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THEORIZING FORMAL AND INFORMAL FEEDBACK PRACTICES IN MANAGEMENT ACCOUNTING THROUGH THREE DIMENSIONS

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ABSTRACT

The purpose of this doctoral thesis is to widen and develop our theoretical frameworks for discussion and analyses of feedback practices in management accounting, particularly shedding light on its formal and informal aspects. The concept of feedback in management accounting has conventionally been analyzed within cybernetic control theory, in which feedback flows as a diagnostic or comparative loop between measurable outputs and pre-set goals (see e.g. Flamholtz et al. 1985; Flamholtz 1996, 1983), i.e. as a formal feedback loop. However, the everyday feedback practices in organizations are combinations of formal and informal elements. In addition to technique-driven feedback approaches (like budgets, measurement, and reward systems) we could also categorize social feedback practices that managers see relevant and effective in the pursuit of organizational control. While cybernetics or control theories successfully capture rational and measured aspects of organizational performance and offer a broad organizational context for the analysis, many individual and informal aspects remain vague and isolated. In order to discuss and make sense of the heterogeneous field of interpretations of formal and informal feedback, both in theory and practice, dichotomous approaches seem to be insufficient. Therefore, I suggest an analytical framework of formal and informal feedback with three dimensions (3D's): source, time, and rule. Based on an abductive analysis of the theoretical and empirical findings from an interpretive case study around a business unit called Division Steelco, the 3D-framework and formal and informal feedback practices are further elaborated vis-á-vis the four thematic layers in the organizational control model by Flamholtz et al. (1985; Flamholtz 1996, 1983): core control system, organizational structure, organizational culture, and external environment. Various personal and cultural meanings given to the formal and informal feedback practices ("feedback as something") create multidimensional interpretative contexts. Multidimensional frameworks aim to capture and better understand both the variety of interpretations and their implications to the functionality of feedback practices, important in interpretive research.

Keywords: formal and informal feedback, managerial feedback practices, management control, performance measurement, interpretive research

FOREWORD

"That which is static and repetitive is boring. That which is dynamic and random is confusing. In between lies art." – John Locke (1632 - 1704), retold

On the surface many things appear simple. Feedback for instance is claimed to assist evaluation and control. However, tackling the variety of ways in which managers in organizations make use of feedback is like a puzzle of 1000 sky-blue pieces. How to capture and theorize such complexity turned out to be the main challenge of this thesis.

Luckily, I have not had to walk alone on this path but there are many who have contributed to my thesis. First acknowledgements naturally belong to my supervisors, Professor Kari Lukka, Professor Markus Granlund and Dr. Vesa Partanen, for their guidance. Your support in management accounting studies, your strong experience and your clearly stated vision of how to proceed from each version made this possible. I am also very grateful to Professor Jukka Pellinen and Professor Alan J. Richardson for their insightful preliminary examination.

During my PhD studies I met many great people in conferences and doctoral seminars, in Finland and abroad. I am grateful for all those helpful discussions, comments, or reviews received. They have definitely influenced my thinking and taught me about research. In addition, I am most indebted to those wonderful interviewees who shared their thoughts about this topic with me. Your experiences could be formulated into fruitful research themes.

I have been working for the Department of Accounting and Finance alongside my studies. I warmly thank my colleagues and friends throughout the university for these years. The support of CIMA General Charitable Trust is gratefully acknowledged. I am also grateful for the financial support provided by the Foundation for Economic Education, the Jenny and Antti Wihuri Foundation, Turun Kauppaopetussäätiö, and Turku School of Economics Support Foundation.

This work is devoted to my dear family at home. Antti, I appreciate your great patience, support, and humor. We made it! My two cheerful girls, Lotta and Eeva-Leena, you're the apples of my eye.

Turku, on a January evening in 2013

Hanna Pitkänen

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1 INTRODUCTION

THE BLIND MEN AND THE ELEPHANT
A famous poem by John Godfrey Saxe (1816-1887)

It was six men of Indostan
To learning much inclined,
Who went to see the Elephant
(Though all of them were blind),
That each by observation
Might satisfy his mind.

The First approached the Elephant,
And happening to fall
Against his broad and sturdy side,
At once began to bawl:
“God bless me! but the Elephant
Is very like a wall.”

The Second, feeling of the tusk,
Cried, “Ho! what have we here
So very round and smooth and sharp?
To me ‘tis mighty clear
This wonder of an Elephant
Is very like a spear!”

The Third approached the animal,
And happening to take
The squirming trunk within his hands,
Thus boldly up and spake:
“I see, “ quoth he, “The Elephant
Is very like a snake!”

The Fourth reached out an eager hand,
And felt about the knee,
“What most this wondrous beast is like
Is mighty plain,” quoth he;

"'Tis clear enough the Elephant
Is very like a tree!"

The fifth, who chanced to touch the ear,
Said: "E'en the blindest man
Can tell what this resembles most;
Deny the fact who can,
This marvel of an Elephant
Is very like a fan!"

The Sixth no sooner had begun
About the beast to grope,
Than, seizing on the swinging tail
That fell within his scope,
"I see," quoth he, "the Elephant
Is very like a rope!"

And so these men of Indostan
Disputed loud and long,
Each of his own opinion
Exceeding stiff and strong,
Though each was partly in the right,
And all were in the wrong! ...

1.1 Motivation for studying formal and informal feedback

The story about blind men touching a different part, and only one part, of an elephant to learn what it is like, is a well-known story. It highlights an important lesson, namely that different views or "truths" are always relative to something and depend on the perspectives each researcher possesses in reality (see Blind men and an elephant). The above version by American poet John G. Saxe continues yet with a moral lesson and a warning that theological wars lead to ignorance of each other's views. In a sense all are wrong although partly right. Another view is to think that all were right; the elephant really had all the features the blind men learned. What is needed, to see the elephant as full as possible, is discussion and synthesis of the various views.

This story came frequently to my mind when puzzling over what formal and informal feedback are or can be and what can be done with them, the question in focus in this doctoral thesis. Even at the times of considering myself being successful in grasping new thoughts of their existence, I could not

escape the realization that this is not all. But I agreed with what Otley (1999, 369) states about the research of management control systems: "Nor should the less formal uses of information be neglected; organizational cultures form and are reproduced, at least in part, by the use of approving and disapproving feedback signals of many types."

Originally, the idea of studying formal and informal feedback was linked to the "unbalanced theory of feedback" in the balanced scorecard (BSC) context. The BSC by Kaplan and Norton (see e. g. 2001a, 1996a, 1992) has been presented as a comprehensive and multidimensional measurement framework, which aims to quantify and offer a balanced set of critical processes. Some studies (cf. Vaivio 2001a; Hopwood 2008) have shown how the BSC has squeezed the domain of the informal with new formal measures. Even with these previously unmeasured aspects of organizational performance, it stresses the role of strategic, measurable performance feedback. However, before we can discuss the balanced set of formal and informal feedback practices, I consider that we need to be able to define and make sense of what formulates the formal and informal feedback.

As the literature review will demonstrate, our prior literature offers rather heterogeneous and vague accounts for these notions. The current analytical frameworks on feedback applied in management accounting research are strongly linked to the cybernetic tradition.[1] The concept of feedback also originates from cybernetics (Wiener 1948; cf. von Bertalanffy 1968). One of its central hypotheses is the mechanism of negative feedback control, which is used to explain purposive and adaptive behavior and error reduction processes in organizations (Otley 1988, 63). In management accounting research, the concept of feedback especially centers on the use of performance measures[2] (Malmi and Brown 2008; Tuomela 2005; Otley 1999; Luckett and Eggleton 1991; Otley et al. 1995; Otley and Berry 1980). In this research doctrine, Flamholtz et al.'s (1985) model of organizational control provides the most comprehensive description and a visual overview of concrete, linear feedback loops in an organizational cybernetic core control system: between goals and actions and formal measurement and reward systems. Corrective feedback loops provide diagnostic and comparative information about the possible deviations between measurable outputs and pre-set goals, whereas evaluative feedback loops aim to motivate behavior towards goal congruence (see e.g. Flamholtz 1983, 1996; Flamholtz et al. 1985).

[1] See e.g. Flamholtz et al. 1985, Flamholtz 1996, 1983; Malmi and Brown 2008; Tuomela 2005; Otley 1999; Luckett and Eggleton 1991; Otley et al. 1995; Otley and Berry 1980; Green and Welsh 1988).

[2] Examples are scorekeeping and attention-directing (Simon and Holt 1954), the fourfold table of answer, dialogue/debate, learning and idea generation (Earl and Hopwood 1979), feedback and feedforward control (Emmanuel et al. 1990) and diagnostic and interactive uses (Simons 1995).

While Flamholtz et al. (1985) provide a mainly formal view for analyzing feedback practices, prior management accounting research has a more established, extensive, and explicit discussion going on concerning informal control issues.[3] In management accounting literature, there is a long discussion about the incompleteness of formal measurement systems and how they fail to produce adequate information for managers (e.g. Hall 2010; Burns and Vaivio 2001; Langfield-Smith 1997; Preston 1986; Clancy and Collins 1979; Mintzberg 1975). Preston (1986) presented how managers in organizations tend to rely on a model of social order (in contrast to a hierarchical model). Instead of official, documented information, too historical for decision making, they keep themselves and the others informed by *informal interaction and socially produced routines*.[4] The existence of informal information systems in accounting not only correlate with formal accounting information system inadequacies, but they are useful *per se* (Clancy & Collins 1979, cf. von Bertalanffy 1968).[5] Thus, this raises the compatibility and interplay between formal and informal systems to the fore.

Since Flamholtz et al. (1985) and Preston (1986), the domain of formal feedback in organizations has developed with more united, transparent, and comparable information and management systems, like ERP (*enterprise resource planning*) and CRM (*customer relations management*) -systems. According to the principle of progressive mechanization (von Bertalanffy 1968), all systems tend to evolve into more formal arrangements and regular feedback mechanisms in the cost of dynamic interactions. But no system itself guarantees good feedback; systems are used by people. Therefore, focus need to be shifted from measures to actors and practices in which measures are used. Taking this into account, the following can be questioned: Where are the challenges of contemporary feedback practices or what are the roles of the informal in the production, communication, and the use of managerial feedback channels?

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3 See e.g. Lukka 2007; Tuomela 2005; Alvesson and Kärreman 2004; Burns and Scapens 2000; Vaivio 1999; Simons 2000, 1995; Daft and Macintosh 1984. Regarding formal and informal control, there are also many heterogeneous interpretations (see e.g. Harrison and McKinnon 2007; Pierce and Sweeney 2005; Dekker 2004; Hoque and Hopper 2002; Burns and Scapens 2000; Langfield-Smith 1997; Modell 1996; Chenhall and Morris 1995; Euske et al. 1993; Anthony et al. 1989). Similar issues to formal and informal feedback are sometimes discussed with other substitutive terms, such as explicit and tacit knowledge, but common to them all is to discuss these conceptual pairs mainly as opposed to each other without paying much attention to their overlapping features (cf. Vaivio 2001b, 13).

4 Similar findings have been reported in several other studies as well (see e.g. Bruns and McKinnon (1993); Alvesson and Kärreman 2004; Simons 1995).

5 The amount of formal and informal information flows have been found to operate differently in different cases. In extreme cases, such as during wartime, the increased amount of informal information may decrease the amount of formal information flows. In normal cases the relation is positive (Katz and Kahn 1978, 449).

Although the explicit discussion of feedback in management accounting seems to be somehow stagnated in the narrow view of cybernetic control theory[6], cybernetics also offers an open systems approach to organizations (Morgan 1997; Lowe and Puxty 1989, 24, cf. Arbnor and Bjerke 1977, 84). Organizations interact with their environment, and in order to learn, they also have dynamic processes and interactions beyond simple negative feedback controls.[7] Flamholtz et al. (1985) claim to recognize this open system approach. In addition to its core control system, with explicit feedback lines, the broader organizational control context includes three additional control layers: organizational structure, organizational culture, and external environment. With the help of these four control layers, the discussion and analysis of formal and informal feedback practices and individual interpretations can be enlarged. However, the basis is not very explicit. Flamholtz et al. (1985) theorize the organizational setting, but the various interpretations to formal and informal feedback among different actors need other kind of theorizing, i.e. multidimensional frameworks and concepts, which better take the agent and the variety of interpretations into account.

Formal and informal feedback practices are analyzed in the interpretive case study around a business unit called Division Steelco, a large basic industry company. The interpretative approach, based on qualitative material, offers a rather unique angle, since most of the prior studies on (precisely) feedback in accounting are quantitative (such as laboratory experiments), or focus on examining individual feedback relations between superiors and subordinates (e.g. Arunachalam and Beck 2002; Jermias 2001). Based on an abductive analysis (cf. Dubois and Gadde, 2002), prior concepts of formal and informal feedback are reviewed, compared, and developed together with the empirical findings. Twenty persons, most of them senior managers, from different units of Division Steelco and its headquarters were interviewed during an 18-month period between 2007 and 2009.

1.2 Purpose of the study

The main purpose of this doctoral thesis is to widen and develop our theoretical discussion and analyses of the concept of feedback in management accounting, particularly shedding light on its formal and informal aspects. For

[6] Mainly focusing on negative controls, deviations, and variance analyses (see e.g. the role of the cybernetic controls in Malmi and Brown 2008).

[7] In dynamic relations, the counterpoint to negative feedback flows are analyzed through the flows of positive feedback, which aim is no longer to stabilize but to feed organizational change and learning (Morgan 1997).

the interpretive analysis of formal and informal feedback practices in organizational control, alternative and additional theoretical views will be considered and suggested along with the evaluation of the conventional paradigm of feedback in management accounting research, i.e. its cybernetic control and measurement view.

The focus will be shifted forward from the mechanistic cybernetic view into a more dynamic, practice-based view needed for interpretive research. The shift will be threefold: from methodological to analytical and theoretical. The notion of informal feedback will operate as an umbrella term to highlight these extensions. Theorizing in interpretive research changes the focus of analyses: not only the mediums of feedback (e.g. performance measurement systems), but also practices and actors, are brought under the analysis of feedback. With the concept of *practices*, I will refer to collective, shared practical understandings, procedures, and routinization processes of how managers produce, seek, and give feedback in organizations (cf. Schatzki et. al. 2001; Lounsbury 2007, Whittington 2006).

Based on an abductive analysis (cf. Dubois and Gadde 2002) of the theoretical and empirical findings from an interpretive case study around a business unit called Division Steelco, this doctoral thesis presents, develops, and discusses a three-dimensional (3D-) framework of formal and informal feedback, as interpreted through source, time, and rule dimensions. Rather than formulating pure classifications of the existence of things (dichotomies), the 3D-framework aims to highlight and provide analytical classifications, i.e. central distinctive features that help us to define, understand, and discuss the variety of interpretations attached to formal and informal feedback practices.[8]

Further, the 3D-framework will be bridged to the organizational analysis of dynamic and intertwined relations between formal and informal feedback practices. Feedback will be analyzed not only as isolated, linear feedback lines based on formal measures and reward systems in the formal core control layer (Flamholtz 1996, 1983; Flamholtz et al. 1985) but also from the three other thematic layers in that model, namely organizational structure, organizational culture, and external environment. The analysis of system-based feedback lines is to be added with the suggestions of interpretative accounts and con-

[8] Similarly, Adler and Borys (1996) challenge the conventional dichotomization of motivation into extrinsic and intrinsic and state that they are "merely two poles of a spectrum characterizing varying degrees of internalization of values". Moreover, they challenge the caricature of bureaucratization as simply good or bad and identify two different types of bureaucracy and formalization: enabling reinforcing mastery and commitment and coercive forcing compliance. Adler and Borys (*ibid*) suggest this may assist in theorizing the difference between good and bad procedures as employees experience them, as well as call for more useful discussions of the range of available organizational forms. For the discussion of enabling use of management control systems, see e.g. Wouters and Wilderom (2008).

texts that allow studying the variety of interpretations of formal and informal elements among different actors and their implications to feedback practices.

1.3 Methodological considerations and interpretive case study

An essential question related to all empirical-based research is how a researcher approaches the empirical world in order to provide satisfactory evidence for theoretical analysis and conclusions. This doctoral thesis applies qualitative research methods, mainly interviews, in its search for empirical material. Covaleski and Dirsmith (1990, 543) define qualitative methods as "a number of interpretative techniques directed at describing, translating, analyzing, and otherwise inferring the meanings of events or phenomena occurring in the social world". Here, most essential tasks are to uncover meanings from the empirical noise and communicate relevant themes clearly (cf. Turunen 1987). Another challenge is to do with writing, as it should provide a concise account of the relevant analytical themes without losing the trail of the argument development process (cf. Ahrens and Dent 1998). Like the Czech novelist Milan Kundera describes: in writing, the challenge is to grasp the complexity of the world without sacrificing "the architectural clarity of storytelling".[9]

A single case method is suitable for exploring new and complex research areas, like the unestablished and heterogeneous concepts of formal and informal feedback and their management accounting practices in an everyday context (cf. Humphrey and Scapens 1996). Management accounting will be approached as a practice[10], considered as a socially constructed, interpreted, and, more or less, subjective playground (Burchell et al. 1980; Chua 1986, 615; Blaikie 1991, 120). This interpretive type of research approach is to yield new insights, as most of the explicit prior studies on formal and informal feedback have been quantitative surveys (e.g. Gupta et al. 1999), laboratory experiments (e.g. Leung and Trotman 2005), or literature reviews (e.g. Luckett and

[9] Saariluoma's (2005, 118-119) treatise on the art of the novel enlightens this "technique of ellipsis" or technique of "radical simplicity". It pursues the style of going directly to the heart of things and avoids unnecessary filling. While it is perhaps not among the primary rules for a researcher, I nevertheless think it draws an analogy about how to work on plausible yet concise reporting out of empirical material. Kundera says to write only what is necessary for the theme; the story is more likely to keep its form when the mind is not busy trying to remember all kinds of small and unnecessary details. Besides, the world is too random that "the being" could be captured there. He invites the reader not to empathize with the fictional world but to ponder the questions of "the being" from a personal reference point instead.

10 See studies such as strategy as practice (e.g. Johnson et al. 2007; Whittington 2006, 1996) or management accounting as practice (e.g. Jørgensen and Messner 2010; Baxter and Chua 2008; Ahrens and Chapman 2007).

Eggleton 1991). Instead of statistical data to broaden the scope with many accounts, case studies can contribute from the point of analytical depth of each scope (Ahrens and Dent 1998).

While methodological assumptions define acceptable research methods, epistemological assumptions define what is accepted as "truth" (Chua 1986, 604). In interpretive paradigm, knowledge is epistemologically seen to derive from practice through subjective interpretations, through which individuals make sense of their social world as well as their given everyday meanings to actions (cf. Blaikie 1991, 120–121; cf. Chua 1986, 615, cf. Lavoie 1987).[11] Researchers are interested in findings about how organizational actors understand, use, and interact with various management accounting and control systems, as understood broadly (MacIntosh 1994, 4; Burrell and Morgan 1979).[12] Methodologically, the empirical world does not have to serve an objective sample, but researchers can interact with the research site – at some level it is even required because of their endeavor to explicate an insider (the *emic)*, perspective for actions (Pike 1954; Jönsson and Lukka 2007; Kakkuri-Knuuttila et al. 2008).

The main unit of empirical analysis will be a steel products supplier, Division Steelco, a large basic industry company. The single-case research design was further specified to subunits of analyses (Yin 1984, 47): to the headquarters, the division, and local units in production and sales in that division, as well as to senior and middle managers in their Finnish operations. Since the flows of formal and informal feedback can be found and studied everywhere, there were no critical requirements for the selection of a suitable case organization. Nevertheless, I found that Division Steelco and the Group offered a very interesting and fruitful case for research. The massive changes and dramatic turning points in recent years had questioned their established practices, turning them more explicit and reviewable. In the empirical story, the changing of the CEO and the cultural change assisted in understanding underlying mechanisms in formal and informal feedback processes as well, giving life and contrast to the story (process analysis, see e.g. Pettigrew 1997).

The empirical material was mainly collected through semi-structured thematic interviews, between September 2007 and February 2009 (20 interviews, 19 persons, approximately 36 hours in total, for the most part recorded and transcribed).[13] In the corporate headquarters, most of the core management

[11] About different world-views, see e.g. Chua (1986); cf. Burrell and Morgan (1979).

12 The usefulness of social theories and explanations has also been questioned in management accounting research. For example, mere theory illustrations that rely on empirical, not theoretical, explanations (Humphrey and Scapens 1996) or their low level of practically relevant results for managers and accountants (Malmi and Granlund 2009). For reviews on what can be regarded as theory in management accounting, see Malmi and Granlund (2009) and Llewellyn (2003).

[13] For additional information of the interviews, see the Appendix 1.

group was interviewed, i.e. five senior managers, one specialist in internal communication, and two from finance and controlling function (all three working for the division). Further, the head of the division, five senior managers from the divisional businesses or operations, and the four divisional production heads and two from sales unit heads (six analyzed as middle managers for their positions and role descriptions). These interviews provided an overview of the general management system of the company and the relations between the headquarters and divisional units in Finland.

Interviews were supported by official materials, such as annual reports, personnel magazines, the Internet documents, and internal documents received from the interviewees (e.g. formal and private reports and excel sheets, operating procedures, leadership principles, performance appraisal interview materials, and leadership training materials). Division Steelco had recently hired their first communications specialist, whose research project was also reflected in my analysis.[14] During the interview process, I also kept a research diary where I listed my most important empirical and theoretical hypothesis, observations, and remarks, as well as discussions with my supervisors. Observations during the interviews, attending an executive lecture by the CEO (25 September 2007), and numerous informal situations, such as factory visits and lunches, enriched the picture received from the interviews. These, together with communication by email and phone calls, were partially used as a validation method for the analyzed material (cf. Hammersley and Atkinson 1995, 139, 230–232).

In the interviewees, in order to tease out information about their use of formal and informal feedback or *the logics of practice* (Czarniawska 2001), people were asked to tell about their own practices, examples, and views about feedback and its formalization. A sheet of A4 with questions was used, but questions were flexible, with a view to the position and experience of each interviewee.[15] The interviews involved many follow-up questions and often turned out being rather open discussions. Roberts's (1991, 361) description of the way of researching interpretative accounts is illustrative: "As a researcher within organizations one can interview people as functionaries… and receive accounts of their experience which merely reflect their functional roles. Alter-

[14] In order to take a view of the present state of internal communication, strategy awareness, as well as available communication channels in the division, she had conducted group interviews in Finland, Sweden, Norway, Russia, Poland, Germany, and Hungary between April and June 2008. In addition, an internal survey was conducted in May 2008, sent to 753 people in 18 countries; the largest groups located in Finland, Norway, and Sweden. The response rate of those with an email account was 45 percent (342 people). In addition, 32 papers from two service centers were returned from those with no access to a personal computer. A written project report leading to an official plan for internal communication was implemented in autumn 2008.

[15] An example of the theme interview guide can be found in Appendix 2.

natively one can talk to others as people who are employed as functionaries, and this tends to produce much more reflexive and critical accounts of individuals' experience at work… a shift of attention uncovers an active process of understanding not wholly confined by the logic of instrumental rationality encouraged by hierarchical accountability… [but] a capacity to conceive of and recognize others and their interests". However, while the interpretative pursuit led to more reflexive questions and discussion, a few questions were asked from all interviewees in order to be able to make reasonable and valid comparisons. These themes included the status and experience of the employment, the view of the notion of feedback, organizational feedback practices (either formal or informal), personal feedback preferences, the feedback culture of the case organization, and challenges attached to feedback practices.

1.4 Abductive analysis

The 3D-framework of formal and informal feedback, developed over time, based the literature review and interviews, i.e. through an abductive research process (Dubois and Gadde 2002; Lukka and Modell 2010). Abductive reasoning is linked to theory development in single case studies (Eisenhardt 1989), in which research activities are nonlinear, intertwined, and path-dependent, allowing theoretical preconceptions to be tested, compared and validated with empirical findings (Dubois and Gadde 2002; Eisenhardt 1989).[16]

The analysis of the empirical material (transcripts, notes from the interviews and other affairs, research diary) included manual identification of relevant features, similarities and anomalies, and categories of formal and informal feedback. Both prior literature and interviews provided fuzzy interpretations; so, early on I considered it very important not to close the multidimensional concepts of formal and informal feedback. I wrote down the most relevant insights and themes to my research diary in order to generate relevant building blocks for the analysis and theory development. Empirical material was analyzed from many angles, as how different individuals and actor groups portrayed things for me and how I considered their quotes to go together. The dimensions emerged during my interview process, which allowed dimensions to be used, not just as an end product but also as a tool in the abductive analysis (cf. Dubois and Gadde 2002). According to Dubois and Gadde (2002, 558), the role of the evolving framework is essential: "The reason the framework

[16] Laughlin's (1995) "skeletal" theories and middle-range thinking highlight similar ideas to combine theories and empirical case material.

should evolve during the study is because empirical observations inspire changes of the view of theory and vice versa."

Theoretical outputs – first the three dimensions and later on the interpretative contexts – were formulated in order to make sense of how and why actors perceive degrees of formality differently in various feedback practices. The dimensions and their distinctive features were found to operate in hierarchical processes; depending on each actor and practice, some features have stronger interpretation power than others (cf. Bourdieu 1998, 15, 52, 69). This lead to the problematization of dichotomies: things as being not just white and black, but incorporating a spectrum of gray between the ends. Contrasting the central theoretical themes from prior literature with the emerged theoretical dimensions and interpretative contexts covered almost the whole research process, starting from the initial readings and continued being sharpened along the writing processes of manuscripts.

Lukka and Modell (2010) connect the process of abductive reasoning further to the validation of the interpretive research (IR) in management accounting. They see validation as an issue of convincing readers of the authenticity of findings (preserving the emic qualities of research accounts) and ensuring the plausibility of etic explanation or insights by linking it to the process of abductive reasoning. The practical reasoning and meanings given by the managers to their feedback processes were given a focal role when developing the dimensions of formal and informal feedback. One interview at the time, I could utilize cross-checks and confirming questions in order to confirm relevant themes and patterns concerning the conceptual framework, and the emergent storyline of the setting as well. These interpretive themes were raised, sub-classified through dimensions, and compared to the findings in prior literature. The 3D-framework persuades to incorporate various emic interpretations into the more theoretical and general analysis of feedback practices at the etic level through the dimensions.

1.5 Theoretical considerations

Theories provide lenses but simultaneously hinder the vocabulary that researchers can use (Littlejohn 1995, 22). The poem of *The blind men and the elephant* reminds us that while every theory focuses on something, it leaves something else out; all abstractions are only partial but partial in their own way. In the search for analytical concepts or frameworks relating the formal and informal aspects of managers' feedback practices, I ended up considering that we either need to refine existing theoretical frameworks or develop new ones. This section will open up the intended shift from cybernetic theories of

feedback to possibly more insightful theories in interpretive research. While theoretical choices rest on the research purpose – which theory can provide the best insights into the issues under study – they also rest on the methodological choices – which theories are supported by the quality of empirical material.

The novelty of the phenomena calls for an explorative, emergent, open-ended, and hermeneutic theoretical search. The strengths of theory building from case studies are that they are likely to generate novel, empirically valid theories, as long as emergent theories do not describe idiosyncratic phenomena or are overly complex (Eisenhardt 1989). Under this yet rather unestablished area of formal and informal feedback, reality can be approached little by little; theories function more as "building blocks", which add details to theories (Keating 1995) rather than fully specified theories with causes and effects. The possible theoretical questions around formal and informal feedback (What is significant or meaningful to managers? and Why are some feedback channels or types perceived as formal and others informal?) have operated as "sensitising devices", guiding empirical search (Giddens 1984, 326; Macintosh and Scapens 1990, 469; Dubois and Gadde 2002). The search for a new, multidimensional framework, instead of the existing dichotomous view of formal and informal feedback practices, has been abductive by nature (comparing the empirical findings with prior theories and the emergent theoretical framework and vice versa) rather than inductive (theorizing from the empirical material).

While the empirical section in the article (Pitkänen and Lukka 2011) discusses the construction of the 3D-framework, this doctoral thesis applies it further to the area of organizational control. I considered different analytical frameworks for the empirical section, among others practice theories (see e.g. Bourdieu 1998) and institutional theories (e.g. Burns and Scapens 2000). However, I found them confusing because of their vocabulary, in addition to my search to make sense of the already complex, heterogeneous concepts of formal and informal as such. The organizational control model of Flamholtz et al. (1985; Flamholtz 1996, 1983) with four control layers – core control system, structure, culture, and environment – was considered to provide a general, open-ended platform to discuss the complex and heterogeneous flows of formal and informal feedback.

In modern science, theories of natural sciences have been seen as dominant methods for social sciences as well: the ability to measure, quantify, validate, control, and forecast information objectively. Cybernetics tends to control systems with efficient information and feedback loops, also with machine-like functions. Interpretive research, along with postmodern thinking, sees also various deviations, surprises, anomalies, and contradictions as interesting occurrences from the "messy" subjective practice (Blaikie 1991; Chua 1986;

Burchell et al. 1980, cf. Lavoie 1987). Blaikie (1991, 121) provides a theory definition that is in line with an interpretive research paradigm: "theory consists of the cultural rules or norms that constitute the meaningfulness of interaction". In an interpretive approach, the world is seen as dynamic and fragmented[17] and in theories of chaos and complexity, feedback loops are no longer seen as linear but as nonlinear and numerous loops, operating in fast interlinked cycles.[18] As prior studies in psychology have also shown, the tendency to obtain, receive, and handle feedback varies between individuals (e.g. Atwater and Brett 2006; Tourish and Robson 2006; Briers et al. 1999; Luckett and Eggleton 1991; Ouchi 1979) – introducing multidimensional complexity to organizational feedback practices. Along the later developments in cybernetics, rational and linear feedback links and boxes (e.g. Flamholtz et al. 1985) have been replaced with dynamic, mutual feedback loops (see e.g. Aula 1999, 38–44; Morgan 1997, 274–283; cf. Lavoie 1987). However, according to Otley et al. (1995, 35), suitable theories studying these complex "soft" systems" with various actors, vague and ambiguous objectives, ill-defined decision-making processes, and insufficient performance measures are still ill-defined despite their undoubted potential contributions to the development of the theory of control.

Management control frameworks (e.g. Flamholtz et al. 1985; Malmi and Brown 2008; Otley 1999) can be used as tools for outlining organizational analysis and directing attention in empirical research. When different controls are presented as separate categories for researchers, they can analogously picture the elephant in the above poem as detached elements of a wall, spear, snake, tree, fan and rope: the connecting lines to picture it as an understandable entity need to come from the further empirical search and analysis (cf. Malmi and Brown 2008). In my case, I found theorizing feedback practices to require other kind of theories. The organizational control model by Flamholtz et al. (1985) offers a directive classifying framework for the empirical work and analysis, while 3D-framework is needed for the discussion of the interplay of formal and informal feedback practices in that setting. Thus, the 3D-framework is not primarily intended for classifying: it highlights and analyzes what makes individuals consider some feedback as formal, some as informal, the

[17] This view of fragmentation can also be applied to the analysis of written texts. Through the reading method of deconstruction, it is possible to discover various (sometime also conflicting) views simultaneously. There is no unambiguous and clearly communicated text from one author but a mix of simultaneous thoughts from what the author has read, thought, and experienced (see e.g. Arrington and Francis 1989).

[18] Mutual (two-way) causality links, in which one cause affects the other and vice versa (A <–> B) compared to rational mechanical linear causality (A causes B).

meanings that one attaches the practices and how these interpretations and meaning come into being in the organizational actions.[19]

As organizations consist of individuals and groups, the feedback processes and practices in this research will consider both organizational (macro) and individual (micro) perspectives. To specify it further, I will utilize the presentation of five levels of theorizing in accounting studies (Llewellyn 2003):

1) metaphor theories
2) differentiation theories
3) concepts theories
4) context-bound theorizing of setting
5) context-free grand theories

This typology takes a rather broad view for theorizing, suitable for an interpretive approach. As the level of theorizing rises, the level of abstraction and explanation increases, but the level of contextualization and understanding decreases (2003, 662). According to Llewellyn (2003), social sciences tend to develop concepts through differentiation (level two theorizing): contrasting concepts with other concepts or by forming categories. Dichotomies or dualities are the basic way of discussing terms as opposing each other, for example the duality of domains of objective and subjective[20] – or formal and informal as dichotomies.

While modern theories have been satisfied with categorizations, post-modern theorizing has aimed to "bridge, blur or merge" these analytical categories (p. 672). Theorizing at level three, concepts are instead being internally differentiated, by identifying their various distinctions and explicating the various ways how people experience them (*ibid*). Theorizing in the 3D-framework works as "concepts theorizing" at level three (Llewellyn 2003), aiming to overcome the dichotomy of formal and informal (level two). The 3D-framework capitalizes individual interpretations for feedback practices, as "theories of practice".

Further, the following chain is important for the logic of interpretative analyses. In interpretive studies, interpretations are always relative to "something as something" (like feedback as formal). The 3-D framework assists in explicating differing interpretations and meanings given to a certain type of feedback practice. These various personal and cultural meanings are likely to create multidimensional interpretative contexts (or practices). In dynamic analy-

[19] The structure of water, H_2O provides one metaphor (Aula 1999, 14) for the intertwined functions of formal and informal feedback. Like water creates an operative meaning and entity (molecule) beyond the operations of mere oxygen or two nitrogen atoms, feedback in practice as it is interpreted with a certain mix of formality and informality, does likewise.

[20] For discussion about how interpretive researchers straddle between subjective and objective paradigms, see Kakkuri-Knuuttila et al. (2008) and Hopper and Powell (1985).

sis, multidimensional frameworks aim to capture and understand both the variety of interpretations and their implications for the functionality of feedback practices ("feedback for something").[21]

Concepts theories can also link differentiation theorization (dichotomies) to context-bound theorization (Flamholtz et. al 1985) (cf. Llewellyn 2003). Context-bound theorizing of settings (level four) moves on to explain how the context for practices is organized, or the settings in which action takes place. Cybernetics typically discusses feedback as an organizational, systemic entity (level four theorizing, Llewellyn 2003). Also, the perspective in Flamholtz et al. (1985; Flamholtz 1996, 1983) is primarily organizational, meaning that the actors and practices are no longer discussable. Theorizing at level three is the highest level that can still take into account the role of the agency (Llewellyn 2003, 673). While management accounting systems are, in Flamholtz et al. (1985), analyzed at organizational level, the shift in focus from measurable output on *practices* in the core control system can better "bridge" actors to organizational structures (the other three control layers).[22] Llewellyn (2003, 684) also notes that practitioners are likely to theorize their worlds through metaphors, differentiation, and categorization.

Theorizing and generalizing in inductive (or abductive) case research lean towards logical consistency and contextual generalization (Lukka and Kasanen 1995; see also Eisenhardt 1989). However, simple contextualization is regarded inadequate in theorizing: while it precedes understanding of practices, it lacks the required level of abstraction in theorizing (Llewellyn 2003, 664; cf. Lukka and Model 2010). Also, interpretive studies aim beyond simply theory illustrations, story-telling, or understanding (cf. Silverman 2000, 122–125). The four control layers in Flamholtz et al. (1985) are not only used for various uses of feedback in their control context, but as to be able to raise interpretive contexts, in which various interpretations of formal and informal feedback are fruitful and to be studied further. Concerning the model of Flamholtz et al. (1985), the theoretical linkage to the case research is of the type of theory refinement in which the existent model has been elaborated further by adding

[21] While the structure of "something as something" (i.e. *etwas als etwas* (Heidegger 2010) is basically static, interpretations can employ the structure of "something for something" as well. The latter highlights temporal behavior, in which observations, meaning, and human action are orienting towards the future, while they are also based on each and one's pre-theories, prior experiences, and other subtext meanings, opportunities, and relations (for Heideggerian or hermeneutic interpretive structures, see e.g. Heidegger 2010; Miettinen 2007; cf. Meretoja 2012, 310–314). This non-static analytical structure highlights the need to acknowledge the historical pre-understanding that drives current actions.

[22] Cf. structuration theory of Giddens (1984), in which social practices are analyzed by linking actors to structures, or multi-level (meso range) practice analyses, see Lounsbury (2007). The institutional view has often been criticized for its lack of focus on the role of agency in theorizing (DiMaggio, 1988).

details and broadening its scope with formal and informal feedback practices (Lukka 2005, 385–386; Keating 1995). Regarding the analytical 3D-framework of formal and informal feedback, the case study has been used for theory development in the sense of discovering new theories.[23] In relation to the theoretical versus practical emphasis, this interpretive research positions to the more theoretically oriented domain, in which it aims for theorizing from empirical material rather than producing practical contributions.

1.6 Outline of the thesis

The structure of this monograph on formal and informal feedback in management accounting is as follows:

The following chapter starts by defining and outlining central feedback flows in the management accounting context. The notion of feedback derives from the cybernetics, and feedback is first reviewed based on this literature. The feedback loops operating in the cybernetic model of control by Flamholtz will be presented, as well as feedback in relation to other cybernetic viewpoints. Next, it will be presented how the scope of the measurable aspects of feedback has been partly enlarged with the BSC technique, as a comprehensive measurement and management trend, and with the discussion of the interactive use of formal systems as presented in Simons' (1995) levers of control. A short review of prior research findings related to the use of system-based feedback and beyond is presented. In addition, management accounting systems, especially top-down, have been criticized for being too hierarchical and mechanical for producing relevant information to other than senior managers. Thus, calls for including employee empowerment are presented.

The subchapter 2.4 discusses, evaluates, and suggests theoretical extensions forward from the cybernetic control theory of feedback in management accounting. *First*, the concept of feedback in interpretive research is discussed further. *Second*, the explicit discussion of the formal and informal feedback can be found from the feedback-seeking literature, and as it acknowledges the active feedback procedures by actors, it involves a clear shift in focus towards an actor approach also with informal feedback practices. The 3D-framework also aims to enlarge the feedback analysis to practices and actors. *Third*, the discussion of what theorizing feedback in interpretive research means is provided.

[23] For the discussion of theory discovery and case studies, see especially Lukka (2005), cf. also Keating (1995, 68–70), or exploratory case studies (Scapens 1990).

The third chapter presents a qualitative empirical analysis of formal and informal feedback channels and practices related to control in management accounting, with the help of the organizational control scene for formal and informal feedback loops in Case Steelco. Division Steelco offers an interesting story of external and internal challenges and pressures that Finnish senior and middle managers face when they give and receive feedback in a large multinational company dominated by an engineering culture. The main structure for this chapter derive from the broader organizational control layers of Flamholtz (Flamholtz et al. 1985; Flamholtz 1996; Flamholtz 1983, see Figure 1 on page 41)[24] while the subthemes in each layer are an abductive combination from the theoretical examples from Flamholtz (*ibid*) and the relevant case-specific feedback scenes.

The forth chapter provides a discussion of the main results. First, it starts by presenting the 3D-framework of formal and informal feedback, a conceptual tool for defining formal and informal feedback. The framework has been constructed through an abductive analysis by classifying views on formal and informal feedback from the literature review, together with the empirical themes emerged from Case Steelco. Three dimensions (3D's) – source, time, and rule – can be used as an interpretive analytical tool when discussing and making sense of the vague and blur concepts of formal and informal feedback. *In the subchapters 4.4 and 4.5*, the 3D-framework and formal and informal feedback practices are further elaborated vis-á-vis the four thematic layers in the organizational control model by Flamholtz et al. (1985; 1996): core control system, organizational structure, organizational culture, and external environment. Based on the analysis of formal and informal feedback flows from Case Steelco, it widens the discussion of feedback with informal elements of feedback flows, much lacking from the cybernetic view of feedback and from Flamholtz's (*ibid*) model of organizational control.

The fifth chapter concludes with specifying the main theoretical contributions of this doctoral thesis to the management accounting research. Finally, the evaluation of the findings and the limitations of this study are provided together with some considerations for future research.

[24] Including the core control system and the wider control context: organizational structure, organizational culture, and organizational environment

2 CONTROLLING ORGANIZATIONS WITH MANAGEMENT ACCOUNTING SYSTEMS AND FEEDBACK

2.1 Conceptualizing feedback from the system perspective

2.1.1 Management accounting perspective

When management information is used for control, the relevance of cybernetic feedback comes into the picture.[25] Feedback is an essential part of the cybernetic control theory (see more in Section 2.1.4), where it, in theoretical terms, serves as a circular return of part of the output back to its input (feedback loop). The definition of feedback in the organizational control model by Flamholtz et al. (1985, 41) is "the information provided about work behaviour and outcomes".[26] Despite this rather broad definition, Flamholtz et al. (1985) still illustrate and discuss the operations of feedback as flowing through the core control system though measurement and reward systems. Also, Tocher (1970) provides a strict definition for feedback-based control (according to Otley 1988, 64): "…a basic model of a cybernetic control process can be derived having four necessary conditions that must be satisfied before control can be said to exist. These are:

1. the existence of an objective or standard which is desired
2. the measurement of process outputs along the dimension specified by this objective
3. the ability to predict the effect of potential control actions
4. the ability to act in a way that will reduce deviations from the objective."

It is rather self-evident that not all feedback flows that allow controlling organizations operate like this, but much feedback is given beyond *ex post* measurement systems (second clause); beyond clear knowledge about *ex ante*

[25] Simons (2000, 68–72) divides the purposes for various use of management information as for decision making (planning and coordination), control, signaling expectations for employees, education and learning, and external communication (to customers, stockholders, lenders, analysts, suppliers, and business partners).

[26] According to one definition (Shields 2009, 38), work behavior is based on the observable, describable, and verifiable actions that directly influence work outcomes.

control methods (third clause), and beyond negative feedback loops (forth clause). However, this is the narrow view of the cybernetic control in management accounting research, in which various measurement systems are the control systems producing feedback (see e.g. Malmi and Brown 2008, 292–293).[27]

In management (core) control, much of the practices rests on the process of generating feedback information – although not usually very well explicated (Otley et al. 1995, 34). For example, budgeting integrates and summarizes a wide spectrum of organizational activities and targets into a coherent compilation of figures. In budgets, performance is reviewed through profitability, balancing between revenues (output measures) and costs (input measures) (Otley 1999). Further, profit plans and performance goals set expectations, standards, and benchmarks against which actual performance and variance reports are compared, and the performance of units and individuals evaluated (Simons 2000, 69, cf. Flamholtz et al. 1985). In controlling, the concept of feedback requires goals, standards, forecasts or expectations (explicit or implicit, organizational or personal) against which actions, operations, and changes can be compared (*ex post*) and evaluated (*ex post* or *ex ante*). This is the comparative or evaluative loop which distinguishes it from mere information (discussed in Section 2.4.1).

In controlling organizations, feedback as a loop between performance (past, present, or future) and desired performance can be summarized as to (cf. Simons 2000; Otley 1999; Flamholtz 1996; Flamholtz et al. 1985):

1. keep the controlled *entities* within the intended paths of development (goal achievement)
2. direct *individual* behavior towards the organizational goals (goal congruence)
3. learn and make *changes* as organizations and individuals seek to *improve* their performance (goal revision).

In feedback practices, two levels for analysis need to be separated. First, the organization-level focusing on organizational performance and second, the person-level, focusing on individual performance (Leung and Trotman 2005, 538; see Luckett and Eggleton 1991 for review). Simons (2000, 69) also discusses feedback in relation to these two levels. First, feedback aligns inputs, processes, and outputs to ensure goal achievement (both at the organizational or individual level). At the individual level, managers also use feedback to motivate and evaluate employees. As in common everyday language, we often

[27] Malmi and Brown (2008) link negative feedback controls to the use of budgets, financial and nonfinancial measures, and their hybrids, such as the BSC. They refer to Green and Welsh (1988, 289) for the five cybernetic control elements: standards, performance measures, comparisons between standards and outcomes, their variances, and modifications.

consider feedback as information in response to our inquiry (concerning what to do or what to think) or experience of evaluating performance (feedback-seeking literature, discussed in Section 2.4). As feedback is central in control, evaluation, motivation, learning, and improvement of performance, London (2003, 179–192) raises yet another important theme: accountability for giving and using feedback. If managers are not accountable for using the feedback they receive, feedback loses its effectiveness. When considering the relevance of feedback, special attention should also be drawn to the concept of accountability of managers' feedback practices as well.[28]

2.1.2 Feedback and feed-forward

Feedback can be interpreted either in a narrow or broad sense, having both backward-directed and forward-directed loops in terms of time (see e.g. Nishimura 2003; Otley 1999, 369; Preble 1992, 393; Gardener 1985, 11; de Haas and Kleingeld 1999, 242–244). In a conventional, narrow meaning, feedback is seen as comparative information between past performance and pre-set goals, thus being reactive in nature (see e.g. Ashby 1958). From a broader view, feedback can also be considered as an input to the ongoing process. Being *ex ante* (before the fact), people anticipate and forecast the need for actions before receiving feedback on whether the goals or standards will be achieved or not. Cybernetics calls this kind of forward-directed information as feed-forward information.[29]

In feedback control, errors occur before corrective actions (error reduction), but in feed-forward control, occurrences of errors are prevented beforehand (error avoidance). In accounting, feedback is claimed to be primarily an *ex post* control device (Flamholtz et al. 1985, 43; Merchant 1985; Paasio 1981, 120, cf. Ferreira and Otley 2009, 279). Performance measurement systems are good examples of this kind of *ex post* control device, indicating deviations and progress against settled performance goals. However, limitations and problems of delay in *ex post* feedback systems have long been acknowledged (e.g. Mintzberg 1975, Preston 1986), and so have the calls for accounting to focus

28 For the discussion of accountability in management accounting, see e.g. Merchant and Otley (2007); Vamosi (2005); Roberts (1996); Miller (1994); Munroe and Mouritsen (1996). Also, the controllability principle, i.e. holding actors accountable only for the outcomes they can control (Merchant and Otley 2007, 793), enables evaluating which feedback is more crucial or justified than the other.

29 In Finnish, there is no direct translation for the system-theoretical concept of "feed-forward", but it needs to be formulated with other phrases like "anticipatory feedback" (cf. Otley et al. 1995; Otley 1988 call feed-forward control as anticipatory actions), "proactive feedback", or "future-oriented feedback". Their visualization has also been considered difficult (1988, 66). However, de Haas and Kleingeld (1999, 242–244) provide one visual presentation of feedback and feed-forward control.

more on the future than on the past (cf. Johnson and Kaplan 1987) – working as a driver for future-performance with strategic-learning processes or double-loop learning (Kaplan and Norton, 1996a). Uncertain or rapidly changing environments may especially require organizations to develop various *ex ante* feedback systems, in which certain disturbances can be anticipated, measured, and corrected before damaging impacts (Morgan 1997, 415–416). In these environments, the formalization of strategic processes (Preble 1992) or the establishment of operational future-directed measures (Gardener 1985) is thought to be challenging. The validity of feedback becomes challenging as well.[30] In complex environments, organizations have claimed to aim at predictability, control, and efficiency with hierarchical arrangements (Morgan 1997, 415–417). In addition, Otley (1988, Otley et al. 1995) suggests that error avoidance could even explain much of the apparent goal-seeking behavior in organizations, since often people aim to avoid undesirable states rather than inherently desire to achieve given goals as such. "Controlling not by error but by what causes errors" is proactive avoidance of goal achievement variances, in which effective control is based on the abilities of predicting and anticipating the consequences of alternative control actions. Otley et al. (1995, 34) state, "In most organizations such predictive models reside in the minds of line managers, rather than in any more formal form… and improvements in control practice need to focus on such models" (see also Marginson 1999; Gardener 1985; Otley and Berry 1980; Argyris and Schön 1978).

Drawing the distinctive lines between feedback and feed-forward also seems problematic (cf. Otley 1988). de Haas and Kleingeld (1999, 243) distinguish feed-forward and feedback control so that feedback measures are directly linked to the outputs (result-oriented performance indicators), while feed-forward measures (process-oriented performance indicators) are linked to the more unclear, "noisy" throughput process. This kind of process definition allows various means to receive feed-forward type of information, oriented to ongoing and future operations. Further, Gardener (1985, 11) also links feed-forward arrows back to the input as planning information. Otley (1988, 65; Otley et al. 1995, 34-35) defines feed-forward control as anticipatory and feedback control as reactive actions, and consider planning and forecasting systems to operate as feed-forward controls in organizations. According to Jackson (2000, 156), any control based on feed-forward information is *de facto* strategic control. Further, Langfield-Smith (1997, 208–213) classifies feed-forward controls as standard operating procedures and rules, human re-

[30] The longer the time span, the more uncertain it is whether the feedback indication will stay the same. Interpretations vary, and the feedback can turn out false. In addition, if feedback is given with many decimal places, it may create a fall sense of apparent accuracy in long-term feedback practices (Paasio 1981, 120).

source management policies, and the ongoing monitoring of activities and decisions, signaling the need for innovative actions when, for example, market share or sales drop significantly. Dekker (2004, 32–43) lists *ex ante* mechanisms as goal setting; incentive systems and reward structures; and structural specifications (planning, procedures, rules and regulations). According to Nishimura (2003, 58), feed-forward control is a proactive and preventive act in which plural planned values are set up and corrected according to different information. The idea is to eliminate the delay of time in corrective actions (Preble 1992; Gardener 1985). Target costing and budgeting with estimations or target costing are examples of management methods which utilize feed-forward types of information.[31] The BSC can also include feed-forward measures in the form of "leading" measures (*ex ante* financial performance).

Heterogeneous interpretations attached to the concept are easily found.[32] Since these complexities, Nishimura (2003) has argued that it could be useful to regard feed-forward information as a separate concept from feedback. However, they often operate simultaneously in such an interlinked manner that they are difficult to be fully divided. For example, budgets include both *ex ante* and *ex post* types of information, for planning and future forecasts as well as for monitoring the actual outcomes. In this doctoral thesis, I will use the term feedback in compliance with the broad interpretation, as an umbrella term for both loops, whether operating as *ex post* or *ex ante*, except when the nature of feed-forward information is explicitly being highlighted.

2.1.3 Negative and positive feedback

In cybernetics, negative feedback as a control mechanism is a key concept, used to explain adaptive and purposive error reduction processes in organizations (Otley 1988, 63; Aula 1999, 124). As Morgan (1997, 393) states the analytical map in cybernetics: where "information rests in the communication of difference". However, in addition to this focus on negative feedback and the desire for stability, cybernetics also applies the concept of positive feedback in analyses of complex system dynamics and changes over time (Aula 1999, 58; Morgan 1997, 274).

The concepts of negative and positive feedback in cybernetics differ from their everyday use, where people simply associate positive feedback with

[31] For the interconnectedness of management accounting techniques *ex post* and *ex ante*, see e.g. Bjørnenak and Olson 1999, 332.

[32] Other management accounting articles which explicitly use the term "feed-forward" information (or control), see e.g. Tuomela (2005); Nishimura (2003); Otley (1999); Langfield-Smith (1997), Otley et al. (1995), cf. Dekker (2004).

praise and negative with blame. Also, some quotes in the empirical section will refer to "positive feedback" as meaning praise. In cybernetics, negative feedback means corrective, restraining, or balancing (stabilizing) feedback. Negative feedback loops lead to counteracting forces that aim to stabilize the system and maintain balance in an optimal (positive) state.[33] Perhaps part of the feedback's conceptual complexity results from the difficulties of adapting concepts from mechanical systems to social systems, such as organizations. In cybernetics, negative feedback is not only "bad news", but provides information about deviations between the actual performance and pre-set goals – the desired direction of present or future performance, the goals and objectives, counts.

Positive feedback in cybernetics amplifies deviations, differentiations, or other changes in the system so that it begins to move into a new direction, i.e. it operates as reinforcing or amplifying feedback. Naturally, this may also be an unwanted development, especially when there are no stabilizing loops to hinder the exponential change. Like the Pygmalion effect (named from Greek mythology), a small change can build on itself.[34] The QWERTY-keyboard is one example of development analyses where positive feedback has reinforced change. The QWERTY-keyboard was designed by one manufacturer in the 1870s to slow down typewriting because typewriters used to get locked if typing too quickly. Other manufacturers decided to learn and copy that system that resulted in many positive, reinforcing feedback loops. As a result, in most of the keyboards, this logic is present even today (Aula 1999).

With the help of negative and positive loops, feedback is seen to enable purposeful and effective actions, changes, and learning.[35] The second-order cybernetics (or cybernetics of cybernetics) enriched the (first-order) cybernetic theory with the ideas of the mutual, two-way causality (Maruyama 1963; Weick 1979), and the "systemic wisdom" (Bateson 1972). Patterns of mutual causality replace the idea of mechanical linear causality (A causes B), when A and B are co-defined because of their circular co-operations. Similarly, systemic wisdom recognizes the complex nonlinear nature of all systems dynamics. Change can be analyzed through dynamic patterns of relations between various positive and negative feedback loops, useful for understanding and analyzing various organizational problems and their key system patterns (so called "attractor patterns"). Loop analysis (instead of linear thinking) focuses

[33] Often used, yet very simple, example of the function of negative feedback is a thermostat controlling the desired room temperature (see e.g. Littlejohn 1995, 50; Aula 1999, 98–99; Morgan 1997, 274–283; Senge 1990, 84–88).

[34] See e.g. Littlejohn (1995, 50); Aula (1999, 98–99); Morgan (1997, 274–283); Senge (1990, 80–83).

[35] An illustrative example of the difference between random actions and feedback systems is the time required for a monkey to randomly type the production of Shakespeare compared to the feedback-based system, originally presented by Dawkins (1989), see e.g. Aula (1999, 100–103).

on the differentiation processes of complex systems and deviation-amplifying processes, such as the "butterfly effects" in which small changes in the beginning expand to eventually produce large effects (Morgan 1997, 274–283; Aula 1999, 25).

2.1.4 Vertical and horizontal feedback channels

The channels of communication structure the practices of managerial feedback (cf. Åberg 1997, 91). In the organization, information flows have "a directional force towards the locus of power" (Pettigrew 1972, 189–190), and those who have positions at the junction of various information flows, the so-called "gatekeepers" of information, can control, regulate, and reformulate flows of information (*ibid*). Communication channels are further divided based on their direction into hierarchical channels – vertical downward and upward – and the more equal and voluntary collegial horizontal channels (see e.g. Katz and Kahn 1978, 440–448).[36]

Feedback from the superior to the subordinate formulates one core channel down the line in organizations. The most important directive from each immediate superior to their subordinates should be the information about how the job is to be done; if it cannot be personally given, it would need to be instructed through pointing out additional contacts (Katz and Kahn (1978, 444). In practice, the different world views and experiences from the business and operations among upper leaders and middle managers can impede these operational instructions, making them too general or too remote. Despite the good intentions for fair and timely review and discussion, the systematic feedback procedures between superior and subordinates often tend to fail (Katz and Kahn (1978, 441–442). Managers may regard themselves more as leaders than punishing disciplinarians, especially in democratic cultures. However, situations that are neglected or poorly handled at an individual level may be less costly to organizations than the maintenance of thorough, systematic, and timely feedback systems kept for all (*ibid*). In addition to receiving feedback from their superiors, subordinates can receive or ask for instructional, motivational, and informational clues and responses themselves: task instructions, job rationales (locating the tasks in relation to the wider organizational setting),

[36] Interpersonal relations between managers have been structured through other forms of organizational hierarchies and group models also. For example, in the linking pin model by Likert (1967, 1961), vertical communication and down/up the line feedback flows are supported by two-family work groups: every supervisor operates both as the head of the group for subordinates and a member of group of peers getting together with their own superior (Katz and Kahn 1978, 278–282). This enhances systematic peer feedback.

information about organizational procedures and practices, and the ideology attached to the goal achievement missions (cf. feedback-seeking literature; Katz and Kahn 1978).[37]

Typical upwards communication loops are very small as they end up with the immediate superior. If the message is transmitted upwards to the next level, it is usually modified. The institutional method of bypassing someone's own superior requires specific circumstances (Katz and Kahn, 1978). For example, if there are doubts of someone's reliability because of frauds, glaring incompetence, or similar. Hall (2010) suggests that managers also tend to bypass organizational charts simply because they do not want to wait for information to come through formal channels.

Horizontal (or lateral) communication takes place at the same hierarchical level. The hierarchical and authoritarian model of organization tends to restrict these flows, favored only when instructed by formal rules for task coordination (Katz and Kahn 1978, 444). When organizations aim to enhance goal accomplishment and efficient communication, they tend to strengthen the reliance of vertical flows of information and restrict the free communication through horizontal levels (Katz and Kahn 1978, 430; cf. von Bertalanffy 1968). Needs for collegial support among peers are neglected, at extreme even punished by social control. In divisional structures, horizontal communication between peers in different divisions should also primarily focus on the tasks of each unit and on the shared objectives that all parties are directly involved with. Otherwise, matters should be handled within divisional boundaries only (Katz and Kahn 1978, 444). In addition, since people have been found to seek primarily contacts at their own "status" level, Katz and Kahn (*ibid*) also warn about neglecting the levels below in the managerial search for critical information.

2.2 Feedback in cybernetic control theory

The concept of feedback in control theory originates from cybernetics (Wiener 1948; cf. von Bertalanffy 1968). The word "cybernetics" comes from Greek, meaning "the art of steering" (see e.g. Niiniluoto 1996). In the book called "Cybernetics, or control and communication in the animal and machine" Wiener (1948) proposed an idea of establishing a new branch of science, called cybernetics, which would study the commonalities of control systems between mechanical machines and biological systems. The novelty lies in the

[37] Katz and Kahn (1978) do not use the term feedback when they discuss the more feed-forward types of controls (as overlapping, see e.g. Langfield-Smith (1997, 208)).

introduction of the concepts from information theory (von Bertalanffy 1968: from cybernetics point of view everything can be translated in informational terms (Morgan 1997, 393; Willmott 1983, 392). Feedback formulates a signal, mechanism, and process which controls the system within itself, according to its in-built goal(s).[38] Cybernetics, as a science, means different things in different streams of thought,[39] but all apply the notion of feedback as serving circularity, arising when (a part of the) output returns back as new input.

Cybernetics is seen to simplify and mechanize the function of the organizations (see e.g. Otley and Berry 1980; Checkland 1981; Marginson 1999). Feedback processes in organizations are represented through a linear process-based performance "system", in connection with the concepts of inputs (planning and goals), throughputs (operations and work behavior, process that transforms inputs into outcomes), and outputs (results) (Shields 2009, 20). Researchers have concentrated on the measured output feedback (e.g. Flamholtz et al. 1985, de Haas and Kleingeld 1999) or negative feedback controls (Malmi and Brown 2008).

There seem to be two streams of cybernetic studies. First, the cybernetic view of feedback operations has been claimed to portray organizations along organic or machine metaphor (Llewellyn 2003, 675, cf. von Bertalanffy 1968). Morgan (1997)[40] does not discuss cybernetics under the machine metaphor but as the metaphor of organization as brains (as information processing brains and as learning organizations) (p. 73–118). Further, the logic of mutual, two-way causality between feedback loops is discussed under the metaphor of organization as flux and transformation, unfolding the logics of change (p. 274–283). At the individual level, the metaphor of the manager as "nerve center" is used by MacIntosh (1994, 37–40) concerning a manager's information processes and relations.

Especially Otley (1988, also Otley at al 1995, 34–35) has evaluated the applicability of cybernetic concepts and models to management accounting research. Cybernetics (and systems theory in general) affects our management control thinking. It seems to provide a language – but not straightforward applications – in which the central management control issues can be expressed (cf. Otley et al. 1995, 35).[41] Similarly, on Morgan (p. 394): "Developments in cybernetics and cybernetic technology have contributed greatly to our under-

[38] About cybernetics, see e.g. Jackson 2000; Littlejohn 1995; Flamholtz 1996, 1983; Otley et al. 1995; Otley 1988; Green and Welsh 1988; Paasio 1981; Arbnor and Bjerke 1977; March 1965.
[39] E.g. in mathematics, engineering, psychology, biology, and economics.
[40] Morgan (1997) has gathered the streams of organizational studies under organizational metaphors: organizations as machines, as organisms, as brains (holographic), as cultures, as political systems, as psychic prisons, as flux and transformation (change), as domination (similar trends can be found also from e.g. Jacobsen and Thorsvik 2002, 29).
[41] Cf. accounting as a language, see e.g. Ahrens (1997).

standing of how systems learn… Cybernetic thinking has become an important part of the information revolution and underpins a great deal of work exploring the impact of information technology on human organizations."[42]

2.2.1 The model of control by Flamholtz

I consider the model of organizational control by Flamholtz et al. (1985; Flamholtz 1996, 600; 1983, 155) as the most comprehensive presentation of concrete flows of feedback in management accounting research (see Figure 1).[43] The flows of corrective and evaluative feedback are presented in the core control system, which is formed by five cybernetic subsystems or processes: planning, operations, measurement, feedback, and evaluation-reward.

[42] A good summary of the cybernetic tradition can be found from Morgan (1997, especially 393–397).
[43] Paasio's doctoral thesis (1981, 191–194) also describes cybernetic control in accounting with a three-level feedback system: operative, adaptation, and strategic. For other frameworks that specify cybernetic feedback control, see 2.2.2.

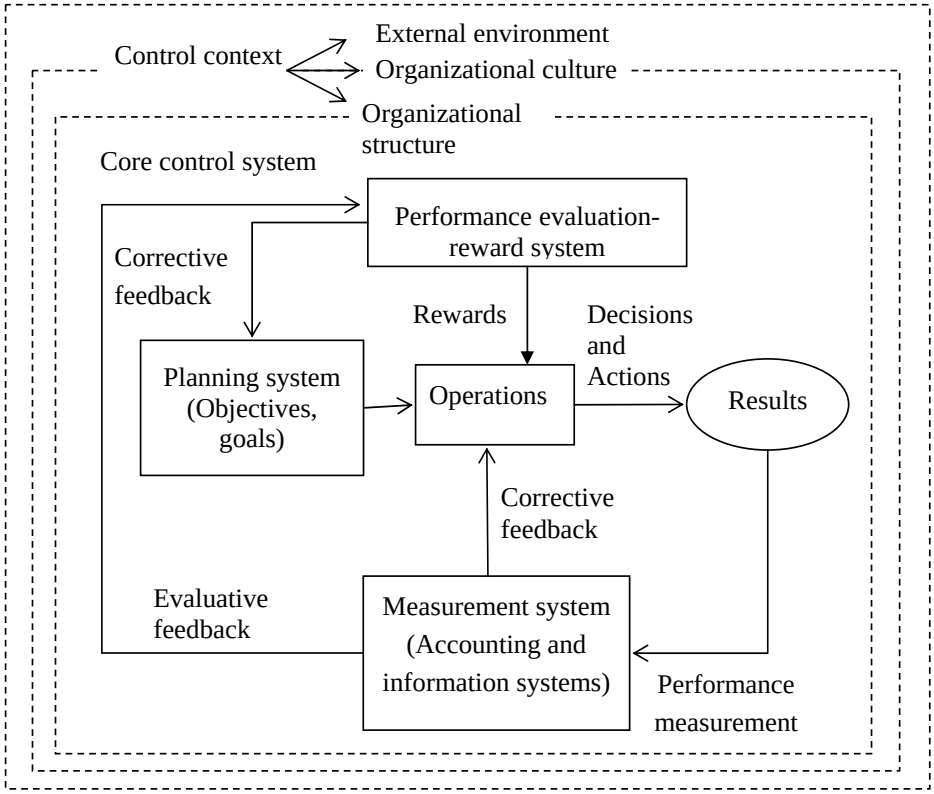

Figure 1 An integrative framework of organizational control (composed of Flamholtz et al. 1985, 38; Flamholtz 1996, 599–600; Flamholtz 1983, 155)

The model starts from predefined organizational goals and objectives (inputs for the process). Measurement of results provides output feedback regarding how an organization or its subunit is achieving its strategic, operational, and financial goals. Together with a related system of organizational rewards, feedback aims at motivating behavior towards goal congruence between different units (Flamholtz et al. 1985; Flamholtz 1983; Ouchi 1979, 1977; Ouchi and Maguire 1975). Rewards in the control system are linked back to the goals in order to communicate the desirable outcomes of behavior (Flamholtz 1996). Extrinsic rewards (e.g. compensation, promotion, recognition) people expect from others, while intrinsic rewards motivate because they are perceived as interesting (Flamholtz 1996).[44]

Flamholtz et al. (1985, 42; Flamholtz 1983, 1996, see also Ilgen et al. 1979) separate two types of feedback: corrective and evaluative. These lead to di-

[44] Malmi and Brown (2008, 293) claim that management accounting research have focused on extrinsic rewards (more about rewards, see Section 2.2.3).

rective and motivational controls. The definition of them varies from broader to narrower view: *corrective* feedback as information about the performance in order to improve it (Flamholtz 1996, 601) or as comparative information between performance and pre-set goals and standards (Flamholtz et. al. (1985, 39)). *Evaluative* feedback as informing how well the operational system is doing (Flamholtz 1996, 601) or as information based on outcomes that suggest future rewards or punishment, both monetary and social (see e.g. Ilgen *et al.* 1979, 351–352; Flamholtz et al. 1985, 42). Corrective feedback is quite close to the output feedback (information about work output) and evaluative to the behavior feedback (information about work behavior whether specific to the work goals or general) (Ouchi 1979; 1977; Ouchi and Maguire (1975).

Noteworthy, as Flamholtz et al. (1985, 36) define control as "attempts by the organisation to increase the probability that individuals and groups will behave in ways that lead to the attainment of organisational goals", Malmi and Brown (2008) note that this definition is broader than the definition of merely organizational control systems. It can employ many types of controls, also feed-forward controls, such as rules, operating standards, policies, and direct monitoring (cf. Langfield-Smith 1997). The core control system is suggested to be seen as a part of total organizational control, added with three layers in the control context[45]: organizational structure (set of rules and their interrelationships), organizational culture (value system, beliefs, and core assumptions), and the external environment (Flamholtz et al. 1985).[46] These broader mechanisms include both formal and informal control elements as well as formal and informal feedback channels. As Flamholtz (1983, 168) states: "…we have observed the crucial role not only of the formal core control system but also of an organization's culture as a mechanism of control." Similarly, there is no reason why there would not be space for various types of feedback loops as well.

However, all feedback flows in the organizational control model (Flamholtz et al. 1985; Flamholtz 1996, 1983) pass through the formal cybernetic core control system: from results through measurement system or evaluation-reward system. Formal and informal feedback practices in the wider control context (structure, culture, and environment) remain hidden, as well as more informal feedback loops in the core control system (Figure 2).

[45] Contrary to Flamholtz et al. (1985), Flamholtz (1996, 599) includes only three first control elements to the framework bounded by the organization's environment. Since many feedback flows operate from an external environment, I follow Flamholtz et al. (1985) and include four control layers.

[46] The forth layer is labeled in Flamholtz (1983, 1996) as organizational environment and Flamholtz et al. (1985) as external environment. Its content is mostly discussed in Flamholtz et al. (1985).

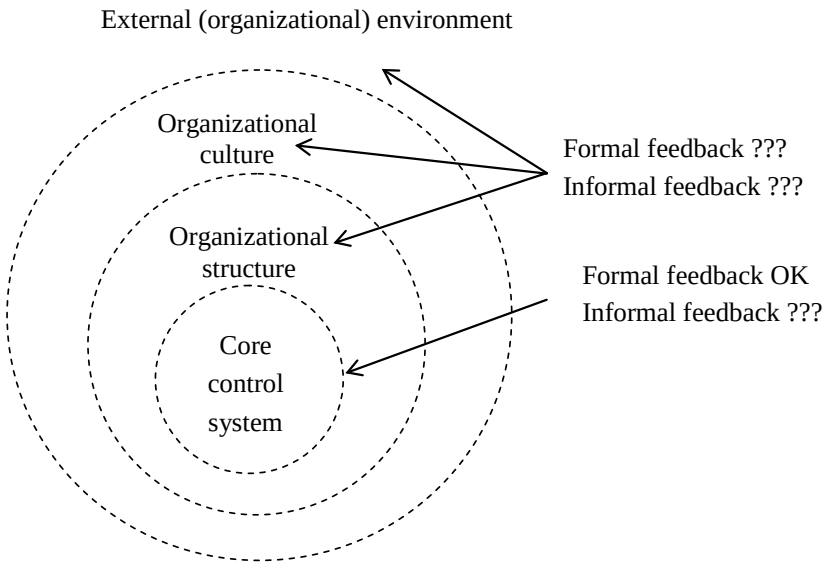

Figure 2 Schematic representation of an organizational control system (Flamholtz 1996, 599; 1983, 155, added with arrows)

This will be used as a platform to enlarge and discuss analytical sub-themes rating to formal and informal feedback practices emerged from Case Steelco. The core control system consists of the cybernetic forms of control: planning, operating, measuring, receiving feedback, and evaluating-rewarding. The focus is on those mechanisms (both processes and techniques) that aim to the attainment of organizational goals and objectives (Flamholtz 1996: Flamholtz et al. 1985). Feedback and feed-forward loops flow through the core control system (1996).[47] Flamholtz (1996) distinguishes objectives and goals so that objectives are relatively broad statements about desired performance, while goals are more quantitative statements. Evaluation of past performance can reinforce or modify future performance, when outputs are used as a basis (an input) for an evaluation-reward system.

As a component of control, organizational structure has been formed as a strategic response to the requirements of markets, technologies, and the environment. It specifies the expected behaviors and performance of people in

[47] Flamholtz (1996) mentions feed-forward loops, but they are not further explicated. I consider that the directive and motivating function of feedback loops in Flamholtz et al.'s (1985) model can be interpreted functioning as feed-forward loops. Also, planning systems can be seen as functioning as feed-forward controls (e.g. Dekker 2004).

their roles, the authority, and reporting relationships. It includes choices regarding the degree of (de)centralization, functional specialization, degree of vertical or horizontal integration, and the span of control, i.e. number of direct reports (Flamholtz 1996; Otley and Berry 1980). Thus, it defines the formal arrangement of who gives feedback to whom, in what form, and when.

According to Flamholtz (1996), organizational culture is the starting point for the design of an organizational control system. Control through organizational culture *represents a form of social control*, and its invocation can be especially appropriate when the knowledge of processes or ability to measure performance is low (Flamholtz et al. 1985). Culture consists of historically derived and selected broader values, ways of thinking and acting, and normative practices and policies which guide behavior (cf. beliefs systems, Simons 1995). Flamholtz (1983, 160) especially emphasizes the role of an organization's culture as a dominant control mechanism "versus formal control systems" (accounting as socio-technical system). Vice versa, the institutionalization of a core control system can be used as a vehicle in cultural change (cf. Case Steelco).

External (organizational) environment is the social context for the organization and its members. Examples of *external mechanisms that guide behavior* are dominant work values in social settings, level of professionalism, and direct demands from customers (Flamholtz et al. 1985).[48] I will also include the demands from relevant stakeholders other than customers, especially from the owners and investors in listed companies.

2.2.2 Other management control frameworks

Similar ideas to Flamholtz's statement that management control systems should be studied inside organizational layers are presented by Malmi and Brown (2008). Their (*ibid*) framework of organizational control package incorporates a set of five types of controls: planning, cybernetic, reward and compensation, administrative, and cultural controls. Otley (1999) structures the analyses of management of organizational performance and management control systems also around five issues: objectives; strategies and plans for their attainment; target-setting; incentive and reward structures; and information feedback loops. Common to these frameworks are their emphasis on rule-based, formal, top-down control elements. As Flamholtz (1996, 599)

[48] Flamholtz (1996, 1983) labels the fourth layer as organizational environment instead of external environment without explicit definitions of it as a component of control.

states: “It [framework] is intended to serve as a managerial lens to make the control system more visible.”

Langfield-Smith (1997, 266) raises the concern that management accounting research should address other (informal) forms of control beyond output measures and formal behavior, as well as dissociate the existence and the use of controls. The explicit identifying and analyzing of information and feedback loops that managers and employees use in practice with the help of the classifying control frameworks (Malmi and Brown 2008; Otley 1999; Flamholtz et al. 1985) enables the discussion of the use of controls rather than their existence.

The effects and applicability of various control systems in various environments and to informational needs are widely discussed in the literature (see e.g. Alvesson and Kärreman 2004; Simons 2000, 1995; Langfield-Smith 1997; Ouchi 1979, 1977; Merchant 1985; Mintzberg 1983). Each of them uses their own, often overlapping, and thus sometimes confusing, vocabulary. In Ouchi’s (1979) typology (market, bureaucracy, and clan controls), informational requirements concern prices, rules, and traditions (as sequential). The rule dimension in the 3D-framework much resembles with the bureaucracy control, while the market and clan controls link to organizational structure and culture in the model of Flamholtz et al. (1985, Flamholtz 1996 1983). Merchant (1985) analyzes between output (result), action, and personnel (social) controls. Output control leans on (cybernetic) measureable outputs and feedback, while the others aim at restricting the behavior with more social feedback (social constrains or self-control). Similarly, Alvesson and Kärreman (2004) discuss technocratic and socio-ideological forms on control, in which the first is associated with formal bureaucracy and measured outputs and the latter to the social clues and persuasion on adapting certain values and ideas of what type of behavior and actions are regarded as good and desired. Importantly, they explicitly state that conceptually “the contrasting forms of control” do not need to exclude each other, but highlight analytical distinctions (p. 424). In line with this argument, they discuss the mutually constitutive role of these two forms of control (cf. Adler and Borys 1996). While they later (p. 426) point out that “what we have labelled socio-ideological forms of control are more frequently (and misleadingly) labelled informal controls, or in some cases, clan controls”. They, alas, do not explicate the problem behind the informal label. While this doctoral thesis focuses on explicating the domain of formal and informal feedback, future research could also specify the use of different vocabulary in management control frameworks, perhaps through theorizing with bridging concepts (cf. Llewellyn 2003).

2.2.3 Feedback in relation to goals, rewards, and performance evaluation

Control is goal-oriented (Flamholtz et al. 1985); control systems require the use of objectives and goals against which performance can be assessed (Otley and Berry 1980). In management accounting research, goal-setting, strategies, performance measurement and reward systems function at the core, while cycles of feedback aim at motivating and directing behavior towards goal congruence between different units (Flamholtz et al. 1985; Flamholtz 1983; Ouchi 1979, 1977; Ouchi and Maguire 1975). Uncertainty drives many organizations to prefer controlling outputs (by setting goals and targets) rather than controlling behavior (Morgan 1997, 80). Phrases like "what gets measured gets done" or "you can only manage what you measure" are the isms in the (BSC) literature. Uncertain tasks can require a large amount of information to back up decision-making at the same time when actions are difficult to be routinized as any pre-planned responses. However, without feedback, without direction and recognition, top management expectations and the level of work desired at a global level do not reach the lower levels.

Cybernetics can visualize organizational goals (group, divisional, unit-level, business, and operations), but the mix of various goals or individual goals fall out of the framework (cf. Otley 1988). Various, conflicting goals concern all organizations, but especially matrix organizations due to their complex structure. In cybernetics, the processes of how different goals are set, negotiated, or changed do not really become explicated (cf. Hopwood 1973), nor do the other internal processes.[49] From an interpretive angle, different views about the goals, processes, or outputs put feedback practices at test. Feedback is linked to the goals only when people share the same ideas about their goals (not necessarily meaning the same goals).

According to Locke and Latham (2002), goals affect individual performance through four mechanisms, as they

1. direct action and effort toward goal-related activities
2. energize employees, as challenging goals lead to higher effort than less challenging ones
3. affect persistence, as employees exert more effort to achieve high goals
4. motivate employees to use their existing knowledge to attain a goal or to acquire the required knowledge.

At the organizational control level, goals can be used to (Flamholtz 1996, 600)

[49] Target setting receives more attention in Malmi and Brown (2008) than in Flamholtz et al. (1985, Flamholtz 1996, 1983).

1. establish and communicate desired performance levels (*ex ante* control as communicating objectives)
2. motivate performance (*ex ante* control as motivation)
3. serve as a benchmark against which actual performance can be evaluated (*ex post* control as evaluation).

Goal-setting can be managed either top-down or bottom-up. Especially in large organizations, the top management determines strategic goals, which define the tactical goals to each department, and the operational goals to each individual. This kind of management by objectives (MBO) focuses on coordinating goal setting, incentives, and feedback, since, if the top management is detached from the everyday operative activities, there is a higher risk for setting unrealistic or unmotivational goals (Locke and Latham 2002; Otley 1999). Figure 3 points out the reward systems and the difficulties of aligning individual goals with organizational purposes.

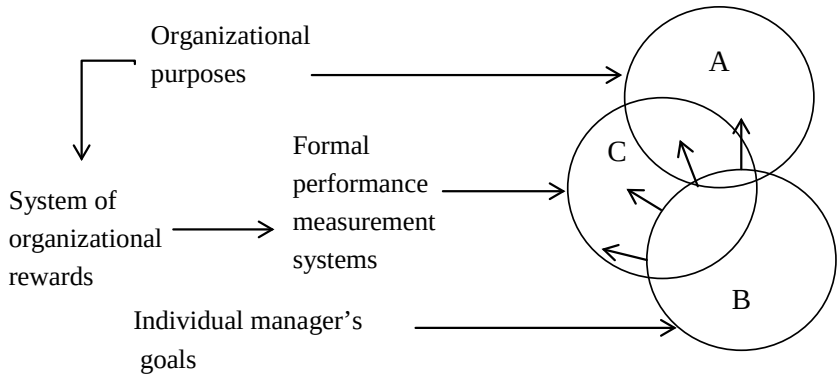

Figure 3 The measurement-reward process with imperfect measurement. A= behavior necessary to achieve organizational goals; B= behavior actually engaged in by individual manager; C= behavior measured by control system (Hopwood 1973; Otley 1978)

Figure 3 highlights that the measurement-reward process is seldom perfect, but can only partly mobilize the organizational goals and the goals by each individual manager or employee. In addition to that, organizations seldom, if ever, possess only one coherent purpose or rationality but instead consist of an accumulation of various, often conflicting rationalities and goals (cf. Sayles 1989, 11–12).[50] The measurement of goal attainment is not only financial but also serves other stakeholders form various interest groups (Otley 1999): own-

[50] Sayles (1989) provides a summary of the disparity between the rhetoric of management and the reality in managerial work.

ers, managers, employees, customers, suppliers, consumers, and authorities. Management can be seen as a political and symbolic struggle over the construction of the reality of the organization (Aula 1999, 21). This kind of organizational view will lead to multiple feedback arenas and practices, since the conflicting goals and rationalities of action turn a single figure of organizational core control setting inadequate. In addition, the conventional goal-action paradigm becomes an inaccurate representation of the organizations' reality and behaviour (Cooper et al. 1981, 181) when actions precede goals (see e.g. Schutz 1967).

In Flamholtz et al. (1985), rewards are discussed as extrinsic or intrinsic in the core control system. Shields (2009, 30--36) defines rewards more broadly as anything tangible or intangible that an organization provides either intentionally or unintentionally in exchange for the employee's potential or actual work contribution, and to which individuals attach a positive value or certain self-defined needs: a combination of extrinsic rewards from the job context (financial, developmental, and social rewards) and intrinsic rewards from the job content. Also, the conventional dichotomization of motivation into extrinsic and intrinsic has been challenged (Adler and Borys 1996, 80) to be just varying degrees of internalization of values.

Performance assessment is always subjective, constructed, and open-ended. Performance review processes set goals, clarify roles, set initiatives for development, provide formal feedback on recent performance, motivate, and set performance-related earnings (Shields 2009, 19–36). In addition to these formal evaluation practices, various multisource assessment and ratings (especially 360-degree assessment) became fads in firms in the late 1990s. These practices tend to enlarge the amount of feedback providers from the immediate supervisor only to peers, possible subordinates, and customers. A more balanced, participative, accurate, and procedurally fair means of performance ratings still have potential shortcomings. Due to the assessor bias, additional information load, and low accountability regarding peer and subordinate reviews, these practices may end up being more developmental than evaluative (Shields 2009, 148–149).

2.2.4 Feedback in relation to open systems and system dynamics

The open system approach and dynamic systems research highlights the external forces (see e.g. Katz and Kahn 1978). An approach in which feedback is a reciprocal actor in its environment (i.e. has mutual causality loops) leads to open systems analyses. The open system approach has been developed in order to overcome some of the weaknesses of the closed system approach. Da-

ting back nearly a half decade, von Bertalanffy (1968, 44) differed between closed and open systems when he introduced his general systems theory.[51] However, Otley et al. (1995, 34) state that although the cybernetics and systems theory have been developed so hand-in-hand that they are not usually meaningful to be separated, one difference between cybernetics and systems theory is attached to the claimed difference between closed and open approaches.[52] As von Bertalanffy (1968) called for a synthesis between these two approaches, the second-order cybernetics (e.g. Maruyama 1963; Weick 1979; Bateson 1972) has enlarged the analysis of the first-order cybernetics with mutual causality, systemic wisdom, and "learning to learn" systems.

Open systems have been characterized through ten points, which highlight central organizational elements and tendencies (Katz and Kahn (1978, 2–33). First, open systems need to import energy for their operations, for example people and material. Second, they process throughputs (i.e. reorganize inputs), for example material, new products, services, and training. Third, they produce outputs, for example export products to the customers. Fourth, they have cycles of events, for example dynamic social structures. Fifth, open systems need to reverse the constant entropic process that takes systems towards disorganization or running down, for example by setting margins of safety. Sixth, as distinct from energic inputs there are information inputs also. In coding processes, the messy world can be simplified into a few meaningful categories that define to which information signals systems are attuned (e.g. goals and performance measures). Negative feedback is the corrective device of that system that delineates boundaries and exposes deviations from targets.[53] Seventh, systems aim for a steady state, for a dynamic homeostasis, which is not a true equilibrium but preserve the system character. Further, complex living systems also tend to expand when they react against entropy or anticipated change. Eight, all systems, whether biological or social, progress and move towards a greater degree of differentiation, specialization of functions, and multiplication and elaboration of roles. In regulatory processes, this principle of progressive mechanization (von Bertalanffy 1968) aims at making the system and its parts more effective. Increasingly more often, attempts are made to govern social systems and dynamic interactions with fixed control arrange-

[51] According to von Bertalanffy (p. 163), the cybernetic approach is stuck to the machine model, unidirectional causality, and closed systems. According to von Bertalanffy (1968), typical feedback phenomena are open with respect to incoming information, but closed with respect to matter and energy. His primary view lies in describing biological systems. In organizations, the system analysis works from a different angle than in biology or for example in engineering, since organizations do not only import informational energy. However, in other places in his book, the two approaches seem to be more on the same level, just capturing different aspects of systems.

[52] This doctoral thesis does not differentiate the two approaches, but refers to the term cybernetics more generally.

[53] Cf. both diagnostic and boundary systems of Simons (2000, 1995)

ments and constraints that aim to ensure goal-directed behavior. As a consequence, the role of regulatory feedback mechanisms increases (cf. Morgan 1997). Divisions of labor, organizational charts, and specified roles also lead to hierarchical components with dominance. The smaller the amount of dynamic interaction, the more "machine-like" the system becomes. Systems become more efficient with feedback and mechanization, but at some point their flexibility diminishes. Ninth, open systems require integration and coordination, through devices, such as goal-setting, routines, scheduling, sequencing of events, timing and synchronization of functions. Tenth, open systems follow the principle of equifinality, which means that the same final state can be reached from various initial points and through a variety of paths, for example the given goal can be achieved in many ways (Katz and Kahn 1978).

In order to learn, organizations need to develop their abilities to detect and revise weaknesses in their structures and processes, both from internal and external factors. Organizations, as any social system, are reasonable to be treated as open systems, i.e. systems which operate with their environment and learn (Otley 1988, 66). Flamholtz et al. (1985, 38) claim their framework of control to propose an open-systems view “unlike previous frameworks”. The attention to holistic control of organizations can be seen as one of the contributions of the cybernetics (and systems theory, more generally, see e.g. Romme and Dillen 1997, 70–71), together with its endeavor to analyze and understand the behavior of complex, learning, and changing systems with the concept of feedback (Otley et al. 1995, 34). However, the boundaries of the systems are yet ill-defined (Otley et al. 1995, 40). The open approach has been criticized from duality of nature, since they imply both openness and boundaries (Katz and Kahn 1978, 31). Katz and Kahn (1978, 33) have considered that despite the calls for openness, in practice the process has been slow when it comes to researching and assessing external forces in companies. More recently, management techniques, such as the BSC (Kaplan and Norton 1992, 1996a, 2001a), also call for balance between internal and external performance measures and perspectives. However, it is good to question how openly companies operate with their environment in today’s global competition.[54]

In contrast to the principle of progressive mechanization (von Bertalanffy 1968), Hamel (2007) questions whether the era of modern management technologies and hierarchies have come to its end. Modern corporations lead with the help of a dominant consultancy business sector, in which all can provide nearly exactly the same models, systems, techniques, strategies, and processes: all aiming at efficiency, with the help of short-time variance reduction actions.

[54] Cf. Katz and Kahn’s (1978) claim that open systems aim for a steady state despite the ongoing changes in the environment, also Aula (1999).

Also, Porter (1996) advises companies to put more strategic weight on their systems of activities instead of techniques. Hamel (*ibid*) calls for "management innovation democracy", where hierarchies and organization charts are forgotten, and instead they aim for radical innovations, continuous experimenting, and routine breaking. In a chaotic world, he states, survival depends on the ability to utilize chaos without trying to prevent the change.

Carr's (2010)[55] debate on the effects of the Internet on our mind also applies to the formalization of feedback and modern communication technologies. Carr starts by illustrating how every information technology, the printed book, the clock, the alphabet or a computer, carries "an intellectual ethic", a set of assumptions about the nature of knowledge and intelligence. For example, when Gutenberg's press made books available to the public, others saw it signalizing a "democratization of culture" while others a "dumbing down of culture". Instead, the modern era of computers and the Internet carry the "ethic of the industrialist" which celebrates speed, efficiency, optimized production, and consumption. The ongoing transition between two very different modes of thinking occurs: from the old linear thought processes into the fast, disjointed, often overlapping information inputs. Carr (*ibid*) even provokes that *when* (NB: not if) the march of technology continues (cf. von Bertalanffy 1968) it may threaten our ability to read, concentrate, and think deeply. Even our ability to read a book, something so long and linear, can be at stake (p. 10). This resonates with the modern reliance on fast signals, scanning, and ignorance of time-consuming but more thorough sensemaking. In addition, it has been claimed that, in the long run, the medium or the technological tool (e.g. television, computer, or email) matters more than its content, since the medium influences the way we think and act (Carr 2010, 3–6: McLuhan 1964). When we consider that any repeated practice will sooner or later affect our synapses (Carr 2010, 49), the relevance of iterative feedback loops to our minds and actions become visible. If they are mainly technological, does our thinking eventually start to resemble the systems we use?

2.2.5 Feedback in relation to learning and change

Since simple cybernetic machines, like thermostats, are unable to question their operating logic, the second-order cybernetics has separated the process of learning and the process of learning to learn. The latter systems, such as organizations, change their operating standards if needed (Morgan 1997, 83–118).

[55] In a book called "Shallows: what the Internet is doing to our brains".

Most of the studies of organizational learning are based on the work of Bateson (1972), a cybernetician. So is the development of single- and double-loop learning (Argyris and Schön 1978); called as first- and second-order learning by Bateson. Otley and Berry (1980, 236) separate four forms of changes in control systems:

1. adjustment of the process inputs in order to stabilize the process output at a desired level
2. amendment of the process objectives to be achievable in the light of previous experiences
3. reformulation of the predictive model to incorporate the errors learned
4. change of the whole activity.

The first two changes refer to single-loop learning while the two latter refer to double-loop learning. Single- and double-loop learning is an analytical separation of the learning processes from simple corrective actions to the revision of corporate strategies. This distinction has gained visibility also in BSC framework, utilized by Kaplan and Norton (1996a; 1996b). Learning as a single loop means reducing or correcting detected errors and weaknesses within the existing set of rules, norms, or operating principles. Kaplan and Norton (*ibid*) attach single-loop feedback or learning process to companies that stick to intended strategies and hierarchical planning and control systems, while the flexibility of goals and strategies allow responding to the dynamic changes in the environment (cf. Ferreira and Otley 2009).

In double-loop learning, organizations not only learn, but they learn to learn. Feedback is used less linearly when evidence, observations, and experience from the environment set to question, evaluate, and adapt the strategy to the emerging conditions. This will change the fundamental rules, organizational norms, operating principles, and cognitive frameworks that underlie action and behavior (Kaplan and Norton 2001a; 1996a; 1996b; Argyris and Schön 1978; Morgan 1997, 83–118; Marginson 1999; Romme and Dillen 1997; Partanen 2001, 68–69[56]).

Because of the strategic focus in their framework, Kaplan and Norton (1996a; 1996b) limit their discussion of feedback and single- and double-loop learning to strategic issues. However, these notions do apply more generally to

56 Feedback is an important linkage in organizational learning as well, but not in the focus in this doctoral thesis. For organizational learning in management accounting, see e.g. Partanen's (2001) doctoral thesis or Kolb's model on feedback-based experiential learning process in production organizations, in which observing, communication, and active experimentation lead to various feedback loops (Jönsson 1996, 10–11, 122–123). According to Jönsson's hypothesis, individuals and groups have to participate in the whole cycle, not only in operative activity or planning, in order to learn effectively.

all kinds of goals, standards, objectives, and control systems (see e.g. Marginson 1999). In relation to the analyses of feedback loops, not just different learning processes, but also different timescales (from instant to days, weeks, months, quarters, years, and beyond) are important (Otley 1999, 369). The discussion of feedback and feed-forward loops combines the dimension of time to learning: whether the informational loops allow to correct and learn from the process *ex post* or *ex ante* – or "on time", during the process (cf. de Haas and Kleingeld 1999; Otley 1988).

The art of double-loop learning is considered critical in cybernetics (Morgan 1997, 90). This view on learning exceeds the passive information processes attached to the first-order cybernetics and simple machines (Morgan 1997, 92). In the creation of learning organizations, needed capabilities include (*ibid*)

1. scanning of early warning signals and anticipating changes in the environment
2. questioning and changing operation principles and assumptions when needed
3. sustaining appropriate strategic direction and organizational pattern.

Further, the requirements of learning organizations question the fit with organizational culture as well. For example, does the culture support needed risk taking or can people question the operating principles (double-loop learning) with their superiors as well? Top-down approaches in organizations have been found to hamper double-loop learning, since focus on control and fixed goals lead to constraints and error reduction practices, to single-loop learning (Morgan 1997, 95) and use of negative feedback controls (Otley 1988, 63). In learning organizations, this problem has been tackled with controlling using "reference points" (visions, norms, values, limits) (Morgan 1997), both guiding and restricting the behavior (cf. Simons' (1995) levers of control, beliefs and boundary systems), and with the interplay of feedback and feed-forward types of controls (see e.g. Ferreira and Otley 2009).

2.3 Enlarging the measurement view in management accounting doctrine

2.3.1 Non-financial and leading indicators: feed-forward measures

The relevance of non-financial measures has, for long, been acknowledged in management accounting research (e.g. Hopwood 1973). The BSC by Kaplan and Norton (1992) is a well-known managerial approach to highlight the rele-

vance of a balanced measurement system. The BSC has also been offered as a solution to goal congruence problems between organizational control criteria (measures) and organizational goals. According to Kaplan and Norton (1992, 1996a, 2001a), companies should aim for a balanced view between short- and long-term objectives, between financial and non-financial measures, between lagging and leading indicators, and between external and internal performance perspectives (for the process of balancing between multiple objectives with the BSC, see e.g. Sundin et al. 2010). The argument has been built for on the claim that companies in the information age cannot rely on past performance management approaches that look too solely on financial measures. The BSC combines the monitoring of both financial results (outcome or output measures) and non-financial drivers of future performance, which can indicate the intangible assets and capabilities in companies, thus being more company-specific and strategic (Kaplan and Norton 1996c).

Earlier discussion of feedback and feed-forward loops vis-à-vis lagging and leading indicators carry out similar tendencies of time orientation. Kaplan and Norton (1996a) further explicated the balance between lagging and leading indicators. Financial measures are lagging indicators, which mean that they report on outcomes and the consequences of past performance, for example profitability and market shares. The leading indicators are non-financial measures of the drivers of future financial performance, thus leading to more or less working cause-and-effect relationships between various measures. Leading indicators are suggested to be targeted on key business processes of each company, such as product quality, cycle time, innovation, and employee satisfaction (Kaplan and Norton 1996a; Ittner and Larcker 1998). Due to the expected causal links and non-financial measures, the BSC can serve as a feed-forward control system, meaning that leading indicators could warn in time (before financial losses) about the implementation of seemingly bad strategies and actions.

The BSC has received much attention, both among academics and practitioners, and has not survived without criticism. Ittner and Larcker (1998) have questioned the value of customer satisfaction as a leading indicator of financial performance.[57] Nørreklit (2000, 67) warns that invalid assumptions in a feed-forward control system can result in dysfunctional behavior and sub-optimal performance. The assumptions about cause-and-effect relations between measures have also been questioned as logically invalid (Nørreklit 2003), although in Malina et al. (2007), they tone down this criticism by stating that the creation of a company's climate of control with perceived logical and finality relations do not require the existence of statistically significant cause-and-ef-

[57] Kaplan and Norton (1996a) have categorized customer satisfaction also to be a lagging indicator.

fect relations. Indeed, what works in practice does not necessarily have to be theoretically "perfect"; the mere belief of the existing causality among actors may be enough for the success of the BSC in practice (Sundin et al. 2010; de Haas and Kleingeld 1999, 244; Malina et al. 2007).

The role of feedback in the BSC context has been limited in its research (Otley 1999). To Kaplan and Norton (1996a, 2001), communication is providing feedback, via the BSC, about the strategy. Feedback provides information about the extent to which a company's key strategic goals have been achieved. Kaplan and Norton (2001a) state: "the measurement focus is used for critical management processes as clarifying and communicating the strategy, linking the measures to the strategy, setting strategic targets and enhancing *strategic feedback* and learning." Thus, Kaplan and Norton (2001a, 1996a) use the term feedback as being a strategic medium in what they call "the systematic process of implementing, testing and updating the company's strategy and intended direction". The "double-loop learning process" tests the direction of the strategy and its implementation.

2.3.2 Diagnostic and interactive use of management control systems

Simons' (1995) framework of levers of control separates diagnostic and interactive control systems, together with beliefs systems (including core values) and boundary systems (including risk control). According to Simons (1995), diagnostic control systems, like budgets and performance measures, are the formal information systems that managers use to monitor organizational outcomes and correct deviations from pre-set goals. Simons (1995) categorizes the use of "normal feedback information" as a diagnostic use of control, since it aims to ensure the performance as planned. This formulates the very core of *ex post* feedback control: predictable goal achievement and controlling with critical performance indicators. Routine control over operations with "operational feedback" (Katz and Kahn 1978, 455–458) reports pre-defined operations and utilizes the existing operational records, less concerned about the search for new information or the assessment of trends in the external environment. Management by exception is simple feedback control or *ad hoc* problem solving (de Haas and Kleingeld 1999, 243, cf. Otley 2003). In feedforward control, managers also consider their expectations for the future success in form of strategic performance drivers (Kaplan and Norton 1996a, 2001, cf. Simons 1995; Ferreira and Otley 2009) or other predictive models that possess anticipatory capacity regarding related outcomes (Otley et al. 1995; Marginson 1999; Argyris and Schön 1978; de Haas and Kleingeld 1999;

Otley and Berry 1980). The interactive use for feedback would lead to revising plans because of changed desired results (Otley 2003, 317).

While diagnostic control systems are levers for implementing intended strategies, interactive control systems aim to control strategic uncertainties. Interactive control systems aim to motivate managers to also use other than routine channels in their search for new information (Simons 1995) – thus it is forward-looking (Widener 2007, 760). According to Simons (*ibid*), managers use interactive control systems regularly and personally as a stimulus for dialogue and organizational learning throughout the organization. Otley (1999, 376) portrays the BSC as an embodiment of Simons' (1995) interactive control systems, since the framework reports the measures that senior managers desire to emphasize. There are studies that suggest that the BSC can be used at least diagnostically, but also interactively (Vaivio 1999; Tuomela 2005; cf. Malina and Selto 2001). Especially non-financial measures have been regarded effective in committing and communicating strategy in line with the interactive type of control. Vaivio (1999) proposes an even more active role for non-financial measures, assisting in discovering new emergent elements of the strategy – and leading to double-loop learning processes.

Simons (1995) use the term "formal control systems", but discusses a wide range of formal and informal, such as cultural controls (Langfield-Smith (1997, 224). As the interactive use of systems is personal and can also promote sensemaking (see e.g. Weick 1995), I consider them to possibly include many informal feedback aspects as well. However, while Simons' (1995, 5) definition of the management control systems is to highlight "the information-based routines and procedures that *managers* [italic added] use to maintain or alter patterns in organisational activities", the somewhat strange label of formality may be partly understood from the angle that it is a top-down-model, thus emphasizing managerial use of information (interpreted solely from rule dimension).

2.3.3 Evaluations of the use of system-based communication and beyond

The functionality and use of management accounting systems, reports, and communication channels involves many subjective views and evaluations, yet some generalizable patterns have been found. Unit data is the metric in which daily management and decision-making usually takes place; financial data comes into the picture when management horizon lengthens (Bruns and McKinnon 1993; already stated by Simon et al. 1954).[58] In daily work, manag-

[58] According to Bruns and McKinnon (1993, 86).

ers also prefer informal sources of information over quantitative accounting information: face-to-face meetings, observation, phone calls, and informal reports prepared by unit staff or users (Bruns and McKinnon 1993, Preston 1986).[59] The choice of the medium in each case depends on the available communication tools,[60] the nature of the data, urgency, distance from other managers, personal preferences of the manager, and norms and politics of the company (McKinnon and Bruns 1992, 103).

Mintzberg (1975, 1–23) summarizes the reasons why top managers regard many management information systems ineffective in decision making. Sometimes systems provide unreliable information, but in general they provide data which is too late, too abstract and general in details yet limited in scope, too quantitative, and it neglects reverse details. Instead, managers search and use personal, often more informal sources of feedback ad hoc. This way, they break into the world of concrete observations (McKinnon and Bruns 1992, 7–8), with a great deal of inputs received through personal contacts, informal subordinate contacts, other organizations etc. These less formal sources of information are often based on irregular and faster reporting (Mintzberg 1975).

Hall (2010) suggests that managers use accounting information in order to know more about their work environment rather than as an input into decision-making. Managers have been found to spend a lot of their time collecting grapevine information[61], i.e. speculation, gossip, and hearsay (Mintzberg 1973; Katz and Kahn 1978, 449) because what this type of information loses in its accuracy, it gains in its punctuality. In general, top managers favor verbal media and channels because they allow for immediate and rich interaction, instead of waiting or burdening themselves with time-consuming formal documents and emails (Hall 2010; Mintzberg 1973). Verbal information also matches with human thinking models: it is soft, detailed, and current (MacIntosh 1994, 37–40). Accounting information as "accounting talk"' dominates managerial work also in various reviews, meetings, and interactions, rather than through formal accountings reports *per se* (Ahrens 1997; Hall 2010). Zuboff (1988) calls senior executives to live in a culture of "orality", giving and receiving knowledge orally as a function of their authority. In the study of McKinnon and Bruns (1992, 105), a large amount of numerical data was

[59] For an integrative table of sources and uses of managers' information for day-to-day and longer-term production and marketing, see McKinnon and Bruns (1992, 17).

[60] Kaplan and Norton (2001a, 218–219) present a communication channel continuum from rich to lean channels, in which the level of interaction allowed by the channel increases. Rich channels, such as face-to-face communication, allow communicators to personally focus on the message and respond to questions and feedback. Lean channels, such as reports, provide more economical and broader reach, but are poor in sensemaking.

[61] The grapevine refers to the informal communication network (Katz and Kahn 1978, 449).

found to travel word-of-mouth before distributed in reports. This communication and search for timely knowledge can also bypass formal organization charts (Hall 2010).

In an organizational chaos, the person at the center of the information flow leads: subordinates must be informed, peers appraised, and superiors briefed. When managers are seen as nerve centers, a manager's role is to collect, store, and disseminate information. Gathering information for decision making seldom causes biases because of the desired accuracy of that information. The information requirements of superior and subordinate are no longer symmetrical, i.e. what each party want to know and tell differ (Katz and Kahn 1978, 448). The communication up the line is exposed to various biases, distortions, and constraints – especially in relation to upward biasing (Mintzberg 1975, 10–11). Some information and feedback will be lost due to the cognitive limitations of the brain or the psychological threats.[62] However, despite the calls for empowerment and various attempts to institutionalize the process of feedback upwards, the hierarchical relations and personal motives impede spontaneous and full expression. Managers have been found to report their own actions in a better light to their superiors, distorting the upwards flows of relevant operational concerns (Mintzberg 1975; Katz and Kahn 1978). In superior-subordinate relations, the existence of goals and rewards also leads superiors to consider the appropriate ways to provide feedback in a way that helps motivating or evaluating subordinates (cf. Simons 2000, 72–74).

Last, informal communication through "management by walking around" (Peters and Waterman 1982) is linked to the management methods in some successful companies. When the size of the company or geographical separation makes personal communication difficult or impossible, managers try to compensate the lack of personal visits with various electronic media: conference calls, telephone, or email (cf. McKinnon and Bruns 1992, 7). On the other hand, the premise "the more communication between levels and units the better", is questioned, while many managers try to cut down and restrict the overloads of information, especially emails. Organizations need not only to consider the ways of informing but also how to protect the work of managers and employees from constant interruptions and messages (Katz and Kahn 1978, 454). The balance between the frequency of interaction, the type of interaction, and the type of information is to require many further studies.

[62] An overview of the impediments, see Mintzberg (1975, 18).

2.3.4 Beyond modern top-down management systems

Continuing from the book of "Relevance lost"[63] (Johnson and Kaplan 1987), "Relevance regained" by Johnson (1992) criticizes the dominance of top-down hierarchical accounting systems that rely too heavily on short-term productivity and meeting given cost targets. Johnson (1992) argues that the management "by remote control" through results-oriented accounting information hampers the understanding of the real business objectives leading to long-term profitability: healthy, flexible, and timely operations and customer satisfaction. "Managing by the numbers" easily leads to the manipulation of processes to achieve accounting targets.[64]

The headquarters cast the accounting reporting system to monitor its responsibility centers throughout the organization, making control possible without personal surveillance. Standards, targets, and budgeted goals are used as senior-level control devices. Further, organizational control systems are based on the assumption of top-down control, i.e. senior managers control the behavior of middle managers and middle managers of their employees (see e.g. Merchant 1985; Cooper et al. 1981, 179–180). These systems rationalize and reflect authority, delegation, and responsibility within organizations. Since managers cannot know the exact moment when they will be followed up, the mere presence of the possibility to be under scrutiny is sufficient for the control system to take effect (MacIntosh 1994, 236–237).[65]

In addition to the systems that senior managers create to influence the behavior of their subordinates, Malmi and Brown (2008) call on researchers to be more explicit or open-minded about the variety of control systems enhancing efficient decision making in all levels of management. Johnson (1992) states that to survive in the battle of global competition, companies should focus on customers not on products. The "command and control" type of ac-

[63] The book Relevance Lost presents an overview of the evolution of management accounting in America, from the late 18th century's textile mills and steel companies to today's manufacturing environment. It calls for the need of new management accounting systems, mainly strategic cost management techniques that would assist in long-term planning (see also MacIntosh 1994, 203–209).

[64] Action at a distance, based on management accounting controls, see e.g. Robson, 1992; Cooper, 1992) and remote control based on accounting numbers, see e.g. Johnson 1992; MacIntosh 1994, 245–249).

[65] Control and surveillance and the contemporary management accounting and control systems in large global corporations seem to partly follow "the architectural design of the Panopticon" (Burrell 1988, 233) as the metaphor for the realization of the nexus of power (or socialized power) used by Foucault (1980). Cowton and Dopson (2002, 194) note that the introduction and development of electronic media has considerably promoted the overall surveillance of actions similar to a panoptic machine. The discipline is turned into internal technology with an array of various methods disciplining space, time, and minds (MacIntosh 1994, 222–228). For example, in disciplining minds, normalizing sanctions aim to motivate individuals to strive for a higher level of performance by reducing the deviations between actual behavior and norms (i.e. negative feedback).

counting information is suggested to be replaced by "bottom-up" empowerment, in which self-managing work teams have a problem-solving type of information to reduce process variations and constraints. Work simplification programs and best practices are examples of bottom-up empowerment programs, which celebrate what Johnson calls the most important assets of a company: people and time. In relation to the openness of strategic information, Kaplan and Norton (2001b) provoke: “Information feedback systems… are designed for the needs of the executive team. But organizations can go further by creating open reporting in which performance results are made available to everybody in the organization. – This creates a set of cultural issues that revolutionize traditional, hierarchical approaches to information and power.”

In addition, line managers have especially been considered to provide a rich feedback channel (Otley et al. 1995). Predictive models of middle managers (Otley et al. 1995; Marginson 1999; Argyris and Schön 1978) draw on anticipatory actions, based on experience and feed-forward information. How can the operational logics and expectations of practical causality in the minds of the managers be made more visible, discussable, and manageable?

2.4 Shift from organization-level analyses to practice approaches

2.4.1 The conceptual territory of feedback

Feedback is not such an under-researched topic as could be thought on the face of it, but overlapping terms exist (cf. uses of information, e.g. Bruns and McKinnon 1993). Can the concept of feedback offer us some fresh, fruitful angle over information (handling) in organizations, and if so what could it be?

First, we need to define three views on feedback: as in the information and communication theory, cybernetics (organizational), and personal (emic) interpretations. Table 1 clarifies their central features.

Table 1 Differences between information and two types of feedback (cf. Aula 1999)

	Information and communication	**Cybernetic organizational feedback**	**Personal feedback**
Key components in the process	Sender, receiver, channel, message	Input, throughput, output, feedback	Sender, receiver, channel, feedback
Direction of the process	Transmit of linear messages or exchange of dynamic messages	Circular: a part of the output cycles back as a part of the new input	Recursive reaction or closure character
Aim of communication	Inform over large scale of issues or communicate and create shared meanings	Organizational: Goal achievement, goal alignment, and goal revision (learning)	Personal: Assessment of personal performance, motivation, learning
Course of actions	Delivered from A to B or exchange	Feedback or feedforward loop from performance or process back to the goals, standards, forecasts, or processes	Passive recipient or active feedback seeking
Rationale behind actions	Distribute information in a way that the message achieves its objectives or enhancing mutual sensemaking and cooperation	Efficiency in terms of meeting the goals and search for equilibrium and learning (stability or change)	Various mix of personal needs (self-knowledge, reputation etc.)

When talking about information, we consider a sender, a channel through which a message (information) is delivered, and a receiver. Feedback is a narrower concept than information, but also varies depending whether we look at organizational (cybernetic) feedback or feedback practices on a more personal level. In organizations, feedback can be seen as a circular return in the cybernetic process of inputs, throughputs (or network nodes and channels), and outputs. When feedback is mediated through people, the communication process between the sender and receiver becomes a key issue again. Due to the social interaction, feedback channels become richer and more complex. While information theories focus on the processes of informing the larger audience – and more recently on creating shared meanings (Aula 1999) – feedback practices seem to call for personal relations and practices instead.

The concept of feedback requires a comparative or evaluative link between the goals, standards, forecasts, or strategies (explicit or implicit, organizational

or personal) against which actions, operations, and changes in the environment can be compared (*ex post*) or evaluated (*ex post* or *ex ante*). The comparative or evaluative features are the common denominators in all feedback practices, whether formal or informal.

> *Feedback is something you compare to something: to goals, to something that has already happened, or something else.* (Senior vice president, Division Steelco)

This quote from the empirical material weights the *ex post* linkage to feedback, but leaves it open for other comparisons. In common language, feedback often includes a hint for some lesson or message that will continue its life in future actions, highlighting its processual feed-forward nature. In relation to personal communication, Åberg (1997, 29) defines feedback as informing the sender (A) that the receiver (B) has reacted to the message. Further, he suggests that the concept of feedback would be studied safely only as attached to the sender. This view on communicative feedback practices between A and B adds to the organizational cybernetic view but leaves out many feedback flows (if not explicitly confirmed back). While the distinctive lines between information and feedback are not always clear, and if the level of intended feedback needs to be raised, this is one hygiene device in personal feedback practices.

In relation to the cybernetic view, systematic feedback practices create and sustain the recursiveness[66] of actions in organizations (cf. Aula 1999, 124–125). This view accentuates the rather formal, iterative system-based practices, such as regular performance reporting practices or regular customer satisfaction surveys. Feedback can be given only once. In communicative acts, feedback, as a response to the messages, can close the circuit at once with a simple reaction or it can continue the flow of the circuit by adding new inputs to the cycle until its final closure. Feedback circuits can be analyzed with the size of the loop (the cover of the system), the repetitive or modified pattern of messages (the amount of distortions [or intended revisions]), the forming of communication nets (who communicates to whom), and the fit between the communication circuit and the system (functional system level) (Katz and Kahn 1978).[67]

Organizations have multiple goals, but also individuals have various rationales and needs for feedback (Atwater and Brett 2006; Tourish and Robson

[66] In a **recursive** process, outputs of a system are used as the input in the next moment: they become repeated.

[67] These analytical points of view would already enlarge the static and system-based analyses of feedback loops in management accounting research, as they focus on the practices and organizational networking.

2006; Briers et al. 1999; Luckett and Eggleton 1991; Ouchi 197). Individuals have also been found to differ in their active search for feedback (cf. feedback-seeking literature). As a regulation and control mechanism, feedback aims to direct specific types of behavior: effective accomplishment and alignment of goals, as well as revision of goals and processes (change, chaos, and learning). When feedback is analyzed through a communication model for nonlinear interactions and dynamic loops (cf. Aula 1999), both formal and informal, it brings to the fore the practices in which managers negotiate and align the domains of local and global, and the individual and shared responsibilities and accountabilities regarding the goals, actions, and results (cf. Frow et al. 2005). Since dynamic, non-linear feedback loops generate complexity and turbulence, organizations have been found to increase predictability in actions with formal, hierarchical arrangements (Morgan 1997, 415–417).

2.4.2 Practices, actors, and feedback seeking

In management accounting literature, Briers et al. (1999) distinguish between financial performance reports (available feedback) and additional feedback that managers do not receive directly from the systems or reports but seek out themselves. While today's business environments qualify dynamic and ambiguous processes, individuals are also expected to be more self-directed and proactive in their search for information and feedback, including actions that challenge the status quo rather than passively adapt to present conditions (Crant 2000).

The explicit discussion of informal feedback in prior literature centers on feedback-seeking literature on individuals and especially superior-subordinate relations. Managers either use available feedback or seek additional feedback to assess their performance (Ashford and Tsui (1991, 253). While the angle to feedback flows in cybernetics is mainly organizational and rather passive, feedback-seeking literature considers feedback as a personal resource (Ashford and Cummings, 1983). In this literature, the essential remark was that individuals are not simply passive recipients of feedback in organizations but they also seek it actively either by asking for it directly (inquiring or eliciting) or by deducing it based on their observations (monitoring) (Ashford and Cummings 1983; Crant 2000; Rice and Cooper 2010). Thus, these studies highlight individual, active, and voluntary feedback practices.[68]

68 Accounting literature offers many psychology-based accounts on issues like how individuals receive or handle feedback (see e.g. Atwater and Brett 2006; Tourish and Robson 2006; Briers et al. 1999; Luckett and Eggleton 1991; Ouchi 1979). Feedback has been studied widely in management and psychology literatures (see e.g. Leung and Trotman 2005, 538–539).

Importantly, managers are found to ask more actively for feedback from their superiors than from peers or subordinates (Ashford and Tsui 1991). Ashford and Tsui's (1991) quantitative field study of 387 managers focused on active feedback-seeking behavior for a process of self-regulation between superiors, peers, and subordinates. According to their framework, managers test their behavior against standards using feedback sensed from the environment and, if necessary, take actions to reduce detected discrepancies.

The obligation to provide negative feedback is one of the most emotionally and interpersonally fraught supervisory tasks for managers (see e.g. Shields 2009; Larson 1989). As judgments of low achievement of desired performance or expectations, negative feedback should rise above mere criticizing by facilitating appropriate, clear, and constructive remedial actions. Managers also fear receiving negative feedback, especially from their subordinates (Ashford and Cummings 1983; Morrison and Milliken 2000; Argyris and Schön 1978). Negative feedback is often received and interpreted less accurately than positive feedback because of the mind's emotional mechanisms to protect self-esteem. Larson (1989) discusses the processes of informal performance feedback between superiors and subordinates and hypothesizes that when employees suspect that they are performing poorly they tend to use feedback-seeking strategies, which could minimize the amount of negative feedback from their superiors. This is in line with Otley et al.'s (1995; Otley 1988) arguments that the anticipatory actions to avoid errors and deviations can explain much of the behavior in organizations.

Gupta et al. (1999) studied the frequency of communication between corporate headquarters and subsidiary presidents and hypothesized that the higher the frequency of this communication, the higher the extent of active feedback seeking through monitoring and inquiry. They named various formal and informal opportunities for this interaction: face-to-face meetings, telephone conversations, routine and periodic formal reporting, and written letters and memos (for channels see also Bruns and McKinnon 1993). Levy et al. (1995) observed that voluntary feedback seeking is less frequent in public situations compared to private or semi-private situations. Typically, individuals are concerned with the social costs of their behavior. According to Ashford et al. (2003), people are especially reluctant to give negative feedback informally. If peers and supervisors have no clear role mandate for giving feedback, they may fear violating social manners (Ashford and Tsui 1991).

Feedback-seeking literature raises also the essential role of the relevance of the organizational feedback culture for the practices of how individuals seek, perceive, accept, use, and react to formal and informal feedback (London and Smither 2002; Levy and Williams 2004). Feedback-oriented culture is characterized by managers and employees feeling comfortable with both providing

and receiving feedback (ibid.). The more hierarchical the structure and the more control is exercised through sanctions and pressure, the less adequate are flows of upward information and feedback (Katz and Kahn 1978, 447). When Morrison and Milliken (2000, 713) studied deliberate withholding of information, they also found that if managers believe that employees are self-interested, opportunistic, and ill-informed, they are unlikely to pursue much informal feedback seeking from their subordinates either (cf. Ashford and Tsui 1991). Morrison and Milliken (2000) note that the cultural, collective-level tendency to block negative feedback loops, defined as "organizational silence", deteriorates the organization's abilities to detect and correct errors – and to question and modify underlying policies and goals, crucial in double-loop learning practices and capabilities of learning organizations (see e.g. Morgan 1997). Organizational feedback culture can thus conflict and impede the calls of contemporary management rhetoric to also emphasize employee empowerment and more open lines of communication, instead of hierarchical, machine-like organization models.

2.4.3 Theorizing feedback in interpretive research

Organizational communication models are closely linked to the current organization theories and ways of seeing organizations (Aula 1999, 19). Any established theory or medium can formulate a dominant and "particular mode of seeing and thinking" in the human mind.[69] The way of understanding and using feedback in organizations connects to the image on how organizations are seen to function and what the models of explaining and predicting, or interpreting the behaviors are.

The image of organizations as machines, i.e. the machine metaphor, is based on strict mechanical thinking and the design of bureaucratic organizations and its parts. Weberian organization focuses on motivation and hierarchical relationships – especially between superiors and subordinates – and not on the variety of individual motives or goals (Katz and Kahn 1978, 278). In Weber's ideal type, formalization is one of the core features of organizing, aiming to control the complexity of the social world with written rules, policies, and instructions, such as job descriptions (see e.g. MacIntosh 1994; Katz and Kahn 1978; Aula 1999, 41–43). These rational organizational models

[69] Carr (2010, 41) uses the example of the invention of a map, which not only stores and transmits information, but provided a new way of constructing reality in our heads. The more people used maps, the more their minds started to resemble the kind of reduction of reality that maps provide. While it also enhanced abstract thinking, the natural phenomenon was turned into an artificial and simplified conception of that phenomenon.

(Aula 1999, 16–17) picture organizations as a group of people operating for common goals. The core control system in Flamholtz et al. (1985) can be seen to fall under this type of seeing organizations. The model depicts a world which is simplified and mechanistic; while the "boxes and lines" –models (e.g. Flamholtz et al. 1985) can visualize processes and predict certain causes (Aula 1999, 91), they, at the same time, lose their capability for detailed descriptions of processes and practices.

In communication theories, rational process models, or "pack and deliver" –models, have constituted legitimate modes of seeing and thinking (Aula 1999). The mathematical theory of communication by Shannon and Weaver (1949) has been (or is even today) one of the most influential communication theories. It also seems to implicitly define the ways of seeing communication in practice (Aula 1999, 9–10, 123).[70] In modern, nonlinear process models, communication is no longer seen as transferring information but exchanging messages. These "dialogic sensemaking" –type of theories (Aula 1999) highlight semantic information and the processes of creating shared meanings between participants (Aula 1999, 1–23). Table 2 will portray the key features and premises of information in rational (conventional) and modern communication theories, highlighting different mindsets for theorizing.

[70] The basic paradigm for communication along the process view (communication is a message delivered from A to B) follows the reasoning that A -> B = X, in which A informs B over something which results X, if only the communication is executed correctly. Communication is suggested to be linear, mechanistic, atomistic, similar to formulas in algebra, and it looks objective (Littlejohn 1995; Aula 1999, 91–97). As developed initially for the need of telephone traffic, it theorizes communication as a series of phases, in which a message is coded as a signal, delivered from its sender (A) and decoded by its receiver (B). It focuses on the balancing of system structures, and any distractions in a communication channel are treated as "noise". Feedback was neglected in the earlier versions, but later on it was added to the model as an explicit line.

Table 2 Typical premises of information in rational and modern communication theories (Jabe 2011; Aula 1999, revised)

	Rational theories of communication	**Modern communication theories**
Existence of information	True information exists somewhere.	Information is generated, distributed and transformed in social networks and work processes. Especially organizational interfaces are hospitable places for generating new information.
Control of information	There is never enough information.	Control over information is impossible.
Flow of information	It is common that information does not pass or it breaks.	There is conflicting information, and it derives from different interests.
Comprehension of information	If only people had information, they would do the right thing.	Sensemaking requires communication and collective evaluation. Distribution of affairs decreases uncertainty.
Attitude to communicative capabilities of people	People are passive objects of informing.	People are active and self-directed communicative players.
Nature of communication	Communication takes place top-down from senior managers to employees.	Communication is one central organizational process and a critical factor for the organizational legitimacy of existence, continuity, success, and innovations.

Modern communication theories (or post-modern views, e.g. Aula 1999; Morgan 1997) depict dynamic relations, nonlinearity, instability, unpredicted change, and sensitiveness to small changes. Regarding feedback in communication, Aula (1999, 97–103; also Morgan 1997) suggests linear causality with feedback lines and boxes to be replaced with dynamic feedback loops, as an exchange of fast and contextual communicative loops (Aula 1999, 123–125; Morgan 1997, 274–283). The model of nonlinear feedback (Aula 1999, 158–159) focuses on interaction and communication between two parties and their recursive feedback. Feedback is no longer analyzed as objective feedbacks existing somewhere "in the reality", but as practices or social constructions in communication arenas, explaining chaos and other cumulative actions. The interpretations of each message affect the future interpretations, causing recur-

siveness and modifying the realm of actions as well. Importantly, this kind of dynamic processual analysis of feedback practices between two parties or groups requires observation material, for example, from performance appraisal interviews while people negotiate the level of desired performance or needed actions and procedures directing and aligning performance (cf. Flamholtz et. al. 1985; Alvesson and Kärreman 2004).

Interpretive research aims to define the "world" as it is understood and constructed by people and their emic accounts (Lukka and Modell 2010), but needs to consider ways to clarify and simplify the fuzziness of the world in theorizing. I had hoped to find something "concrete" that I could take away from the book of Aula (1999) about dynamic theories of organizations; models that would allow systematic discussion, visualization, or theorizing. Instead, I was left with some confusion, words, and "semantic mind maps" (Aula 1999, 89). However, I understood why I had been struggling in my endeavor to "visualize" some of the lacking feedback loops in the model of Flamholtz et al. (1985, cf. Otley 1988). Now I regard it as if not impossible, then unwise; the richness and the variety of formal and informal feedback loops need to be put into sentences, explanation trails, empirical stories, narratives, or dimensions.

My search for relevant, applicable theories in interpretive research concluded to the construction and use of multidimensional analysis. The developed 3D-framework of formal and informal feedback (see 4.2) is an analytical and conceptual tool to define and make formal and informal feedback loops more concrete, more discussable, and more "visible". Multidimensional frameworks can both respect the complexity of various views and standpoints (emic domain), while simultaneously aim for understanding their analytical differences, interpretations, and human motives for action (etic domain). Theories of social practices (or culturalist theorizing, Calhoun et al. 1993; Reckwitz 2002) carry the analytical capacity to recognize the internal motivation, political concerns, and logic of managers and their social practices, important in interpretive studies.[71] A social practice view of feedback focuses not just on how managers use feedback socially, but on the internal interpretations and meanings they gave to their feedback practices and their reality.[72] The basic interpretive structure ("feedback as something") has been applied in the development of the 3D-framework of formal and informal feedback as well as when formulating analytical themes for the control layers to the organizational control model by Flamholtz et al. (1985). The power of the 3D-framework is to

[71] Theories of social practices or "practice theories" include many streams of thought, contributed by authors such as Bourdieu, Giddens, Taylor, late Foucault, Garfinkel, Latour, and Schatzki.

[72] Social practices are concerned with internal, personal goods, while institutions, for example, aim for external goods acknowledged by other institutions as well (according to McIntyre, 1984, Räsänen 2008).

analyze these meanings from several angles, illustrating and mapping the feedback practices from a new angle. The following narrative from the interviews from Case Steelco opens up analytical strength of mapping the variety of meanings that each actor gives to the very same practices, each from their own position:

> *You know there is for example some new employee who suggests something in a meeting … some feedback idea, maybe improvement, of how things could be done differently. That can be just dumped immediately by saying that "Yes, we tried that once and it didn't work" And that was done only because you don't want changes.* Service center manager, Division Steelco)

The above story takes place in a meeting, which stands for an interactive forum for various feedback flows (source dimension). However, organizations are not democratic in many senses (cf. Adler and Borys 1996). The one who suggests is a novice, and the one who rejects is a senior member. In the narrative, the ability to reject the new idea was not given as to explicate hierarchical power. Of course one has to possess some degree of power to be able to reject the idea, but the new worker here could have been the superior as well. Instead, the key was to represent the informational power received from seniority (time dimension) rather than from the position itself (rule dimension). Experience and years in service give informational advantage and validity: the negative argument won because the other was too novice to evaluate whether the negation was true or not. Thus, the analytical, multidimensional framework allows not only to combine personal and cultural meanings given to the formal and informal feedback practices as such among actors ("feedback as something"), but also analyzing the interpretative contexts that discuss the use or the functionality of feedback in organizational control ("feedback for something").

3 CASE STEELCO: FINDINGS AND ANALYSIS OF THE INTERPLAY BETWEEN FORMAL AND INFORMAL FEEDBACK IN CONTROL

3.1 Introduction to the case setting

Division Steelco, the main unit of analysis, is one division of a large, globally operating Finnish basic industry company. It is the oldest of the divisions, the largest in total net sales, and the heart of the "old" company and production operations. Division Steelco is a changed company; no doubt, it was an issue raised by all interviewees. The President of Division Steelco, who came to the company in the 80s, put it as strongly as this:

Compared to the year 2002, we are a totally different company now.

The culmination of the changes was linked to be the appointment of the present chief executive officer (CEO) of the company. When he took charge in 2003, the company was, according to his words: "… a standard steel producer, located in the corner of the world and managed strongly by production… financially heavily in debt and unprofitable." The CEO changed the strategy of the company from operating a steel producer business to a solution provider business. In line with this re-orientation, the organization structure was rearranged. New customer-responsible divisions and business units were formed in the construction and engineering industries.

The CEO has a financial background and he manages strongly with financial measures. The relevance of contribution margins had not previously been regarded as a truism in their engineering-oriented culture but now "Profitability is the word in every operation" he says. The new business model accentuates pricing and customer profitability instead of manufacturing capacity and the amount of produced tons.[73]

These changes in Division Steelco have not been painless for all, and many people had to leave the organization. To put the change process into action, new customer-oriented managers were hired and placed at the top and to other important places in the organization. All employees have been forced to adjust to the new ways of working:

[73] Cf. Dent's (1991) famous study of the cultural change in the railway company.

> *It was a big change. I don't think many people understand how hard they worked or how sick people felt because of this change. We still have some people in Division Steelco that are waiting for the organization to return to the way it was, but this won't happen. Many people have to work harder now. Before, it was easier; the systems were clearer. The playing field, how they steer things, is more difficult. Earlier, they bought and sold goods. Now, the guys have to consider whether to sell from the service centers or to take from the factories. Some take this as a challenge and eagerly go ahead with it, others don't want to or can't anymore. I understand; if they have done something a certain way for 30 years, that doesn't change in a day.* (President, Division Steelco)

The major changes in the central control systems, both formal and informal, provide an interesting background to discuss and study the use of various feedback loops between Division Steelco and the headquarters and between senior and middle managers in different functions. The historical course of events is incorporated in Division Steelco in order to understand their predominant institutions and logics of action (cf. Vamosi, 2005) regarding formal and informal feedback practices.[74] Some of the interviewees had experience only from the "new" company, but altogether, all seemed to have an opinion of the track of the changes going on in the company.

Division Steelco can be regarded as more of a most-likely case than a least-likely case (cf. Keating 1995) to find emphasis on formal feedback. Managers invest and rely strongly on formal feedback practices in the cost of more informal feedback practices, because of their hierarchical and technological culture. On the other hand, a clear initiative of Division Steelco is to change the feedback culture to be more communicative, customer-oriented, international, and outward-looking; managers would focus more on discussion-based controls, co-operation between the divisions and units, and the discovery of new global solutions, rather than looking at the past with routine production reports. The success in their new cultural undertaking will partly depend on their competence to look for more diversified feedback than before.

74 Based on his case study, Vamosi (2005) discusses changing views on accountability and a struggle between different rationales: the market economy, social accountability, and production-oriented views. His case story is similar to mine: to show the institutionalization processes in the company becoming a market economy actor. According to Vamosi (2005, 467), the interpretation of accountability is based on Berger and Luckmann's (1966) terminology, focusing on the importance of historical dimensions and defined "as a translation and interpretation of an institutional arrangement with a given logic or rationality".

3.2 Performance measurement and reward systems in Group and Steelco

The main controlling system of Division Steelco is a yearly budget called the *Master Plan.* The budget is based on the three-year strategy plan, and estimations are rolled further for each quarter, and realized measures followed on a monthly basis. The finance function reports the realizations and variances of costs and performance indicators, with verbal comments explaining the scores. These scheduled, systematically produced, and hierarchically reported indicators between the units and headquarters are perceived as the cornerstone for formal feedback practices. The metrics allows regular controlling, comparing and discussing of the outputs in relation to the standards, goals, and objectives, as well as forecasting and planning the future operations in various reviews and meetings.

In Steelco, the systems which were regarded as very formal fall much under the conventional view of the core control systems (e.g. Flamholtz et al. 1985; Figure 1 on the page 41). At the senior management level, formal reports (performance measures), formal review meetings (discussions), and performance appraisal interviews with their superior (evaluation and reward) are regarded as the main channels for formal feedback. Going down the hierarchy, the middle managers, also included in the formal feedback, practice their own superior-subordinate relations and the top-down enquiries for their personal or unit-level goal attainment. The enquiries about measured variances between the goals and the level of outputs were especially raised as one central feedback practice, and not always as pleasant ones.

> *We summarize monthly and report the central indicators and explain why we did or did not meet the targets. We constantly receive enquiries from senior management regarding certain indicators. They very actively follow what is happening.* (Senior vice president, Division Steelco)

> *We especially follow tendencies: does it improve, does it drop off, how come this does not change, and how come that changes?* (Division controller, Division Steelco)

While the senior managers at the headquarters and Division Steelco were rather pleased with the present official measures, middle managers confirmed that their concerns are more operational. An illustrative example of the change in informational logic was that when the profit of the company was before calculated for the biggest factory of the company in Finland, now the factories operated as cost centers only. When they no longer know the share of the performance of their own unit, only in financial terms, or cannot affect all the ac-

tions they are being measured for, the risk for inefficiency, routine-like behavior or even disregard increases.

The form of the feedback from formal measures is important: it needs to be readable, understandable, and informative. The common problem in companies is that the formal reports include too many measures, which was also noticed in Division Steelco. The budget-based monthly reporting includes a vast amount of information: for example, the monthly production report at the group level incorporates nearly 50 key performance indicators: profits of the division and business units, certain comparisons, stock values, delivery accuracies, issues related to processing and production, and forecasts for each quarter and year.

> *Monthly reporting… that's how we control, and it needs to be numbers. I would say that basic financial reporting is business as usual, there's nothing special. Certain themes, like special products, delivery accuracy, and industrial accidents go through the whole organization, and these are more closely followed then.* (President, Division Steelco)

The budgeting and monthly reporting procedures were seen to operate as the basic routine procedure that seldom gives big surprises to those who review it. But the group-wide strategic measures are of high importance and closely followed (see Table 3).

Table 3 Key performance indicators at the Group level

		Actual year 0	Forecast year +1	Strategic year +3
Net sales growth %	Financial			
Share of solution business (of sales)	Strategic %			
Share of special products of metal sales	Strategic %			
Share of CEE and EE (Business areas)	Strategic %			
Accident frequency	Operational			
Delivery accuracy	Operational			
Operating profit, M€	Financial			
Working capital, M€	Financial			
ROCE-%	Financial			
EPS	Financial			

These group-wide performance indicators, brought by the new CEO and his team, are all quite generally accepted throughout the organization. The CEO has taken certain themes, like accident frequency and delivery accuracy, one by one to be really emphasized so loud and long that everyone in the organization will understand their importance, eventually becoming a cultural control itself.

The measures are being operationalized at different local units. The groups' strategic focus on solution business instead of being only a raw material provider has also affected the organizational structuring of the sales function. The old regional sales units operate now on the basis of different customer branches, aiming for better customer service and understanding of what customers in specific branches do, need, and want. The amount of salesmen and subordinates increased and old job descriptions, customer relationships, and the knowledge requirements changed among salespeople.

> *You have to relearn the business you do and focus more on the specific branch; for example, the construction business operates more with construction firms, contractors, and such. And for the salespeople, the change has been huge; some have had long-term customer relationships, 25 or 30 years, and then they have to give some of them up and get to know new customers. Perhaps it has been hardest for the older salespeople.* (Sales Manager, Division Steelco)

Some basic measures for sales functions were kept, such as the amount of sales in relations to tons, euros, and contribution margins, but also shares of special products and know-how of sales. At the group level, when the old systems calculated and reported only the amount of customer visits, the new system, the CRM (*customer relations management*] –system also reports the quality of these visits and is open access system for the salespeople. In addition of the day of the visit (i.e. the old report), the new database includes information about official records and memos of what has been done and agreed on during the last visits, the people visited, and possible open issues that need to be closed in the next visit.

> *We now measure the quality of customer visits more than the amount of them, so that people do not only concentrate on the customer visits as such. And of course, the other measure is that these visits should be seen in the form of sales figures.* (Sales Manager, Division Steelco)

At the service centers, monthly measures comprise of net sales, and more operational measures: delivered tons, inventories, days of supply, order stock and new order stock, personnel, working ours, overtime work, illness, number of close calls, number of accidents, accident frequency, number of deliveries, delivery accuracy, production, number of reclamations, and quality costs of net sales. These measures are further classified into strategic measures and goals, methods defined for their future realization, the local operating responsibility, and targets for the next year, realized at the present year and month, averages, and possible monthly comments explaining the level of measured performance. These unit measures are mainly result measures.

> *But I have also tried to find performance measures that a single foreman or worker can understand that he can affect the origin of the accident frequency. For example, reporting close calls or reporting cleanliness, etc… In my opinion, performance measures are far more important at the floor level than result measures… I would like to see it constructed so that the group measures at the upper level would go all the way down to the last machine so that each would somehow link to each other...* (Senior vice president, Division Steelco)

> *Good measures go through the whole process in a way that people can also understand them clearly… very complicated calculations and averages doesn't necessarily relate to the everyday operations... otherwise it only will be reviewed once a month... Accidents or safety is clear. As an employer we need to provide a safe working place, where people do not have to be afraid of being hurt… The more difficult themes then require a lot of training… or attending…. It is difficult… many people with various job descriptions… and many actions that do not at all relate to what indicators measure… Financial measures may be especially difficult, because we never properly open these up to the people… for example, EBIT* [earnings before interests, and taxes]. *If I go to the different places where we have operations and ask people whether they know what EBIT is and how they can affect it with their work, I will receive very colorful answers.* (Division controller, Division Steelco)

Work safety is an example of the common measurement themes that go through the whole chain of actions, from the top to the factory floor. In Division Steelco, work safety has to be discussed in every meeting: in the top and divisional management groups, in the monthly operating meetings, until the foremen meet with their workers in the factories. Group-wide financial and non-financial key performance indicators for each unit in Division Steelco are also linked to the personal bonus schemes negotiated in performance appraisal interviews for all employees. Monetary rewards were aligning the various interests of different actors towards the common, group-level goals.

> *We, all higher management workers, have cash incentives, which are bound to the achievement of these certain goals and, of course, they usually are the important goals which are then followed through this formal feedback. Money is what motives us all to be interested. (*Senior vice president, Division Steelco)

Every superior also has to arrange performance appraisal interviews for their subordinates once or twice a year. Managed by the HRM function, these practices are codified to the written leadership principles of the group and concern the ability to set clear, proper goals for each individual, to monitor their attainment, and *to give proper feedback on the attainment of these goals*

in the previous period, as well as to discuss strategic issues between the superior and the subordinates. These codified principles aim to produce coherence between organizational and individual goals, as well as congruency to managerial practices. However, the quality of actual practices varies among different managers from the formal standard in Division Steelco. The same applies to the perceived frequency of these kinds of feedback situations.

> *I think that it is wrong to say that these* [performance appraisal interviews] *take place only once a year, because you have informal meetings substantially more often. It's only that they are not formal with an agenda, like the performance appraisal interviews have… You might just spontaneously sit down with your superior and go through issues, your successes and failures. It is a normal activity. I think they are exactly similar situations to performance appraisal interviews, which are just not commanded to be taken and have no agenda.* (Senior vice president, Division Steelco)

Moving to the lower levels of organization, another senior vice president of Division Steelco illustrates his experiences with his own subordinates like this:

> *When the time comes for the superior to give feedback to the subordinate in a performance appraisal interview, you can see how he* [subordinate] *gets uneasy right away and is afraid of what is coming.*

Since feedback in performance appraisal interviews is given and received at a more personal level than the formal review of the unit performance, these practices require feedback skills from both of the parties. In the above narrative, the superior observes that the subordinate is getting seemingly uneasy when the time to give feedback comes. The setting is already hierarchical, but the hearing of the word "feedback" still feeds that feeling as a more hierarchical one, as a required assessment top-down. However, the feedback also includes many informal, discretionary, and personal elements, and is strongly cultural bound, which we will discuss more in 3.6.1.

3.3 Formal and informal feedback practices in the core control system

Since meetings and other interaction have been long regarded as rich channels to be informed of what is going on in the organization, much due to their face-to-face interaction and discussion (cf. Preston, 1986), they provide a suitable communication arena to discuss the interplay between formal and informal feedback. Interactive feedback practices allow one to make observations of people's reactions and other non-verbal communication. This kind of more informal, observation-based feedback was also raised in Steelco as a useful

tool to see beyond the official performance measures and other official feedback.

> *It* [feedback] *is not only in the form of documents, it also requires meetings between people. Informal feedback is more important, measures are after all only instruments in the pursuit of management. I think that informal feedback is actually the main way to get feedback.* (Chief strategy officer, Croup)

Importantly, even within "formal" practices, feedback mediates as partly formal, partly informal practices. For example, in Division Steelco, the attainment of set targets and goals is discussed monthly at divisional review meetings between the president of Steelco, the division controller, the CEO, the chief financial officer, and the chief strategy officer. While these senior level meetings *per se* (two from the Division and three from the Group) were regarded as formal, the interaction there was regarded as more informal. In the divisional business units and operations, senior vice presidents go through their own areas with their subordinates.

> *Once a month, we sit down for a day-long meeting and look through the realized results unit by unit. At the same time, we set targets for the future and go through important issues.* (Senior vice president, Division Steelco)

Interaction facilitates the accumulation of mutual sensemaking over goals and other issues, not only serving for control purposes (goal achievement), but learning (goal revision) and sensemaking (goal congruency). Shared principles assist organizational control as a whole and make the operations of its parts more united. While formalization of feedback causes it to be more managed, it is not certain whether it makes it more reliable as such. I questioned whether the official feedback is more reliable:

> *No… of course not. But you need to take it; so as long as it* [formal feedback] *is not proven wrong, you accept it as it is. It would be impossible to work if all the time you suspected the reliability of that information.* (Senior vice president, Division Steelco)

Official numbers are required to be given in an objective form, publically confirmed, and transparently distributed. But this is only one side of the coin; the very same feedback through these reports includes many negotiable, agreed elements (cf. Kepsu 2012; Sayles 1989, 11–12).[75] Formal reports pro-

[75] In reporting, managers have been found to distort the information system in several ways: smoothing, biasing, focusing, gaming, filtering, and illegal acts (Birnberg et al. 1983; 120–124;

vide less information for the accountable, those who know the facts and premises behind constructed reports figures; for others, it can provide rather general information over the entity as a whole. Monthly reviews are also scheduled according to the series of reporting hierarchies; based on upwards reporting. People at local units meet and report their own accounts and responsibilities to their colleges and superiors, which then meet with their superiors, and so on, until the divisional review board meets at headquarters. The reporting chain is long enough to allow managers to bypass organizational charts if desired. Such practices were not specifically reflected in any of the interviews, only stated with a comment that "so can be done as long as this is a free world".

Personally acquired feedback beyond official feedback procedures follows the institutionalized practices of each manager and the history and culture of the company. It's been claimed that the present CEO has tightened up the access to system-based information as well created a formal organization chart with more inflexible reporting hierarchies. Informal networks are still always an inherent part of organizational communication, and experience facilitates exchanges of this additional feedback. Managers in Steelco reported varying use of personal feedback channels considered useful in daily management. The next quote links feedback strongly to the use of formal measures.

> *The information from informal channels is a bit unofficial and you don't control with it as strongly as you do the official information… it is different. There is no fact-based numerical value or something that is linked to your performance, good or bad feedback, but it's a different type... the informal one also includes personal opinions.* (Senior vice president, Division Steelco)

Informal networks are used for all kinds of personal background information, cues, and gossip, but contrary to the above quote, the next quote relates more directly to performance and control feedback as such. Managers actively search for more personal feedback for enlarging their view of ongoing and future operations and need for setting, accomplishing, and reviewing the "goodness" of the goals.

> *If I would rely only on feedback in the form of official numbers, I would have to control this thing wearing blinders.* (President, Division Steelco)

Lumijärvi 1988, 150–152). For example, in relation to the negative performance reports, the smoothing of the information flow aims to minimize the possible periodical variances of performance.

Also, the delayed formal interactions need to be counterbalanced with more flexible and timely channels. Many *ad hoc* situations, anomalies, errors, or assumptions create the need to find and use additional feedback channels beyond the regular, *ex post*, management reporting cycles.

> *Usually informal networks are used when we need to find a quick answer to some problem.* (Sales manager)

Even if these additional loops would rely on system-based data, the features of being irregular, unsystematic, or detached from the pre-planned official management schedules bring in degrees of informality. Furthermore, a great deal of deviations and errors are just observed or discussed in the course of everyday actions, leaving no objective, codified marks behind. While the status of more informal feedback can accentuate more uncertain, personal, in some cases even arbitrary knowledge, feedback received from formal reports are also a result of negotiations and agreements for a common view. Nevertheless, it is a formal view that each reporting unit will be accountable for in the eyes of the others.

3.4 Organizational structure and feedback practices

3.4.1 Matrix organization

The matrix organization structure of the Group brings its own challenges to the control of its complex entity. The coordination causes “meeting disease”: a large amount of various meeting practices. Horizontal (collegial) and vertical (hierarchical) feedback chains between different units and levels become crucial for operations as an entity. At top management level, the management group and the extended management group of Division Steelco include representatives from different business and operational management, and these practices partly unite the various functions and businesses, allow comparisons, and produce horizontal feedback.

In this tricky playing ground, there are various goals and related reporting structures of each business, operation, and the unit. Although different divisions were not to compete against each other, managers and specialists need to balance with the various competing goals and responsibilities arising from each specific position in interactions that cross organizational interfaces.

> *Of course, we have our own divisional matters to take into account along with the group matters. So there is always that kind of natural*

> *arm-wrestling about what comes where.* (Division controller, Division Steelco)

In Steelco, the co-operation between different units and divisions was regarded by many as too low. The challenges start from the middle management level and continue to the operative level in each division. The leaders of the business units and operations hoped for more benchmarking and learning from the best practices from other divisions.

> *We have different divisions and similar functions. I have also considered that we could possibly have a baseline… We do things our way, they do them their way, but these cannot be compared. Or at least we have never done it, so it could be interesting.* (Senior vice president, Division Steelco)

Middle managers were especially found to be in central positions and informational crossroads to either ensure or hamper the flows of information and feedback between them and senior managers (vertical upwards), between different divisions and units (horizontal) and between operative employees (vertical downwards).

> *The real challenge of the feedback practices lie in the hands of middle managers.* (Vice President, Corporate Finance and Control, Group)

However, Division Steelco is not uniform in its feedback culture but various subcultures can be found, much due to the history of acquisitions, scattered units, and the personal management style adopted by each superior.

> *The functionality of informal feedback varies heavily in different units and depends on the goodness of each individual superior and the culture.* (Chief strategy officer, Group)

At the lower level, factory and service center level, team meetings, notice boards, printouts at the coffee tables, local and personal records, and reports are the channels to be informed and pass feedback of the operations and production performance. Some senior or middle managers preferred more technologically oriented channels and some interaction-based channels. The meeting practices were found to vary from a very active to poor level in different business units of Division Steelco (Internal survey in Division Steelco 2008). In some production units, superiors have, for example, regular Monday morning meetings with their teams and subordinates. Those who did not, and hoped for more guidance and feedback from their unit leader, felt this inequality of practices as an ill-favored surprise.

3.4.2 Relations between Division Steelco and the headquarters

The following illustration by Katz and Kahn (1978, 428) enlightens the dramatic difference at a more profound level, different world views and informational logics in practice between those who work at the steel factories and those who follow the more universal logic of controlling business enterprises at the headquarters and in local units. The quote is not from my case study, but it illustrates and captures the same sense of two different worlds and atmospheres that I experienced in my visits to Division Steelco.

> *When one walks from a factory to the adjoining head-house or office, the contrast is conspicuous. One goes from noise to quiet, from heavy electrical cables and steam pipes to slim telephone lines, from a machine-dominated to a people-dominated environment. One goes, in short, from a sector of the organization in which energic exchange is primary and information exchange secondary, to a sector where the priorities are reversed. The closer one gets to the organizational center of control and decision making, the more pronounced is the emphasis on information exchange.*

The interviews and the internal survey (2008) by Communications specialist confirmed the image that local units, both domestic and foreign, considered that the headquarters steers too strongly and too often the decisions that have to be made or accepted there. In the changing phase, the CEO heavily centralized the authority and established new formal control systems and practices. The formal authorities, information hierarchies, and reporting structures became stricter. Access to some previously open information became role and task specific. Units earlier governed by smaller owners were used to different management culture and distribution of decision power, for example, that they could employ people without having everything accepted at the headquarters. Senior managers at the Group thought that the "change is more likely to happen and go through the organization" when "formalizing processes enforces routines to be equal".

> *When he* [CEO] *made his first rounds here, he said that things should first be collected: the management group needs to know the ropes, because there are so many different plants here and we live differently.* (Service center manager, Division Steelco)

Senior managers, especially at the headquarters, were rather pleased with the value of the current feedback they receive from the formal accounting and information systems and from the daily actions.

> *I think I get enough feedback from the daily real-time action… I receive automatically a vast amount of information, even too much. However, I*

> *bet when you go to the units and ask them whether they get enough feedback, they'll say they don't.* (Chief strategy officer, Group)

Senior managers at the Group considered that official numbers and other feedback (observations and cues on what is really going on) to be pretty well in-line nowadays, supporting each other and offering similar feedback.

> *The basis is that the amount of feedback from the systems is not and never will be sufficient. From different systems it is summed up to be as true as possible. It is never in order, but in the end it's in the right ball-park.* (Chief Information Officer, Group)

The mindset of what is being measured and controlled (control climate) had changed forcefully after the CEO implemented a new set of group-wide formal feedback indicators, focusing especially on two operational issues: delivery accuracy and accident frequency. The general acceptance of the new formal (top management level) measures seemed rather stabilized, after all top-down informing and training and their usefulness in the middle management level was not much criticized. From the results of the internal survey (2008), however, there were some who felt that the accident frequency was, although important, already too heavily stressed by the senior management.

Instead, middle and operations managers at the local units in Division Steelco found more problems with the value of feedback received from the group-wide accounting and information systems or from their superiors. Partly, it can be due to the organizational changes (more centralized management and strong emphasis on group-wide measures), and partly due to the recent SAP-project, which had at least temporarily deteriorated their system-based feedback and caused a lot of extra work.

> *Let's put it this way, the worst distress is over. We have now learned to live with it, but it is not a workable tool for us yet. You can dig out whatever you want but not very quickly. (*Service center manager, Division Steelco)

> *As I have seen it… SAP is a senior management system… providing a lot of information to their decision making, profitability and so on. It is open, so everyone can dig out the kind of report they need. But for the time being, it provides quite rough information beyond central key indicators and targets. Going down the information hierarchy to the units… middle managers in production, and people with operative needs… the information they need is not sufficient…. cost centers cannot track development, what people are doing, or what is coming out from the process.* (Senior vice president, Division Steelco)

Regarding the operational co-operation and common targets, feedback practices that would cross the boundaries of different functions were perceived as a bit problematic. Especially the poor communication between production and sales function was raised as a problem in Division Steelco, partly linked to the ongoing implementation of SAP, but not totally.

> *A bit overstated, sales can feed orders as much as they want to without considering what we can actually produce and deliver.* (Senior vice president, Division Steelco)

Since the headquarters monitors delivery accuracy as one key indicator, and variances including the reason for late deliveries are tracked carefully. Production units felt that they are blamed for poor scores that partly exceed their influence when people at the sales function made unrealistic promises to customers that they cannot fulfill. The discussions were described as more of the type of defense, with accusing fingers pointing at each other instead of constructing models that would consolidate the actual operations. These problems in communication were to also arise from overlapping common measures, in which different functions have different roles in their operations. Also, production and sales people can be seen as forming different cultural actor groups.

3.4.3 Relations between senior and middle managers

Because the amount of feedback signals at the company level is inevitably vast, organizational chains of feedback through senior and middle managers are critical. No single manager can control thousands or hundreds of employees, but mostly his own subordinates only.

> *Because there are [thousands of] employees in our company or even [over a thousand] in our Division, you cannot react to every single item of feedback, although you know how important it would be.* (President, Division Steelco)

Senior managers receive much of their feedback vertically from middle managers. Middle managers also need to use horizontal feedback channels when they collect the feedback they need to give upwards to their superiors. Formal authority, such as being a superior, should involve managerial responsibility to provide feedback for their subordinates to perform. However, according to the results of the internal survey in Division Steelco (2008), middle managers feel a significant feedback deficit from superiors. The interviews illustrated similar results. Subordinates may miss out on guidance from their

superiors, even regarding things like how to perform and operate in their tasks. More person-to-person feedback is hoped for.

> *Subordinates may want to discuss, in addition to taking a look at the reports… I should understand in which times sending only the comment 'okay' is not enough. Discussion is what they need. The problem is that time is limited, and we should have more time for analysis and feedback discussion in line with the management by numbers*. (Senior vice president, Division Steelco)

When middle managers say that they would hope for more feedback from their superiors, they often talk about operational feedback: about their local performance and support on how to attain their objectives. However, how detailed operative feedback can be expected from vertical channels, is another question, since the targets and knowledge of business-oriented managers are different. In fact, feedback channels that middle managers could find more useful are more horizontal than vertical; incorporating peer groups and active search for personal networks in and outside the organization, for example by attending to executive training programs and other leadership training, where they can meet other managers dealing with similar questions.

3.4.4 Managerial skills

Superiors at all organizational levels were considered to be in especially important positions for the creation of a good feedback climate. Before anything, this requires good managerial skills, the ability to communicate the set goals at the top down the line, the ability to listen to the subordinates, and the ability to communicate feedback from the customer interface upward.

When feedback flows mainly through informal feedback channels, or there are unclear role mandates when and how to give feedback, the quality of feedback varies heavily depending on the individuals' activeness, personal networks, communicative skills, and attitudes. As a result, very unequal feedback environments from the various parts of the organization can be found. Poor managerial skills were addressed as one reason for the lack of relevant feedback in parts of the organization. When poor scores were given, they concerned especially the process of job instructions, the lack of feedback from the superior about own performance, and the counter-productive inheritance of Finnish culture for feedback practices and skills (see more in Section 3.6.1).

While the existence and goodness of formal feedback systems, such as performance appraisal interview, is important as such, the way of using them is what counts, concerning each manager and subordinate at all organizational levels. If some superior thinks that "knowledge is power" or "e-mail is all we

need", this kind of attitude is likely to deteriorate the flows of feedback even cumulatively in the organization. This is why the formalization of feedback channels and the establishment of official rules and written instructions were assumed to decrease the playing field and withholding of information. In addition, it was acknowledged to bring practices of different organizational units and teams closer together. However, the difficulty in large organizations is also when communication goes through many people either in oral form or so that messages can be revised in the middle. The final message for example in the fourth node (manager) is not usually the same anymore as the original input.

Leadership was pursued through values also. Division Steelco fought against the laissez-faire to be realized in the form of attitudes like "I don't mind, it's not my business". Through training, individuals were hoped to take more responsibility for their operations and communication and be more active. For managerial feedback actions, interviewees highlighted the need to receive timely feedback from their colleagues or superiors. "Give feedback on time" was published also in the personnel magazine in Division Steelco (2/2008). Feedback was considered fairer when given in the course of action and signaling the action needed, not just evaluating the output when the case is closed.

3.5 Organizational feedback culture and elaboration of rules, symbols, and values

3.5.1 Profit making and customer orientation

Division Steelco had faced an enormous strategic and symbolic shift in their business model. Previously people, most of them engineers, were primarily interested only in the amount of tons of steel produced. Instead, the present CEO has raised the relevance of contribution margins and profitability of the production decisions (*economic capital*). In addition, the solution provider business thinking pays a great deal of attention to customer needs.

> *This has been painful for many, because they are used to the way of thinking that the measure of manhood are tons and the turnover is nothing, the contribution margin even less. We have really been pushed to exercise that people don't first look at how many tons there are.* (President, Steelco)

The CEO needed executors for effective change. He appointed and recruited many new managers to important positions in the organization, among

them many with customer-oriented backgrounds. His team, the corporate management board, was changed entirely as of 2003.[76] All these personnel changes capitalized the knowledge and experience of the managers, which can assist the intended cultural change towards more customer-oriented behavior.

> *The reason for many changes has been our CEO, he himself and the people he has selected for his own team* [management board]*… We have recruited new people from customer-oriented backgrounds… Everyone takes this same kind of culture forward… where we can discuss things.* (Chief strategy officer, Group)

The old engineering culture still haunts in the background, and especially beyond the top management level at the headquarters. Many seemed to be more interested in production feedback than financial feedback, which I consider rather understandable because of the engineering culture and the basics of the operations. When I conducted the interviews and visited the local production units, people talked about formal measures and knew about them. However, in the more informal chats, before or after the actual interview, I got to hear – without any questions - how many tons of steel are produced at each factory or other production-oriented facts. This was their choice of the informal discourse, even at the more senior level.

3.5.2 One global company

The Group and Division Steelco were often described (especially by the sen ior managers at the group level) as being too inward looking and Finnish oriented (cf. Katz and Kahn 1978). The company is managed strongly from Finland, from the headquarters that is considered to weaken the feedback and control over global units and actions. The CEO supported the management by targets by many formalizing and harmonizing projects, and centralized the organization model. There had been several local information systems, and the multiplicity of different information systems and reports in different units was tackled with unified and centralized platforms, such as SAP (enterprise resource planning system). From the top management perspective, these were regarded as necessary means to improve the quality, transparency, and comparability of information in a large, multinational company.

[76] The corporate management board comprises the president and the CEO of the group, the presidents from the divisions, the chief financial officer, and the chief strategic officer. The extended management board comprises an additional seven managers.

> *We have really worked a lot when we have aimed to harmonize the reporting, that everyone would broadly follow the same issues… that things are in a comparable form. It is one of the most important reasons for why we and so many others run for one platform… I believe this concerns all organizations, divisions, groups, and others. But what an awful amount of work! We really do have controllers in this house* [stressed]. *If you enter the word controller into our internal phone book, you get a lot of hits. I bet many Excel-sheets are run here, I mean very many.* (Senior Vice President, Division Steelco)

During the years, several acquisitions had brought many different companies and brands under the company name. The company has launched group-wide programs to harmonize ways of working, cost savings, and to improve the use of shared resources between different countries, divisions, and units. Nowadays, the company runs specific and systematic integration programs, but according to the Chief strategy officer, the integration processes were earlier only partly executed, which lead to the situation where each country and unit just continued operating rather independently, often also with a strong sense of belonging to the old company culture or brand. All operations are now under one marketing brand. This was thought to unify company practices and enhance the employees' sense of belonging to one global company.

> *The fact that everything is under the same marketing brand now is extremely important. When we make acquisitions and integrate, we aim that on the very first day, factories have our sign on the roof, and people wear our working clothes. This all affects their sense of culture and identity*. (Chief strategy officer, Group)

This is the "formal" side of the story. However, the interviews and visits to Finnish service centers confirmed the insight that I heard from the beginning, that even today the different divisions and business units are quite heterogeneous, due to their different historical backgrounds and local traditions.

3.5.3 Towards more communicative feedback culture

When the challenges of formal and informal feedback in Case Steelco were considered, the poor feedback culture came up frequently. Division Steelco is on the threshold of a new era: a more communicative and open feedback culture. People at the headquarters were said to be rather pleased with the present official numbers and reports, but they also hoped for more interaction, communication, and spontaneous performance feedback throughout the large organization.

> *Our organization creates a certain model, which enables action and opportunities for communication* [that unites distinct local units]. *But you need to be active, nothing is self-directing. Besides, in any group, information does not usually automatically flow upwards, you need to brief people and persuade. We have quite large units, active ones; they feel that they have a life of their own there if you don't separately go through issues and create an interface with the division. You need to open your mouth.* (Division controller, Division Steelco)

A good feedback culture improves the efficient, useful, and timely flows of feedback, since people feel comfortable at giving and receiving feedback and vice versa. A poor feedback culture can arise from different things, but in Division Steelco this was largely due to the long tradition of management by fear. The old company culture, in the times of the former CEO, was portrayed as very hierarchical and managed with fear. Strongly hierarchical cultures turn people loyal to the official arrangements.

> *In the era of the past CEO, people were afraid of making any decisions. Things were just delegated upwards. Eventually, all the decisions were made here in the corner office.* (President and Chief Executive Office, Group)

> *In healthy cultures, they* [subordinates] *do it* [ask for opinion] *because they respect your expertise, and in sick cultures, they do it because of the fear or rules of the game.* (Chief strategy officer, Group)

The present CEO has explicitly wanted to change the feedback culture and attitudes toward sharing information and having the courage to speak out. As an illustrative scene of this top management's desire for change, Division Steelco opened a new vacancy for an internal communications specialist in 2007.

> *Before me, there was no one working in internal communication in Division Steelco. I think this is a clear hope, or order, how should I put it, from the management board that the culture should change and more information should be shared and delivered.* (Communications specialist, Division Steelco)

The culture of discipline and fear includes the conscious withholding of information, revenge from mistakes, and leads to situations in which individuals do not help each other (Internal training material).

> *There was this thinking that the less you tell, the more power you have.* (Senior Vice President, Division Steelco)

> *The culture of that time was that if you made a mistake, you certainly heard about it.* (President, Division Steelco)

When the culture is competitive, and people fear punishment from mistakes or deviations, people were found to learn to hide them. Prior research also suggests that the excess feeling of formality may hamper the flows of needed feedback when people do not feel free to talk to each other (London and Smither 2002; Levy and Williams 2004; Katz and Kahn 1978, 447). As referred to the "old" Division Steelco, its tradition was found to feed passive behavior and adaptation to the existing conditions – and this needed to be reversed with explicit training of the personnel.

The desired change from "the culture of command to the culture of equal interaction" was a managed target in Division Steelco, also led with leadership training programs in Finnish service centers. When the culture of command centralizes power and manages people by orders, controls, and hierarchies, the culture of equal interaction leans towards shared goals, individual responsibility and activity, team work, and guiding rewards (Internal training material). Feedback culture directs attention first to goals and then to the process of sharing information and helping each other to get there. This kind of interaction-based sensemaking culture is inherently different from a mere information-based culture, where there can be lonely score-keepers and decision makers (cf. managers as nerve centers, MacIntosh 1994).

The strong dominance of the present CEO became evident in all of the interviews, but there were also other strong leaders and authoritative management styles. Some vestiges of the culture of discipline and fear can still be observed. Senior level managers at the group and at division level have their own discussion arenas, but people at the lower levels of the organization or abroad can be very reluctant to give spontaneous feedback or even speak out, especially in public situations and channels upwards to superiors.

> *When you are talking in a unit, no one talks, no one asks, and then when the break comes, there are four men plucking at your sleeves and asking what you think of something or that he considers that.* (President, Division Steelco)

At the headquarters, senior managers have also tackled the problem of hierarchy and fear with an explicit downsizing of hierarchical symbols, like formal dressing or separate dining room and tables. They hope that this would be a positive signal, a sense of informality created by their own behavior for subordinates to come and talk to them.[77]

The overall image of the interviews confirmed, though top-down type of organizational culture, but yet positive progress in building a more open and

[77] However, prior research has been doubtful of the relevance of this kind of signalling for other than the construction of the democratic self-image of the managers (Katz and Kahn 1978, 447-448).

communicative feedback culture, in which people discuss things, share information, and have the courage to disagree. In some units, the team spirit was regarded high, while in other units, the situations were clearly more problematic.

3.5.4 Towards more qualitative discussion in technology-dominant culture

Like many engineering cultures, Division Steelco is considered to be good with numbers and systems. Most of the senior managers at the group level were surprisingly pleased with the performance measurement practices as well as with the more informal feedback flows.

> *The difficulty is, I guess, that nowadays we have way too much information. The information or feedback up and down* [in the organization] *is a bit of a different type. The challenge is how to deliver it in an appropriate way. We hear all the time that down there they do not get enough feedback, they do not know about issues, when again upwards they give feedback saying that yes they have been informed about these things. But I guess that it is the form of it that deteriorates the understanding of it down there and here, we don't see it similarly… It can also be that there is some widespread dissatisfaction there in the crowd, that they want to see it so from the principle. I don't know.* [pause] *The biggest problem is the flow of too much information.* (Senior vice president, Division Steelco)

This person interviewed saw feedback much as informing people up-down about official decisions and actions, and through many rather formal channels, such as Intranet. It pictures a hierarchical organization model with conflicting groups, but also raises an important question: the lack of common view on what to inform and how. Overall, an excessive use of unidirectional communication channels (like Intranet) in the cost of bi- or multidirectional communication channels (like team meetings), is raised as a challenge in Division Steelco. While the former channels are considered mainly useful for informing, management, control, and leadership are considered to also require interactive feedback processes. The results from the internal survey (2008) reported on the lack of qualitative and interactive performance feedback practices as one of the most critical issues, as well as the next quote:

> *We need more qualitative feedback. We have systems and electronic possibilities, but the problem is that we should have more qualitative discussion. The communication should come off from the computer screen… we need more face-to-face communication here and leader-*

> *ship. Nowadays, people try to lead with the help of PCs.* (Senior vice president in human resources, Group)

The channels that are used inevitably shape and restrict not only the possible communication ways but also affect the type of feedback practices that are being established over time. E-mail was especially criticized for becoming a too dominating management method for some.

> *People are just sending e-mails and they think that they have done their part of communication and informing. But with e-mail, there is a low certainty of whether the receiver has read, agreed, or understood the message.* (Division controller, Division Steelco)

The poor communication nature of the email as a medium is one problem. Further, the proportion of rather good-quality, system-based feedback to the low quality e-mails seemed to be out of balance, leading to the overload of messages that people have little, if anything, to do. Informing about organizational issues is easier than relevant feedback practices that usually require more interactive forums and links between the goals and processes that each person understands.

3.6 Feedback and external environment

3.6.1 Dominant values on feedback in Finnish culture

The interviewees constantly referred to the problems of giving and receiving feedback, not just in the feedback culture of their company (which was also problematic), but also in a wider setting of the Finnish society as such.

> *We* [Finnish people] *seldom give positive feedback. Silence means that everything is okay. Then again, we give negative feedback directly. We have traditionally been raised like that.* (Service center manager, Division Steelco)

> *I have noticed that giving good feedback is more difficult than giving bad feedback. For some reason… for us Finns.* (Senior vice president, Division Steelco)

The quote summarizes our traditional (post-war) upbringing, in which modesty and uprightness were dominant virtues. Whether this kind of cultural inheritance among Finns is a more generally valid interpretation or not, I as a Finn at least recognize the stereotype.

Explicit negative connotations attached to the word feedback are highly evident from the empirical material. Naturally, these are likely to cause problems to the adequate flows of feedback, since informal, voluntary flows remain much in silence. Feedback practices were characterized culturally as very authoritative (or too ceremonial, Åberg 2009[78]), more evaluative than directional, as *ex post* evaluations from senior managers to their subordinates.

> *A Finn usually takes feedback pretty negatively… We should try to take our culture further so that the word and concept would be more positive.* (Senior vice president, Division Steelco)

As to redress this situation, it was suggested that the connotation of the word feedback should be more casual and should acknowledge various informal ways to give feedback. Instead of negatively punishing and reprehending for past performance, the call was to focus more on forward-looking signals about how to work with goals. Also, people hoped to receive feedback during the process when corrections are still possible and not afterwards, i.e. more directional than evaluative feedback.[79]

On the other hand, if Finns are to be direct in their communication, the positive side would be the "truthfulness" of feedback practices. This was raised since while Division Steelco operates in many countries, not all formal reports abroad were considered as plausible. Reports may, on the face, look okay, but going beyond numbers and their construction is not always easy or possible because it would require knowing the people, their business, ways of operating, and cultural logics. However, the negative side of not giving good feedback is linked to poor leadership skills and not motivating or encouraging people for good performance.

3.6.2 Level of professionalism and high standards

Steel factories employ a large amount of production workers, and only half of the personnel of Division Steelco have access to modern communication channels. When the Communications specialist was doing her internal survey about the company's communication channels, she interviewed, among others, a Russian steel worker with the assistance of an interpreter:

[78] This statement is based on an informal chat with Leif Åberg over the training day about organizational communications arranged at the Hamburger Börs Congress Center.
[79] As an interesting side remark, Finnish has no direct translation for *feed-forward,* which makes its communication and use in everyday rhetoric tricky.

> *I asked how he prefers to be informed about things. I realize that he is perhaps an extreme case but still, this is a person I should also be able to contact somehow and I feel I have very few means of doing that. Our cultures are totally different, we share no common language, the communication channels are poor… That was the moment when I realized how challenging this all is.* (Communications specialist, Division Steelco)

The work in the factories can be hard, dirty, and prone to accidents. As the work safety indicators are highly appreciated and followed in Division Steelco, service centers have various methods to trace it. When accidents happen, they are calculated as accident frequency and announced with an official and global Safety Tool. The number of close calls are also measured and reported by the factories as *ex ante* feedback indicator to accident frequency. This provides maybe the best example of a clear and measurable feed-forward indicator that traces the process of safety in order to anticipate and reduce the real accident frequency outputs. According to practical knowledge, the larger the number of close calls, the larger the number of accidents. However, certain skepticism and suspicions arose towards the plausibility of these measures at global level. There can be countries that hardly ever report many close calls but do report fatal accidents in a frequency that questions the amount of (un)reported close calls.

In order to minimize the number of accidents in the factories, safety issues are discussed regularly in safe quarters. Managers also execute regular safe circuits in factories or send checklists to local managers in order to map the safety of the production halls.

> *When we go to the factories, we claim and expect to track certain trademarks of top-class engineering work: the flooring of the factories are clean, workers wear helmets, goods are in place and labeled, and the measures and graphs are on the notice boards on view etc. This is part of our management system and controls but also a feedback system. There are no numerical measures included but certain clear issues that are checked by observing whether they are in order or not.* (Chief strategy officer, Group)

These methods are founded on world class best practices, and they are urged to be broadly systematized. Many customers require the existence of certain production standards and quality systems. It is a direct feedback of their expected competitiveness both to customers and to senior managers. The accident frequency curve (number of accidents per million working hours) is also reported publicly in social responsibility reports.

3.6.3 Demands from the external environment

At Steelco, managers are rewarded for meeting the goals, being international and customer-oriented. Managers need resources to research and formalize market, customer, and environmental expectations and analyses, as well as emergent changes and risks. External trends can be searched personally, through contacts, the media, consultants, or research projects. This kind of systemic thinking requires top managers to also code external information systematically and proactively, not only in the case of problems (Katz and Kahn 1978, 460, cf. Sayles 1989). At the senior management level, strategic concerns may remain unnoticed without functional formal measures, systems, and procedures. On the other hand, the risk of formalizing strategic feedback can lead to another extreme, to a stiff bureaucracy (cf. von Bertalanffy 1968), ignoring the emergent and various signals from the operational environment.

> *The worst scenario in formalizing strategic planning is that people can foretell everything that is coming out of the process… It becomes a budget process in a way. Similarly, if the feedback process is very similar every year, it no longer reacts to the changes of the situation where the company is.* (Chief strategy officer, Group)

In Case Steelco, the share of forecasts in the formal measures and reports were considered too small. Estimations and calculations served for the cooperation of the different units as a whole, the supply of materials, use of capacity, and long-term investments. Many central flows of external feedback, especially customer feedback, link to the function or unit level. The sales function formulates the most important gate for customer feedback throughout the organization. For example, service centers need to deal with customer orders and complaints.

> *We do receive external feedback through our organization, through our contact person, usually sales... and also from our partners, carriers, and subcontractors... with those who we network and do business.* (Senior vice president, Division Steelco)

Forecasts require other kind of formal reporting, not covering the past results but estimating what will happen for the next quarter, or rolling for the next 15 months. Strategic issues go even further, for years ahead. Giving estimations was, however, regarded as risky, not only because of their uncertainty, raised from the many external factors, but also because of the culture and fear of punishments, and discussions that follow from wrong guesses.

> *Forecasts are things in which we would need to develop in our systems… I feel that people are afraid of giving forecasts, because if it*

> *doesn't happen they fear that they'll be punished.* (President, Division Steelco)

Division Steelco also raised the common complaint of salespeople being an occupational group that is not so willing to share their knowledge and add to the organizational success as a whole, so much than to their own success. This may demand the use of group-wide, open access systems that code and distribute the customer-based knowledge, occupied previously only by a single salesperson. The new CRM–tool was a clear example of this kind of trend that coerces formal reporting over daily activities to a wider utilization of customer contacts and visits. For the time being, each sales manager has had slightly different methods for producing their estimations. When asking about informal feedback practices, one Sales Manager, for example, presented a monthly template that he uses with his subordinates to help him report the sales estimations for the next month. Before the CRM will be fully in use, he describes his informal method like this:

> *I ask my subordinates some questions by email … a filled-in form with three items I want to emphasize... how is the business, the situation with the contracts, the field of competition, how the future looks, the view about material supply, ten items maximum.. Then I try to synthesize those and report it forward.* (Sales Manager, Division Steelco)

Last but not least, the pressures from the markets for listed companies were acknowledged. Inside the organization, the regulations narrow the access to information. At the group level, "the need to be positive but not too positive" in public relations requires balancing acts in finding the "right" level of reporting to the market. When the exchange regulations become tighter, for example concerning the use of inside information, the managers from the listed companies need to follow them.

> *It can be that the present management is a bit, um, more selective in what they want to show people.* (Senior vice president, Division Steelco)

The company cannot provide overly optimistic releases, but one important task of top managers is to create a positive mindset and acting. This links to the use of management information and its possible biases and distortions, but also to the Pygmalion effect of self-fulfilling prophecy (e.g. Senge 1990). Good news and experiences often build on themselves and snowball with the help of positive feedback signals. Also, inside the organization, the feedback practices that nurture the positive mindset and actions instead of focusing too much on the realization of what has happened in the past, builds a positive feedback culture and target-setting for the future.

4 PROBLEMATIZING THE DICHOTOMY OF FORMAL AND INFORMAL FEEDBACK WITH THREE ANALYTICAL DIMENSIONS

4.1 From cybernetic to interpretive view on feedback

In the empirical section, Flamholtz's (1996, 1983) overall organizational control framework provided an organizational-level analysis of the use of formal and informal feedback in Division Steelco's control context. Like the quote below indicates, the interpretation of informal feedback exceeds what managers and employees can do with formal systems and figures:

> *I consider informal feedback related to the culture and conditions. [It is] more unclear, expressed with words, qualitative 'measures' or things that you cannot measure.* (Division controller, Division Steelco)

Issues considered more informal, such as culture, can be managed through managerial interventions and values, even though it can be difficult and slow. Paying more attention to informal aspects can assist in understanding the limits of technocratic management. Informal as a domain is not easy to observe, specify, communicate, and manage. Taking the informal to the theoretical focus leads to conditions in which organizations are not working as the sum of its parts, but they operate in continuous chaos. Here, chaos is not random with no form and order, but includes a simultaneous interplay of various states and rationales for desired stability (see e.g. Aula 1999, 23–26; Morgan 1997). Various conflicting goals, views, and rationalities of action battle for the legitimacy and justification for whose view will reach the level of formalized actions.

Visual informal feedback loops added to the cybernetic model of control by Flamholtz (1996, 1983; Flamholtz et al. 1985) are hardly helpful. But the conceptual pair of both formal and informal feedback can raise awareness of crucial information channels and flows beyond the measured outputs. Importantly, this does not mean that every feedback channel outside the measurement and reward systems would be informal feedback, or that all feedback practices in the core control system would be formal – both formal and informal feedback loops operate or are influenced by every control layer. I consider that the framework (*ibid*) can provide a broad analytical control context in which the flows and use of both formal and informal feedback can be dis-

cussed. It requires further elaboration of its central feedback operations, such as relevant feedback practices, important actors, organizational cooperation across different units, effects of the feedback culture, and demands from external environment. However, formal and informal feedback need to be first approachable, and ahead of this conceptual challenge, the framework of the three dimensions of formal and informal feedback will be next presented and discussed.

4.2 Construction of the 3D-framework

In the management accounting literature, performance measures are commonly understood as providing formal feedback. What comprises informal feedback is more unspecified, sometimes viewed simply as opposite to the formal management accounting system feedback or simply feedback based on daily social interaction (as dichotomies, cf. Llewellyn 2003, theorizing through differentiation). The heterogeneity of definitions and classifications, which inherently weakens the common ground for discussion and research, indicates the need for clarifying the concepts of formal and informal feedback.[80]

To begin with, I introduce the findings from the literature review in which the notions of formal and/or informal feedback were explicitly used and decrypted. It demonstrates how the notions of formal and informal feedback come to the fore heterogeneously. The explicit discussion between formal and informal derives largely from the management literature (e.g. Ashford and Cummings 1983; Ashford and Tsui 1991; London and Smither 2002; London 2003), where it concerns feedback-seeking behavior between individuals, typically superiors and subordinates. In the area of informal feedback, the article by Ashford and Cummings (1983) is a seminal work to view feedback on personal vantage point and not just as an organizational resource.

First, the literature distinguishes formal and informal feedback along pathways through which feedback flows, which is named here as the *source dimension* (see Table 4). London (2003) defines formal feedback to be consisted of formal appraisals, performance reviews or meetings with superiors, whereas informal feedback is communicated in everyday interactions.[81] London and Smither (2002, 87-88) define informal feedback in a way that such feedback is provided independently of formal mechanisms, such as traditional perfor-

[80] The framework of formal and informal feedback along three dimensions is published and discussed in its full length in Pitkänen and Lukka (2011).
[81] I consider London's (2003) definitions as the broadest: we can find hints about all three dimensions.

mance appraisals or a 360-degree feedback survey process.[82] Luckett and Eggleton (1991, 376–378) do not explicitly use the term informal feedback, but they classify internal feedback sources into formal (management accounting system), superior, peer, task, and self, and that "accounting information usually comes from either a formal reporting system or a supervisor" (p. 376). In addition, they state that "informal sources of feedback" are used because feedback provided by the formal management accounting systems is regarded as inadequate (see also Ashford and Tsui (1991, 253).

Table 4 Three dimensions of formal and informal feedback

	Formal feedback	Informal feedback	Dimension
London (2003)	Formal appraisals, performance reviews or meetings with superiors	Communicated in everyday interactions, individual feedback- seeking behavior	Source, Time, Rule
Luckett and Eggleton (1991)	Feedback provided through management accounting systems (MAS)	Provided through social sources such as superiors, peers, task, and self (person-to-person feedback)	Source
London and Smither (2002)	Provided through formal mechanisms	Provided independently of formal mechanisms	Source
	Planned, officially defined feedback	Unplanned or "in the moment" feedback	Time, Rule
Katz and Kahn (1978)	Scheduled feedback	Unscheduled feedback	Time
Ashford and Tsui (1991)	E.g. formal performance appraisal systems, formal measurement systems, and formal communication among managers	Unsolicited feedback	Rule, Source

The *time dimension* of feedback involves dealing with, when certain flows of feedback operate. London (2003) regards informal feedback as "everyday interactions". More clearly, London and Smither (2002, 88) accentuate the

[82] In 360-degree surveys, ratings are collected from the manager's supervisors, direct reports, peers, and sometimes also customers. For the method, see e.g. Atwater and Brett, 2006.

nature of this kind of informal feedback as an unplanned event, or "in the moment" feedback (cf. "unscheduled feedback" by Katz and Kahn 1978, 449). Ashford et al. (2003, 785) connect informal feedback to "spontaneous feedback interactions". Further, London and Smither (2002) regard formal feedback as planned beforehand and systematically scheduled into the official procedures in the organization.

Lastly, Ashford and Tsui (1991, 252; 260–265) draw a parallel between informal feedback and unsolicited (voluntary) feedback. Managers use informal feedback exchanges to seek additional information cues from their environment and other people. In their article, formal feedback is not used explicitly, but they discuss formal systems and managerial hierarchies to provide available feedback, such as obligatory reports, performance measures, and formal communication. The *rule dimension* of feedback - dealing with why certain flows of feedback are provided - build on both Ashford and Tsui's (1991) and London and Smither's (2002) observations by labeling formal feedback as obligatory feedback to highlight coercive hierarchical relations and responsibilities between managers and units as well as official procedures, different from voluntary, and, thereby, additional (informal) feedback practices.

While these dimensions were identified, formulated, and grouped based on the review of prior literature on definitions of formal and informal *feedback*, these ideas were developed further from the practical meanings and interpretations given by the interviewees in Case Steelco. With an exploratory feature, the field work with Division Steelco allowed combining, analyzing, and "testing" interpretations regarding formal and informal feedback received from the managers of the case company on those dimensions and to make sense of various conceptualizations (cf. Scapens 1990, 265).

4.3 Coupling of formal and informal elements of feedback

Early in my research project, I expected that the area and content of informal feedback would be more spread and diverse than the area of formal feedback. However, not only the concept of informal feedback, but also the concept of formal feedback has room for many interpretations. What we accept at first glance as formal and informal channels of feedback are, in fact, arenas for a variety of different elements of feedback, both formal and informal (cf. Aula 1999 about communication arenas). If monthly performance measures are considered as formal feedback, the discussions in monthly reviews, in which managers or controllers explain the meaning, reasons, and possible impacts of the metrics (both historical and estimations), turn the use of formal measures as a template for more dynamic feedback loops. A formal review as a practice

is an arena in which the domain of informal feedback becomes visible. Thus, it produces not only formal feedback (see London 2003, Table 4).

In order to be able to discuss the difference between formal and informal in these multiple communication arenas, we need analytical classifications. Three analytical dimensions (3D's) – source, time, and rule – provide an analytical device in order to make sense of and debate various interpretations of formal and informal feedback practices (Figure 4).

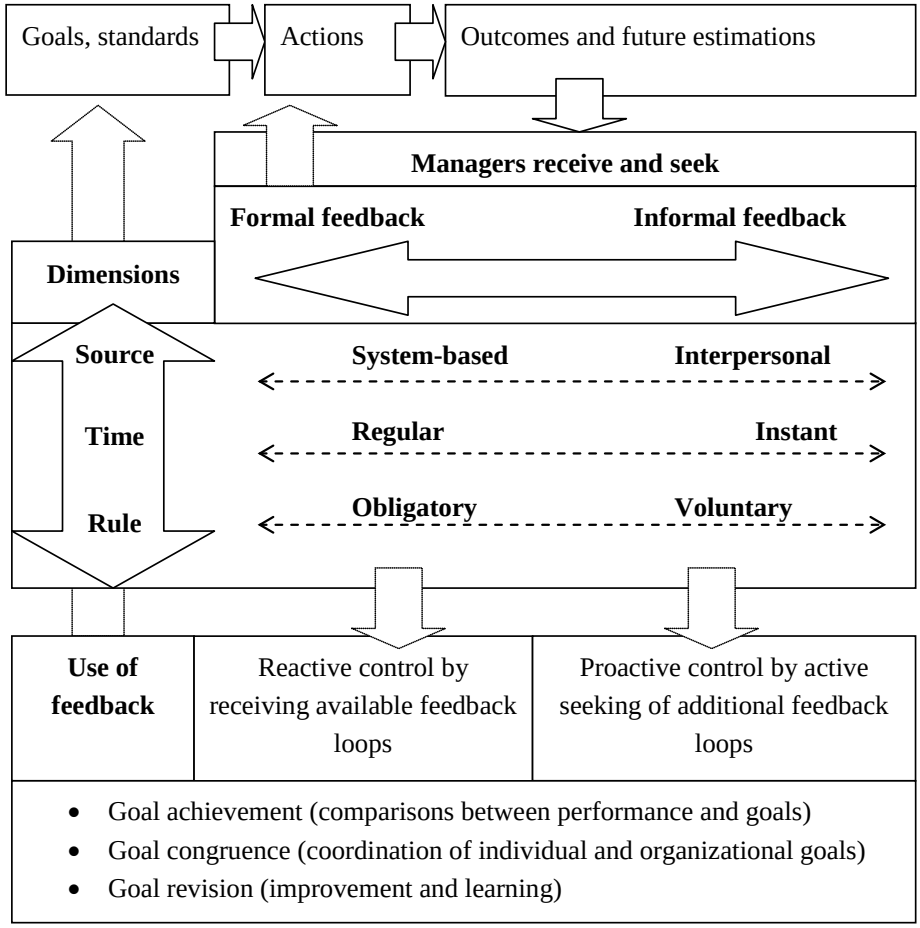

Figure 4 An analytical matrix of formal and informal feedback in the management accounting context

The horizontal and vertical arrows in Figure 4 refer to the key argument for not regarding formal and informal feedback or the three analytical dimensions as strictly dichotomous notions. Rather, they operate as tendencies, which can overlap and co-exist in an intertwined manner. The hierarchical superior-subordinate positions and the alignment of different units and targets formulate

both formal and informal feedback. A certain feedback can be viewed differently depending on the party evaluating the communication situation (superior or subordinate). In addition, while there certainly can be "clear" examples of formal feedback (system-based, regular and obligatory) and "clear" examples of informal feedback (interpersonal, instant and voluntary), all other combinations are also possible. A certain piece of feedback can be, for instance, system-based, but still instant and voluntary (see the interactive control systems by Simons 1995).

For these reasons the analytical matrix should be read as depicting a space, where feedback can "travel" rather fluidly. Dimensions highlight different aspects of formality or informality of feedback existing together. They interact along a continuum specified by qualifiers like formal – semiformal – informal, or formal – less formal – more informal – informal. The dividing lines between formal and informal feedback practices are ambiguous, as they are formed of various intertwined elements. For example, people may choose to use personal sources or irregular get-togethers (informal sources), like ad hoc face-to-face meetings, when discussing monthly figures on performance (formal feedback) or give voluntary, additional (informal) feedback, like estimations, with monthly reports (formal feedback). Also, when a superior comes and asks for a subordinate to sit down and discuss something emergent, the existence of a hierarchical relationship may transform an informal ad hoc situation into a formal feedback situation.

When formal and informal feedback practices are formed of various intertwined elements, the dividing lines between formal and informal feedback practices are ambiguous. Sometimes simple differentiation between formal and informal feedback is applicable enough (cf. Llewellyn 2003); the various interpretations do not cause confusion, conflicts, or inefficiency to the research, or to practices in organizations. However, because of the clear existence of a "gray, fuzzy area" between the pure classifications of formal and informal feedback, I suggest that, in addition to the dichotomous applications of formal and informal feedback, the interpretative formal and the informal practices can be discussed and analyzed through three dimensions. These three analytical dimensions (3D's) – source, time and rule can highlight the different aspects and perceived interpretations of the formality or informality of feedback, approached with the help of three questions (Figure 5):

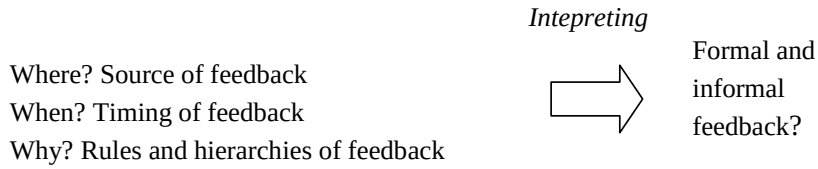

Figure 5 The questions and dimensions of formal and informal feedback

The following sections provide interpretations and some common examples of formal and informal feedback within each of the three analytical dimensions. They highlight the main analytic features of the dimensions as derived from the findings from Case Steelco. The examples extend from one dimension to another, i.e. they are not intended to be regarded as mutually exclusive categories in any strict sense.

4.3.1 Source dimension: systems and interaction

Source dimension distinguishes formal and informal feedback along pathways through which feedback flows. *The more mechanistic the channel, the more formal is the related feedback.* The mechanistic, computer-based feedback channels hinder the spectrum of available feedback cues (cf. Carr 2010) but make the operations and throughputs controllable for a larger audience even at a distance.

System-based feedback is bound to and originates from accounting and other information systems. For example, in Division Steelco, performance data is codified in explicit forms into global SAP-systems, which can be accessed by those with appropriate rights to retrieve different reports. In open databases, like CRM-systems, feedback can be stored, retrieved, and used more widely in the organization. System-based feedback, which is given in an objective form, can be turned into unified feedback practices throughout different units and divisions facilitating behavior towards common goals. However, even system-based feedback is not only formal and needs to be communicated and interpreted by its users.

Interpersonal feedback given and received between people is more subjective and tacit. Examples of feedback practices, which involve interpersonal feedback, are management group or team meetings, performance appraisal interviews, and ad hoc communication between superiors, subordinates, and peers. Interpersonal feedback allows the observing of a broader scale of feed-

back loops, such as non-verbal communication (gestures, facial expressions and body language). On the other hand, feedback communicated only in human interaction is bound to certain managers and local contexts, and thus it easily produces patches of information and disparate practices.

4.3.2 Time dimension: feedback periods and horizons

Time dimension is suitable for considering formal and informal feedback in relation to when certain flows of feedback operate. *The more systematic the schedules are, the more formal the related feedback is.* Procedures for scheduled feedback are planned beforehand and expected to produce both continuity and foreseeability in the operations.

Regular feedback is based on procedures for providing feedback systematically and iteratively in certain time periods. In system-theory, feedback processes are defined as iterative. Management information systems enable regular feedback processes, for example a month after month people compile similar reports. In the forms of pre-defined measures and standards, it gives a comparable time series and enables managers to follow trends and analyze occurred changes in performance. For example, monthly reports include certain standardized indicators and themes that are followed. In addition, customer satisfaction surveys produce comparable results year after year. However, sometimes regular reports come too late to be able to provide relevant feedback for managers – they are yesterday's news.

Nevertheless, much of the feedback in organizations is irregular and *instant*, i.e. unplanned and spontaneous: communication that just emerges in the moment. Instant practices allow faster responses to changes and assist in everyday management and real-time operative decision making. Being unsystematic or detached from the pre-planned official management schedules brings in features of informality.

4.3.3 Rule dimension: power and hierarchies

Rule dimension is suitable for considering formal and informal feedback in relation to why certain flows of feedback are provided. *The more established authority or the higher the dominance, the more formal is the related feedback.*

Obligatory feedback relates to hierarchical accountability relations between superiors and subordinates and is based on official operating procedures. Monthly performance reports, in which certain indicators need to be tracked

and reported, or performance appraisal interviews arranged by every superior for their subordinates, exemplify this kind of feedback. As officially directed by management, it can be largely standardized and controlled so that at least a certain minimum level of feedback occurs everywhere. Unified practices make the role of individual preferences and differences between superiors less crucial. However, even this kind of rather formal communication between superiors and subordinates includes qualitative and personal evaluation.

In contrast to obligatory feedback, *voluntary feedback* requires an active attitude at the individual (or group) level. Hence, it is connected to personal relations and networks, personal abilities, styles and preferences that offer and receive feedback (managers' personal attitudes to feedback practices). Being connected to individuals and their mind-sets, the flows of voluntary feedback are difficult to manage, but choosing capable superiors, educating people, and having a good feedback culture opens up additional feedback flows as well.

4.4 Feedback practices through dimensions in Case Steelco

Different interpretations of the concepts of formal and informal feedback among managers were found to derive from different hierarchical positions (senior or middle level), superior-subordinate relations, individual feedback attitudes and preferences, and organizational feedback culture. Some senior managers felt that their most important form of feedback is informal, while some other claimed to primarily prefer and focus on the formal, system-based feedback in their feedback practices. The difference between their views can be partly understood as stemming from the different feedback seeking preferences, but it also indicates a different understanding of formal and informal feedback practices.

The crucial positions of each middle and line manager for the vertical and horizontal loops of feedback were highlighted. Some superiors were criticized for limiting themselves too much to the system-based and obligatory feedback, such as realized monthly figures at the cost of more job-related feedback. When Katz and Kahn (1978) discuss the often unsuccessful feedback practices between superiors and subordinates, they maybe refer to a surveillance system for tracking errors, in which superiors make early interventions (negative feedback control). Managers in Division Steelco were also concerned about the lack of feed-forward types of controls and interventions regarding processes of how to operate (cf. Langfield-Smith 1997, 208).

Overall, the interviewees, both senior and middle, stated that in the end, the existence of systems per se is not so crucial for effective feedback practices than the skills and abilities of each manager to utilize that information. Feed-

back practices, formal and informal, accentuate the responsibility and activity of each individual, both as a feedback provider and as a receiver of feedback (*rule dimension*). As a result of individual differences that eventually lead to legitimized feedback practices at the local level, even my small "sample" of the people interviewed in Division Steelco illustrated different feedback cultures in different units.

The interplay between formal and informal feedback is flexible and dynamic – not only when analyzed through a stable system or a static view of the channels, but also in the course of time, operating like a developable organism (such as brains) (cf. Carr 2010). As the CEO increased hierarchical control at a distance, global measures, practices, and information systems, and limited the access to information to role specific, the specialization and differentiation increased. This is in line with the principle of progressive mechanization (von Bertalanffy 1968). On the other hand, the top management's aim to change the cultural control to more discussion-based swung the pendulum of mechanization towards more dynamic interactions. However, it remained somewhat an open question on how generally this applies to others outside of the senior management level. Typical to situated feedback, like meeting practices, which are not codified, informed, and managed, is their local reach and closed circle from the outsiders. Even inside of them, they are far from democratic practices in organizations (*rule dimension*):

> *A bit caricatured, the very same people attend most of these important meetings, and even there the same people talk, and the same are quiet.* (Senior Vice President, Division Steelco)

Feedback communicated through interaction is not usually codified, except for public memos. The element of regular feedback as formal seems intertwined to the *rule dimension*: as there are hierarchical demands to report or give feedback at certain, regular intervals. Instead, the *time dimension* seems to strongly validate the informal feedback practices as such. Informality was frequently linked to the feedback flows that are instant and take place unplanned or "in the moment" (London and Smither 2002), or when the personal need for those practices arise.

Due to the hierarchical culture, the *rule dimension* turned out to be rather dominant in defining formal feedback practices in Case Steelco. Formal feedback was rather tightly bound by the systems, required routines, and power relations. The hierarchical settings and domination were especially observable in superior-subordinate relations, since no-one explicitly mentioned subordinates as an important formal feedback channel. On the other hand, this is in line with the previous research (Ashford and Tsui 1991), which suggests that

individuals are primarily more interested in getting feedback from their superiors than from their subordinates or from peers (cf. Katz and Kahn 1978).

At the more local levels, formal feedback was also attached to the obligatory reports that people have to produce, regardless of whether they consider them useful or a waste of time from the "real" business (*rule dimension*). Following the theoretical hypothesis of the progressive mechanization (von Bertalanffy 1968), the ever-continuing reporting cycles are thought to lead to rigid bureaucracies with stable, non-reactive feedback flows but also to long working days with massive reporting burden for the sake of the reporting duty and not the necessity of informational needs. As pointed out from the empirical material, the requirement of the uniformity of group-wide practices may weaken the usability of these common goals at a more local level. While Burns and Scapens (2000, 18) consider formal management accounting systems as rules, and routines as "practices actually in use", similar interpretations were attached to the formal and informal feedback practices as well.

> *Formal is what is expected from you… Informal is what you do in practice. And if they somehow conflict, it leads to inefficiency. That is how I see it.* (Sales Manager, Division Steelco)

When some of the older literature (e.g. Hall 1977; cf. also Hall 2010) regards written reports as formal, this no longer receives support from my empirical study. For example, when asking about feedback practices perceived as informal, many interviewees illustrated the use of their personal memos (written), excel sheets (numerical and written), and reporting practices (system-based discussions). These practices were perceived as informal since they were not required as such (*rule dimension*), but they themselves found them practical for their own use or for hierarchical reporting upwards. Also Bruns and McKinnon (1993) label reports prepared by unit staff or users as informal (cf. Preston 1986). However, when a divisional sales manager considers his own additional monthly upwards enquiry as informal, it may well be that his subordinates do not consider them informal (*rule dimension*). This kind of difference in interpreted formality structures on formal reporting hierarchies, needed in functioning organizational communication. Furthermore, when the senior manager in human relations presented the written leadership principles of the group (in PowerPoint), it was added with a worry that "perhaps many do not even know that we have these". If these operating principles composed at the top are not properly informed and trained to the people in the organization, their effect is small if not zero in the other functions and units.

> *…like if your* [handwritten] *notes you take now would only remain there in your notebook.* (Senior vice president, Division Steelco)

The above example came from another senior vice president when we discussed the availability of databases and the actual use of them. Only the "practices actually in use" (Burns and Scapens 2000) have an influence, not the written or codified official data, memos, rules, systems, or similar, which are detached from the actual operations. In relation to the formal and informal feedback practices and their analytical dimensions, the routines as practices actually in use (Burns and Scapens 2000) include both formal and informal feedback practices, whereas rules as formal management accounting systems also highlight the formal feedback but not entirely, as discussed earlier. Although I am not therefore suggesting the conceptual pair of rules and routines (Burns and Scapens 2000) as an additional dimension for describing formal and informal feedback as such, they can highlight the difference when feedback is used "for something" but the practices of formal and informal feedback collide.

4.5 Control layers and formal and informal feedback practices

4.5.1 Feedback in Flamholtz's organizational control layers

In the empirical section, I have analyzed the flows of formal and informal feedback and their organizational control mechanisms from Division Steelco applying the organizational control framework of Flamholtz (1996; 1983, Flamholtz et al. 1985). Drawing on that model, the 3D-framework and formal and informal feedback practices will next be further elaborated vis-á-vis its four thematic layers: core control system, organizational structure, organizational culture, and external environment (Figure 6).

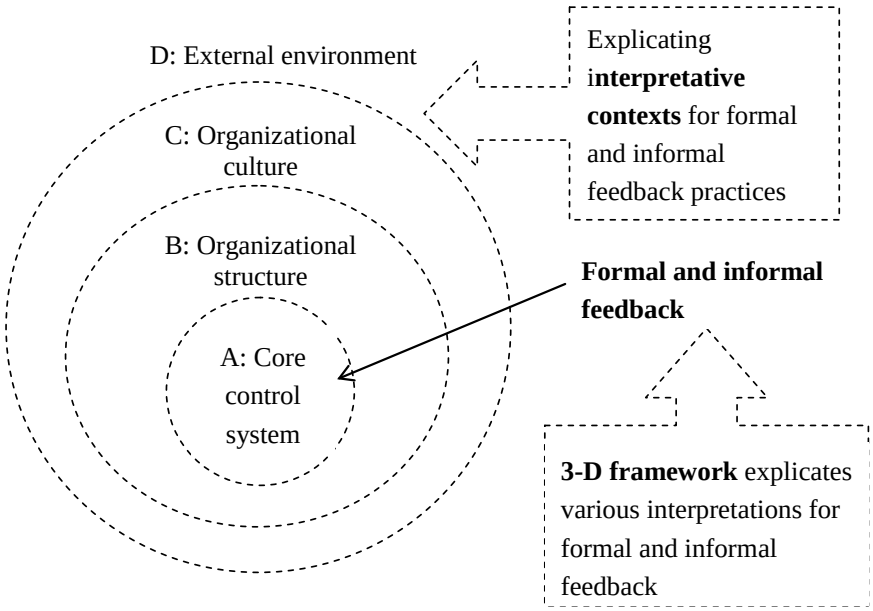

Figure 6 3-D framework in organizational control context (added to Flamholtz 1996, 1983)

In the core control system (A), the voluntary and active feedback seekers and producers (feedback-seeking literature)[83] and the human communication processes (see e.g. Aula 1999) better bring actors and practices to the fore instead of focusing on measures and reward systems. In the organizational structure (B), relevant feedback positions (Otley et al. 1995; Katz and Kahn 1978), and vertical and horizontal feedback channels (Katz and Kahn 1978) help locate various uses of formal and informal feedback in managerial practices. Cultural elements in organizations (C) affect feedback cultures, which also have implications to the interpretations and use of various types of feedback. Lastly, flows between internal and external environment (D) enlarge organization-level analysis of both formal and informal feedback practices (i.e. to open system analysis).[84]

[83] See e.g. London (2003); London and Smither (2002); Morrison and Milliken (2000); Gupta et al. (1999); Ashford and Tsui (1991); Larson (1989); Ashford and Cummings (1983).

[84] E.g. limiting to the use of negative feedback controls based on accounting numbers (Malmi and Brown 2008; Flamholtz et al. 1985); reward and compensation controls through the measures (Flamholtz et al. 1985); diagnostic and interactive use of performance measurement systems (Simons 1995, Otley 2003), or strategic feedback through the BSC (Kaplan and Norton 2006, 2001a, 1996a, 1992).

In empirical Chapter 3, the flows of formal and informal feedback from Case Steelco related to core control system (A) were analyzed from two angles

1. performance measurement and reward systems (i.e. cybernetic view)
2. formal and informal feedback practices in the core control system (i.e. interpretive view)

The below sub-categorizations (B-D), developed from the organizational control framework of Flamholtz (1996; 1983; Flamholtz et al. 1985), are case-specific, as they highlight the critical additional control layers for both formal and informal feedback flows in Division Steelco.

Flows of formal and informal feedback from Case Steelco, related to organizational structure (B), were analyzed through four themes

1. matrix organization
2. relations between divisions and the headquarters
3. positions: relations between senior and middle managers
4. managerial skills in important positions

Flows of formal and informal feedback from Case Steelco related to organizational culture (C) were analyzed through four themes

1. core values: profit making and customer orientation
2. coherence: one global company
3. type of the feedback culture
4. qualitative vs. technology-oriented discussion

Flows of formal and informal feedback from Case Steelco related to external environment (D) were analyzed through three themes

1. inherent values on feedback practices at the national level
2. level of professionalism and high standards in the business
3. other demands and contacts with the external environment

Next, the search for meaningful interpretative contexts (below underlined) that can better bring the various actors and practices under analysis, raise the level of theorizing and generalizing. I suggest that for future research, the flows of formal and informal feedback can be studied and analyzed as a continuous balancing with systematizing and regeneration between various control layers (A–D).

4.5.2 Accountability and feedback practices in the core control system

A. Analyzing the search for the efficiency, timeliness, and level of feedback practices (global – local; organizational – unit – personal)

Formalization of feedback converts the flows more explicitly and transparently (both measures and reporting channels), settles controllable targets,

which can be tracked and compared through a regular time series, and enhances control (continuity, legitimacy, and uniformity). With the 3-D framework, the technology-oriented analysis that focus on the systems is enlarged with the analysis of the interconnectedness of formal and informal feedback practices (Llewellyn 2003).

Formal feedback practices in Steelco were typically pictured through the channels (*source dimension*) or accountability structures: monthly reporting (indicators), performance appraisal interviews, other discussions with superiors, fixed meetings (management group, review, team etc.) (cf. London 2003), and systematic feedback surveys typically conducted once a year (customer satisfaction survey, work satisfaction survey, and other assessment and ratings, e.g. 360-degree multisource assessment). The interpretations to formal practices greatly focus on the layer of the *core control system*, as allowing systematic follow up of performance through the formal performance measurement and reward systems, but not entirely. They include informal ones and do not tackle all formal ones.

Through *the dimensions*, we can similarly discuss and examine the various governable and accountable features of feedback practices. Based on the material from Case Steelco, the problem in organizations seems to be that there is too much information and too little feedback that the reviewer receives, recognizes, or capitalizes on. As mechanization and formalization transfers feedback practices into abstract, technological, and numerical practices that top managers at the global level are pleased with, the other organizational levels and local units can end up with unequal local cultures lead by their unit heads. I suggest studying the cooperation of different actors in feedback practices (e.g. reviewing measures), i.e. when they search and give feedback either personally (cf. feedback-seeking literature) or through controls set (cf. Sayles 1989). In order to work efficiently towards the organizational strategies and common goals, people need to determine whether their personal actions, plans, and goals are acceptable and constructive also from the eyes of others. These practices aim to fit strategic and operative feedback both at the *personal and organizational level* (cf. Ashford and Cummings 1983). When the personal level relates to more task-related feedback, the organizational level relates mainly to result-related feedback (e.g. Flamholtz et al. 1985).

Accountability structures (e.g. construction of formal reporting) convert feedback to be accountable but not necessarily "right" in a strict sense, since reporting practices have been found to include many negotiations and even distortions (cf. Kepsu 2012; Sayles 1989, Lumijärvi 1988). Further, the emphasis on technocratic management tools and realized formal accounting

numbers in the cost of more interactive practices can lead to stiff and mechanized control views (cf. *remote control*, Johnson 1992; MacIntosh 1994).[85] They enable control, but the threats of formalizing feedback practices are similar to those of mechanization: slowness, inflexibility, and bureaucracy. While mechanization and formalization aims for efficiency of systems (cf. von Bertalanffy 1968), the effects of feedback practices are twofold, both aiming at efficiency of operations (negative control, cf. boundary and diagnostic control system, Simons 1995) and facilitation of change (positive control, cf. beliefs and interactive control system, Simons 1995). I suggest that acknowledgment of positive (cybernetic) feedback controls that lead to changes in operating principles and predictive models[86] would balance the analysis of feedback in management control frameworks emphasizing negative feedback controls (e.g. Flamholtz et al. 1985; Malmi and Brown 2008). Calls to incorporate all four levers of controls into analysis of management control systems (see e.g. Simons 1995, 2000; Widener 2007; Ferreira and Otley 2009) are then to be extended to studies of dynamic feedback practices.

The core control system not only produces *ex post* organizational indicators, but also utilizes estimations and anticipatory feed-forward practices. Feed-forward controls are seen to include a vast array of managerial controls: policies, procedures, and rules (Langfield-Smith 1997; Dekker 2004), human resource policies, ongoing monitoring and signaling (Langfied-Smith 1997), forecasting systems (Otley 1988; Otley et al. 1995), planning (*ibid*; Gardener 1985; Dekker 2004), goal setting and reward structures (Dekker 2004), or strategic control (Jackson 2000). In relation to feed-forward practices in Division Steelco, one example of the numerical link between leading and lagging indicators (cf. Kaplan and Norton 1996a) is the measure of close calls and the measure of accident frequency in the operative work safety. The same measure (close calls) can be used both for reporting the close calls as feedback (*ex post*) and as a feed-forward loop that anticipate (*ex ante*) future accident frequency, proactively pointing out the needs to revise actions, investments, and operating logics before severe accidents.[87]

Applying the *time dimension* can clearly add to the presentation of feedback lines in the model of Flamholtz et al. (1985). When feedback is analyzed as forming dynamic and situated loops (e.g. Aula 1999, Morgan 1997), the management techniques are not, in the first place, considered as stable classifications but arenas for varied loops of feedback, operating in multiple, often fast

[85] Cf. two types of bureaucracy, Adler and Borys (1996).
[86] I.e. double-loop learning, Kaplan and Norton (1996a); Argyris and Schön (1978).
[87] At least planning, administrative controls, and reward and compensation in the control package model of Malmi and Brown (2008) seem to involve also some feedback practices, along with its broader definition.

and intertwined cycles (cf. Sayles 1989). Uncertainty connected to future estimations seems to bring essences of informality to the systems and use of measures. Routines in the course of time can legitimize certain practices, which are then part of the "formal" culture without explicit formal orders. Also, managers are far more proactive than the basic model of negative feedback controls presents (e.g. in Malmi and Brown 2008). Organizational behavior based on "controlling not by error but by what causes errors" (Otley 1988) utilizes various anticipatory (feed-forward) actions, both formal and informal. The selection of available media shapes and limits the possible forms and uses of feedback, but people usually need to seek it beyond the *ex post* routes when they need assurance and recognition for their work (cf. Flamholtz 1996).

4.5.3 Feedback channels and positions in organizational structure

B. Analyzing the distribution of feedback vertically and horizontally and the critical nodes in the communication network

In a world which is constantly changing (e.g. Aula 1999; Sayles 1989), many feedback loops are too quick to be formalized in systematic accounting procedures (Morgan 1997). The existence and obligation to use hierarchical relations aim to tackle and formalize part of these flows (cf. Katz and Kahn 1978; von Bertalanffy 1968). The analysis through *rule dimension*, straddles between the rule-based feedback practices, hierarchical structures, and voluntary practices, and stretches to the analysis of *organizational structure* in the model of Flamholtz et al. (1985).

There may well be two contradictory interpretations of formality in the same feedback situation, especially if the parties represent different levels of the hierarchy of the organization (*rule dimension*). Some subordinates regard all discussions with their superior as formal, while superiors regard many of them as informal. Similarly, some formal reviews were seen to include mainly horizontal, collegial feedback, if people were of the same hierarchical level. Here, I suggest *that people attach the interpretation of formality of feedback with the actions they perceive accountable from the viewpoint of their hierarchical position and set goals*. Thus, the interpretations of the formality both derive from and affect the sensed accountability and have implications for the effectiveness of feedback practices throughout the organization. Different accountability structures yield from their internalized goals, prior experiences, and preferences within their feedback culture. This view tackles many informal elements, such as the discussion of the various interpretations and de-

mands, seeking and negotiating the common position, or defending one's position. Like Roberts (1991, 356) argues: "individuals often feel themselves torn between the competing demands of the formal and informal", the more socializing and hierarchical forms of accountability.[88]

In Division Steelco, senior and middle managers had different views about the usability and applicability of the same feedback flows. The common measures at the group level were classified as top management control devices, while middle managers needed different information systems. Interviewees speculated that the common view of the targets and measures will only deteriorate while going down the organizational hierarchy, the view supported by the findings from the internal survey (2008).

In the heterogeneity of organizational life, Lounsbury (2007) specifically calls to study the multiple, competing logics and practice variation.[89] Division Steelco had explicitly raised the formal objective to co-ordinate the different feedback flows of various units and functions by forming new meeting practices that aim to increase informing, discussion, and cohesion throughout the organization. While the feedback practices and networks operate at all organizational levels, many management control frameworks highlight the rule-based top management practices (Malmi and Brown 2008; Otley 1999; Flamholtz et al. 1985).

The existence and use of vertical (upward and downward) and horizontal (peer or benchmark) feedback depends on the abilities of each manager to be active, provide and seek relevant feedback, and create needed personal networks (informal). Based on the interviews, especially middle managers were considered to operate at the crossroads of vertical and horizontal flows of information, either ensuring or hampering the flows of feedback throughout the organization (as "gatekeepers" for both operative and strategic feedback, cf. Pettigrew 1972). Further, line and middle managers with operative knowledge are also important "databanks" needed for forecasting. The company-wide

[88] For the socializing forms of accountability, see e.g. Roberts (1991) or Frow et al. (2005). Roberts sees these two forms of accountability to operate in opposition to each other (p. 365): "One is pushed to the conclusion that socializing forms of accountability will always be limited to local contexts, where there is a relative absence of asymmetries of power and the possibility of face-to-face interaction. These local contexts, however, are repeatedly subordinated to systems of hierarchical accountability sustained through the sanctions of power and money". Frow et al. (2005, 273) point out the use of these socializing forms of accounting (Roberts 1991): they emphasize the need for co-operation and promote a capacity to conceive the interests of others, while individuals are "constantly confronted with a choice between ties of loyalty to colleagues and their individual interests in the hierarchy".

[89] The need for coherence and cooperation of various management control systems is also acknowledged by Malmi and Brown (2008, 291): "concept of a package points to the fact that different systems are often introduced by different interest groups at different times, so the controls in their entirety should not be defined holistically as a single system, but instead as a package of systems".

utilization of these mental predictive models should not be neglected (Otley et al. 1995, 34), especially linked to the sales function that operates with the crucial customer interface.

Also in Case Steelco, sales and production units were found to differ in their views about the rationales for operations, for example about the reasons behind late deliveries. Different positions, targets, and rationales yield different feedback views and needs, which brings challenges for the operations of common feedback practices (cf. Lounsbury 2007). While management at a distance (formal structure) enhances management by numbers, it easily neglects the dialogue and understanding of the process from which the measures arise. Without the needed informing and understanding of the processes and procedures in relation to the important goals, directions, expectations, limits, and risks (cf. Simons 1995), even strategic feedback can end up ineffective or missed.[90]

The methods of task and role clarification (what is expected, how, when, and with whom) guide the use of feedback channels in the organization (Katz and Kahn 1978). Feedback can be sought more informally as the moment arises (London and Smither 2002) – within or beyond formal, hierarchical superior-subordinate relations – or more formally through setting systematic controls or performance review processes (e.g. Shields 2009). Peer feedback, which is interpreted as more informal than the hierarchical communication, is not regulated with formal rules, but it depends on initiatives and needs of each individual (*rule dimension*). The preference of how feedback to be given or sought is also context- and path-dependent. It depends on the organizational operating principles, norms, routines, individual preferences, and physical context. In Steelco, subordinates in the sales function were located in many separate units – both geographically and because of the organizing through business areas. Katz and Kahn (1978, 442) suggest that the company norms and the more informal group standards come to replace the more personal methods to provide feedback about desired direction and behavior, as "a uniform rate of accomplishment", when superiors cannot provide continuous or personal feedback to their subordinates. Still, people in Division Steelco were found to hope for more guidance from their superiors and colleagues (cf. Katz and Kahn 1978, 440–448). Feedback is expected in order to assess whether people's own expectations and actions are in line with the goals and strategies that they themselves, their unit, and the company are trying to fulfill (Cf. Katz and Kahn 1978).

The channels and the media inevitably translate the form of feedback and how it can be given (cf. Carr 2010). Formal measurement and reward systems

[90] For the strategic alignment with the BSC, see e.g. Kaplan and Norton 2006.

are mediums that can be used in a way that impede daily operational feedback and dialogic sensemaking over desired goals, procedures, and processes between superiors and subordinates. Instead, they support mechanization and management at a distance, or a "pack and deliver" –type of informing (cf. Aula 1999).[91] The feedback channels and forms that enhance mutual sensemaking over common practices (cf. Lavoie 1987) assist managers and employees in all organizational levels to understand how to operate towards desired organizational goals (cf. Simons' (1995), all four levers of controls)).[92]

4.5.4 Feedback culture(s) in organizational culture

C. Analyzing the functionality versus inefficiency of feedback practices in different parts of an organization

While the domain of formal feedback in organizations may increase with many top-management driven models, such as the multidimensional BSC-technologies, my empirical findings support the view that a great deal of important feedback flows through the positions of middle and line managers. Their predictive or proactive feedback models are personal, and thus voluntary, which makes them trickier to be tackled and managed (cf. Otley 1988; Otley et al. 1995). The discussion of a suitable feedback culture stretches to the third control layer in the model of Flamholtz et al. (1985), namely *organizational culture.*

How individuals seek, perceive, accept, use, and react to formal and informal feedback, depends partly on the feedback cultures. In prior literature, good feedback culture has been characterized by managers and employees feeling comfortable with both providing and receiving feedback (London and Smither 2002; Levy and Williams 2004). However, like in Case Steelco, (large) organizations do not include only one coherent but many feedback cultures of a different level. Various unit heads and superiors have different views of the needed scope of feedback practices. The requirements for transparency and shared practices (e.g. development discussions, regular meetings and reviews) coerce and aim to assure a certain level of feedback standard but the rest depends on the individuals and the feedback culture of each unit.

The hierarchical structure with sanctions and pressure has been found to restrict the flows of upward feedback (Katz and Kahn 1978, 447), from subordi-

[91] For example, through accounting measures, the Intranet, or formal employee evaluation practices.
[92] For example, reviews and meetings (cf. communication channel continuum, Kaplan and Norton (2001a, 218–219)).

nates to superiors. Case Steelco implicates that subordinates are more likely to interpret all discussions with their superiors as formal, if the feedback culture is very hierarchical (*rule dimension*). As in Division Steelco, by decreasing the feeling of hierarchy, superiors can add the feeling of trust and openness and induce more voluntary feedback from their subordinates. Managers from Division Steelco considered that in a good feedback culture, people not only control and evaluate performance *ex post* but also evaluate and acknowledge personal performance when matters arise, as a part of a leadership culture. In leadership literature, Sayles (1989, 163–179) raises an important notion in relation to feedback: the problem with employing measures as providing feedback is that their effect for behavior is often more destructive than constructive. "Keeping score" may induce subordinates to narrow focus at the cost of overall organizational performance or even distort the results. Instead, for motivating purposes, individuals would need to be able to sense good progress and work themselves.

Feedback environments are managed by people, not by technological devices or improvement to the measurement and evaluation systems (cf. Bruns and McKinnon 1993). Like in many other contemporary organizations, the feedback culture of Division Steelco is strongly managed using PCs, emails, systems, and hierarchies. Instead, active control through voluntary seeking of additional feedback loops, i.e. mainly from the domain of informal feedback (*all dimensions*), makes the most of the qualitative feedback, interaction, and team work. Also, the heritage of the Finnish culture, in which managers tend to focus more on the facts and evaluation than on motivation, was considered to deteriorate the power of enhancing positive feedback. One senior vice president of Division Steelco captures the future challenges of the feedback practices in corporations like this:

> *Informal feedback is not done with any formula, but in a wiser way so that we trust each other, we have a common goal, we can discuss and learn to operate like that. This is the direction, this kind of discussion… not that it takes place after the game. But probably the organization, which in the future operates like this and which can solve this issue in the right way, by changing the style of leadership of superior and the behavior of the subordinates' as well, has really different opportunities to succeed… information systems have not yet solved this and they never will. I think it's more about humans and culture… openness, discussion, thinking together, these kinds of issues.*

This very analytical summary reveals how culture bound the question of informality is. It also depicts a way of organizing that would be very different from the modern technology-based models and hierarchical organization charts that large, global companies apply (cf. von Bertalanffy 1968; Carr

2010). While formal techniques, systems, management models, and fads can be imitated and copied, the organizational culture is a result of a long path and has no easy solutions. While the local practices depend on each individual, the organization-level culture can be formed with top-down informing, teaching, and personnel changes. When talking about feedback, the story of Case Steelco emerged as a story about top-down given requirements for a cultural change after the change of the CEO and the launch of the new strategy. Although largely informal, culture was not considered as a "soft" issue in practice, but highly crucial to the realization of the strategy, the new goals, and the needed feedback practices (cf. Otley 1999). I also heard many various formal initiatives and examples of efforts on how they have tried to manage informal issues related to culture, ways of interacting and informing, mind-sets, proactive behavior, etc. However, not all corporate feedback cultures support "softer management" and the fit of the type of organizations and their feedback culture is still an open question for future studies.

4.5.5 Feedback between organizational members and stakeholders in external environment

D. Analyzing the stability of the organizational strategies and goals versus reactions to the external changes, strategic renewal, and learning

The need to study management accounting within its organizational or social context has been addressed in management accounting research from the 1980s (Flamholtz 1983; Hopwood 1983). Further, the organizational structures and logics of managers can be reviewed through studying accounting practices (cf. Llewellyn 2003; Lounsbury 2007). In the open system approach, the ongoing change and demands from the wider society and business *environment* is taken into consideration – the fourth control layer in the model of Flamholtz et al. (1985).

Division Steelco raised the concern that many others share: that companies need to be more outward-looking. In order to utilize not only internal feedback, but also external feedback loops from the operating environment and stakeholders, senior managers aim to codify that information into formal systems and measures, systematically research external information and changes in the environment (e.g. use consultants or the CEO meetings and discussions with stakeholders), or just be open to the ongoing weak signals from the environment (cf. Katz and Kahn 1978) (*source dimension*).

The strategic aim of Steelco was to focus more on customers than on products, as Johnson (1992) pursues global companies to do. Importantly, this shift

requires that companies not just ceremonially measure customer satisfaction with formal enquiries once a year, but also follow and report it in a more systematic way in daily routines (*time dimension*). In addition, senior managers called for additional resources and systems that would systematically research customer expectations and market changes and formalize that kind of feedback (*source dimension*).

Feedback flows from the external environment were seen to operate either through the *disunited person-specific practices or through the regular technology-based* surveys and enquiries. The CRM-system, that codifies specific details from customer visits among salespeople into systems that can be accessed by others as well, provides one example of practices that can formalize, harmonize, and improve the transparency of personified practices at local levels of the organization (*source dimension*). However, this target is set from the view of top managers, not from the view of the employees. When managers and employees have different views about who possesses the intangible capital linked to customer knowledge, the organization or the single employee, the ownership of this type of feedback can lead to disputes or conflicts. While the interpretation of formal and informal feedback practices vary at different positions (*rule dimension*), researchers need to be specific about the point of view(s) and actors they want to emphasize.

According to the open systems approach, when organizations change, the needs and requirements for feedback change as well. While forecasts from external accounts were considered difficult and inadequate in Case Steelco[93], another question is more theoretical. Beyond measures *per se*, do our theoretical management control models and frameworks neglect feedback needs and practices outside the organization? Further studies are needed regarding the mutual feedback practices between the interfaces with organizations and their environment, as well as *how the various methods can support the success and renewal of corporate strategies*.

Lastly, analyzing and theorizing the interplay of formal and informal feedback can assist in understanding the simultaneous search towards efficiency and control (stability) and dynamic interactions (learning and change). In the search for efficiency of actions and interactions, organizations control the complexity and chaos with iterative feedback practices, mechanical procedures and routines, and stable hierarchies. At the same time, they need to evolve in order to survive in the competition and external change and continuously search for the success and approval of new, innovative products, solutions, and improvements (i.e. double-loop learning with feed-forward flows,

[93] Some improvements, like shortening the forecast cycle, have been ordered since the time period of my interviews.

cf. Ferreira and Otley 2009, 273–274). The analysis of formal and informal feedback practices also calls for the discussion of the suitable mix of feedback channels in and outside the organizational boundaries (cf. Adler and Borys 1996).

5 CONCLUSIONS AND EVALUATION

…**Moral**: (the last verse of the poem from the introduction)

So oft in theologic wars,
The disputants, I ween,
Rail on in utter ignorance
Of what each other mean,
And prate about an Elephant
Not one of them has seen!

From The Blind Men and the Elephant
– John Godfrey Saxe (1816-1887)

5.1 Conclusions regarding management accounting research

If research only concentrated on stating how things are, it would lead to conservatism (Turunen 1987). Another threat to development is linked to what the above poem raises, i.e. ignorance of each other's views leading to fragmentary research and contributions. This doctoral thesis has explored elements for formal and informal feedback practices in management accounting from literature review and interpretive case study, developed a multidimensional analytical tool, the 3D-framework, for discussions of various interpretations and implications concerning formal and informal feedback, and followed with an initiative of discussing how to theorize feedback in interpretive management accounting research from the premise of the cybernetic paradigm – and forward.

The way of seeing organizations sets the scope for available interpretive patterns. The concept of feedback and its basis for "system theoretical thinking" derives from cybernetic literature, which I have reviewed in order to open the tradition that underlies control thinking in management accounting. Otley has also summarized many of the contributions, weaknesses, and potential related to cybernetics in management control research. However, distinctive streams for cybernetic tradition were found. Organization and communication literatures discussed cybernetics and feedback yet further: not only hierarchical structures and machine-like functions aiming to control organizations

and stay on track. Morgan (1997) portrays feedback operations with the metaphor of organizations as brains: evolving and learning with the help of informational mutual feedback loops – both positive and negative, both feedback and feed-forward. The literature on learning organizations and double-loop learning has explicit cybernetic roots.

In management accounting research, the concept of feedback typically centers on the use of performance measures. I found Flamholtz et al. (1985) to provide the most comprehensive description of feedback loops, presented in a cybernetic core control system between goals, actions, and measurement and reward systems. Based on my empirical analysis, this view portrays part of the "reality" in organizations, but neglects many others. "Measurement" can be informal and so can the "systems" (cf. Simons 1995). Also, the balance of feedback through increasing mechanization or quantification (for example with the BSC) can be questioned, since the domain of informal feedback always has its own counterbalancing existence and meaning in managing real organizations.

Twenty interviews from Case Steelco pointed out many different views, stories, and interpretations about feedback practices. With an interpretive approach, the core of the analysis was shifted from the mediums of feedback forward into a more dynamic, practice-based view, which can take the actors into account. When only analyzing feedback practices at the organizational level, they are easily pictured as uniform practices, and the emphasis stays on top management systems and techniques. Using an interpretive and multidimensional angle, we enter into a different kind of analytical world, highlighting the various meanings, interpretations, and expectations arising from different experiences, positions, goals, rewards, personal preferences, and local cultures. People and their practices will replace the spot of the "core" analysis (cf. Flamholtz et. al 1985). Hence, the notion and scope of feedback in management control changes. *I suggest feedback processes to be approached as practices in which people from varying positions aim to set controls and seek views for desired and/or acceptable goals, procedures, course of actions, and level of performance.*

Different personal and cultural meanings that were given to the formal and informal feedback ("feedback as something") create multidimensional interpretative contexts to organizations. Based on the abductive analysis of the theoretical and empirical findings from the case, I have suggested a 3D-framework of formal and informal feedback, in which various contrasts and dynamics can be interpreted as being dynamic between channel, time, and rule dimensions. The more mechanistic the channel, the more formal is the related feedback. The more systematic the schedules are, the more formal the related feedback is. The more established authority or the higher the dominance, the

more formal is the related feedback. Division Steelco indicated a varying emphasis on these dimensions, depending on the actor and unit. For example, a subordinate interprets superior feedback in any form as formal because of the existence and acknowledgment of hierarchies. Also, senior manager regards some reported figures from operative field as formal because of their systematic and accountable nature, despite their constructed nature. Formal and informal feedback practices become more situated when individual interpretations and premises underlying managerial actions are linked to their feedback setting, to their structure, environment and culture – or many feedback cultures of a different level.

The dimensions in the 3D-framework aims to tackle the interpretive prestructures that affect human actions and interpretations given to the reality. Multidimensional frameworks give voice to emic views in the practice as well as to connect heterogeneous accounts from prior literature. The notion of informal feedback was attached to the formal feedback to highlight suggested extensions. Importantly, I suggest that in addition of the dichotomous treatment of formal and informal (as contrasting either formal or informal), they could be studied and analyzed as intertwined. Rather than formulating pure classifications of the existence of things, the 3D-framework aims to provide bridging analytical dimensions that help us to define, understand, and discuss the variety of interpretations attached to formal and informal feedback practices. Hence, theorizing in the 3D-framework works as "concepts theorizing", aiming to challenge the dichotomy of formal and informal. I also regard enabling and coercive types of bureaucracy and formalization (Adler and Borys 1996) and technocratic and socio-ideological forms on control (Alvesson and Kärreman 2004) as concepts theories. In these, controls are not seen as dichotomies but as practices, explicated through both subjective meanings and significance of actors and more objective realms of action in organizational structures.

Further, the 3D-framework can be bridged to the organizational level analysis of dynamic and intertwined feedback practices. Hereby, concepts theorizing can link also dichotomies to context-bound theorization of practices. Flamholtz et al. (1985) provide mainly an organizational level analysis. The shift in focus from measurable outputs on *practices* in the core control system can "bridge" actors to organizational structures, as to the other three control layers. Then, feedback is no longer analyzed as isolated lines in the core control layer (Flamholtz et al. 1985) but enlarged to cover the context of the three other thematic layers: structure, culture, and external environment. Based on an empirical analysis, in which the formal and informal feedback practices were further discussed vis-á-vis the four thematic layers in Flamholtz et al.

(1985), I have raised and suggested certain interpretative contexts considered fruitful for multidimensional analyses and studies.

Various accountability structures enlarge analyses of formal and informal feedback practices. For example, the process of constructing *formal reporting* opens up the cooperation of different actors and their rationales when they negotiate a shared output to be reported upwards. Also, various *review meetings*, where outcomes and measures from different accountability units are reviewed, are likely arenas for a variety of different interpretations for formal and informal feedback. Practices around *common (group) measures* aim to assist goal congruence and coherence, both at personal and organizational levels, but different actors stand differently in these practices. For example, tracking accident frequency in local units produces relevant feedback for senior managers, but on a local level, it is often no news. Different positions and units attach different views of the usability and applicability for them. In Division Steelco, (multi-)interpretative contexts were especially found in relation to the relevance of group measures between senior and middle managers. In addition, the sensed locus of controllability to these measures between the sales and production units varied: who is responsible for contributing to bad scores and how. More similar practices are likely to be found if the search is yet enlarged to other organizational positions and units.

Managers can seek and provide feedback at two levels: either concerning the performance of a unit or personal performance. Explicit feedback-seeking literature focuses on the active, voluntary search of feedback between superiors and subordinates or headquarters and divisions, i.e. within rather hierarchical relations. In explicating dominant actors needed for united and efficient feedback practices, senior managers in Division Steelco raised middle managers as gatekeepers, positioning at the juncture of organizational feedback practices, both vertically up and down. Senior managers are again the level accountable for formalizing, directing, and ensuring feedback practices top-down. Lastly, practices and *interfaces aligning internal and external feedback* flows still seem quite modest, calling for more systematic analyses both in organizations and academy.

Through practices, the variety of interpretations and their implications to the functionality of feedback practices can be researched and analyzed, as well as dynamic processes (“something for something”). I argue that with multidimensional frameworks, we can analytically travel back and forth between the simplicity of the theoretical models and diversity of the everyday practice, by picking up dynamic concepts and analyzing their internal logics from various standpoints. The analysis of formal and informal feedback conducted vis-á-vis the four thematic layers in Flamholtz et al. (1985) raised fruitful tensions: highlighting the difference between technological and human communication

(cf. Alvesson and Kärreman 2004), organizational and personal goals, the informational needs in various positions and units, different timescales, and cultural traditions. Hence, in analyzing practices, the 3D-framework can be used not only in discussing and analyzing the various interpretations, but also when a certain kind of feedback is used for something: dynamics, for example, regarding why some feedback practices are considered more effective than others.

Lastly, many control frameworks in management accounting, including Flamholtz et al. (1985), present and describe controls as classifications, without paying much attention to their internal dynamics and bridging concepts. Naturally, they can be used to discuss dynamic, overlapping elements and practices, but they do not directly assist in such analysis. However, I argue that concepts theories, such as the 3D-framework, can be used to bridge actors and their practices to organization-level analysis. These theories allow detecting actor-relevant, dynamic practices in various controls (e.g. the levers of control, Simons 1995) or in different levels of controls (e.g. Sayles 1989).[94] In management accounting research, Simons' framework can be applied differently: either analyzing bridging dynamics in and between all four of its control levers or emphasizing their differentiation (e.g. interactive and diagnostic use, and beliefs and boundary systems). However, at least for feedback analyses, the mere focus on the use of measures as diagnostic or interactive is apparently lacking, since a great deal of formal and informal feedback flow through beliefs and boundary systems as they aim to direct and motivate behavior and performance with desired values (positive controls) and limits (negative controls). In addition, when metrics, controls, or practices are not classified into separate, exclusionary categories in theoretical frameworks, they can be analyzed from various points of view, emerging from the complexity of the practice – in the eyes of one actor or between various actors, enhancing understanding and developmental purposes.

5.2 Evaluation of the study

This doctoral thesis has explored informal aspects in relation to the theme of controlling through feedback in management accounting research. The integration of formal and informal elements is based on the abductive analysis (Dubois and Gadde 2002) of the theoretical reading on the topic and empirical

[94] For example, Sayles (1989, 164–191) raises three levels of controls: low-level controls to constrain and motivate subordinates, middle-level controls to allocate resources and identify problems, and high-level controls to reassure external stakeholders.

search in an interpretive case study in Division Steelco. I have suggested that interpretive studies could especially balance the prior, mainly system-based, cybernetic analysis of feedback in management accounting research. I considered it possible to conjoin these two approaches, cybernetic and interpretive accounts, so that one can straddle between them and build on their partials and preconditions. In relation to the risks that Ahrens and Chapman (2006) raise about combining too different theories that possess disunited epistemological assumptions, I consider that these theories can be used in a way that matches the researcher's world-view and the methodological choices defining the nature of empirical material. While the cybernetic heritage celebrates informational loops in organizations, interpretive research celebrates the multidimensional, interpretative accounts of various actors and practices, despite their degree of formalization (cf. Lavoie 1987).

Concerning the ways of working in the field, qualitative research is inherently personified. A researcher is a part of the empirical interactions in the field, even with interviews. McKinnon (1988, 41) states that research in social sciences can, therefore, only speak about degrees of validity and is subject to various observer-biases.[95] Lukka and Modell (2010) bring the discussion of validation closer to the subjectivist research paradigms, namely that validation in interpretive research operates more as a partly simultaneous process, with the ongoing empirical search for developing explanations. The logic of validation lies in the researcher's ability to carry authentic emic accounts to the analysis from the interviewees and the plausibility of the explanations generate through the process of abductive reasoning and the use of different theories (Lukka and Modell 2010).

While formal feedback practices are considered more objective, visible, and easier to articulate and study (cf. Aula 1999, 88; Langfield-Smith 1997), informal feedback practices are not so observable or explicit, not always to the organizational members themselves.[96] This brings challenges to the validity of the empirical analysis as such, but also supports the use of an abductive, multidimensional interpretive approach. The theme of informal feedback seemed to raise rather sensitive and confidential issues to the fore in the interviews. Some of the facts and examples I was given came with a request to keep them confidential. Even though they were not reported, they did not provide anything conflicting to the things that were reported; they only enlarged my con-

[95] Validity concerns the conduct of the research: is the researcher researching the claimed subject or something else? Reliability concerns the quality of the empirical material and the trustworthiness of its contents.

[96] In some studies, activity in communication patterns, networking, directions, and blocks of information have been tried to be tracked and made visible between members of an organization activity with the help of a sociogram (see e.g. Chapman 1998).

struction of the overall picture of things in the case. The permission to do the interviews came from the CEO of the group, and in the beginning, I was somewhat worried that they would consider me as operating in the role of management spy. In a couple of interviews, I did sense some caution towards me, but this feeling typically diminished during the interviews. At an early stage, I considered eliminating the recorder, because, either way, I was taking the notes as well. However, the transcribed files enable quoting the "emic" voice of the interviewee as directly as possible, and I considered it important for my interpretive research view. My decision was to keep the recorder, but to turn it off a bit before the end of each interview to see if there was any difference – a couple of times there were. In order to give space and tease out a variety of interpretations, and perhaps more unusual ones, I asked for similar views, examples, and experiences from many angles in addition to the quite often repeated but fruitful question "Do you have anything else to add to this issue? (cf. researching interpretative accounts that reflect beyond merely functional statements, Roberts 1991). The interviews were conducted during the period of 17 months, which allowed abductive theory development, empirical analysis, and the building of the trail of questions and themes interview-by-interview. The manuscripts have also been sent to the case company reviews and acceptances, which confirms the validity of my empirical analysis from their part.

While this doctoral thesis has concentrated on an exploratory search for theories and analytical classifications in a management control setting, I found it practical to concentrate on two managerial levels: senior and middle managers and the relations between the headquarters and local units. My focus has emphasized the unit or business-level management with similar superior tasks, and the middle managers interviewed were service center managers or sales managers instead of from more operative levels. I could utilize the plan for the internal communications (internal report autumn 2008) conducted at the more operative level (production managers, employees, steel workers) in Finland and abroad. However, this report served more for confirming the similar views heard from the senior and middle-level managers than as an enlargement for the lower levels of organization.

My study does not provide direct longitudinal observations of the processes over time beyond what has been observed and discussed in the interviews and factory visits. The changes in Case Division with their new CEO brought also processual, dynamic features into the setting (Pettigrew 1997). However, the empirical material about the classifying definitions and analysis about formal and informal feedback, "feedback as something", is more static. Interviewees were also asked to give their own narratives, situations, or examples in which the personal views, meanings, and interpretations of (in)formality would lead

to certain behavior or speculations about the effects of certain feedback practices in action. This kind of analytical structure of "feedback for something" also brings some non-static features into the analyses.

The limitations of one study and one empirical setting are apparent. My field work reflects the logics of practice regarding formal and informal feedback in one specific case and industry studied, i.e. a Finnish engineering unit. However, the analysis, following the mode of abductive reasoning (Lukka and Modell 2010: Dubois and Gadde 2002), drew together, causing the elements both from prior literature and the empirical work talk to each other. This opens an opportunity for contextual generalization (Lukka and Kasanen 1995), applying particularly to the dimensions of feedback and the control layers, where the dynamics of formal and informal feedback were noticeable.

However, I regard that the theme at hand needs not to be very case specific. While feedback could be studied in any organization, the risks of the scarcity of observational material to hamper the evaluation of the validity of conclusions decrease. The validity of the suggested dimensions and interpretative situations can further be reflected to each and one's own personal experiences and thoughts about formal and informal feedback practices.

All interviews were conducted in Finland, while Division Steelco operates in other countries too. What is gained in clarity by focusing on a specific context and one national culture has, on the other hand, its drawbacks for its lack of comparisons. The empirical material indicates rather strong influences of culture to formal and informal feedback, but this study cannot directly provide explanations or generalizations into other types of organizational or national cultures. In fact, I expect the specific patterns of formal and informal feedback practices to vary in different settings, for example in service companies relying heavily on team performance and team management. However, more important than exploring how specific features change from one setting to another, is yet an open question as to how greatly such contingencies affect the core structure of the 3D-framework – which calls for more research.

5.3 Suggestions for further studies

While this doctoral thesis has explored the issue of formal and informal feedback in organizational control, and emphasized its theoretical search, more empirical research is still needed to address ignored or neglected areas of research. Since my empirical material consists of mainly interviews, participant observation studies would especially add to the analysis of dynamic processes

regarding formal and informal feedback[97] or to their implications for managerial actions.

The concept of feedback and other cybernetic ideas has influenced management control thinking, but rarely explicitly applied in empirical research (also Otley et al. 1995, 40). Otley et al. (*ibid*) suggest that the management control research, as well as the design of effective systems, could utilize more cybernetic predictions and explanations, such as surviving strategies of organizations facing complex and uncertain environments.[98] Based on the implications of my empirical research, the effects of organizational factors to formalization needs and flows of feedback are to provide fruitful further studies, for example concerning the roles of reactive feedback and proactive feed-forward loops, or managerially relevant flows of feedback at every organizational level (e.g. in Malmi and Brown 2008; in Flamholtz et. al. 1985).

Further, I consider the dynamics and tendencies of open systems (Katz and Kahn 1978, 2–33, presented in 2.2.4) useful when analyzing the interplay between management accounting practices, stability, and change[99], both formal and informal. Interesting research directions could be, for example: how positive feedback enhances change (amplify in cybernetic terms), the effects of negative feedback controls, explaining changes through the mutual patterns of both positive and negative feedback loops[100], the difference of feedback and feed-forward controls (Haas and Kleingeld 1999, 242–244), the anticipatory feed-forward operations for error avoidance rather than error reduction with negative feedback (Otley 1988), the use of mental predictive models of the line managers needed for forecasting, the link between feedback and learning organizations (Morgan 1997), and the broadened focus on bringing more external control factors to the analysis of organizations and their changes.

The discussions with senior and top managers in Case Steelco led me to consider the balance between the management of formal and informal feedback. How could managers make better use of both formal and informal feedback? Like most contemporary organizations and societies, Division Steelco also encounters a prevailing paradox: information systems are improving and

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[97] Process view can add dynamic features into the more static structure and organizational mechanisms in Flamholtz et al. (1985), cf. processes rather than properties (Scott 2001; Giddens 1984). Processes are also important in dynamic feedback loops (Aula 1999).

[98] On the other hand, Malmi and Granlund (2009, 608) raise the control framework by Otley (1999) and call for managerial relevance in future theorizing: "If we could come up with a coherent set of propositions on how to respond to each of these questions [objectives, strategies and plans for their attainment, target-setting, incentive and reward structures, and information feedback loops) in a given situation, we could have a managerially useful, yet disciplinary distinctive theory of how to use MCS [management control systems] to achieve superior performance".

[99] Discussed especially by Granlund (2001, 1998).

[100] Negative feedback controls aim for stability by aligning goals and actions, while positive feedback controls are those which enhance organizational change and learning.

people receive loads of system-based information, but still people, apart from the very few people from the top management, suffer from the experience of not getting enough feedback. Why is this?

In today's companies and changing environments, I consider the claim of von Bertalanffy (1968) about the ongoing and never complete process of mechanization very interesting. Carr (2010) proposes similar claims on ever-continuing technological development. Are we on the way towards ever-higher mechanization? On the other hand, the struggle between balanced states in Division Steelco made me think of the mechanization and formalization trends, as portrayed by the metaphor of a swing pendulum, from one extreme to the other (Simon 1945). [101] However, with shorter time periods, we can only talk about and analyze the everyday need for dynamic balance. It has been argued that many systems are non-reactive to external changes, because they try to keep and stabilize their structure (Katz and Kahn 1978; Aula 1999, 109). On the other hand, anticipatory actions allow organizations to create change themselves as well so that they do not only have to adapt passively to the external changes (Aula 1999, 103). It is still an open question as to how widely these three dimensions suggested in the 3D-framework could be used to explicate wider formalization literature about organizing other structures and practices as well (other than feedback).

The shift from the industrial society to the information society, the increased amount of highly educated people, and complex and changing operating environments all call for the use of different feedback systems and practices than what were traditionally considered as reasonable. Managers in Division Steelco balanced between formal and informal feedback operations, suffered over excessive use of measures and electronic media (especially email), called for more feedback in the form of guidance and recognition, and put more weight on interaction and informing. It seems clear that management by objectives can turn too detrimental if it leads to technocratic management by numbers only. And if formal reporting is also seen as a time-consuming obligation from the actual business, one can ask how many educated people want to spend their time mainly reporting just because of the rules of the game, if they cannot commit to its relevance. Are today's specialists, which are burdened with obligatory reporting, comparable to factory workers operating in the machine bureaucracy, just filling the tasks given top-down?

[101] Simon (1945) presented the pendulum of reforms in public administration swinging back and forth with one set of ideas and managerial proverbs replacing another when the time passes (see for the analytical use of the metaphor of swings of a pendulum in e.g. Hoskisson et al. 1999).

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APPENDIX 1: INTERVIEW MATERIAL

	Interviewee	Position	Date	Length
1	Chief Strategy Officer	Group	24.08.2007	2'00
2	Chief Strategy Officer	Group	14.09.2007	1'25
3	President	Steelco	19.09.2007	1'30
4	Senior Vice President A	Steelco	28.09.2007	1'30
5	Senior Vice President B	Steelco	11.10.2007	1'25
6	Senior Vice President C	Steelco	11.10.2007	1'20
7	Senior Vice President, Human Resources	Group	02.11.2007	1'25
8	Division controller	Steelco	08.11.2007	1'35
9	Service Center Manager A	Steelco	09.11.2007	1'50
10	Senior Vice President D	Steelco	15.11.2007	3'00
11	Senior Vice President E	Steelco	07.12.2007	2'00
12	Service Center Manager B	Steelco	10.03.2008	2'45
13	Service Center Manager C	Steelco	10.03.2008	2'30
14	Service Center Manager D	Steelco	26.03.2008	2'30
15	Sales Manager A	Steelco	17.06.2008	2’20
16	Sales Manager B	Steelco	23.06.2008	1’45
17	Communications Specialist	Steelco	25.06.2008	2’15
18	Chief Information Officer (by phone)	Group	04.02.2009	1’00
19	President and Chief Executive Officer	Group	16.02.2009	1’05
20	Vice President, Corporate Finance and Control	Group	17.02.2009	0’55

APPENDIX 2: THEME INTERVIEW GUIDE

Interviewees received a one-page theme interview guide beforehand. All interviews were conducted in Finnish. Here, as translated, are the most common themes discussed, since the guides did change a bit along with the evolving framework and due to the different tasks of the interviewees. Naturally, many follow-up questions were asked during the discussions (cf. the method of the analytical interview by Kreiner and Mouritsen, 2005).

BASIC INFORMATION

- Position, job description, job history, about the unit

FORMAL CONTROL SYSTEMS

- Tell me about your budgeting, performance measurement, and control processes
    a. Review of targets and reports
        - key performance indicators
        - financial and non-financial measures
        - *ex post* feedback and forecasts
    b. Meeting procedures and time scales
- Tell me about your performance appraisal interviews
    a. goal setting and evaluation
    b. communication between superior and subordinate
- How would you consider the quality of feedback available from accounting information systems and procedures?
- What other forms of feedback do you encounter? Can you offer any personal events or narratives?

DIFFERENT FORMS OF FEEDBACK AND WAYS OF PROVIDING FEEDBACK

- Feedback as a concept, what is your own interpretation?
- In your opinion, what classifies feedback as formal?
- Name channels of feedback you consider as
    a. formal
    b. informal, why?
- How do you receive/ask for feedback from your own / unit's performance
- How do you give feedback to your subordinates?
- Can you offer some examples of feedback that you consider to be most important or influential in your daily work?

FEEDBACK CULTURE AND FLOWS OF FEEDBACK

- Tell me about your feedback culture here

    a. Feedback culture in your group/division/unit
    b. Finnish feedback culture
- How would you describe the following flows of feedback in your organization?
    a. Vertically between different organizational levels
    b. Horizontally between different units or divisions
    c. Internationally
- How are different feedback channels being managed in your organization? Which one of these do you prefer?
    a. Systems and interaction
    b. Hierarchies and voluntariness
    c. Numbers and verbal communication
    d. Regularity versus when needed
    e. Others?
- Are there any challenges regarding efficient feedback flows in your organization?
    a. Possible solutions
    b. Development targets

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