended and unfortunate intervention done by the author of this paper, which resulted in an intervention from faculty that lead into the fourth and final period where the discussion group can be seen as slowly dying out. The peak value ("special cause") at the beginning of the fourth period was due to the visit of a professor from a nearby university.

The unintended intervention done by the author consisted of sending the quality control statistics for monitoring and provided feedback to the students about the attendance for the group discussions. The diagram in figure 3 gives a graphical representation of how often individual participation in the forum.

When the attendance list was distributed and put out on the wiki after each meeting in the shape of a sorted frequency table were the names of each student clearly identifiable. Although the practice was implemented without any prior discussions, there were no complaints with the exception of one student who held clear opinions of not finding the discussion forum useful and not wanting to have his name publicly associated with any sort of ranking.

This problem was solved by removing the document from the wiki, only distributing it through email, but when it was accidentally distributed to a larger group than intended, there
were several amusing comments about control and ranking from outsiders, a bit of interesting debate, and a professor who kindly asked the monitoring to be stopped. This happened at the beginning of the fourth stage in figure 2, and as the diagram illustrates, the following evolution of the discussion group was that less and less people attended until it died out.

Figure 3: Pareto analysis of group attendance

It was also a problem getting senior students to participate, one of them describing the group as “the blind leading the blind”, and thus not wanting to waste time on this. On the other hand, for those participating on a regular basis, opinions were expressed in the direction that it was successful and interesting, and the reason why not more people were attending was described as a mystery.

4.3.3 Second writing group

The second writing group was run in paral lell with the reading group, and it was mostly attended by the same people who attended the reading group. The group lasted eight meetings with an average of 4.5 people attending, including 0.7 faculty members, meaning that about half of the meetings were done without academic support. The group was run without technical support of wikis, email discussions and quality control measurements, only focusing on whatever paper was the the pipeline for discussion on the given meeting. Despite the fact that there were some comments about difficulties in being able to attend both reading groups and writing groups during the same week, the second reading group worked successfully in a similar way to the first writing group.

4.3.4 Third writing group

After five semesters of no discussion groups, a third writing group started in January 2009 and has been running successfully on a regular basis for ten meetings at the time of writing. As with the earlier writing groups, the focus is on the usual care, hospitality and cultivation through constructive criticism that had been displayed in earlier writing groups, in a similar spirit to how the paper discussion groups of the IRIS seminars are done.
The average attendance has been 7.7 people, including 1.2 faculty members. All people involved have expressed pleasure and usefulness in being part of the group.

5 Discussion and conclusion

In order to support the theoretical argument in section two, the aim of the discussion below is to interpret the case stories in terms of how values like care, hospitality and cultivation is a natural part of academic life, and how the examples of success and failure in the academic discussion groups provides insights on how both the CMM and non-CMM examples of industrial quality circles could have been designed more successfully, indicating how the "Ciborra strategy" of care, hospitality and cultivation can work in the context of CMM. The central idea in the argument is the phenomenological or hermeneutic approach in the reading of the CMM framework through the pioneers of the quality and productivity improvement community, and try to cultivate the software organization in the direction of developing values that are representative of academia.

5.1.1 From discussion groups to quality circles

The story about the academic discussion groups illustrate some of the points argued by Ciborra. The focus on regulation, technology, feedback monitoring and control in the reading group reads somewhat similar to Ciborra’s crisis stories, while the simplicity and focus on care, hospitality and cultivation in the writing groups make these groups examples of foundation stories.

<table>
<thead>
<tr>
<th>Focus on process and structure</th>
<th>Focus on content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>Establishing a quality circle at the tax administration required much time and resources in getting acceptance at the right managerial levels, but focusing on content (problems and opportunities for improvement) without sufficient structures and formal processes resulted in the circle quickly being dissolved.</td>
</tr>
<tr>
<td>The reading group at the university department focused on regulations, technology, feedback monitoring and control and was moderately successful but not as successful as anticipated.</td>
<td><strong>Solution</strong> Providing process and structure in terms of benchmarking projects through the use of CMM-compliant audit standards (CobiT) and letting the participants present and discuss the content was highly successful, although the circle folded after a short while due to organizational reasons.</td>
</tr>
<tr>
<td>The writing groups at the university department focused only on content (papers to be discussed) and kept structure to a minimum and was highly successful.</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: A complementary pattern of problems and solutions in quality circle design

As seen in the case of the CMM-case at the tax administration, it is questionable whether care, hospitality and cultivation may work without some basis in regulations, technology, feedback and control. Even though the academic writing groups were more successful in
terms of engagement and willingness to interpret the texts in challenging and helpful ways, the
statistics in table 2 shows that the reading group lasted 4-5 times as long as the writing groups.
The reason for this was that the reading group was successful for about 20% of the student
population, as the Pareto analysis in figure 3 shows (the author representing the anomaly in
the first position of the diagram).

The most successful quality circle, the case from the climate department reported in section
4.1, contained success elements from the university department in terms of an academic
culture of care, hospitality and cultivation in a peer-like environment combined with the
success factors from the tax administration in terms of applying a rigorous focus process and
structure in a CMM-like fashion.

While the experience from the university department and the tax administration seem to
point in two opposite directions, as illustrated in table 3, what was achieved in the case of
trying to improve the performance of automatic weather stations, was to turn the reading and
interpretation of the monthly error statistics reports into a reading/writing discussion group,
making the process and structure invisible as it was a way of presenting the content. The
practical task of trying to identify instrumental problems and figure out how to fix them was
metaphorically turned into a process of “exegesis” as the focus of the quality circle became
the interpretation of the world as a text (cf. section 2.2).

5.1.2 CMM as a framework for cultivating academic freedom and responsibility

The complementary pattern in table 3 can be a result of the fact that behaviour getting
rewarded in the tax administration is “not rocking the boat” while behaviour that gets rewarded
in the university department is behaviour that produces academic knowledge. While
following processes and structure can be useful at the tax department for avoiding being
reproached, process and structure is only useful at the university department if it benefits
relevant academic learning.

Although the second quality circle at the tax department did not last sufficiently long for
doing proper empirical research, part of what seemed to make it work was the fact that the
people participating were all peers, the “exegesis” was relevant and interesting to all involved
as the CMM was being used for structuring discussion, making process and structure more or
less invisible as simply a format for getting into the content of comparing practices, sharing
and learning. In other words, the CMM framework was in this case a sufficient and necessary
key for making it possible to discuss, learn and improve, experience joy in learning and joy in
work in a climate of care, hospitality and cultivation (table 1), similar to how this was
achieved at the university department and the meteorology department.

The experience from the first quality circle at the tax department showed that similar
results would be difficult without CMM or something equivalent.

5.1.3 Conclusion

If we are to treat CMM and the underlying philosophy of the framework with respect, care
and hospitality, we must acknowledge that these methods were developed as research
frameworks in order to bring forth academic values like joy in understanding and learning, but
science is also a danger when left in the hands of the incompetent, as pointed out by Taylor,
Deming and Ciborra. Ciborra’s solution, the focus on care, hospitality and cultivation should
not be read as a request to leave frameworks like CMM alone and move on to other fields
where the human components of work are in stronger focus. On the contrary, Ciborra’s
analysis of CMM helps in pointing out how frameworks of this kind are even more in need of
a phenomenological approach in order to understanding in a manner that can make them work. A shallow understanding of CMM can make it into an iron barred prison, a deep understanding can make it into scaffolding for emancipation, empowerment and joy in work.

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References


