ÜLLE PÄRL

Understanding the Role of Communication in the Management Accounting and Control Process

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ACADEMIC DISSERTATION
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Ülle Pärl

ABSTRACT

The communication process in MAC is extremely important to understand how indicators and actions are connected. The study investigates the opportunities to understand communication in MAC. The aim of this study is to elaborate the model of communication for the MAC field to better understand the role of communication in MAC.

The study draws on Jakobson's communication theory, Lotman's cultural semiotics and analyses the MAC communication process along with the results of the case study. The empirical study is based on participant observation and utilises the researcher's previous professional (business) experience. The researcher gathered empirical material in the course of working with people with whom she forged good relationships for many years and with whom she could conduct her research and create opportunities for dialogue. The empirical study tests using the communication model to better understand the communication process in the MAC chain of the case company.

This study shows that misunderstanding is an integral part of communication in the MAC processes and the communication and understanding/misunderstanding aspects of MAC are more important than was thought in the age when MAC was a tool for top management.

This study introduces a communication theory which could offer managers a useful way to analyse the implementation of MAC. It provides theoretical propositions about the mechanism and the effects of a communication process on coordinating action in the organization and also provides a practical tool for analysing those processes in the organisation. This may help in both the evaluation of MAC and in improving its actual processes. This study attempts to help organizations improve the application of MAC by proposing a theory that might improve MAC practice and assist managers in engaging employees.

TIIVISTELMÄ

Viestintäprosessissa yrityksen taloushallinnosta lähtevä tieto yhdistyy organisaation jäsenten toimintaan, ja viestinnällä on siten hyvin tärkeä rooli organisaation johtamisessa ja tavoitteiden saavuttamisessa. Tämän tutkimuksen tarkoituksena on kehittää viestintämalli, joka parantaa ymmärrystä viestinnän roolista johdon ohjaus- ja valvontaprosesseissa.

Tutkimuksen teoreettinen osa pohjautuu Roman Jakobsonin kommunikaatioteoriaan sekä Juri Lotmanin kulttuurisemiotiikkaan. Tutkimuksen empiirisessä osassa on hyödynnetty osallistuvan havainnoinnin menetelmää. Tutkimuksen empiirinen aineisto kerättiin organisaatiossa, jossa tutkija oli aiemmin toiminut taloushallinnon johtotehtävissä ja näin vuosien varrella muodostunut hyvän käsityksen organisaatioista ja luonut hyvät suhteet organisaation jäseniin. Tämä mahdollisti aineiston keruussa luottamuksellisen vuoropuhelun organisaation jäsenten ja tutkijan välillä. Viestintämallin kehittäminen ja soveltaminen toteutettiin rinnakkain. Ensimmäistä versiota viestintämallista käytettiin johdon ohjaus- ja valvontaprosessin analysointiin. Samalla mallia kehitettiin ja täsmennettiin lopulliseen muotoonsa.

Tutkimuksen tulokset osoittavat, että toisinymmärtäminen tai väärinymmärtäminen (engl. misunderstanding) on olennainen osa viestintää ja siten myös johdon ohjauksen ja valvonnan viestintäprosessia. Tämän tiedostaminen on nykyään erittäin tärkeää, koska johdon ohjausjärjestelmien sisältämän tiedon tuottajia ja käyttäjiä ovat modernin tietoyhteiskunnan oloissa (lähes) kaikki organisaation jäsenet, ei pelkästään yrityksen ylin johto.

Tutkimus perustuu viestintäteoriaan, joka muodostaa viitekehyksen johdon ohjaus- ja valvontajärjestelmien analysoimiseen. Tutkimuksen tuloksena esitetään viestintämalli, jonka avulla organisaation ohjaus- ja valvontajärjestelmän toimintaa on mahdollista analysoida ja löytää keinoja järjestelmän tehostamiseen, mikä puolestaan auttaa organisaatiota tavoitteeksi asetettujen tulosten saavuttamisessa.

KOKKUVÕTE

Kommunikatsiooni protsess seob omavahel juhtimisarvestusest saadavad näitajad organisatsiooniliikmete tegevustega ning omab seetõttu väga olulist rolli organisatsiooni juhtimises ja selle eesmärkide saavutamises. Käesoleva doktoritöö eesmärgiks on välja töötada kommunikatsiooni mudel juhtimise ja –arvestuse valdkonna tarvis, mis võimaldaks paremini mõista ja seeläbi mõjutada organisatsioonis toimuvaid protsesse.

Doktoritöö teoreetiline osa baseerub Roman Jakobsoni kommunikatsiooniteoorial ja Juri Lotmani kultuurisemiootikal. Doktoritöö empiirilises osas on kasutatud osaleva vaatluse meetodit. Töö autor töötas ja samal ajal kogus empiirilist materjali organisatsioonis, kus tal olid aastate jooksu kujunenud head tööalased suhted paljude selle organisatsiooni liikmetega. Head suhted võimaldasid luua dialoogi organisatsiooni liikmete ja uurija vahel. Kommunikatsiooni mudeli väljatöötamine ja selle rakendatavuse uurimine toimus paralleelselt – kasutades väljatöötatud mudeli esialgset varianti analüüsiti selle ettevõtte juhtimise ja –arvestuse protsessi ning samaaegselt täiendati ja täpsustati loodavat mudelit.

Uurimuse tulemusel võime öelda, et teisiti- või erinevalt mõistmine (ingl. k. misunderstanding) on kommunikatsiooni ja seeläbi ka juhtimise ja –arvestuse protsessi lahutamatu osa. Doktoritöös tuuakse välja, et teisiti/erinevalt mõistmise roll ja selle teadvustamine juhtimise ja –arvestuse protsessis on tänapäeval väga oluline, sest juhtimisarvestuse süsteemi kasutajateks on kaasaegse infoühiskonna tingimustes (peaaegu) kõik organisatsiooni liikmed.

Doktoritöös töötatakse välja kommunikatsiooni teooria mille kaasabil saaksid organisatsioonide juhid ja ka teadlased analüüsida juhtimise ja –arvestuse süsteemi toimimist. Uurimuse tulemusena luuakse kommunikatsiooni mudel, mis aitaks juhtimise ja –arvestuse protsessi paremini analüüsida ja leida võimalusi selle efektiivsemaks muutmiseks, mis omakorda aitaks juhtidel paremini organisatsiooni liikmeid kaasata planeeritud tulemuste saavutamisele.

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Accounting inscriptions - the material and graphical representations that constitute the accounting report: writing, numbers, lists, tables etc. Inscriptions are signs used in the mediating process of accounting.

Acting at a distance gives an opportunity to control employees from a distance and decide how they should act in different situations.

Acting by accounting – the use of information from a management accounting system to decide how to act in different situations to achieve organizational objectives as well as the actor's own ends.

Amplification in management accounting – an element in management accounting that provides management accounting inscriptions with authority - making indicators powerful enough to be received, thus mobilizing behaviours and actions.

Auto-communication is communication with self. Auto-communication does not add to the information we already have, but transforms the self-understanding of the person who has engendered the text and transfers existing messages into a new system of meanings (gives a new code).

Code - a system of meaning common to the members of a culture or subculture. Code consists of both signs and rules or conventions that determine how and in what context these signs are used and how they can be combined to form more complex messages.

Communication - social interaction between individuals that creates social reality and actions through messages. Communication is an ongoing social process in which the parties to the communication (sender, receiver) influence each other simultaneously.

Conversion model of organization - organizational self-models that are intended to change the reality that differs from ordinary reality or practice. In a conversion model a meaningful

encounter with discrepant information can change an organization's accepted goals, acting patterns and culture.

D**ialogical approach to communication** - producing and reading a text are seen as parallel, if not identical, actions. The dialogue-based view of communication is concerned with how messages interact with people in order to produce meanings.

Dialogical approach to management accounting - producing and reading (using) management accounting information is seen as a whole process. The management accounting process is a chain of producing and using information via communication.

Genre - how words, colours and numbers are used – how something is said or left unsaid. The language and inscriptions of different genres can be used as a source of power in interaction or amplification in management accounting and control processes.

Indicators - measurements which are produced as representations to measure complex conditions relevant to management.

Institution - socially constructed and shared assumptions which identify categories of human actors and their appropriate activities and relationships, shape and constrain rules and routines within an organization, and determine the structures of meaning and values of individual actors.

Language - may refer either to the specifically human capacity for acquiring and using complex systems of communication, or to a specific instance of such a system of complex communication. All languages rely on the process of semiosis to relate a sign to a particular meaning.

Linguistic turn across the social sciences - the idea of treating the phenomenon or object of interest as a text and analysing it for its textual properties using methodologies from literary theory, linguistics and semiotics.

Meaning - the result of the dynamic interaction between sign, interpreter and object. Both parties, the producer of the text (for example, a report, some accounting inscription etc.) and

the user are important in creating meaning from the text and, through this process, an understanding of reality.

Message - a construction of signs which, through interacting with receivers, produce meanings.

Reality - constructed by actors in the organization. In the organization every actor may have their own 'reality'.

Self-reference - a process of auto-communication possibly resulting in self-modelling - organizations establish and affirm their own self-images or their own cultures. Through the self-reference process cultures maintain and construct or develop themselves.

Semiotics – the study of the process of generating meaning as conveyed by 'signs' and 'symbols'. The subject of semiotics is any object which acts as a means of linguistic description.

Semiosis - the process of communication by any type of sign.

Semiosphere - the space of meaning generation.

Sign - anything that stands for something (its object) to somebody (its interpreter) in some respect (its context). A sign is something physical and perceivable; it refers to something other than itself and depends upon recognition by its users that it is a sign. The sign is the relationship. Signs are not meaningful in isolation, but only when interpreted in relation to each other. The meaning of a sign depends on the code within which it is situated.

Sociological view of management accounting and control (MAC) - a broader perspective on the understanding of the aspects of MAC as a social and mediating process. MAC is a socially-constructed, situational dynamic process which aims to generate organizational reality and coordinate actions via communication by using management accounting methods and inscriptions.

Text - meaningful signs. The text may be literal, consisting of written or spoken words. It may also be figurative, in that social acts are regarded as meaningful symbols, taking the text as a model. Facts emerge from the text via a process of interpretation.

Translation – a universal and complex process occurring between two messages (texts), the message of a sender and the message of a receiver which are generated mutually and simultaneously. All communication requires some form of translation for meaning to be generated.

LIST OF ABBREVIATIONS

BSC	Balanced Scorecard
CEO	Chief Executive Officer
CFO	Chief Financial Officer
EIS	Enterprise Information Systems
ERP	Enterprise resource planning
FD	Functional department (in the case company)
IFAC	International Federation of Accountants
IT	Information Technology
MAC	Management Accounting and Control
MACS	Management Accounting and Control Systems
MA	Management Accounting
MC	Management Control
MCS	Management Control Systems
PAR	Participative Action Research
PC	Personal computer
PL	The name of the case company
PPL	The parent company (the corporation) of PL

We do not find truth and meaning in social life by watching the world from a distance and detaching ourselves from its turmoil, isolating ourselves in ivory towers, just reading what the well-known philosophers and authorities have said, and elevating science to divide status. The search-and re-search and research…- goes on all around us in every little activity and event of private and professional life. We need to fine-tune ourselves as research instruments; we need to take science personally. (Gummesson, 2000: xi)

1. INTRODUCTION

1.1 Motivation for the research

Management accounting and control (MAC), like the entire business environment, has moved from a technical, manufacturing world to an information-oriented, human and service based world. Contemporary IT systems allow the collection of detailed online data from every level and at the same time the sharing of that collected and subsequently analysed data with every person in the organization, at almost any time and in almost any format (Heath, 1998). This technological opportunity has meant that people from all levels of the organization can engage more actively with the internal communication process of the company as mediated by MAC. Moreover, it makes MAC processes capable of being created and used by (almost) every person in the organization. Furthermore, it places the large and important group of MAC information collators and users at the operative level of the organization, the level where the company's customers are served and most of the resources used. The movement from a production to a service framework forces operative level managers and employees to decide how to serve the customer, how to react quickly to market changes and how to act in everyday business situations. To decide how to act, the actor has to take account of the business environment at the moment as well as the objectives set by senior management (Welch, Jackson, 2007). Lower-level managers and employees have to understand objectives *at a distance to act local*. This means that MAC as a mediating tool in the organization needs to move away from roles and address the involvement of all organizational members in the enactment of ongoing internal communication. In practical terms, this means that MAC has to be more than an isolated function of (top) management and management accountant function,

and instead be seen as a mediating tool in the field, integrating all levels and employees of the organization and guiding action throughout the organization.

Seeing MAC as a mediating instrument in the field raises the importance of focusing on MAC as an instrument for understanding goals at distance and acting local in addition to being an instrument *of acting at a distance* (Latour ,1987; Hopwood, 1990; Robson, 1992). This shift calls for a better understating of the relationships between measuring and actions (Catasus et al., 2007). Catasus et al. (2007) claim that giving information by indicators is not enough to spur the organization into acting (p. 516) and suggest including the concept of *mobilizing* in the discourse on indicating and management. Catasus et al. define mobilizing as (ibid, p. 509): "… the process of moving an organization from a state of passiveness to a state of activeness: to mobilize is to marshal resources (of all kinds) to promote acting. Typically, mobilizing is about talking /.../ Mobilizing is the act of summoning attention, resources and strategies for acting". The above research encourages us to better understand communication as a basic aspect of mobilizing in MAC processes. Therefore, the communication process in MAC is extremely important to understanding how indicators and actions are connected.

Recent decades have seen growing research interest in the social aspects of MAC (e.g. Vaivio, 2008). There are many studies of rules, norms, power and beliefs (these phenomena are based on or are the result of communication), but there are few studies on the communication within these and in the MAC process. Although in the accounting field there are some studies on communication, most look at communication as a mechanical and directed process of transferring information from one part of an organization to another or from the mind of one person to that of another (e.g. Malina and Selto 2001; Siegel 2000). There is a call for studies which aim to understand communication as interaction as a basic social process in MAC. This study strives to fill that gap.

Managers have to deal in the holistic world of MAC. They have to understand which components in the MAC processes relate each other and how. MAC research as a social discipline could never provide a recipe for how to act in specific situations, or as Malmi and Granlund (2009:597) put it, "what kind of management accounting systems managers should apply, how, in what circumstances, and how to change them". MAC research as a social discipline can provide to practice with general and accessible tools which could help to understand and thereby manage the holistic world. One example of such analytical tools is the Balanced Scorecard (BSC) framework (Kaplan and Norton, 1996). The BSC covers the instrumental side of MAC. Alongside the instrumental model it is a requirement to develop a general model of the communication aspects in MAC, that is, to develop a model of

communication for the MAC field. By using a communication model for analysing processes in MAC we can understand, and through that could better affect actions. There are few studies to date on how actions are coordinated by MAC (Preston, 1986; Chenhall and Morris, 1995; Catasus et al., 2007). This dissertation strives to fill this gap.

Although there are some empirical studies about different elements of communication such as the context, sender and receiver in MAC (e.g. Preston, 1987; Jönsson, 1998) there is a need for studies about communication as interaction in MAC aiming is to develop analytical models to understand communication processes in practical circumstances. Earlier studies of communication in the MAC process have described the situation in case companies and have concluded that communication has an important effect on the implementation of MAC. As Jönsson concludes: "The epistemological status of these interpretations remains a problem" (Jönsson, 1998, p.430). In other words, questions remain as to how this communication process works in MAC and how to understand the process of communication there. This study strives to fill that gap, too.

Accounting is a "language of business" (e.g. Belkaoui, 1978, 1980; Macintosh et al., 2000; Ahrens and Chapman, 2007), and both managers and management accountants use business language alongside other languages (such as a natural language like English) to construct meanings and organizational reality. This means that organizations can look at phenomena in language and of language. This viewpoint is called the "linguistic turn" across the social sciences, and refers to the idea of treating the phenomenon or object of interest as a text[1] and analysing it for its textual properties using methodologies from literary theory, linguistics and semiotics (see for example, Macintosh, 2002).

This study introduces a communication theory from semiotics to the field of MAC. Originally a sub-field of linguistics (Eco 1986), semiotics has become more prominent in text and media analysis, biology, computer engineering, control engineering (Meystel, 1996), and can be applied to management instruments as signs (Lorino and Gehrke, 2007). Semiotics is the study of the meaning generation process as conveyed by 'signs' and 'symbols'. According to Hodge and Kress (1991:1), signs seem to supply an analogy for a 'molecular structure' or the 'genes' of social forms and so semiotics offers a potentially systematic, comprehensive and coherent method to study communication as a whole, not just instances of it .

[1] "The text can be literal, consisting of written or spoken words. It can also be figurative, in that social acts are regarded as meaningful symbols, taking the text as model. Facts emerge from the text via a process of interpretation. … thus, we see parts of the text *as* something as meaningful signs, either we are reading a text written in letters of the alphabet or in social acts" (Alvesson and Sköldberg, 2000: 61).

Although in the MAC field there are some theoretical studies using linguistic theories (e.g. Macintosh, 2002; Graham , 2008), and some empirical studies using linguistic theories in the financial accounting field (e.g. Crowther, 2002), this research revealed no empirical studies in the MAC field adopting an inter-disciplinary approach to connect the semiotic, linguistic and management frameworks. This dissertation strives to fill this gap by proposing a communication model for the MAC field. If we are able to understand how the communication in MAC works we could be better able to implement MAC as a tool for guiding actions and achieving organizational goals. The aim of this study is to elaborate a model of communication for the MAC field. The study also tests this model for analysing the MAC processes in a company.

1.2 Aim of the thesis

The study investigates the opportunities to understand communication in MAC. The aim is to elaborate the model of communication for the MAC field to better understand the role of communication in MAC.

In defining MAC the study builds on the sociological view (Hopwood, 1990; Macintosh, 1994; Macintosh and Quattrone, 2010); and studies based on a broader perspective on the aspects of MAC as a social and mediating process (Belkaoui, 1978, 1980; Lavoie, 1987; Arrington and Francis, 1989; Boland, 1989; Macintosh and Scapens, 1990; Robson, 1992 etc.). The main features of the social-constructivist MAC approaches used in the dissertation are that MAC is socially-constructed and aims to generate organizational reality. MAC is used for action generation via communication.

Communication is defined in this research as social interaction between individuals which creates social reality and actions through messages (Fiske, 1990). Communication is seen as dialogue (Jakobson, 1956; 1959; 1974; Lotman, 1970; 2001) that contains elements which work simultaneously and mutually relate to each other.

In addressing the question of communication processes in MAC, the study reviews a wide variety of approaches to and methods in MAC and communication. Thus the dissertation investigates the communication processes in MAC by exploring the literature of different research disciplines such as semiotics and management. If we are able to analyse and understand how communication in MAC works we will be better able to implement MAC as a tool for guiding actions and achieving organizational goals.

1. 3 Research methodology and method

1.3.1 Ontological and epistemological assumptions

Although research into MAC can be seen as a scientific discipline in its own right, with specialized journals, professional and scholarly associations, and a network of collaborative relationships, every MAC researcher has their own deontological background and disciplinary roots (Hopper and Powell, 1985). As Duranti (2005:410) adds:

> We as social scientists, we look for generalizations. /.../ We soon realize that we are not all looking in the same way, we are not all searching for the same answers, and we do not all start from the same place or stop at the same point in our pattern recognition quest. This is due the fact that our epistemologies vary, in part, because our ontologies are different.

Several scholars have pointed out that our understandings of phenomena are built on certain underlying philosophical assumptions (e.g. Hopper and Powell, 1985; Quattrone, 2000; Clegg, 2006). Glesne (2006: 8) suggests that we tend to be attracted to research questions and ways of enquiry which match our personality, background, values and ways of seeing the world around us. In this way some research paradigms and consequently some research questions tend to seem more relevant and familiar than others so that we are more likely to choose and defend them (Paalumäki et al., 2010). Consequently, researchers' methodological roots heavily influence their perspectives on what MAC is (Hopper and Powell, 1985; Clegg, 2006), how it works, and how it should be researched. This is why it is important to make these roots explicit.

No scientist can believe that it is possible to rid oneself of philosophical assumptions and become an "objective" researcher. Knowledge can never be fully objective because of the intrusion of factors to do with knowing the subject and the operations s/he performs to know others (Alvesson and Sköldberg, 2000). Science become widely viewed as a social practice involving (some sort of) social construction (Alvesson and Deetz, 2000). At best, we can hope to reflect openly about the norms and structures that influence us, check for alternative explanations, allow for additional explanatory factors, and be careful not to overstate our research findings.

The ontological, epistemological and methodological assumptions of this study are based on relational constructivism as a hermeneutic reflexive interpretation perspective (Alvesson and Deetz, 2000; Hosking, 2011)[2]. Alvesson and Sköldberg (2000: vii) state that: "Reflection means interpreting one´s own interpretations, looking at one´s own perspectives from other perspectives, and turning a self-critical eye onto one´s own authority as interpreter and author", suggesting that interpretation precedes data in all research (p. 261). Relational constructivism reveals the origin of construction processes and views individuals and worlds as emerging through processes. It also focuses on dialogue as a way to enable and support multiple local forms of life rather than imposing one dominant rationality on others (Alvesson and Sköldberg, 2000; Hosking, 2011).

If we divide the research on MAC in the subjective-objective (Burrell and Morgan, 1979), or functionalism-interpretive dimension (Hopper and Powell, 1985), this study is based more on the subjective than the objective and is more interpretive than functional. It is important to mention, that the prevailing approach in research on the organizational and social aspects of MAC still draws mostly on a functionalist paradigm (see e.g. Hopper and Powell, 1985; Merchant and Otley, 2007; Vaivio, 2008).

The functionalist paradigm-based ontology assumes that an organization's social system consists of concrete, empirical phenomena that exist independently of its managers and employees. Organizations are treated as stable empirical phenomena that have, or should have, unitary goals, normally profit maximization. This ontology assumes that knowledge can be acquired through observation and can be built piecemeal. Human nature is taken to be calculative and instrumentally rational, but essentially passive. Thus MAC is depicted as something that can stabilize and programme behaviour by allocating positions to sub-goals derived from the organizational goals, and monitoring performance by formal means. Evidence of the prevailing functionalist approach in MAC research is provided by the survey findings of Merchant and Otley (2007). They provide an overview of MC (or MAC) research in the last 50 years. They stress three main research questions during that period:

a) how and why control systems work in various situations;
b) what can be done to improve the systems;
c) how and why specific sets of control or control characteristics are or are not effective in specific settings (p.790).

[2] Alvesson and Sköldberg (2000: 248) "The term reflexive interpretation as a way of indication the open play of reflection across various levels of interpretation - the empirically based, the hermeneutic, the ideologically critical and the postmodernist".

The answer to the first question frequently used in contingency theory is based on a functionalist approach and statistical methods (Vaivio, 2008) which assume that there are some causal relationships which work in all (or at least most) situations. The second question assumes that there has to be a system which is good at some point in time and place; this means that it is based on a functionalist framework as well. The third question is based on a normative framework and assumes the existence of effective control systems.

Giddens (1984) demonstrates that the work of functionalist authors has been very important in social research precisely because it has directed attention to the disparities between what actors intend to do and the consequences that ensue from their actions, for example the knowledge-using gap and the gap between organizational and MAC change.

Contrary to the functionalist view, the interpretive perspective of organizations (see Figure 1) rejects the existence of one single, objective, concrete organizational goal and reality. Rather it states that organizational reality is constantly socially constructed and transformed, and provided with meaning based on the multitude of personal reflections and interactions by managers and employees (see e.g. Hopper and Powell, 1985; Taylor *et al*., 1996; Hodge and Kress, 1991; Gubrium and Holstein, 2008). The focus is on individual meaning and people's perceptions of 'reality' rather than any independent "reality" that might exist externally (Derrida, 1978; Hopper and Powell, 1985).

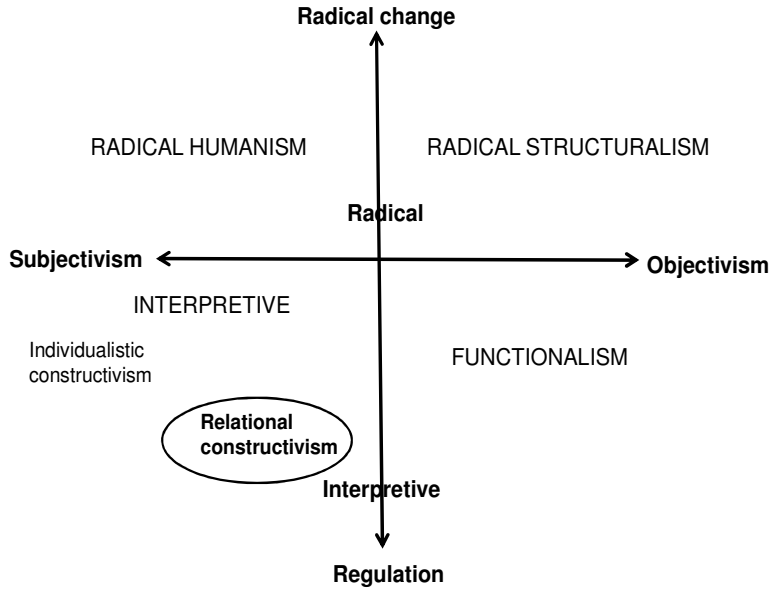


Figure 1 Sociological paradigms in MAC research
Source: Burrell and Morgan, 1979: 29-30; Hopper and Powell, 1985: 432, modified by the author

The framework by Hopper and Powell (1985) locates this study as being based on an interpretive or social constructive framework. Different versions of constructivism can be distinguished (e.g. Danziger, 1997; Gubrium and Holstein, 2008). The mainstream notion of constructivism is based on western individualism and its construction of the bounded, separately existing individual relating to a separately existing other, where 'other' is everything which is not self; that is it is based on 'hard' self-other differentiation or a 'monological' approach (Sampson, 1993). Sampson reveals that the monological and 'self-celebratory' construction is oriented around the notion of (i) a singular and rational self (ii) who is able to know others as others really (or probably) are, (iii) who speak for and about others, and (iv) can use others in the rational pursuit of (supposedly) rational goals and interests.

This study is based on *relational* constructivism (see Figure 1) with the "soft" self-other differentiation (Hosking, 2011), that takes a dialogical approach (Sampson, 1993; Alvesson and Sköldberg, 2000), emphasizing multiple self-other relations and their mutual creation and co-emergence in ongoing processes. The soft view centres on, and gives ontology to, the construction process (to *how*, rather than what) and sees people and worlds as emerging in *processes* (rather than assuming individual minds and actions), and centres *dialogical* practices (Gergen et al., 2001) on always relating to what can enable and support multiple local forms of life rather than imposing one dominant rationality on others (Hosking, 2011).

Hosking (ibid: 53) claims that the relational constructivist discourse of interacting stands apart from individualistic, subject-object discourses of science and constructions in a number of important ways:

1) Construction is described as a process of *interrelated* acts, actors or texts and not as individual action. Power is an inevitable part of these processes.
2) Relational constructionism takes the view that relational processes 'go on' in *language-based* interactions.
3) Relational constructionism talks about the '*textuality*' of all relating – and not just of written and spoken texts.
4) Relational constructivism and other social science perspectives/practices are all included in the scope of the discourse.

In the relational constructivist view the objects of enquiry are the very processes themselves, the *relational processes* as they co-ordinate or organize activities, make identities and relations, constitute and live a certain 'form of life' (Wittgenstein, 1953), and as they construct different but equal, or different and unequal orderings of power and value (Hosking, 2008). Relational constructivism makes the possibility of carrying out research 'with' others

more meaningful (Pearce, 1992) than other perspectives on social science that might conduct research 'on' or 'about' their subjects (Hosking, 2011). Doing research with others means creating opportunities for dialogue. Conducting enquiries 'with' others means working in and through dialogues that can open up the possibility of becoming more multi-logical, or can open up multiple local rationalities.

1.3.2 Models

Studying the complex reality of the social world involves using models which are like entities that are good to think with. It is important to stress that the models used in a relational constructivist approach differ from models used in functionalistic sciences. Next we provide some insight into the models and modelling used in the dissertation.

The model is like a map – worth pursuing if it provides us with a conceptual apparatus that can be used to describe, and thus (better) understand or explain a given range of phenomena. A model consists of an interrelated set of elements which fit together representing something (Duranti, 2005). Modelling is useful and necessary, particularly as a basis for structuring a programme of study or research. According to Fiske (1990: 37), the value of using models in social research is that:

a) They highlight systematically *selected* features of the territory
b) They point to selected *interrelationships* between these features
c) The system behind the selection in (a) and (b) provides a definition and delineation of the *territory* being modelled

Typically one uses a model to reason with or to calculate with by mentally manipulating the parts of the model in order to solve a problem. More generally we can distinguish two types of models: one sets out the boundaries of the enquiry and the other is open and allows for the expansion of existing boundaries. In other words there are two types of models: "*models of*" and "*models for*" (Duranti, 2005: 420). For example, mathematical models which are used in contingency theory research tend to be *models of*. On the other hand, there are different types of *models for*, for example in the form of metaphors, such as the metaphor "translation" for describing the communication process. Duranti (2005) states that another example of *models for* is a case study. Cases are extensively used in MAC research because they are valued for their specific material reality, their uniqueness, and at the same time the fact that they show something typical. Cases, it is assumed, capture the research objects in all their complex

uniqueness while at the same time rendering them in a form amenable to general analysis. Case studies operating as *models for* tend to be more open-ended frames of enquiry.

The *models for* variants, like Jakobson's communication model (see Chapter 2.2.4), differ from transmission type models, first in that they are not linear, so do not contain arrows indicating the direction of the message. They are structural models, and any arrows indicate relationships between elements in this creation of meaning. These models do not assume a series of steps or stages through which a message passes: rather they concentrate on analysing a structured set of relationships which enable a message to signify something. They concentrate on *what it is that makes a message*. In these models there is *multidirectional causality between variables* rather than the previously held unidirectional view of models that show the relationship between a dependent and an independent variable. If we take communication as the generation of meaning, as a transaction, we have to turn to *models for*.

When using models we have to account for some of their boundaries or limitations. Models, like maps, present *selected* features of their territory: no map or model can be exhaustive. A model highlights different features of the phenomenon. This means that the choice of model has to be *purposeful* (Fiske, 1990). In order to know whether we have a good description, we also need to be explicit about what kind of information we want to provide a description of, and the conditions that would render the identification and collection of such information satisfactory. The trouble with models is that their purposes are usually less well signalled (Duranti, 2005). In fact, many claim a comprehensiveness that can never be achieved.

Radical subjectivism or mainstream social constructivism assumes that "there is nothing outside text" (Holt and Mueller, 2011: 68), that is, there is no "independent reality and stable meaning", nothing but language, discourse and metaphors shape our world (Fairclough, 2005). By making knowledge about society and organizations available, scientists need to employ some normative activity – fixing some criteria, making the generality of processes accessible to managers. To do so, we have to let "language go on holiday" (Wittgenstein, 1953) that is, to accept the objectivity of social facts (Berger and Luckmann, 1967) about things (like an organization) and the general processes that lie behind them.

This study assumes that society exists as both objective and subjective reality (e.g. Berger and Luckmann, 1967; Gergen, 1994; Quattrone, 2000; Kakkuri-Knuuttila et al., 2008), in that we can "stabilize some meanings" or look for general processes (not results!) in the organization. We can draw some general lines to fix things and events (such as processes and

relations) so as to assist our pragmatic orientation to the world of the organization (Ingold, 2007; Holt and Mueller, 2011).

In drawing generalizing lines around and between things and events we draw them as though we were somehow completing the world, continuing from where our imperfect experience or even ignorance left off. General lines clarify and purify the world thereby making the world presentable by presenting the world. Lines become starting points from which one departs for life (Klee, 1961; Holt and Mueller, 2011).

In the generalization of processes, we are *following* a rule, rather than *obeying* a rule. Wittgenstein (1979) used the 'path' metaphor to describe the 'following rules'. The path metaphor allows us to appreciate how meaning is fixed – changing direction counts as doing something different – and fluid; changing direction, or avoiding signposts is always possible, and even in approaching the pathway from a different perspective there is the possibility that it will be unfamiliar, and we will have to find a new path. It is necessary that we accept the garden path, where we feel comfortable acknowledging relationships unquestioningly (Holt and Mueller, 2011). Thus we accept that walking these paths through learning how to go on, which is not based on evidence, is the right thing to do. Using lines as paths, the regularity expressed in rules is normative; it relies on the possibility of the practices of imitating, justifying, explaining and exemplifying which themselves require nuanced and sometimes novel variations that others regard as significant.

To sum up, MAC is a socio-technical activity that involves dealing with both technical and societal factors. As stated by Quattrone (2000: 132), in MAC there is the realm of nature, which can be studied through a methodology that produces objective knowledge, and there is the realm of culture, which can be studied through a methodology that produces subjective knowledge, as well as the interaction between them. There may be some causal connections between variables and at the same time, there is multidirectional causality between some variables (Clegg, 2006). In MAC research we have to use models which describe the multidirectional view as well as models which describe causality correlations.

1.3.3 Methods

If we look at MAC as a *dynamic dialogical social phenomenon*[3], where subjective experiences of individuals and the creation of the social world are stressed, then the research

[3] For more on dialogical view of MAC see Section 2.1.3

methods that allow insight into an individual's inner world are emphasized – for example, with participant observation case study (Hopper and Powell, 1985: 431).

This study uses a case study methodology. Following Keating's (1995) management accounting case study classification, this study can be categorized as a *theory refinement* case study.

Communication as interaction is not something tangible and stable. A case study is useful to investigate the communication process and its role in MAC processes because the communication phenomenon is complex, the theoretical basis of the communication process in MAC is thin and the communication phenomenon is difficult to study outside its natural environment (see Gummesson, 2000). To better understand the communication processes, the researcher collected empirical material *in vivo*; this study uses a participative observation (Spradley, 1980) case study.

Participant observation research is a way of learning about a social system not at a distance but through direct engagement at close quarters with the groups studied and at the scene of the action (Parker, 2008: 911) in the change process (Gummesson, 2000). Lewin (1946) noted that a researcher wanting to understand a phenomenon should try to change it. Getting directly involved in the everyday life of an organization and trying to change it gives the researcher a better opportunity to understand and compare different 'realities' thus, as Jönsson and Lukka (2005) said, to understand what is going on in the organization, or getting better pre-understanding and understanding of the situations (Alvesson and Sköldberg, 2000: 99). Instead of simply being an observer, the researcher is actively trying to influence and intervene in the organization observed. Different social processes, problems and contradictions are more clearly seen in the change process.

In this study the researcher's aim of being an agent of change (Gummesson, 2000) in the research process was similar to that of a science researcher – to *use changes for research purposes*. Changes are useful for research because we can study phenomena better (or sometimes only) if they are undergoing change. For social scientists, as for physicists, it is also problematic to generate changes or find change processes for research purposes. How might the research tool be developed? Sometimes building up a research tool can be even more problematic than collecting and analysing empirical data, that is, the research result could be primarily dependent on the tool used in the research process.

For social science, there are two options in using changes: use changes which occur irrespective of intervention (like an economic recession which causes changes in society and organizations), or try to generate changes in the participating system (that is, the organization)

during the research process. In the latter case, the scientist has to be allowed to make changes which have a useful or positive effect on the "research object" (that is, the participating system). We can say that the (hopefully!) useful or positive changes occuring in the participating system during the research period, from a research point of view, were a by-product of the research project. This study attempts to elaborate a communication theory for the MAC field and test its usability in practice.

It is important to note that the aim of this research was *not* to describe and investigate a MAC (instrumental) change and the impact on organizational performance, but to focus upon the *black box* of the process (Parker 2008) in MAC operating to produce and disseminate scientific knowledge[4]. Additionally, it should be noted that this research does not address the management control system as a whole, but only the diagnostic and interactive control systems (Simons, 1995). This means that the research does not address the procedural and technical aspects of MAC and rules for calculating management accounting entries and preparing reports. Neither does this study focus on the results of acting (that is, good or bad performance) nor on the quality of a particular MAC.

According to Alvesson and Sköldberg (2000) and Gummesson (2000), participative observation research can employ a variety of methods to generate empirical material. Several empirical material acquisition methods were used in this research. The main method used was participatory observations (Spradley, 1980).

The process of participatory observation was conducted in two separate periods in this research: the first is the pre-research period (1988 - 2007), which covers working as a manager, CFO, and in the case company as the MAC specialist 2002—2003 (Appendix 1). This pre-research period is important to gain a better *pre-understanding* of MAC as the research object (Alvesson and Sköldberg, 2000). During the research period (2007-2008) when working with the case company as a part-time consultant, the researcher generated empirical material for the research: she participated in management team briefings and was involved[5] in 18 senior and middle management meetings (Appendix 9) and eight operative-level management meetings (Appendix 8), and also conducted five workshops. She also attended finance division meetings and the annual meeting of the parent of the case company, which provided a better understanding of the institutional context of the case company.

[4] It is important to make this distinction explicit, because a familiar aspect of MAC research is the investigation of MAC change as a phenomenon, whereas this study views the MAC and organizational change as the research tool or fruitful environment for research processes.

[5] The researcher prepared meeting agendas together with senior management, sent instructions to participants on preparing meetings, co-chaired meetings etc.

Everyday work for the case company involved using accounting and management data, accounting and financial analysis software and the company database, reports, budgets and formal instructions. Access to empirical material (subject to confidentiality agreements) gave the researcher an excellent understanding of both the history of the case company and the actual situation within its units. Particularly useful data was obtained from an employee commitment survey conducted by an external HR consultancy in February—March 2008. The researcher's employment with the case company gave her access to hundreds of pages of printed material, and a reporting environment based on databases producing customized online reports. Of course strategic plans, budgets, reports and analyses are confidential, and where examples are drawn from them to serve the purposes of the study, the data have been altered to preserve that confidentiality.

To test the model in practice and to reflect the findings arising during the research process (Paalumäki et al., 2010) and also to mitigate any effect of bias, the researcher conducted 20 semi-structured, in-depth interviews with top, middle and operative-level management colleagues and with controllers during the research process running July 2008–April 2010 (see Appendix 12 for details). The result is research that is not 'about others' but created 'with colleagues' (Hosking, 2011) from the case company. The interviews lasted between 15 and 90 minutes and yielded about 20 hours of recordings; all were later transcribed. The textual level analysis of the interviews was conducted by coding segments of text. The coding and analysis was a hermeneutic process (Jönsson and Sköldberg, 2000, see Appendix 2) conducted during the interview period and thereafter. The coding was conducted by carefully reading and analysing the meaning of the printed text, listening to recordings several times, conducting follow-up interviews based on questions arising from previous interview analysis, and adjusting the formulation of sentences and paragraphs in relation to the theory.

1.3.4 Applied approach

Within MAC research we can distinguish two different types of studies. First there is the research *about* MAC (Malmi and Granlund 2009), where the purpose of research is to build theories to solve problems that *researchers* face in a particular domain. The core questions for MAC researchers to deal with are then how MAC works and what it does to and for organizations. This view of such research supports Giddens' (1984: 348) view of social sciences where "... the practice is the object of the theory. Theory in this domain transforms

its own object". As Kakkuri-Knuuttila et al. concluded (2008), "Management accounting research literature includes a number of published case studies which apply qualitative methodology and offer 'rich insights' into accounting in its varying organizational contexts (p.268)". Usually scientists describe different situations of the reality in the sense that they have an interpretive approach (Hopper and Powell, 1985) to understanding what happens and how it happens in a given case.

The interpretive approach tends to favour the 'emic' perspective – an examination of how the research subjects themselves develop their meanings. This type of research is usually intra-disciplinary (see Quattrone, 2000), focusing on one or a number of approaches or paradigms based, for example on Burrell and Morgan's (1979) paradigmatic differentiation. This kind of research is useful for academics to understand the research object and provides them with a basis on which to determine research questions that can be of interest to practitioners as well. As noted by Malmi and Granlund (2009), despite its practical purpose, MAC research is often criticized for not having an impact on practice, let alone leading it. A further criticism is that most academic researchers and their works are not known at all outside academia (e.g. Swieringa, 1998; Lee, 2003). In reality, practitioners (MA specialists, CFOs, managers etc.) are not interested in research that mainly results in a description of the reality of the organizations, like that which describes the process of using or developing MAC. As Giddens (1984: 335) states, "…'findings' of the social sciences, are not necessarily news to those whom those findings are about". In other words, there is an objective gap between academic research and practitioners' interests.

The second perspective views MAC more as an applied discipline. This suggests that the knowledge created by scientists does indeed have value for practitioners. Or, as Malmi and Granlund (2009: 598) state, the reason for MAC research is to be able to use the understanding of causes, effects and the functioning of MAC for creating better practices, both in terms of content and application. Undertaking research and developing theories on MAC can be used by someone to accomplish something. This approach could be categorized as the other perspective of science, the "etic" – where the core issue is the interpretations of the researcher of the phenomena studied (Kakkuri-Knuuttila et al., 2008).

One possible way to implement MAC as an applied discipline is to start from the practical problems. Research on and theories of applied MAC could be problem-focused (e.g. Quattrone, 2000; Malmi and Granlund, 2009). Yet problems in the 'real world' are never mono-disciplinary or intra-disciplinary (e.g. Heidegger, (1977(1954); Okhuysen and Bonardi,

2011). Thus there arises a clear call for an inter-disciplinary approach to applied MAC research (Okhuysen and Bonardi, 2011; Quattrone, 2000).

Treating MAC research as an applied social discipline usually gives rise to discussion about aspects of objectivity and subjectivity in social sciences, or disputes about similarities to, and differences between natural and social sciences. Although, as mentioned by Quattrone (2000: 135), the distinction between the natural and social sciences is formed by an old-fashioned debate on the unity of methodology, which was a matter of contention at the beginning of the last century. However, recently published papers (e.g. Malmi and Granlund, 2009) illustrate the importance of determining some *similarities* between the 'working' of these sciences.

Clegg states about the social world, (2006: 861): "…there are an enormous number of variables, great complexity, unique actors, and no possibility of artful laboratory closure". The same picture appears if we look at molecules or genes – an enormous mess, variability and chaotic movement - and *without special equipment* there is 'no possibility of artful laboratory closure' either. Or, for example, we can describe the sunset in countless different ways – each moment reveals different colours, the sunset occurs every day in a different moment, in a slightly different place - and of course it is impossible to achieve an 'artful laboratory closure' of the sun. Thus the social and natural or physical worlds are, contrary to Clegg's notion, very similar. To understand processes, we need to go to the 'right' level and need special tools to open and understand the 'enormous mess' or 'black boxes' of the social world - or to actually understand the *basic* system of the phenomenon.

Another example is provided by Vaivio (2008), that in the social world we are not able to predict the outcome of any specific case before its conception. This restricts the explanation of probabilistic statements prevailing to the level of ontological adequacy. The fact is that we can say the same about the physical world – it appears impossible to predict how molecules or genes will act in a particular case, or which colours will make up the sunset in a particular place and time if we do not know some *general* rules about the relevant world. Thus it means that if we look at the world from a particular level or through lenses (Okhuysen and Bonardi, 2011) that make it impossible to see general rules, or if we do not know them, or adopt methods that cannot reveal those rules, there are an enormous number of variables, which creates confusion. Connected with this messy view of the social world are volumes of research describing different cases, detailing what happened and how it happened, that is, describing the *results* of processes. In this way we can find certainty and disprove whatever theory tries to say about how things must be in the organization (while leaving enough space

for ‘discoveries’ - as the results of processes have an infinite number of variants in different situations).

To continue with the work of Malmi and Granlund (2009), they also say: “the limited insight for practitioners is the second concern we have with current theorizing (p. 603)”. They give an example from contingency based positivistic research, and conclude that “this literature is not specific enough to provide much useful guidance to practice and ... are so general that they are of little use, or of incremental value, in practice (p. 603)”. They propose: “... certain forms of MAC used in a certain way would provide better decision-making support or more likely achievement of goal congruence”. In addition, they suggest that one MAC applied “... theory would explain how to design and use incentive systems to achieve superior performance (p. 602)”. The main problem therefore appears to be the specific, situational normative solution. But it is impossible to create a theory that can suggest what to do and how to behave in a particular situation. In the ‘doing’ and ‘behaving’ processes there are different factors that can affect the results. On this level - the ‘what to do’ level - the number of variables is too great. On this level and for this reason we could therefore agree with Giddens (1984), that the social sciences could never affect ‘*their world*’, the social world – that is to say how things have to be in certain circumstances. For that reason, scientists can never realise the dream of normative researchers of MAC and offer the solution Malmi and Granlund,(2009: 597) crave, asking “what kind of management accounting systems managers should employ, how, in what circumstances, and how to change them”.

We therefore unable to predict the outcome for any specific case, nor are we able to say what to do in a particular case. It seems that at the visible or action level, the science around MAC is unable to offer any useful knowledge. Could it then mean that maybe we are at the wrong level or using the wrong equipment? We are trying to understand rules on a level where it is impossible to see them and are using other equipment incapable of testing them or making them visible. Our rules and the tools we use are not adequate to open up this phenomenon or the ‘black box’ of organizational processes.

If we cannot predict the results of actions and cannot say which actions are ‘better’ in a particular case, maybe we have to go to another level – to the process level. Perhaps it is more fruitful to try to understand the logic behind the processes rather than the actions as results of the processes, and consider the general logic of the processes themselves. The problem is not that our knowledge needs to be more specific, as stated by Malmi and Granlund (2009), but on the contrary, we have to understand more the general rules of the world and learn the basics. We have to try to understand the general logic of the functioning

of the processes which go *before* actions and results. This means that our knowledge about the processes which makes sense in MAC is not yet general enough; we have to find the methods by which and the level on which we are able to alter certain aspects so as to attribute meaning and find some rules that can serve as general rules. We have to find some aspects in the social, interpretive world which appear objective or even normative. Alternatively, as Hopper and Powell (1985: 432) propose, we can locate both interpretive and radical research in management accounting so that they straddle the line between subjectivism and objectivism.

The discussion about the differences in social versus natural science or the objective versus subjective paradigm could conclude, as noted by Kakkuri-Knuuttila et al. (2008: 288): that "...our analysis indicates that interpretive studies are yet inclined to include a certain element of realism: things do not just occur in the minds of people, but they also tend to become inter-subjectively objectified in the interaction between them and therefore explainable and real in their tangible consequences." To understand processes in the social world we have to take into account the subjective factor, but to make knowledge accessible in practice, we have to be able to identify the objective aspects, fix meanings and locate *general* rules. One task of this dissertation is to propose a model which could serve as the basis for a practical analytical model for the MAC world.

1.4 Structure of the study

The dissertation is organized as follows (see Figure 2). The introduction presents the background of the research and the motivation behind it, with an explanation of the research objective. It also provides a short overview of the research methodology and method. This study is based on hermeneutical methodology, using assumptions from relational constructivist philosophy and empirical data based on a participatory observation case study. It is important to make explicit the assumptions and choices made in this research to better understand interpretations made during the study.

The study includes two broad terms: MAC and communication. What hence the theoretical part of the dissertation contains two sub-chapters, Chapters 2.1 and 2.2. Chapter 2.1 starts with a discussion of some aspects, such as the purposes, users, methods used and IT that can be associated with the change to the big picture (or paradigm) of MAC. This chapter describes how different changes have substantially increased the importance of understanding communication processes and introduces MAC as the organizational self-reference model.

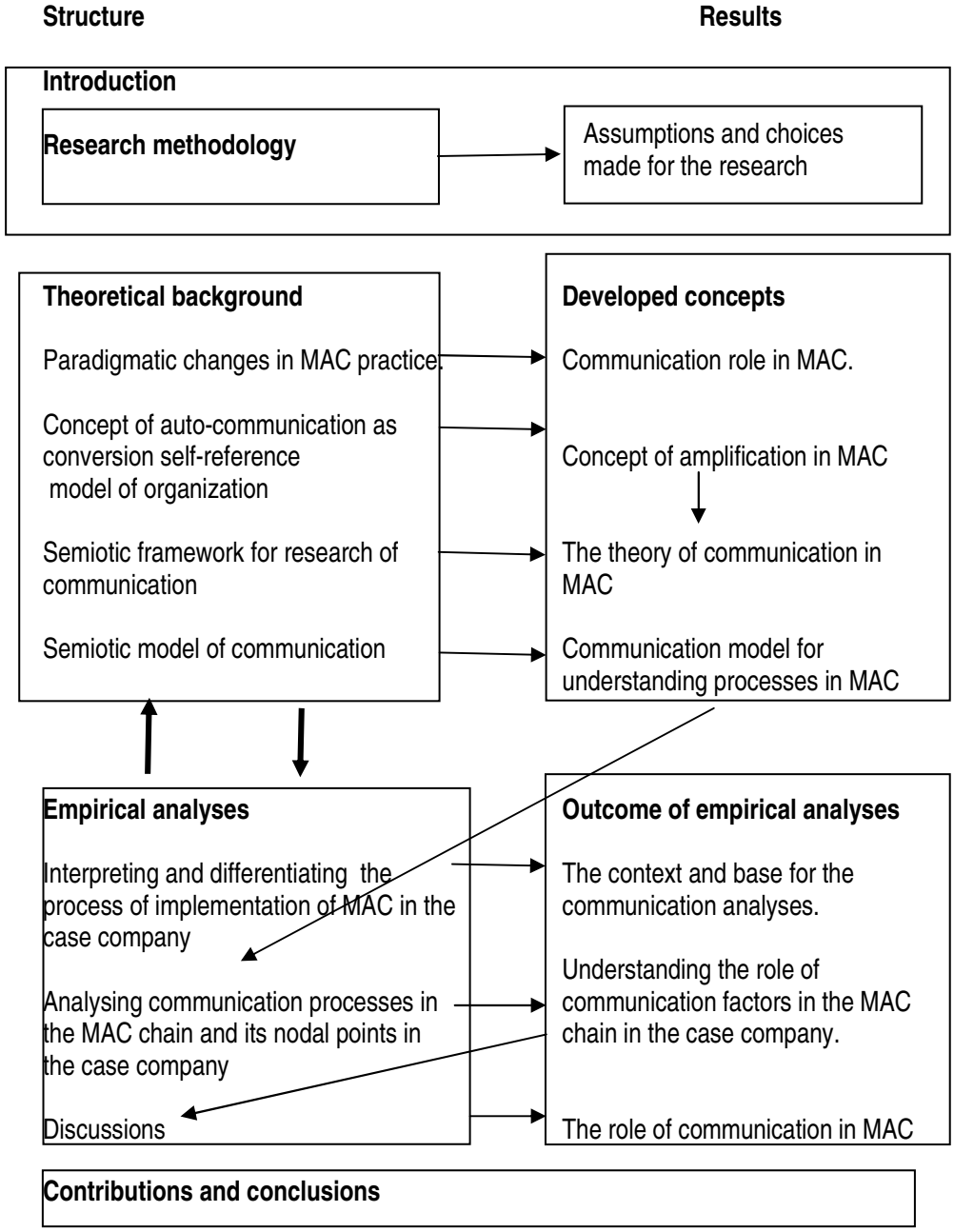


Figure 2 Structure of the study

The contribution of the theoretical discussion of this section is to propose a *conversion self-reference model* of the organization which is a basic model for a relational constructivist view of MAC. The chapter continues by relating *auto-communication* phenomena to MAC. This theoretical chapter develops the concept of *amplification* in MAC.

Chapter 2.2 focuses on the phenomenon of communication, especially the dialogical view of communication. It presents a short introduction of a semiotic framework for research of communication, sign and code (Section 2.2.2). Section 2.2.3 introduces the concept and

role of misunderstanding in the communication process. Section 2.2.4 introduces the communication model used in cultural and organizational semiotics. The last section (2.2.5) of this chapter presents a brief overview of the interrelation of inter-communication and auto-communication.

The third chapter continues the theoretical discussion and develops a MAC communication theory. This section shows how the theories described in Section 2 work together and enabling a better understanding of the working of communication in MAC. Sub-chapter 3.1 focuses on creating the theory of communication for the MAC field and Sub-chapter 3.2 elaborates the communication elements forming the *MAC model of communication* for analysing communication processes in MAC.

The fourth chapter introduces a case study which illustrates the MAC process in practice. First the research method is outlined along with an overview of the hermeneutic process and the tools used in the collection of the empirical material. Then it follows the case description. This case description starts with an overview of MAC and focuses on one example, the implementation of one indicator – the contribution margin – in the case company during the research project. This section shows how the implementation results of the indicator differ in the same company. It confirms the findings of Catasus et al. (2007) on how indicating and actions can have different impacts.

The fifth chapter tests the communication model to better understand the communication process in the MAC chain of the company. It starts the MAC chain and the nodal points of this chain. The analysis seeks to identify the main communication factors and functions causing the differences in the MAC chain in the case company. The study shows how different people in the organization participated in creating MAC permanently and jointly. It provides propositions on how the communication process in MAC has an effect on organizational MAC. The final chapter presents the conclusions drawn. Having outlined the main theoretical propositions, the section explains the potential value of the theory for research and practice.

2. THEORETICAL BACKGROUND

2.1 MAC approaches

The terms management accounting (MA), management accounting systems (MAS), management accounting and control systems (MACS) and management control systems (MCS) are sometimes used interchangeably. It is not easy to separate management accounting (MA) and management accounting systems (MAS) from management control (MC). This dissertation uses the term management accounting and control (MAC) to suggest that when both MA and the aspect of control are referred to, we should use the term management accounting and control (Macintosh, 1991; 1994).

One task of the dissertation is to better understand the phenomenon of MAC, especially its communicative aspects. The chapter begins with an overview of Hopwood's (1990) three roles of (management) accounting. The chapter continues with a short overview of the history of MAC based on IFAC[6] and a discussion of some aspects, such as the purposes, users and methods used that can be associated with shifts in MAC practices and, based on these, the growing importance of aspects of communication in MAC.

This chapter shows why and how the communication aspects in MAC are now more important than ever before and will become increasingly important in the future. The chapter goes on to describe how various changes have substantially extended the role of communication in MAC and shifted thinking from a technical approach to a social one. To paraphrase Chalmers (1982): What is this thing called MAC? It seems as if this question was easier to answer a couple of decades ago. In view of the rapid changes in IT, the business environment and management systems during recent decades, however, the question may still appear relevant. Over 20 years ago, Salme Näsi in the conclusion to her research on the development of accounting, mentioned the paradigm change therein. She stated (Näsi, 1990:234):

> Whether it be strategic accounting or something else, accounting today is but an integral component of a more comprehensive and complex system than ever before. This has engendered a need to regenerate the concept 'accounting'.

[6] The International Federation of Accountants

2.1.1 Roles of MAC

MAC and the organization are reciprocally related. Organizational changes caused changes in accounting and MAC and conversely, accounting and MAC can in general play a role in the process of organizational change (Hopwood, 1990; Roslender, 1996; Catasus, et al., 2007). Hopwood mentions three roles of MAC (Hopwood, 1990:8-10) in generating organizational changes:

a) creating visibility;
b) creating economic actions; and
c) giving power through calculations and indicators.

As Hopwood (1990) explains, bookkeeping, according to Bentham (Bentham, 1791; see Foucault, 1977), enables an indirect means of visibility to be created where the eye could not otherwise see. Accounting makes visible things which happen on the other side of a wall or the world [7] by translating real-world action into abstract (accounting) language using inscriptions[8] (Latour, 1987; 1988; Robson, 1992). As Hopwood (1990) and Robson (1992) point out, making things visible gives an opportunity to control from a distance or, as Latour (1987) put it: *acting at a distance*. Hopwood (1990) and Robson (1992) thus identify the ability of accounting to exert control over others at a (long) distance, meaning to create or coordinate the action of 'others' (Kaplan and Norton, 1992; Petty and Guthrie, 2000; Behn, 2003). Based on Latour's (1987) concept of *acting at a distance*, Hopwood (1990) and Robson (1992) look at the problem of the isolation of and distance between knowledge and action. Hopwood (1990:12) stresses the problem of managers as "isolated from where actual productive activities take place", Robson (1992:691), sees the distance problem as:

> ...the basis for a distinction between knowledge and practices which has to use more translations or forms of settings ('information') need to be mobilized in order to overcome the problem of distance.

The other solution in addition to the need for 'more information' is seen as the need for a 'strong explanation'. Robson's 'strong explanation' must contain first and foremost the power to act, not the truth. It means the need for more powerful explanations which may then be invoked to act upon all relevant contexts. *Action at a distance* implies not merely physical

[7] For empirical research on visibility see, for example, Bürkland and Lääts, 2011.
[8] The term inscription refers to the material and graphical representations that constitute the accounting report: writing, numbers, lists, tables (Robson 1992:685).

space between two points but the "capacity through 'strong' explanations, to influence many contexts at the same time" (Robson, 1992:691).

Using Hopwood's (1990) accounting inscriptions, which are an abstract description of 'the real world', it is possible to create an abstract 'economic world'. Abstractions and objectifications in the accounting area are created in the name of abstract economics. As he states (ibid: 9):

> …no one has yet perceived a cost, or a profit for that matter. They are abstract and conceptual phenomena, creations of the human intellect, forged and shaped by economic, social and institutional forces…Not directly visible, they nevertheless can be enshrined in the record books, thereby providing a basis for their observation, monitoring and control.

Using this observation, monitoring and control, provides a powerful means for confronting the social and the political with the economic thereby enabling a precision and an apparent objectivity to be given to economic affairs that otherwise would not exist. Based on this, accounting has an active role in creating a domain of economic action. Accounting accentuates one part of the social world, the economic world and meanings. 'Economic' actions take place in reality, that is, they are actions in the 'real world'. This means that there is a need for a second translation process – abstract phenomena like cost and profit translated into real-world actions.

Further, by these translations, accounting is implicated in the objectification of phenomena of making those things that would otherwise reside in the realm of the abstract appear real and precise. The essential subjectivity of the concept of cost has been reduced by the accountant into fact, something which strives to be a calculative embodiment of the abstract phenomenon, but which often is not. Accounting makes the abstract, economic world visible and thereby usable by actions. By making some things visible and other things not, an organization can strive to exclude particular visibilities from the official organizational agenda (Hopwood 1990:9).

According to Hopwood (1990:9): "As with visibility, the power of calculation is potentially great". Accounting *could* play a powerful role in organizational and social affairs. It could influence perceptions, change language and infuse dialogue, thereby permeating the ways in which priorities, concerns, worries and new opportunities for action are articulated.

In the MAC literature it is often noted that the principal argument for measurement and management control is that of achieving action (cf. Kaplan and Norton, 1996). The adage

"what gets measured gets managed" - based on the assumption that things made visible can create economic action. Some studies generally support the adage some studies report mixed results, some find no association with economic performance and what managers measure does not correspond well with what they want done (for an overview see: Catasus, et al., 2007).

The adage is based on the functional approach [9] to measurement and suggests that by producing indicators management would (always) influence the organization to act in relation to the indicators (Wickramasinghe and Alawattage, 2007). This view reflects a fundamental 'trust in numbers' (Porter, 1996). It is based on the belief that indicators serve as 'shortcuts' to organizational reality and as such allow organizational actors to make sense of performance in a standardized and resource-efficient way (Jordan and Messner, 2010).

In recent years, the adage has been revised and modified. For example, Otley modified the truism in a restatement (Otley, 2003:319): "What gets measured generally gets done" and Catasus, et al. (2007:516): "What gets mobilized gets managed, especially if it gets measured." It stresses that measurement and reporting are insufficient to make sense of performance in a standardized way. It indicates that MAC as a tool for making things visible is not an isolated 'toolbox' of functional techniques and neutral systems to assist rational choice and control. Or, as Hopwood states (1990: 9), "the power of calculation is potentially great".

By making things visible, it is possible to focus on particular aspects of the social world, giving power to some aspects or persons. Two modes of accentuation can be distinguished: first, the choice of which things to make visible and second, by whom and how (by what bodies of knowledge) things are made visible (Hopwood, 1990). It is therefore important to understand these 'who' and 'how' questions. The accounting inscriptions could make things visible and could give power to one subject or another. This means that it is fundamental to understand for what reason this is happening or not happening. The aim of the dissertation is to develop a model for understanding these aspects in MAC processes. To better understand why these questions are important, we first make a short excursion into MAC history using the Hopwood–Robson framework of the accounting inscription and the IFAC classification of MAC history.

[9] According to Norreklit, et al. (2006:53) the functional framework assumes "…the existence of a universal structure of rationality deciding what is good for everybody. Also, it assumes that managers are rational and that they respond to the environment with a rational structure and a hierarchy of decision levels."

2.1.2 Shifts in MAC practices

The definition of control in the early 20th century was based on an understanding that an organization is like a machine[10]. The machine metaphor views organizations and managers as rational decision-makers concerned with the functionality and goals of the organization as a whole. From this period comes the understanding that decision-making is needed for effective distribution of resources and control (e.g. Simon et al., 1954). Management accounting was viewed as mechanical 'calculative practices'. Thus, prior to 1950, the focus was on cost determination and financial control through the use of cost accounting technologies (see Figure 3). The result was that in this period the role of accounting was to make things visible from a long distance and create an economic domain in organizations. An example of this understanding of management accounting is the definition (Arnold and Hope, 1990:5):

> "...a system for providing (primarily financial) information to managers who have to make decisions and control the implementation of those decisions".

Or as Anthony (1965) in his seminal work on management control as a separate topic of academic study defined it:

> ...[a] process by which managers ensure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives.

In this era the main users of accounting information are portrayed as senior management who could control lower-level groups of staff by acting *at a distance* (Latour, 1987; Hopwood, 1990; Robson, 1992). This understanding of control connected with the assumption of the centrality of the accounting role in organizational and social affairs could be taken for granted. Rather than trying to probe the factors implicated in the emerging significance of the craft, they blithely attribute quite particular functionalities to it, often then trying to provide these with a greater cohesion and organizational and technical rationality (Hopwood, 1990). The main problem at this time was how to get more and better information (the question of what) from the other side of the 'wall' in order to better understand subordinates' activities and to control them, that is to control others.

[10] Frederick Taylor's theory of scientific management, Henri Fayol's theory of classical management, and Max Weber's theory of bureaucracy highlight the perspective that organizations and the communication within them are governed by standardization, specialization, and predictability (Miller, 2005:208).

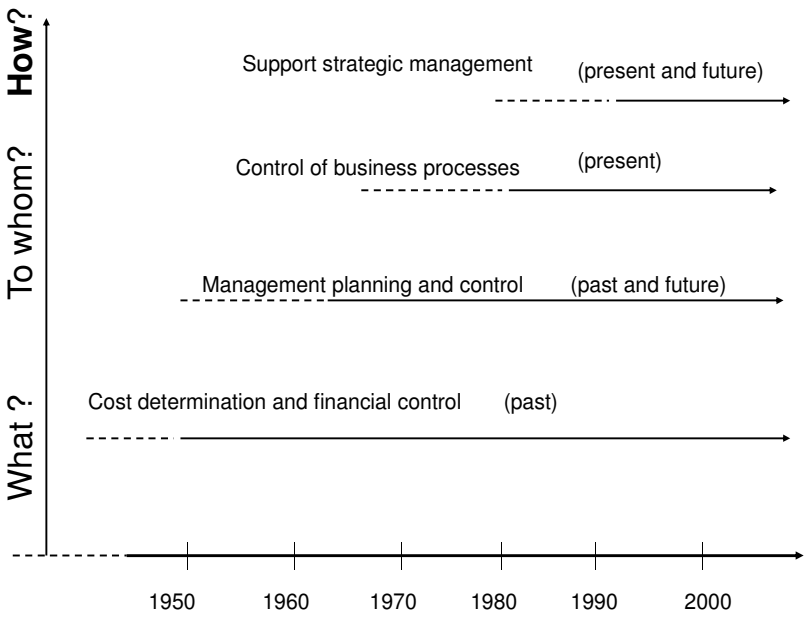


Figure 3 Changes in the objectives of MAC
Source: IFAC, adapted by the author

In the 1960s the use of computers was just emerging in companies. Routine accounting processes (e.g. payroll accounting) were becoming centralized. The 1970s ushered in a change: research was conducted on how to use computers to process information for management decisions. At the same time stiffening competition and reduced product lifecycles made the future more important. Besides historical data about costs and used resources, the problem arose as to how to make future processes visible and hence better control others. In addition to historical accounting information, budgeting was included in the management accounting system as a tool to connect the future to the past. As a result, by 1965 the focus had shifted to the provision of management planning and control, through the use of techniques such as responsibility accounting. Like the early management accounting, the control framework tended to encourage a strong emphasis on financial, accounting-based controls (Otley, 1999). By bringing the control aspect as a separate activity and object to the science of management accounting, Anthony (1965) lent importance to the aspect of making things done by others visible to 'us', in other words to higher level managers.

The 1980s saw the introduction of personal computers and the development of local area networks, which in turn facilitated the development of more complex localized decision-making systems. A new paradigm appeared, called final-user-oriented information processing. However, centralized data transmission systems continued to be used. At the same time, intensifying competition drew attention to reducing wastage of the resources used in business

processes (Horngren, et al., 2005). The business process (value chain) and the optimization of resource usage were added to planning and operative management. Furthermore, such methods as quality cost, activity-based costing, value chain analysis and strategic cost management were added. To observe actions and processes, the quantity of goods in stock and their quality gave an opportunity to monitor and affect present and future costs. Additionally, there were the first calls to use external information related to markets, customers, competitors, as well as non-financial information related to production processes. But even at this time, MAC was conventionally perceived as a passive tool providing information to assist managers to make actions made by others more visible from a distance (to 'us') using various calculative methods and practices to do so, that is, mainly developing the instrumental, technological side of MAC.

In the early 1990s large companies had at their disposal a vast number of generic and personalized information systems used on a wide variety of hardware. Specially customized EIS[11] were introdiced, with the objective of screening out the most relevant information and customizing the information according to the users' needs (e.g. computer-operated traffic lights). An added benefit was that the end user had no need to understand the principles of the information systems technology.

The same era ushered in the development of data storage systems and ERP[12]. The Internet, together with ERP, allowed the power and potential of information to be provided for everyone in a company (Gordon and Loeb, 2003) Also, client/server systems became more widespread, and because of their compatibility, ease of implementation, and cost-effectiveness they became successfully applicable for many users. Though the system is quite intricate, the end user finds it quite 'user-friendly' and it does not require specific extras. Contemporary information systems are computer-based, often for online use. These systems enable the use of unique information throughout the value chain and its management so that it becomes an integrated system involving all parties, starting from procurement and ending with the after-sales service to clients.

Using the tools provided by contemporary information technology, it is feasible to procure extensive data clusters and personalized analyses via information systems integration. Limits to the capacity of usable information, however, are set by the human capability to receive and interpret information. The main problem in utilizing MAC is no longer how to get

[11] Enterprise Information Systems

[12] Enterprise resource planning. Integrated software, its purpose to manage and supervise all the company's value chain activities (Chapman and Chua, 2003:75)

data, how to measure it, or how to technically analyse it, but how to retrieve valuable information from the enormous amount of data available. The amount of management information should not exceed the manager's ability to disseminate it, otherwise the quality of management and the expected returns on the expense incurred will suffer (Reiljan and Kasemets, 2001; Üksvärav, 2004). Empirical research (e.g. Hofstetter, 1993; Lewis, 1993) has proven that the majority of information systems collapses have not been due to technical errors, but rather to the information user's failure to understand the system's function which, in turn, may be due to a mismatch between the system and its user.

Managers have frequently grappled with information excessive amounts of which has been ineffectively organized and communicated and therefore rendered unintelligible. Yet an information system can be very sophisticated and contain a lot of data. If receivers either fail to identify the right information, interpret or use it, or they merely find them irrelevant (Pärl, 2007), the whole system becomes void and will soon disintegrate (at least informally). Research has proved that once the decision-makers have received too large an amount of information simultaneously, the information management process will be delayed or it will lose its focus. As a consequence, the managers will face difficulties in selecting the most relevant information for themselves (Lewis, 1993; Stocks and Harrell, 1995).

Based on such problems of selecting the most relevant information the 'novelty' control tools came into use, including the Balanced Scorecard (BSC) and the concept of key performance indicators[13] (Kaplan and Norton, 1992; 1996). Thus the more data is compiled, the better it can be organized to meet the needs of the information consumer. In other words, the information provided corresponds to the recipient's ability to receive it. Three major changes have therefore taken place in the IT and data processing environment:

- the volume of data has grown exponentially;
- information transfer and processing is faster;
- (almost) everyone can be involved in the data collection and usage process.

The aforementioned changes – stiffening competition and shortened product lifecycle – divested attention away from planning, operative management, and cost reduction towards strategic management in MAC (see Figure 3). Organizational strategy indicates the corporate position with regard to competition (Gordon and Loeb, 2003). Managers have become increasingly interested in information on the performance of their competitors (Mendoza and

[13] Indicators are measurements produced as substitutes for measuring complex conditions relevant for managerial attention (Catasus, et al., 2007:508)

Bescos, 2001; Pärl, 2006). Thus strategic management requires that competitor performance is analysed[14] and interpreted, and the vision for the company's future success is provided by mobilizing its existing competitive advantages (Bromwich, 1990; Shank and Govindarajan, 1998).

In addition to changes in IT systems in recent decades there have been significant changes in the business environment and even in business philosophy. Decades ago it was common to use the term 'manufacturing activities' (see, for example Hopwood, 1990) for operational level processes in the organization; today we talk instead about 'service activities' which encompasses offering the customer goods and services which they (might) need. This philosophical shift connects the external marketplace with every level of an organization, and, in contrast to earlier eras, even to operational level actions.

In such fast changing market conditions, operational level employees are directly connected with customers and they are the first to obtain information on market changes in the external environment. In the manufacturing activities model, the manufacturing processes were separated from the market environment and information (Hopwood, 1990; Robson, 1992) so higher level managers knew how to produce one product or another. In the service world, the employee who communicates directly with the customer gathers everyday information on the market and internal processes and the one who best knows how to serve the customer. Retailing activities are becoming related to wholesaling and the manufacturing/service process.

On the one hand this changed business environment demands more complex and complicated data processing and analysis methods, while on the other hand, the Internet and other IT solutions allow the addition of a wide variety of users of MAC to monitoring their own actions, or make *acting by accounting* (or by information) more important on every level. There are thus many different users of MAC with different backgrounds, varying information needs and aims in organizations.

By projecting the evolution of MAC on the time axis in Figure 3, one can conclude that, owing to its evolutionary changes over a relatively short time span, MAC has been established as an integral component in corporate management, providing information, knowledge and operability. There is no need to believe that the time-honoured and traditional roles of management accounting (e.g. cost accounting) will be cast aside. Rather, in the period

[14] Competition analysis – compiling and analysing information about one's competitors in the market, with an objective of establishing the company's strategic position to achieve the company's profitability (Gordon and Loeb, 2003:96)

in which MAC as a supervisory tool for cost accounting and financial control (*acting at a distance*) was expanded to include data analysis for strategic and process management (including more and more *acting by accounting*), it became an integral part of management. Consequently, it is essential to note the cohesion between the MAC functions and the tasks to be accomplished. The daily corporate management activities and MAC essentially draw on cost accounting both for planning and controlling (stage 1), and for analysing data as necessary for effective strategic and process management (stage 4).

To sum up, for decades the aim of MAC has been to make things visible at a distance for others (as system for *acting at a distance*). It has increased the amount of information generated, which means more translations or settings are needed (Robson, 1992). The situation has therefore changed and MAC is now more of an instrument that can guide actions at every organizational level (as system for *acting by accounting*). In companies there are many different users with different backgrounds, varying information needs, and aims. This makes the communication role of MAC more important than before. For many years MAC has not just been a subsystem operated by MA specialists; using contemporary IT systems and the Internet, it is applied by all members of the organization. This means that more than being merely an isolated (top) management function, MAC is viewed as a holistic mediating and dialogical instrument in the field, integrating all levels of the organization. Additionally, operative level managers and almost all employees are important collators and users of MAC.

2.1.3 The role of communication in MAC

Several researchers have claimed that the functioning of MAC is influenced by social and behavioural factors rather than technical or 'numerical' factors (e.g. Hopwood, 1974; 1986; 1990), that is the usefulness of MAC is dependent on organizational actors. According to Wickramasinghe and Alawattage (2007), Max Weber (1949) was the first person to emphasize the importance of social actors who create social reality and the need to focus on individuals rather than social structures. The same idea was shared by the social constructivist school (Derrida, Foucault, Lacan) stating that organizational reality is constantly socially constructed and transformed, and provided with meaning on the basis of a multitude of managers' and employees' personal reflections and communication (see e.g. Taylor et al., 1996; Hodge and Kress, 1991).

Focusing on individuals, we can distinguish two general factors in using MAC for achieving actions which correspond to organizational goals: goal and interpretation ambiguity. First, the contribution of MAC to the organization depends on how people perceive its purpose (Pihlanto, 1994; 2009; Kihn, 2011) or how they make sense of it (see Table 1) because there are no independent meanings of social categories such as 'organizational goal' and 'organization'. Individuals have different goals and reasons for using MAC because organizations are composed of individuals, each of whom has their own purposes (Simon, 1954; 1964; Cyert and March, 1963). For instance, instead of serving internal decision or control needs, the figures provided by management accountants may be used for merely cosmetic purposes, projecting an image of up-to-date management practice. Or they may be used as a substitute for action, to deceive external parties into believing that a major transformation is occurring where none in fact exists (Kasurinen, 2002; Malmi, 1997; Vaivio, 2006). For example Hopper and Powell (1985) argued that accounting and control can be used to maintain the interests of individuals, reflecting that accounting plays a political role rather than providing legitimate solutions to organizational problems. Therefore management accounting figures may look like a premeditated, carefully analysed decision. Therefore MAC often plays a significant role in the construction (Hopwood, 1990) rather than a mere reflection on or description of the reality.

Second, if the aim of using MAC was similar for people in the organization, for instance improving the company's economic results, people might behave differently because they would interpret differently:

- the information
- the reality of the organization
- their role in that situation and
- the results of their actions.

According to Vaivio (2008): "Budgets and performance measurements can produce unintended consequences if they are misunderstood" or we could say if they are understood differently. Actors interpret their own and others' actions in the context of their goal and 'reality'. As Derrida states, reality is not something "objective and out there" (as cited in Hatch and Cunliffe, 2006). Reality is constructed by actors in the organization and in the organization every actor has their own reality. Different realities give rise to the actors' own interpretation of the situation (Lukka, 1988; Pihlanto, 1994) and therefore they may act in different ways.

Table 1 Instrumental and sociological view of MAC

INSTRUMENTAL VIEW OF MAC	**SOCIOLOGICAL VIEW OF MAC**
MAC is a technical calculative system	MAC is a socio-technical process
MAC is a static system	MAC is an on-going, changing process
There could be one effective MACS	MAC is situational
Causal relationships among components	Complex relationships
The aim of MAC is to transfer information	The aim of MAC is sense making by communication
Information is used for formal control and costing calculations. The aim of information is to control others - *acting at a distance*	The aim of sense making for guiding actions, achieve employees´ own ends - *acting by accounting*
Reports own meaning and describes (reflects) reality	Communication is the meaning and reality generation process in MAC

The reality of each actor is dependent on different factors, like their personal historical basis for understanding (Pihlanto, 2009; Davila, et al., 2009), power relations and values (Boland, 1993; Ansari and Bell, 1991). Ansari and Bell (1991) for example, demonstrated that based on their cultural values, people interpret and create values and meanings for controls, as opposed to their managers' expectations of controls. According to Boland and Pondy (1983) budgeting can create an everyday language by which people in organizations attach meanings to the budgets and their implications for organizational functions.

According to mainstream social constructivist views, each individual actor has their own objectives and an organizational objective is (somehow) constructed from these individual actor objectives (Simon, 1954; 1964; Cyert and March, 1963). According to the relational constructivist view, organizational goals and reality are the result of multiple dialogues between organizational actors and their mutual creation and co-emergence in ongoing processes. Consequently, meanings are the result of the construction process of individuals who act upon, and interact with, those social categories. MAC thus lends itself to multiple uses (e.g Bariff and Galbraith, 1978; Dent, 1986; Kihn, 2011) and the unintended consequences of accounting systems (e.g. Hedberg, et al., 1976; Burchell, et al., 1980; Kihn, 2011). The relational constructivist view can enable and support multiple local forms of life

rather than imposing on others one dominant rationality (or one 'right' MAC) (Hosking, 2011).

The aim of MAC is the generation and coordination of actions in order to fulfil organizational goals (set by top management). If the dialogue mediated by MAC does not result in actions consonant with organizational goals, we cannot talk about the successful use or work of MAC. Consequently, MAC is a socially constructed process in which communication between people creates interpretation and, as a result, coordinated actions. The main features of the social-constructivist MAC approaches are:

- MAC is a socially constructed, situational, dynamic process
- The aim of MAC is to generate organizational reality and coordinate actions
- MAC is used to generate actions via communication

Without communication, it would be impossible to imagine any MAC processes. Communication and interpretation are crucial for MAC to work, providing 'performance measurements'. As long as reports or indicators are not interpreted by actors 1) to make sense of the situation of they face, 2) to exchange information about this situation and 3) to consequently go on acting in their own preferred way in the situation, then figures, scorecards, indicators and diagrams are only 'things', objective artefacts without meaning, ink on paper, figures on curves. They become instruments, engaged in and transforming action as soon as they are interpreted by actors in the course of communication (Lorino and Gherke, 2007).

Communication is a basic process, taking place continuously as a social process within and through MAC. Communication is the process by which organizations (and the motives we attribute to them) are formed, deployed, modified and achieved and therefore it must not be rendered epiphenomenal. Consequently organizations are constructed (created) through communication, with organization and communication reciprocally producing each other. In other words, concepts such as dialogue are grounded in this social-constructivist perspective on organizations, concurrently implying that MAC processes are equally socially constructed and dialogue based (see e.g. Hodge and Kress, 1991; Taylor et al., 1996; Macintosh, 2002; Norreklit et al., 2006). In other words, events, actions, agents, situations, systems and even material/technological artefacts are constituted in discursive practice (Orlikowski, 1992), and these discursive practices are fundamental in constructing organizations (Kuhn, 2008:121).

As Eilon states (1968), communication is a vehicle for control, by which behaviours can be coordinated, or a dialogue made possible with others. In other words, communication

in MAC creates and coordinates action through which organizations fulfil the objectives set by (top) management.

2.1.4 MAC as a conversion self-reference model

John Dewey argued in 1916 that society is not only maintained by communication, but also constituted by it (cited in Ihlen and van Ruler, 2009). Without communication socially organized reality cannot exist. Any creator, while creating their work, communicates both with the audience and with themselves. Moreover, if we talk about communication in MAC we have to remember that two levels of communication exist concurrently: the individual and the organizational (or institutional) levels. On both levels we could, for theoretical-analytical reasons, distinguish the inter-communication and auto-communication processes.

The communication processes in organizations can be treated as a communicative (dialogue with other) and auto-communicative (dialogue with self) complex (Lotman, 1977; (1984) 2005; 1990; Broms and Gahmberg, 1983). In the organization what at an individual level manifests as a process of communication and a dialogue between actors at the organizational level can be seen as the auto-communication of the organization (that is self-reference) (Torop, 2008) and as a dialogue of the organization with itself, thus reifying and legitimizing the organization to itself (Broms and Gahmberg, 1983). Looking at MAC as a system in the organization, one can therefore say that MAC as the system is the tool for the auto-communication of the organization. The aim of MAC is to create the self-reference of the organization which is important to maintain the organization as a system (see also, Luhmann, 1990; Christensen, 2004).

Self-reference is a process of auto-communication and may result in self-modelling. Through auto-communication organizations establish and affirm their own self-images or their own cultures. Through this process, organizations maintain and construct or develop themselves (Lotman, 2000; Torop, 2005). Self-modelling is a powerful means for the end-regulation of an organization, offering a systematic unity and largely defining its quality as a reservoir of information (Lotman, 2000). All the texts (or messages) of different organizational spheres and all the reviews, reports, meetings and conversations make up the organizational reality as a whole, offering the organization an opportunity for self-control and learning, also enforcing certain official or commonly accepted ways of perception and understanding. For example, Broms and Gahmberg (1983) and Christensen (1997) show that

strategic plans and budgets often serve as auto-communicative devices which corporations use to tell themselves what they would like to be in the future. The purpose of these auto-communicational planning tools is to focus the mind, to pursue objectives and generate enthusiasm (Broms and Gahmberg, 1983:482).

Lotman (2000 (1970)) distinguished three different types of self-models namely the scientific or sub-typing model, the bookkeeping model and the conversion model. Scientific models are self-models that exist as ideal organizational self-consciousness separate from reality and are not oriented towards it. Such models are sub-typing models, in which subcategories of the overall schema are formed to deal with new and discrepant information. The aim is to describe or construct new and ideal situations or theories.

According to Lotman (1970), there is another type of organizational self-model with results and goals very close to (actual) reality. This model is called the bookkeeping model, and it features gradual changes to the codes of the existing culture to account for discrepant information and encounters. Such models are designed for understanding the existing organizational reality. For example, financial accounting aims to provide a picture of the existing organizational reality, to measure and reflect actions and their results in the organization. As an example, Morsing (2006) states that when companies express themselves in an annual report as an ideal corporate 'we', for example, by describing themselves as a "stakeholder corporation", they show that they adhere to institutional expectations of contemporary organizations and that they can therefore expect to be seen as legitimate partners in society.

Third, there are organizational self-models intended to change a situation that differs from the ordinary situation or practice (Lotman, 1970). This is the conversion model, in which a meaningful encounter with discrepant information can change an organization's accepted goals, modes of action and culture. Imagine that the company board sets higher or otherwise different targets for the forthcoming period, like an improved market share or greater profitability. Starting from the baseline of the present performance, the organization has to change something to reach the target. Faced with changing goals, and being auto-communicative, an organization tries to improve the quantity of information about itself to promulgate a better understanding of the situation (Torop, 2008). For example, it may include non-financial data in the MAC system, collecting data from the outside environment – about its market, competitors, best practices – or more detailed data from inside, like detailed information about products, departments and processes. It leads to changes in the instrumental

or technical side of MAC and, by increasing the quantity of information, it tries to improve its quality and so to generate change in itself.

To improve organizational performance, first of all information shared by MAC systems has to make changes in patterns of actions – meaning changes in the understanding of the situations and the context – and that means changes in the quality of the information. According to Broms and Gahmberg (1983:485) "this change leads to a displacement of context and thus to the introduction of a code which turns the original message into a new one". As shown by Catasus, et al. (2007), indicating alone (i.e. the changes in quantity of information) has little relevance for action: reports and figures themselves do not affect actions. To affect actions, indicators have to be connected to some amplifying element (see Figure 4), or as Catasus, et al. (2007:516) state, "the production and transmission of indicators influence acting if they support the issues that receive the most esteem inside and outside the organization". Consequently, inter-communication between people mediated by MAC must include an element which engages the auto-communication process of receivers and is thus able to make qualitative change(s) in the person or group in question (Broms and Gahmberg, 1983).

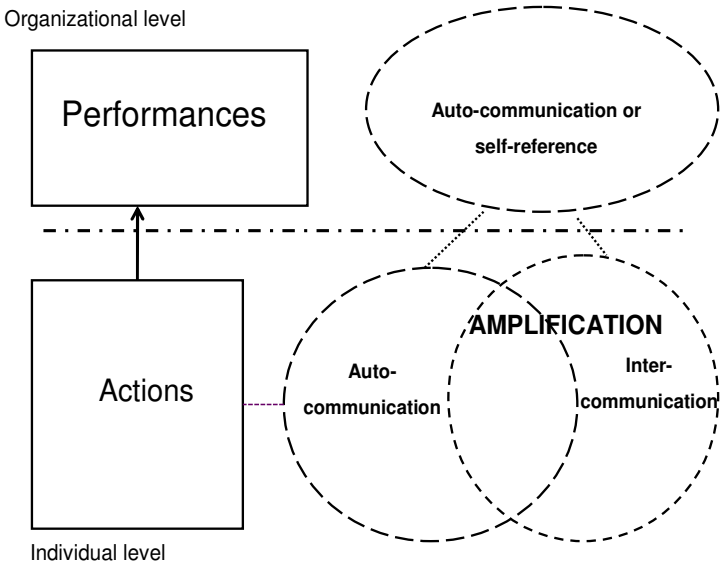


Figure 4 Conversion self-reference model of the organization[15]

[15] Inter-communication and auto-communication in different levels are marked with broken lines, to accentuate the hermeneutic stance of these processes. The results of these processes – actions and (financial performances) are better seen, sometimes even like tangible systems (like MAC instrumental side), so the result of the communication and causal connections between actions and organizational results are marked by solid lines.

To effect changes in the results of organizations requires changing people's understanding, creating a new (or different) understanding of the same information. All these changes increase uncertainty. Most people are averse to this, preferring stability and a safe environment (Knight, 1921). As a result, the MAC used in the company needs, on one hand, to provide information and knowledge about aims, processes and actions, but on the other hand to have enough power, authority, or esteem to overcome the fear of uncertainty and aversion to change, while at the same time making the activities guided by this information look interesting and creative to receivers (Broms and Gahmberg, 1983). Thus there are two elements in MAC messages: information (a quantitative element) and amplification of the information (a qualitative element) to make the desired actions seem important, interesting, and less scary. Both are necessary to drive changes. More usually research covers the relationships between management accounting information and rewards (for example, Wallace, 1997; Ittner and Larcer, 1995).

The difference between the bookkeeping and conversion models is important because organizational communication differs between static (for example, a monopolistic environment), and dynamic (for example, a free market competitive business) organizations. The aim in the former (situation) is primarily to preserve the status quo and merely to describe the reality (the aim of financial accounting). In the latter organization, the aim of the model applied is to change the reality by affecting actions. While one records and values the situation at a given moment (using accounting without amplification components), the other is directed towards changes and development (the conversion accounting model with amplification like MAC). The aim of MAC in dynamic organizations is to change a reality that differs from the ordinary situation or practice. In light on information mediated by MAC, actors in the organization have to change something in their pattern(s) of actions in order to reach a target. Changes are generated by giving the actors information about their activities, organizational processes, aims and strategies with sufficient amplification.

To conclude on the role of amplification in MAC – actions do not depend so much on the power of superiors but require an amplification of important information to assist in finding the 'right' way of acting. In practical terms it is important to analyse and understand how the elements of amplification are produced and if there is sufficient amplification in specific situations for MAC to work successfully. The empirical part of this research tries to understand the amplification element in MAC in a real situation.

The discussion of the current study started from the concept of MAC as a socially constructed, situational, dynamic process aiming to generate organizational reality and

coordinate actions via communication. We perceived that communication constructs organizations and is an important tool in (the) socially constructed MAC. What then does the term 'communication' mean and how is it possible to research such a complicated process in MAC? Section 2.2 will discuss the communication phenomenon and section 3.2 will refine the communication theory and model (Jakobson, 1956) for the MAC field.

2.2 Communication approaches

In previous chapters we considered communication as a central part of the social view of MAC. But what is communication? According to Fiske (1990:1) "communication is one of those human activities that everyone recognizes but few can define satisfactorily." Communication has been defined (ibid.) as social interaction between individuals which creates social reality and actions through messages. Different schools use this definition, though they interpret the meaning of communication differently because they interpret the 'reality', 'interaction' and 'message' differently. This section introduces the dialogical view of communication (Derrida, 1978; Lotman, 2005 (1984)) used in this thesis[16]. In light of this view, communication theory (Jakobson, 1956) with cultural semiotic lenses (Lotman, 1990, 2005 (1984)) is described, analysed and refined for the MAC field in Section 3.

2.2.1 The dialogical view of communication

The relational constructivist school sees communication as an ongoing social process of the de- and reconstruction of interpretation (Derrida, 1978), as a process in which the communication participants (sender, receiver) constantly influence each other (Lotman, 2005 (1984)). They (re)create particular language games together with their related experiences which we then take to have their own independent existence, in other words, to be how things 'really are' (e.g. Bohm, 2004). This is a dialogical view of communication and the individual. Sampson wrote at length about what he called 'the dialogic turn' which he saw as celebrating the 'others' (rather than the 'self') (Sampson, 1993:97):

> "What stands out when we look at what people do together is language as communication action. Because we have become so intent on searching deeply within

[16] The brief overview of the basic non-dialogical view of communication, see Appendix 3.

> the individual's psyche for the answers to all our questions about human nature, we usually fail to see what sits right before us, a dominating feature of our lives with others: conversations. It is time now to take conversations seriously."

Sampson (1993) singled out four key features of conversations:

- First, they go on between people; even when people are alone 'their thinking occurs in the form of inner conversation or dialogue'.
- Second, conversations are social because they involve signs that are generally shared by a particular community.
- Third, conversations imply addressivity – they are addressed by someone to (an)other(s) and they are what we humans do, that is, conversation is action (rather than about action).
- Last, conversations include verbal and non-verbal aspects, symbolic and written material.

Sampson says: "The argument, in short, is that we gain a self in and through a process of social interaction, dialogue, and conversation with others" (Sampson, 1993:106). By being constituted in conversation each person is therefore a multiplicity and thus multiplicity is the norm (Lotman, 2000; Hosking, 2011). When looking at the exchange as a transaction, we need to look simultaneously at both parties involved (see also Jönsson, 1998; Macintosh, 2002; Weick, 1995). Or, as stated by Lotman (2005 (1984)), "Meaning without communication is not possible. In this way, we might say that dialogue precedes language and gives birth to it (p. 218)." These dialogic, conversational processes are processes in which all aspects of relational realities are ongoing, emergent (re)constructions. Producing and reading a text are seen as parallel, if not identical, processes in that that they occupy the same place in this relationship (see also, Macintosh, 2002).

Communication, thus, has no pre-given subject matter. Although it is organizational in the sense of coordinating and controlling activity and knowledge, communication has no motives of its own and evinces no unitary logic. The dialogue-based view is concerned with how messages interact with people in order to produce meanings. According to this view, communication is not strictly a one-way process with direct and linear effects (as in Shannon and Weaver´s cybernetic model of communication)[17] , but it recognizes the inherent complexity of the communication process and will enhance our understanding of a variety of communication exchanges.

Communication works through language. If we talk about communication, we have to talk about language because communication cannot exist without language. Accounting is

[17] For more on the critique and comparison of the Shannon – Weaver model (1949) and Lotman´s dialogical communication see: Machado, 2011.

frequently referred to as a language of business (Belkaoui, 1978; 1980; Macintosh et al., 2000; Ahrens and Chapman, 2007), and both managers and management accountants use business language as well as other languages (for example, a natural language like English) in the MAC communication process to construct meanings and organizational reality. From this prospective, what happens to and within organizations can be seen as a phenomenon in and of language and analysing it for its textual properties using methodologies from literary theory, linguistics and semiotics (e.g. Macintosh, 2002).

2.2.2 A semiotic framework for research of communication – sign and code

Faced with the task of analysing strings of interaction of various dimensions and complexity communicative, we need to ask ourselves whether we have the right analytical tools to describe such phenomena. Do we have the right levels and units? Do we have the right methods for collecting 'data' that correspond to such units? And do we have units that can capture the full range of phenomena that our empirical material could reveal? If theories and methods based on mathematics, economics and information sciences have not provided tools with which to understand processes in MAC, we have to turn to other tools. In this study we turn to methods from semiotics.

The subject of semiotics is any object which acts as a means of linguistic description (Lotman, 2005 (1984): 206). Originally a subfield of linguistics (Eco, 1986), semiotics has come to be more prominent primarily in text and media analysis, and then in biology, computer engineering, control engineering (Meystel, 1996); it can be applied to management instruments as signs (Lorino and Gehrke, 2007). The reason for using semiotics in communication research follows Hodge and Kress (1988:1): "…semiotics offers the promise of a systematic, comprehensive and coherent study of communications phenomena as a whole, not just instances of it."

According to Graham (2008:757), pioneers in linguistic or literary approaches to accounting research include Belkaoui (1978; 1980), who asserted that accounting is a language and explored the cognitive implications of using that language, Lavoie (1987), who explored the hermeneutics of economic decision-making with accounting information, Arrington and Francis (1989), who introduced postmodern linguistic theory to the accounting literature and Boland (1989), who showed how a hermeneutic approach could break down the dichotomy between subjectivism and objectivism. In this present research we use semiotics as

a methodology to study the hermeneutic process in MAC and to understand and study the communication process in MAC.

As pointed out in Section 2.1.1 accounting makes visible things which happen on the other side of a wall or the world by translating real-world action into abstract (accounting) language using inscriptions (see Latour, 1987; 1988; Hopwood, 1990; Robson, 1992). The term inscription refers to the material and graphical representations that constitute the accounting report: writing, numbers, lists, tables (Robson, 1992:685). Inscriptions are signs which are used in the mediating process of accounting.

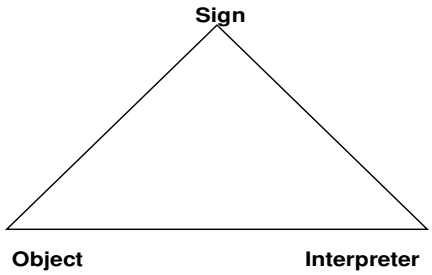


Figure 5 Peirce's elements of meanings of sign

According to Peirce (1839 - 1914), semiosis is the process of communication by any type of sign. For him a sign was anything that stood for something (its object), to somebody (its interpreter), in some respect (its context). Peirce explained sign processes in terms of triadic relations (see Figure 5). Each of the three points of a triangle is closely related to the other two, and can be understood only in terms of the others. In other words, a sign is anything that stands for something else for some community. A sign is something physical, perceptible to our senses, refers to something other than itself and depends upon recognition by its users that it is a sign. The sign is the *relationship*. Signs are not meaningful in isolation, only when they are interpreted in relation to each other.

The meaning of a sign depends on the code within which it is situated, in other words, codes provide a framework within which signs make sense. The context, both the physical referents and the social conditions of semiosis, is crucial for communication to occur.

Graham (2008:758) developed sign theory for accounting based on the works of Saussure, Baudrillard, and Macintosh, and points out that the accounting sign is more complicated than other signs in everyday life. Here sign has some 'real' or objective referent (for example, the word sign cat refers to a quadruped of the feline species) and we like to believe that in traditional accounting theory signs have an objective referent as well: 'net income' measures a real surplus of a company's economic activity. Macintosh et al. (2000)

argue, however, that accounting signs have lost their objective referent. According to Baudrillard (2001a; 2001b) accounting signs take their meaning only from their relationship to other signs in the communicative system. Macintosh et al. (2000) argue that accounting signs precede the reality they purport to represent, creating that reality through their sign value (see also for example Hopwood, 1990:15): accounting signs have gained independence from reality.

The accounting sign has a specific form (Graham, 2008:761) it is an inscription (Latour, 1987; 1988; Robson, 1992). Inscription means the material and graphical representation that constitute the accounting report: writing, numbers, lists, tables (Robson, 1992:685) in that accounting information consists of a system of equations. The accounting sign is 'Label = Value', for example 'Profit = $100,000'.

Additionally, these signs are arranged according to the logic of the double entry method. Certain events in the course of business are selectively recorded in variations of the form 'Debits = Credits'. This is an equation of equations, each side consisting of one or more signs in the form ''Label = Value". The combination and recombination of the signs and the transactional form gives rise to other equations at the level of the financial statement proper, such as 'Assets = Liabilities + Owners' Equity' and 'Revenue – Expenses = Net Income'. The sign-equation suggests finality as it seems to contain its own referent in the monetary amount.

Yet the monetary amount is stated as a sign of value. It takes its meaning from its relationship to other signs of value, for instance, the values that were assigned to that label in the budget. It also takes its meaning from its relation to other signs of value in the same set of MAC reports, such as the meaning of variable costs in relation to sales volume. These meanings are heavily contested, and are not strictly related to the number assigned by the producer of the accounting sign (Graham, 2008). As such, the code system to interpret accounting signs in MAC communication process is very situational and may vary even in the same case in the same moment.

Accounting as the language of business is a specialized form of discourse. It relies primarily on numerical representations because it is codified – where codified means that accounting is cast into systematic forms (MAC) that tell people how to make things happen.

A code is a system of meaning shared by the members of a culture or subculture. It consists both of signs and of rules or conventions that determine how and in what context these signs are used and how they can be combined to form more complex messages. The production and interpretation of texts depends upon the existence of codes or conventions for communication (Jakobson, 1971).

But codes are not simply 'conventions' of communication but, rather, procedural systems of related conventions which operate in certain domains. Conventions play an important variety of roles in communication. At its most formal level it can describe the rules by which arbitrary signs work. For example, there is a formal convention that the sign cat refers to a feline animal and not an article of clothing; or that a red light on a set of traffic lights means stop; or, for example, if the amount of profit is smaller than the projected profit in the budget, it means reduced salaries in the coming months.

Codes and conventions constitute the shared centre of any culture's experience. They enable us to understand our social existence and to locate ourselves within our culture and our organizational culture. Only through the common codes can we feel and express our membership of our organization. Using codes, whether as sender or receiver, we are inserting ourselves into our organizational culture and maintaining the vitality and existence of that culture. An organizational culture is an active, dynamic, living organism only because of the active participation of its members in its codes of communication (Lotman, 2000).

One specific factor in understanding MAC codes is that they are professionalized: the instruction codes are professionally constituted and regulated. Only the actors from the organization who are able to use both professional knowledge (accounting and production process codes) and the organizational cultural code can fully encode MAC texts. Any decoding in the MAC communication process (for example, deciphering the meaning of a profit/loss report) takes place within the scope of professional (accounting and production process) practice and cultural context.

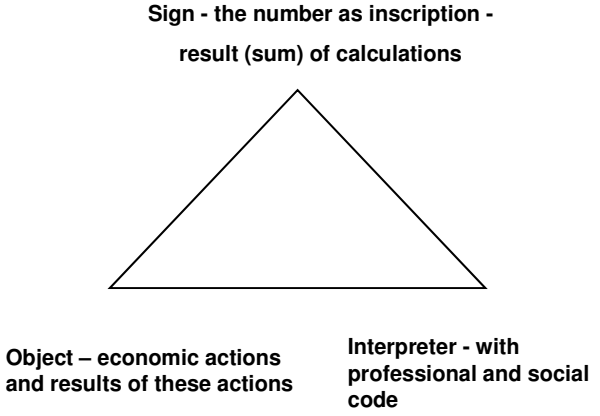


Figure 6 Elements of meaning of MAC sign

To conclude, the meaning of a sign depends on the code within which it is situated (see Figure 6), in other words, codes provide a framework within which signs make sense. The MAC sign has a specific form of sign:

- MAC signs could be arranged according to the logic of the double entry method, which is an equation of equations – each side consisting of one or more signs.
- MAC sign takes its meaning from its relationship to other signs of value of the same or some other report.
- The code system to interpret MAC signs is very situational and may vary even in the same case in the same moment.
- MAC is codified. It means that MAC is cast in systematic forms that tell people how to generate economic actions.
- MAC code is professionalized, its 'instruction codes' are professionally constituted and regulated.
- MAC sign is very situational – only the actors of this organization who have professional knowledge (of both accounting and the production process) can fully encode MAC texts in the sense of setting or amending the codes.

Semiotics sees communication as the generation of meaning in messages by its participants. Models of meaning do not distinguish between interpretants of the text. The interpretant is the mental concept of the user of the sign, whether this user is the sender or receiver, the writer or reader, the MA specialist who produces a report or a manager who uses the report. Decoding is as active and creative as the encoding process in the communication. The efficiency of communication requires the use of a common code by its participants. The meaning of a number, word, picture, photograph or other sign depends on the code within which it is situated. Codes provide a sense-making framework. Codes organize signs into meaningful systems and transcend single texts, linking them together in an interpretative framework. Codes are therefore interpretative frameworks which are used by both producers and interpreters of texts. Consequently, when reading texts, we interpret signs with reference to what seem to be the appropriate codes.

2.2.3 The role of misunderstanding in the communication process

If we understand signs as relationships, language is not only content; it is also context and a way to re-contextualize content (Deely, 2009). Although managers must use language to construct meanings as part of this continuous process, the words used do not have fixed, stable

meanings. Instead, as signs, they take on meaning only within the context of the communication between organizational members in their effort to construct that same organizational reality. Beusch (2009) and Jordan and Messner (2010) offer recent studies showing that in an organization many different languages as well as texts[18] are read and used simultaneously. Additionally, with different languages and texts, people have to translate them in order to understand each other.

The process of translation takes place between two messages (texts), the message of a sender and the message of a receiver which are generated reciprocally and simultaneously. Lotman claims that there is always more than one text, more than one code in the dialogical communication (Lotman, 2005 (1984)). A consequence is that in every communication situation there are at least two different texts, and at least two different languages in use (Lotman, 1990). There can be no such thing as a single language or single culture. Translation is not only translating words from one language into another, as from English to French, but is a universal and more complex process. The universality of translation comes from its connections with thought processes. According to Lotman (2000), all communication requires some form of translation in order for meaning to be potentially generated. As he affirms, "…the elementary act of thinking is translation" (Lotman, 2000:143).

Jakobson (1971) states that it is impossible to generate true equivalents in the translation process. For example, Beusch (2009) shows how the technical and human (soft) world uses different languages and how the physical world of product materials for cars and trucks links with the abstract world of finance and accounting models (bookkeeping, and budgeting) and how actors in these different worlds have difficulties understanding each other. He concludes: (ibid: 47) "what appears rational to some actors [in one world] was still irrational to others [in another world]".

Meaning is not an absolute, static concept to be found neatly parcelled up in the message. Reading is the process of discovering meaning that occurs when the reader interacts or negotiates with the text. Meaning is the result of the dynamic interaction between sign, interpretant, and object (see Figure 6): it is historically located and may well change with time. Therefore, the meaning of the report does not exist independently of its readers. Continuing this notion, both parties – the producer of the report and the user (the manager) – are important in creating meaning from the report or analysis and, through this process, an understanding of the reality of the organization.

[18] Texts for example are reports, everyday situations etc. See Section 1.1.

It places the MAC user and MAC producer on an equal footing within MAC. Accountants make interpretative readings of an organizational situation as a basis for writing records and producing reports. Accounting reports, in turn, are read by managers and others as they try to understand organizational situations. The interpretative schemes provided by MAC are present only as actors draw upon them in a particular situation.

The semiosphere can be defined as the space of meaning generation. Indeed, there is only one way to generate meaning – via multiple simultaneous descriptions, that is simultaneously to understand and not understand, or to recognize and not recognize one and the same thing (Lotman, 2001).

Juri Lotman (2001 (1992)), describes a paradox when describing the assumptions for communication: if two individuals are absolutely different from each other, if they do not have anything in common, then meaningful communication between them is not possible (see Figure 7).

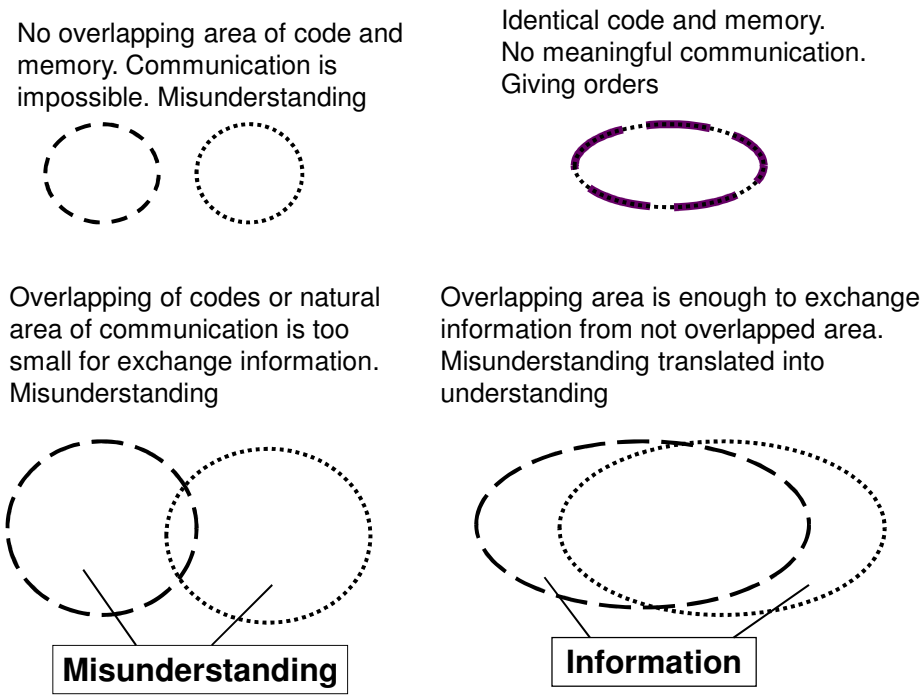


Figure 7 The role of differences and similarities in communication
Source: Lotman 2001 (1992); composed by the author

However, two individuals identical in every way – with the same set of memories and the same code system (the semiotic space) – would understand each other ideally, but the merit of the information transported is minimal and the information itself is constrained. The mutually identical sender and receiver understand each other ideally, but they have nothing to talk

about. Consequently in this case communication is equally impossible – actually, it is possible, but there is nothing to communicate. This model or case is suitable for giving orders, but not for normal communication. Meaningful communication between people assumes that the sender and the receiver are not identical. This is the situation in which understanding is a process that on the one hand creates differences and, on the other hand, similarities (see also Torop, 2005; Kull, 2005).

In order to communicate, participants need to simultaneously have both different and overlapping areas in their semiotic spaces (Kull, 2005). The overlapping space of sender and receiver becomes their natural area of communication. At the same time the areas that do not overlap, at first sight seem to be switched off in the dialogue, and look to form an area of misunderstanding. However, if communication in an area of overlap is trivial, there is nothing new for the communicators. On the contrary, the area that does not overlap is that which contains new information and is the source for the new code for the other participant. That is, the non-overlapping area, in other words, the area of misunderstanding, is extremely important for a meaningful dialogue. In this way the translation of the information from the misunderstanding area becomes the bearer of information. Communication is easy in the area of overlap between people who are similar, but between the different codes and languages (for example, accounting and engineering) it is difficult and creates ambiguity. Or as Lotman (2005 (1984)) points out: "The presence of two similar but simultaneously different partners in communication is one of the most important, but not the only, condition in which dialogic systems originate. Dialogue includes within itself a reciprocity and mutuality in the exchange of information (p. 216)."

The dialogue-based concept of communication, or as Lotman(1990) distinguishes it, cultural semiotics, investigates the discrepancies between the 'input' and 'output' texts in the model 'text – person – text' (see also Section 2.2.1). In this model these two texts are never the same. The communication in the sense of cultural semiotics or the dialogical view of communication is the process of meaning generation from one text to the other. It means that there are at least two different texts and codes in the meaning generation process (Lotman, 1990; see also Machado, 2011). It means that there is the transformation of codes which takes place in the interaction process, that is, coding-decoding-recoding (Machado, 2011:91). By this transformation process the code will change, or, in practical terms, information (the accounting inscription) takes on a new meaning (see also Section 2.1.4). In other words, the meaning of the one and the same sign (information or number in the reports, for example), have more similar meaning for different communication parties in the communication

process. It means that it does not consider misunderstandings to be necessarily evidence of communication failure or noise as it is in Shannon´s communication model. Furthermore, the misunderstanding and breakdown (or noise) in communication as a cultural semiotic process are as important as understanding. It means that the meaningful communication assumes transformation of text and codes. As described by Lotman (2001 (1992):16): "misunderstanding is as valuable a meaning-generating mechanism as understanding". Or as Kull (2005:185) put it: "Only those who use at least two codes, two languages, etc., can be a part of the semiotic world, the semiosphere". But the same time, "in order to communicate, participants not only need to share the semiosphere, but much more – their semiotic spaces have to be similar in several aspects. And there exists a trend of increasing similarity between regular communicants (Kull, 2005: 186)".

2.2.4 Jakobson´s model of communication

In order to understand the process of communication one option is to use earlier work and fall back on one of the sources of Giddens' structuration theory (1979:18-20)[19], the work done by Roman Jakobson (1896 - 1982). In the words of Lanigan (2005):

> "All contemporary discussion of communication derives from a fundamental understanding of Jakobson´s work. It is no exaggeration to say that understanding the main positions and counter-positions of any contemporary author within the domain of the Philosophy of Communication is grounded in the use of Jakobson´s definitional theory. Rather than a "theory" in the limited sense of a model, Jakobson´s theory is a complete account of human communication from the microscopic to the macroscopic level of application. As such Jakobson is the only person to have offered a legitimate Theory of Communication with both eidetic (theoretical) and empirical application, i.e., a Communicology (p. 12)".

Of particular relevance, and in response to the epistemological criticism of Giddens' structuration theory, Jakobson's model of communication (1956) (Figure 8) is useful to move to the epistemological level. Moreover, it is beneficial to study how communication works in MAC. Jacobson's model moves beyond the basic linear transmission model of communication and highlights the importance of codes. According to Jakobson (1971), the production and interpretation of texts depends upon the existence of codes or conventions for communication.

[19] For more on the critics of communication in Giddens' theory see Pärl, 2011

Jakobson starts by modelling the six constitutive elements in an act of communication: the *Addresser* sends a *Message* to the *Addressee*. To be operative, the message requires a *Context* referred to by the addressee, a verbal or verbalized *Code* fully or at least partially shared by both - the addresser and the addressee, and, finally, a *Contact*, a physical channel and psychological connection between the Addresser and the Addressee, enabling them to stay in communication.

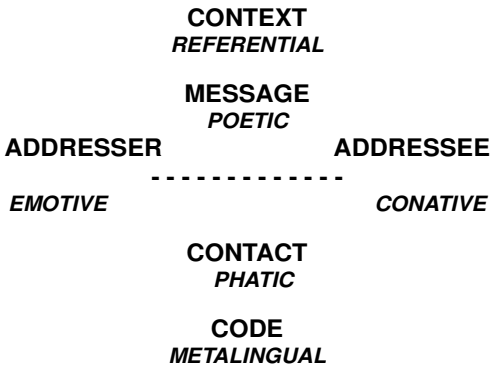


Figure 8 Model of communication (Jakobson 1956)

Jakobson's model is a double one. In addition to the elements, Jakobson includes in the model the functions of the elements. Each of these elements of his communication model describes a different function of language, and in each act of communication there is a hierarchy of functions. It is a dynamic representation of a minimum number of elements and functions present in each and every communication act. Each of these elements and functions is in a hierarchical relationship defined by constant internal renegotiation of dominance within each individual act (Andrews and Maksimova, 2008).

Jakobson produced an identically structured model to explain the six functions (each function occupies the same place in the model as the element to which it refers) (see Figure 8).

The addresser (in other words, the sender) is the human, embodied origin of communication and in consequence is not a mechanical "sender" or "signal source", but an expressive constitution of emotion (Lanigan, 2005: 14). The addresser, the emotive function, describes the relationship of the message to the addressee. The emotive function of the messages is to communicate the addresser's emotions, attitudes, status, class; all the elements that make the message uniquely personal. The addresser is the verbal First Person who is speaking. The addresser gives (data) a message that constitutes a code and selects a context for contact. How the addressee (in other words, the receiver) sees or thinks about the

addresser depends upon how the addressee takes the message, how they interpret the message. Is the message (or addresser) important, powerful enough? The emotive function gives power to the message or amplifies it.

At the other end of the process is the addressee (receiver), the conative function – the effect of the message on the addressee. How does the addresser see the effect on the addressee and how does the addressee take or interpret the message? The addressee is a human, embodies the origin of culture and in consequence is not a mechanical "receiver", but the interpretive subject. The addressee is the second person, who is spoken to. The addressee takes the code which (for him) constitutes a message and selects a contact (the channel) for a context (Lanigan, 2005: 15).

Context is the referential function, the 'reality orientation' of the message. It is something or someone (third person) spoken of. This function is very important in objective, factual communication (as, for example, in MAC). This is communication that is concerned with being 'true' or factually accurate. This is the function which contains professional knowledge about signs used.

Contact, the phatic function, is necessary to keep the channels of communication open. This function operating in human communication such that there is a physical (interpersonal) and psychological (intrapersonal) connection. It is also required to maintain the relationship between addresser (sender) and addressee (receiver) and to confirm that communication is indeed taking place. For example, Jönsson (1998) investigates this function in the process of conversation in management accounting – who speaks and what must happen next for a successful conversation to take place? It means how the contact works in the management accounting process in the case situation.

The metalingual function is that of identifying the code that is in use. This function gives the message an ethical and cultural context.

The poetic function is the relationship of the message to itself; the way in which something is said or even not said and which genre is used. In literature, this means trying to use words and expressions with a more aesthetically pleasing, rhythmic pattern. In aesthetic communication this is clearly central, but Jakobson points out that this function also operates in ordinary conversation. In MAC the poetic function may be a very important aspect of communication, because the language of different genres can be used as a source of power in interactions (Carter and Sealey, 2000:9) this is the function which amplfies the message (Askehave and Swales, 2001:196), which accentuates or gives power to the message.

The basic idea of Jakobson's model is that in the process of communication, a hierarchy is presumed to exist in the structure of the message (text). In any given situation, one of these hierarchical functions is 'dominant' and this dominant function influences the general character of the 'message'. The six-factor communication circuit was devised as one possibility, but it does not propose the hierarchy for every case. Conversely, Jakobson stresses that in every communication act the hierarchy or dominant function may be different. As stated by Machado (2011:92): "Jakobson´s six factors shaped the performance of language, so the functions of language do not specify the correct position of the sender, message, receiver, code, channel or context as does the spatial diagram of communication designed by Shannon-Weaver."[20]

INSTITUTION [context]

REPERTOIRE [code]

PRODUCER [addresser] ----------[addressee] CONSUMER

("writer") ("reader")

MARKET [contact/channel]

PRODUCT [message]

Figure 9 Even-Zohar's version of Jakobson's model
Source: Even-Zohar, 1990 : 31

Jakobson's (1985 (1956)) model of communication has been, and continues to be, applied in many different fields such as research into marketing communication to understand the advertising communication process (Even-Zohar, 1990; Fuentes-Olivera, et al., 2001). Even-Zohar (1990, 1997) transformed Jakobson´s communication model into the socio-semiotic (cultural) event. Even-Zohar´s version of the Jakobson's model (Figure 9) is no one-to-one correspondence between Jakobson´s notions and his suggested "replacements".

The major difference lies in Even-Zohar's introduction of the "institution" where Jakobson has "context" (Even-Zohar, 1990: 31). By "context" Jakosbon means the referential function, the 'reality orientation' of the message. For Even-Zohar (1990: 37) "the "institution" consists of the aggregate of factors involved in the maintenance of literature as a socio-

[20] On the Shannon-Weaver model see Appendix 3.

cultural activity. It is the institution which governs the norms prevailing in this activity, sanctioning some and rejecting others".

The next important difference between Jakoson's (1956) and Even-Zohar's (1990) model is the factor "code", which Even-Zohar replaced by "repertoire". For Even-Zohar (1990: 39), "repertoire" designates the aggregate of rules and materials which govern both the making and use of any given product.. These rules and materials are thus indispensable for any procedure of production and consumption. … without a minimum of shared knowledge there will be virtually no exchange. "Pre-knowledge" and "agreement" are thus key notions for the concept of "repertoire."

The next noteworthy substitution is "message" by "product". For Jakobson (1956) the factor "message" has a poetic function, which is the relationship of the message to itself; the way in which which genre is used. By "product" Even-Zohar means "… any performed (or performable) set of signs, i.e., including a given "behavior." Thus any outcome of any activity whatsoever can be considered "a product," whatever its ontological manifestation may be (Even-Zohar 1990: 43)."

However, the basic idea of Jakobson's model is that in the process of communication, a hierarchy is presumed to exist in the structure of the message (text), Even-Zohar points out (1990: 34) "… this framework requires no *a priori* hierarchies of importance between the surmised factors. It suffices to recognize that it is the *interdependencies* between these factors which allow them to function in the first place. Thus, a *consumer* may "consume" a *product* produced by a *producer*, but in order for the "product" (such as "text") to be generated, a common *repertoire* must exist, whose usability is determined by some *institution*. A *market* must exist where such a good can be transmitted. None of the factors enumerated can be described to function in isolation, and the kind of relations that may be detected run across all possible axes of the scheme".

2.2.5 Inter- and auto-communication

One crucial aspect of the concept of communication is the interrelation of inter-communication and auto-communication (Jakobson, 1974; Lotman, 1977). For example, reading messages is the process of discovering meanings that occurs when the reader interacts or negotiates with the text.

Researchers working with the theoretical perspective of auto-communication mostly refer to Juri Lotman (1922 - 1993) (Broms and Gahmberg, 1983; Mason, 1994; Christensen, 1997; Christensen and Cheney, 2000; Cheney and Christensen, 2001; Steedman, 2004; Torop, 2008). Lotman (1977) distinguishes between communication and auto-communication – the 'I–s/he' and the 'I–I', where the latter is auto-communication. According to Lotman (1990:22), inter-communication is oriented towards receiving a constant quantity of information (the quantitative element of communication), and internal communication towards receiving codes (the qualitative element of communication). The "I-I" system qualitatively transforms the information, and this leads to a restructuring of the actual "I" itself. For Lotman auto-communication does not add to the information we already have, but transforms the self-understanding of the person who has engendered the text and transfers (already) existing messages into a new system of meanings (gives a new code). It means, instead of inter-communication, that the transformations operate with auto-communication processes.

Based on this the inter- and auto-communication view in the sender/receiver relationship are experienced on four network levels: the intrapersonal level, the interpersonal level (for example two persons), the group level – one person communicates with a group or a group as the sender influences one person, the intergroup level in which one group addresses another group (Ruesch, 1972, cited in Lanigan, 2005). For example, accountants communicate both with the users of the reports and with themselves when compiling a report or analysis. They first have to create meanings for the figures for themselves. In this auto-communication process, actors use the knowledge and experiences they already possess. It means using the concept of auto-communication in the meaning generation process and adds the time dimension to the communication. For Lotman (1990: 9-19) the meaning generation process is characterized by three functions: transmitting, generating and memory. This means that the negotiation or auto-communication takes place as the reader introduces aspects of his or her cultural and professional codes (based on memory) which make up the text. As Jakobson (1974:98) states: "While interpersonal communication bridges space, intrapersonal communication proves to be the chief vehicle for bridging time."

This aspect makes the communication process dynamic in space and time, making it situational and dependent on individuals. In the context of Jakobson (1959), Lotman (1970), Broms and Gahmberg (1983), and Giddens (1984), it follows that we once again stress the homogeneity and duality of the internal and external in relation to the actor and institution. Hence the mechanisms of communication and auto-communication or dialogue with other and

dialogue with self coincide. This view makes Jakobson's communication model dynamic, dependent on individual context, and solves the space–time problem (see Giddens, 1984) in analysing social processes.

3. DEVELOPING MAC COMMUNICATION THEORY

Kurt Lewin strongly emphasized the need for the action researcher to make the theoretical contribution of the study clear (Lewin, 1946). It has since been argued that the main potential of action research is in theory building (e.g. Eden and Huxham, 1996). There are several requirements for a good theoretical framework. A theoretical framework should identify the phenomenon of interest, provide the key premises (Bacharach 1989), and explain the relationships between the elements in the framework (Whetten, 1989; Sutton & Staw, 1995; Weick, 1995b). In short, a theory must answer the questions what, how and why (Whetten, 1989).

This chapter serves to align the preceding chapters with the theoretical explanations of how communication as interaction works in MAC. We draw on Jakobson's (1896 - 1982) communication theory, Lotman's (1922 - 1993) cultural semiotics and try to translate these concepts to the MAC field by using knowledge gathered from observations of the communication process in MAC in real life. The main elements of the theory (the what question) were introduced and discussed in earlier chapters. The general basis of the theory of MAC as a social and dialogical process was introduced in Section 2.1. The phenomenon of communication connected with MAC processes was explained in earlier Sections of 2.2.

The aim of this study is to elaborate the model of communication for the MAC field to better understand the role of communication in MAC. To fulfil the aim of the study, in next section we will develop a theoretical framework of the communication aspects in MAC which could help to better understand the role of communication in MAC. The main aim of this section's is to show how the theories described in previous sections work together and so give an opportunity to better understand the working of communication in MAC. Thus we create the theory and model of communication in MAC and later use it to analyse communication processes in MAC in the case organization.

3.1 Theory of communication for the MAC field

The communication theory of MAC was developed by using knowledge from the literature and from observations, i.e. working in companies. The theory developed is presented before

the empirical study because first, these observations or knowledge gathered over decades is impossible to describe by step by step as is common in research reports with a clear starting and ending point. Second, this structure helps to clarify the theoretical ideas in relation to the literature, as well as the empirical findings in relation to those ideas. The ideas about communication in MAC were developed by going back and forth between the literature and the observation (Alvesson and Sköldberg, 2000), while the researcher was actively working at the companies (Ahrens and Chapman, 2006) and later by using Jakobson's communication model (1956) for analysing MAC implementation in the case company. As a result of this analysis this section presents theoretical propositions about the mechanism of a communication process on coordinating action in the organization, and the Section 3.2 provides a model which will used to better understand these processes in practice.

In the communication process in MAC, there are two important aspects: the similarities and differences between participant semiotic space (see Section 2.2.3) and amount of amplification (see Section 2.1.4). First we will explain the role of overlapping semiotic space. In the process of increasing understanding or similarities between organizational members we have to stress that the meaning of the report does not exist independent of its readers. Meaning is the result of the dynamic interaction between sign, interpretant and object (see Figures 5 & 6). The process of understanding and interpreting information happens between two messages (texts). The message of a sender and the message of a receiver (which) are generated jointly and simultaneously.

Common communication between people presumes that the sender and the receiver (A and B in Figure 10) are not identical (see Figure 7). Lotman claims that there is always more than one text, more than one code in this dialogical communication process. Jakobson (1971) states that it is impossible to generate true equivalents in the communication process. The meaning of a number, word, picture, photograph or other sign depends on the code within which it is situated.

Efficient communication requires the use of a common code by its participants or overlapping areas in their semiotic spaces (Lotman, 1990; Kull, 2005). However, according to Lotman (2001), in order to communicate the participants need to simultaneously have both different and overlapping areas in their semiotic spaces. The overlapping space of sender and receiver becomes their natural area of communication but the exchange of information happens between the areas of no overlap.

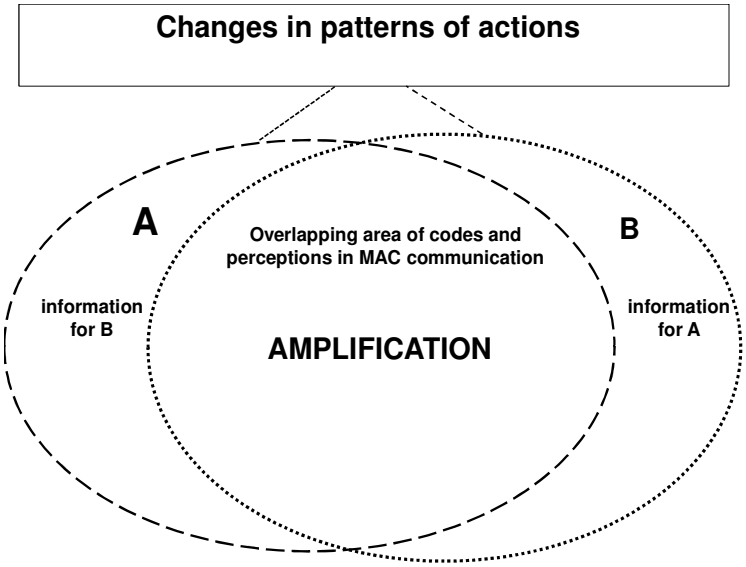


Figure 10 Model of communication in MAC

According to these theories, for the MAC communication process to work successfully it is important to have a balance between the overlapping and non-overlapping areas of communication (see Figures 7 & 10), which creates the balance of understanding and misunderstanding (see Figure 7), and of the new and the familiar information and codes. Or, as Lotman (2005(1984)) says: "The possibility of giving information in portions appears to be a general law of dialogical systems (p. 216)". If the differences of the semiotic space are too big or the overlapping area is too small, the communication between actors will not be 'successful'. In other words, MAC does not work in the desired way because there is too great a misunderstanding between organizational members.

Second, the aim of MAC is to guide changes in an organization that differ from its ordinary situation or practice. Based on information mediated by MAC, actors in the organization have to change something in their patterns of actions to reach a target. In the change process, amplification (see Section 2.1.4) plays an important role because the information quality or codes for the actors' auto-communication processes have to be changed. For this, it is important to give actors a strong and clear message by inter-communication on what is intended, why, and how they have to change their code system, consequently changing patterns of action. Using sufficiently powerful amplification (to get people interested or *mobilized* (Catasus et al., 2007) people have to change their code systems and therefore their action patterns.

To conclude, there are two important components required for successful a dialogical communication process in MAC: a balance between differences and similarities of

understanding and sufficiently powerful amplification. Accordingly, it is important to analyse differences and similarities in understanding and on the other hand to determine if the amplification (perceived power or importance of the message) is sufficient to change codes and thereby the patterns of action in the organization. To analyse these aspects we could use a model based on Jakobson's communication theory (1956). But before using this model in practice, we have to refine it and make it more applicable to the MAC field. The next sections gives an overview of how and why we have refined Jakobson's communication model on the basis of the theories described above.

3.2 A model for analysing communication processes in MAC

To develop the communication model for MAC field we use theoretical knowledge as described in preceding sections, especially Peirce's theory of the sign as a triadic relationship (Section 2.2.2), or more precisely, the theory of management accounting sign developed (see Figure 6). In sign theory, the theory of codes takes central position. In Jakobson's communication model (see Figure 8) the code is central. To understand what in the MAC case corresponds to the contextual code in Jakobson's model (called context in his model) and metalingual code (called code in his model), we use our knowledge based on the theory of management accounting sign (Section 2.2.2 in the dissertation) and Even-Zohar´s developed model (Figure 9, Section 2.2.4) . The theoretical knowledge has been shaped and developed with experiences and knowledge gained through observations while working in companies for decades, the case observation during the research project and analyses of empirical material gathered from the research case. This means that prior to the observation and empirical analysis in the case company in the research project, a choice was made about a theoretical framework. There was a general understanding of Jakobson's communication theory and Lotman's cultural semiotics, but how it could fit or applied in the MAC context was investigated during the present research process through observation, conducting interviews, analysing empirical material and writing the research report (i.e. by using reflexive interpretation, see Alvesson and Sköldberg, 2000, also Table 2 Section 4.1.in the dissertation). All these processes shaped the author's understanding of the communication process in MAC as well as what is meant by and how to use Jakobson's communication model in the MAC context (see also Appendix 4). This section presents the conclusion on the results of the process.

Originally Jakobson's communication model was developed to describe the single utterance that takes place in the conversation process, to be applied to the MAC communication process, some adaptation is required. The first and most important difference between conversation and MAC communication is that the latter is a mediated process in which it is not always clear who is the sender or receiver in the mind of the parties to the communication in MAC. Therefore, in the MAC communication process it is important *to make clear who the receiver is (in the mind of sender) and equally who the receiver understands the sender to be* (see Figure 11). The method reveals the individuals and groups who (in the opinion of the sender or receiver) are party to the MAC communication process. There could be important differences in this question which actually play an important role in creating and implementing MAC in the company. According to Jakobson (1959) the power of the message to the receiver(s) depends on who they believe or understand the sender to be. Thus, these elements are closely connected with *amplification aspects in MAC*.

Second, MAC consists of two functional parts: collecting and using information. Almost every person in the organization is involved in both. In a MAC communication process, one important aspect is the data gathering and sharing system used – the accounting software and other technologies (Dechow and Mouritsen, 2005) by which accounting inscriptions are made visible. *Contact* in the MAC could, for example, be meetings and IT tools. It is important to understand how useful such tools are to the senders and receivers. Which means of contact, the physical channel or instrumental tool, should the sender use to make the message as useable as possible to the receiver and how does the chosen contact method actually work with the receiver to confirm that communication is taking place? Accordingly, in the MAC communication model, the contact contains tools and channels for gathering and sharing inscriptions which are useable enough for sender and receiver, that is, the instrumental side of MAC.

These three elements – sender, receiver, and contact (see Figure 11) look quite similar to addresser, addressee, and contact in Jakobson's original communication model (see Figure 8) and in Even-Zohar's (1990) model to producer, consumer and market (see Figure 9). The next three communication elements are a little more problematic and differ from the common conversation process as well as from the translating process used in the literature.

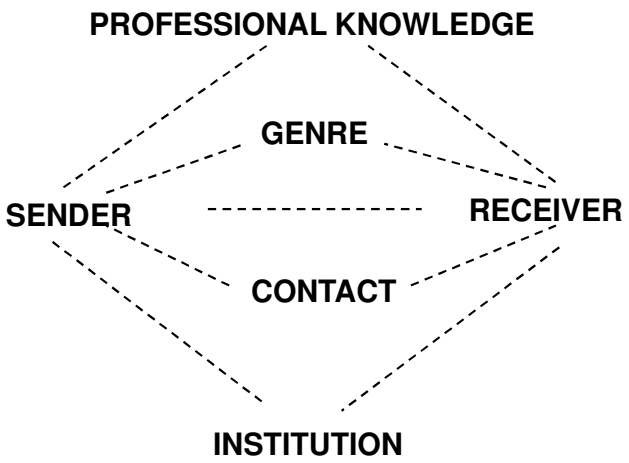


Figure 11 A communication model for MAC

Third, the *codes* in Jakobson's communication model (see Figure 8) organize signs into meaningful systems and transcend single texts to link them together in an interpretative framework. In other words, the code is the sender's and receiver's understanding of organizational norms and routine. Codes give the message its social dimension, it might be more accurate to describe the 'code' in the Jakobson's communication model as '*social code'*. In Even-Zohar's model (Figure 9) the socio-cultural aspect is called "institution" (Even-Zohar, 1990: 37, but see pp. 69-70 in this dissertation). According to Burns and Scapens (2000:9): "...institutions are socially constructed and share 'taken-for-granted' assumptions which identify categories of human actors and their appropriate activities and relationships, shape and constrain rules and routines within an organization, and determine the meaning structures and values of individual actors". Therefore, to make the model fit the MAC scenario better and comparing it with Even-Zohar´s (1990) model, we should call the code element in Jakobson's original model (see Figure 8) an *institution* (see Figure 11). It is the element in the MAC communication process that *gives a social code to the message.*

Fourth, the other element which works in quite a similar way to the 'code' in the Jakobson model is the '*context*' or referential function of that model (see Figure 8). The referential function is the 'reality orientation' of the message. The management accounting sign is very complicated and situational because only the actors from the organization with professional knowledge (of both accounting and production processes) can fully encode MAC texts in the sense of setting up or amending the codes (Section 2.2.1). This is then the element which makes the message 'true' or factually accurate in Jakobson's terms (1956). In the MAC world, it depends on the sender's and receiver's knowledge of accounting models and concepts used in organizational accounting and budgeting systems as well as the professional

(for example engineering) knowledge of processes, products and the market. In the MAC context it might be better to call this component '*professional knowledge'*. Thus the element 'professional knowledge' in the MAC communication model (see Figure 11) is concerned with being true or factually accurate, and it gives the message the reality orientation for the receiver. It is the element of the MAC communication process that gives the message its *professional code*. The professional code system binds together the accounting and engineering worlds; it determines how well accounting or economic language and engineering language are related to actions. Professional knowledge is the knowledge of accounting models and concepts used in MAC as well as the professional (for example engineering) knowledge of processes.

Fifth, the *message* element with a poetic function in Jakobson's communication model (see Figure 8) refers to how words, colours and numbers are used: how something is said or not said and which *genre* is used – what the product looks like or sounds like (see Even-Zohar's model, Figure 9) of MAC. Although the *contact* (meeting, report) is a mechanical or physical phenomenon which carries the message, its design plays an important part in creating the meaning and triggering the resulting action. A sender has to use a genre of contact which is both sufficiently familiar to the receiver and sufficiently powerful or makes the communication process sufficiently amplified. Originally Jakobson's model was created for literature. In the literary world it means to try to use words and expressions with aesthetically pleasing rhythmic patterns. In aesthetic communication, this is clearly central. But in MAC the poetic function could be an even more important aspect of communication because the language of different genres can be used as a source of power in interaction (Carter and Sealey, 2000; Askehave and Swales, 2001). The *genre* is the element (see Figure 11) that plays an important role *in amplifying the message*.

The basic idea of the MAC communication model is that there are always differences in the code systems and other communication elements (semiotic space) of sender and receiver. To understand why and how MAC works in specific situations, one must know these differences in perceptions of elements between sender and receiver. The question is therefore not what the element is but how sender and receiver perceive this aspect or element of the communication process and how big the gap is between their perceptions. It is important to look at them in interaction [21].

[21] This assumption is taken from relational constructivism.

The other basic idea of Jakobson's communication model is that in the process of communication, a hierarchy is presumed to exist in the structure of the process of creating a message. In any given situation, one of these hierarchical elements and functions is 'dominant' and this dominant function influences the general character of the 'message'. In other words, there could be a balance between these functions in the communication process. If some function is not balanced, if there is too big a difference between sender's and receiver's perceptions or understandings, then this function of the MAC communication process could cause too great a misunderstanding which prevents MAC from working adequately. For MAC it means that we have to know which element or function is dominant or out of balance in a particular situation. In turn, this could help us to develop that element to make MAC more useful. To achieve the desired results and guide actions appropriately it is important to understand the communication processes in MAC.

To conclude, the communication model of MAC is a dialogical view of communication. To understand which elements influence the effectiveness of MAC, we have to analyse the similarities and differences between the perceptions and understandings of receiver and sender. The question is, how actors understand or perceive processes (how different the perception is), not how a thing is in a particular situation. The aim is to understand the process of creating meaning in MAC. The framework described above is provided as a means of addressing this complexity. It is not an attempt to reduce that complexity to simple terms; rather it is intended as a starting point for a holistic understanding of the complex processes involved in MAC. If we wish to clarify the effects of the hierarchy of the elements in the communication process in MAC an empirical study is necessary.

In the following sections we will describe an empirical study that was used both for developing the theory and the model as described in this section and introduces one way in which the model developed can be used in a practical situation.

4. DESIGN OF THE EMPIRICAL STUDY

This chapter presents an introduction to the empirical research. First, the design of the empirical study and the methods used to carry it out are described. Since the methods and processes used to conduct participant observation case studies vary, the process of collecting and interpreting the empirical material is described in detail. Secondly, the processes used during observation and intervention are described and interpreted.

4.1 Collecting and interpreting empirical material

According to Alvesson and Sköldberg (2000), it is often difficult to separate preliminary interpretations from better-reasoned, next-level interpretations (Table 2) in which the researcher does not construct but (further) interprets and explores "data" in-depth or interpretations of preliminary interpretations. In this study this multi-level interpretation process runs concurrently with first stage of the research: the first level interpretation is working with a company and interpreting situations and the second interpretation level is choosing and using theory to analyse more systematic empirical material. The third level interpretation which uses the results of the first and second level interpretations, i.e. the communication model developed (see Section 3.2), is used in understanding communication functions in the MAC process in the case company.

Table 2 Levels of interpretation

Aspect/level	***Focus***
Interaction with empirical material	Accounts (explications – added by the author) in interviews, observations of situations and other empirical materials
Interpretation	Underlying meanings
Critical interpretation	Ideology, power, social reproduction
Reflection on text production and language use	Own text, claims to authority, selectivity of the voices represented in the text

Source: Alvesson and Sköldberg 2000: 250

The choice of theory for the interpretation process is central to the research because it determines which "data" are important and how to interpret the empirical material. Or as Alvesson and Sköldberg (2000: 250) put it: "… the researcher´s repertoire of interpretations limits the possibilities of making certain interpretations". The repertoire of interpretations means that certain interpretations are given priority, that others are possible but are not so readily emphasized, while still others never even appear possible. The possibility of reciprocity between the researcher (the theory) and what is being studied should be emphasized in the interpreter´s construction of data. Pre-structured understandings dominate seeing (Alvesson and Sköldberg 2000: 250).

This study uses theories and models originally drawn from the fields of linguistics and cultural semiotics in the belief that knowledge developed in these fields for over half a century can bring lucidity to the study of MAC. The following sections will give an overview of collecting empirical material and the process of its interpretation.

4.1.1 Selection of the case

This empirical evidence for this study was collected from a single case company (referred to as PL) between 2007 and 2010 (for more on PL see Section 4.2.1). PL was chosen for two reasons. The first related to the timing of the study. In 2007, the researcher was looking for appropriate sources of empirical material; at the same time, PL needed to implement changes for economic reasons and offered the researcher the post of CFO.

The second reason for choosing PL was related to the researcher's previous experience with PL. In 2002–03, she had worked as a principal specialist in management accounting. This experience provided her with a thorough understanding of how the company worked and made it easier to build up close working relationships when carrying out research. Most of those who worked in PL in 2002–03 were also there during the research period. According to Jönsson and Lukka (2005), good relationships and understanding are not only a function of the situation but also a function of the role assumed by the researcher.

Acknowledging a potential conflict of interest in relation to the desire to collect empirical material for a study, the researcher agreed to work with the company as a part-time consultant to management for one year. Being part-time allowed her to better manage the conflict between her role as a researcher and her role as a consultant; this is common in participatory observation practice (Gummesson, 2000). The researcher acted as a change

agent (Gummesson, 2000) with PL for 15 months (Sept 2007-Nov 2008). A consultant to top-level management can guide the company towards implementing changes, but the responsibility for the results of these changes rests with the senior managers. The researcher could then "gain a free hand to pursue whatever interesting prospects that may arise" (Jönsson and Lukka, 2007: 382). The consultant can remain an observer.

From the relational constructivism approach, 'power over' gives little space for reflexivity. The following are examples of the relational constructivism approach (Hosking, 2011: 60):

- Work through multiple dialogues rather than following top-down leadership edicts and avoidance of dialogue;
- Work with many different self-other relations rather than with a single hierarchy of knowledge and expertise;
- Work with what is already available and with material that the participants believe to be relevant, rather than impose the mono-logical constructions of leaders or, for example, outside experts; and
- Invite and support many opinions rather than requiring or imposing consensus.

Rather than constructing separate realities (fixed or closed) of one's own position or that of another, dialogue leads to relationality and the possibility of opening up the space for each to co-emerge (Bohm, 2004).

The consultant role provided more opportunities for conducting enquiries *with* others, working in and through dialogues, and in ways that minimize *a priori* assumptions about local rationalities and their relations (hierarchical or otherwise). It thus led to the possibility of becoming more multi-logical and of opening up multiple local rationalities (Hosking, 2011). Working with colleagues that the researcher had known for many years were a way to open up through 'power to' rather than close down through 'power over'.

The objective of the company was to implement changes using MAC to improve its economic results. For research purposes, the role of communication in MAC is better illustrated during a time of change or in critical situations.

4.1.2 Interaction with empirical material

In this study the researcher was deeply and actively involved with the object of study – an involvement that would constitute 'strong intervention' according to the classification

developed by Jönsson and Lukka (2007). The researcher did not try to avoid having an effect. On the contrary, she used participatory observation as one of the main research tools: talking to people, creating pictures of empirical phenomena and making preliminary interpretations, etc. Her role as a management consultant gave her the opportunity to participate in and co-chair meetings, prepare agendas along with management, propose agendas for meetings, educate management and employees, visit departments, talk with employees, conduct analyses, use the accounting and management software and database, propose technical improvements to MAC and ways to develop incentive systems, change reporting genres and systems, discuss issues with the parent company's MAC specialists, and participate in formal and informal meetings.

During the research period the researcher participated in meetings with senior managers and in management team briefings. She was an active participant[22] in 18 management meetings (Appendix 7 and Appendix 8). Minutes of management team briefings as well as agendas and minutes of meetings with senior managers and middle managers for research purposes were collected and analysed (Appendix 9). To understand how MAC worked at the operative level in PL, the researcher actively participated in eight meetings of foremen (Appendix 7). The main topic of these meetings was MAC: strategic management, budgeting, reporting, incentive systems and the ranking results of foremen. Three of the meetings with foremen were recorded (see Appendix 10). In addition, the researcher conducted five training courses or workshops; these totalled 11 hours. She visited construction projects in different departments, and talked with managers and department controllers. While working with the company, the researcher had access to all accounting and management data, accounting and financial analysis software, reports, budgets and formal instructions. This enabled her to gain a better understanding of the history and background, as well as of the actual processes of PL and its units.

To better understand the institutional context of PL, the researcher participated in meetings held by the financial division of PPL (PL's parent company) and the annual meeting of PPL's top-level and middle managers. During the research period, the researcher communicated by e-mail and telephone with management accounting specialists at PPL's head office and with PPL's CFO, and held talks with PPL's internal and external auditors. "Employees' commitment survey of PL" – a report conducted by a professional human resources survey company in February–March 2008 – was also used.

[22] The researcher worked with management to prepare agendas, sent instructions to participants on preparing for meetings, co-chaired meetings, etc.

On average, the researcher worked with PL for three days a week, usually at the company's head office. Her previous work experience with the company meant she was entirely familiar with the processes and this made it easier to build up close working relationships. Working with PL provided her with an opportunity to collect more detailed and richer empirical material, and to examine what the participants actually said and did (or did not say and do) in circumstances that really mattered to them.

The process of collecting the empirical material will be described in the following sections. The following is a summary of what was done during the research period.

- September to October 2007: Analysing and formulating the situation and problems encountered by PL.
- October to December 2007: Improving internal reporting and the accounting systems.
- November 2007 to February 2008: Implementing an accounting and reporting system.
- February to March 2008: Developing an outcome-based incentive system.
- March to November 2008: Implementing a "new" MAC (improved reporting with an incentive system).
- June to July 2008: Interviews I.
- October to December 2008: Interviews II.
- March to April 2010: Interviews III.

The researcher became an active participant (a change agent or change facilitator) who actively attempted to influence the organization under observation (see Gummesson, 2000). The purpose of working with the company as a change agent was to have the opportunity to interact with empirical material. According to Alvesson and Sköldberg (2000) in this process, the degree of interpretation is usually relatively low or somewhat unclear to the researchers. They refer to this as "raw interpretations" or "interpretations close to the empirical material" or "low-abstract interpretations" (2000: 249). The process of ´raw interpretation´ of this research started even before the official research period began (Appendix 4). This was based largely on the researcher's previous experience as a CFO or a management accounting specialist (Appendix 1). Primary interpretation continued with the case company while developing its MAC.

To conclude, in this research, the levels of interpretation of empirical material were as follows.

- Preliminary interpretation relates to selecting empirical materials, making observations, conducting interviews, transcribing recorded interviews.

- Second-level interpretation is based on using Jakobson's communication model (1956) (Appendix 12) for conducting and interpreting empirical material (see Figure 8) and producing a report on how MAC was implemented.
- Third-level interpretation based on critical theory, some aspects of which will be described in Section 4.1.3.
- Fourth level interpretation relates to text production (Section 5) on communication in MAC. The theory presented in Section 3.1 and 3.2. Findings from the empirical analysis of communication in the case company presented in the discussion section.

More about the interpretation process appears below (4.1.3 and 4.1.4). The interaction process with the empirical material (the first level interpretation) and the results of this will be described in Section 4.2. The next level interpretation used the communication model developed (see Section 3.2) and will described and analysed in Section 5.

4.1.3 Interpreting empirical material in dialogue

In addition to observing, the researcher conducted semi-structured, in-depth interviews with PL personnel. The entire interview process can be divided into three periods, each with different aims.

The initial interviews, with senior managers and the principal controller, were conducted in June and July 2008. The aim was to understand how senior managers and the controller perceived the MAC process in PL. Questions revolved around what they thought MAC was, how they used it, what could be improved in the MAC process, how successful the company was and had been, and the interviewee's role in the organization and in the MAC process.

The next round of interviews, based on the interpretation of the initial interviews, was conducted with middle and operative level managers (foremen) between October and December 2008. The main aim was to understand the differences in how MAC was implemented across the company. These interviews were structured according to the elements of Jakobson's (1956) communication model: addressee, addresser, message, code, contact and context (Figure 8, Appendix 14). Using the model-based interview form for conducting and interpreting the interviews, the researcher refined the communication model of MAC (Figure 11).

The third round of interviews took place between March and April 2010, during the post-intervention analysis (Jönsson and Lukka 2007). By 2010, PL no longer existed as an independent company but had once again become part of a larger corporation (as it had been

before 2000). This change provided an opportunity to look at MAC and at the changes made in the company from a different perspective. We can compare the environment and the changes made there with new experiences (for example, the CEO now runs his own small company). There was also the opportunity to analyse the actions, feelings and behaviours that occurred in PL during the intervention period in a more open-minded way. Information was gathered from the CEO who had worked for PL between 2000 and 2006, and who had actually been one of the founders of the company in 1998–99, and from the accountant who had worked with PL from 2000 to 2008. A controller who had been a super user of the MAC system from 2000 to 2009 also provided crucial information.

As part of the participatory observation, for primary interpretation before and during the interviews, the researcher interpreted what could be asked, who could be asked, what had already been said, what was being said, and what was of interest. A total of 20 interviews were conducted between July 2008 and April 2010 (see Appendix 11). Interviews were carried out with the senior managers, specifically those senior managers who had worked for PL in 2000–06 and 2007–08. The researcher also conducted interviews with an accountant who worked for PL in 2000–08, an accountant working with PL when the research was being carried out, a controller who had worked for PL since 2000, and a middle-level controller who had worked for PL since 2002. The researcher interviewed middle managers who worked for the company during the research period. For more about the middle managers interviewed see Section 4.2.1.

The researcher interviewed foremen as operative-level managers in this company. There were 40 foremen in the company, and six were interviewed. The interviewees were carefully chosen so as to cover the different aspects of using MAC. When deciding whom to interview, the researcher consulted middle managers and controllers, analysed operative-level financial results, talked with different foremen, and participated in formal and informal meetings. The researcher was interested in gathering empirical material from several foremen. As a result, six foremen were interviewed: those whose financial results had been very poor or particularly good during the research period, those whose results had suddenly improved, those who had worked in a monopoly for many years, those with entrepreneurial experience, those who had an university degree in engineering and who had vocational qualifications, those who calculated very carefully and had their own online records of construction and maintenance projects, and those who did not care much about figures and financial measures.

The interviewees were drawn from different departments (called in PL "areas"). Four were from areas where the results had changed significantly during the research period.[23] Two of them had engineering degrees (one gained in 2001, the other in 2003). The results achieved by these two teams were extremely poor in 2007. However, in spring 2008 the results of one improved in a very short space of time, jumping from last place to first place in the rankings of operative-level teams. This manager had worked for various companies, and had entrepreneurial experience. The other was at the bottom of the ranking and stayed there. In engineering terms, this manager was well educated and had gained work experience only within PL. The area managers had presented both of these foremen as personnel who analysed financial reports very carefully and carried out a number of additional calculations and analyses.

Two interviewees from the dynamic departments had a polytechnic diploma in engineering. When the research began, one was in last place in the rankings of operative-level teams, and did not improve. The other one was around mid-way in the ranking. One had worked for PL and PPL for over 30 years; the other one had worked for PL for the previous 10 years. According to the area managers, neither of these foremen analysed financial reports very much, nor did they add their own calculations or have supplementary data gathering systems.

Two interviews were conducted with foremen in areas that had performed well during the research period[24]; these teams were in the construction field. Both interviewees had a polytechnic diploma in applied engineering. One had worked with private companies for a couple of years, and then worked in PL and PPL for almost 15 years. The other had worked only in PL and PPL for about 20 years.

The interviews conducted in 2008 took place either in the researcher's office at PL or in the interviewee's office; the interviews conducted in 2010 took place either in the university library open seminar room or in the interviewee's office.

The research was based on reflexive interpretive ideology, which stresses that there are four reflexive areas in which the social science researcher should be engaged (Alvesson and Sköldberg 2000: 7–8): systematic and techniques in research procedures, clarification of the primacy of interpretation, awareness of the political-ideological character of research, and reflection in relation to the problem of representation and authority. These must, in principle, have the same weight (Alvesson and Sköldberg 2000: 257). This means that although

[23] Hereafter referred to as 'dynamic departments'.
[24] Hereafter referred to as 'stable departments'.

interpretation and interaction are important, the interview texts as empirical data also have to be carefully analysed. The empirical material was organized and analysed alongside the interview process. At the end of each day of interviews, the recorded interviews were played back and transcribed. They were then printed and organized into the interview catalogues according to the positions held by the interviewees. Textual-level analysis was conducted by coding the segments of ordered text. The texts were analysed between interviews to prepare for the next round of interviews. The coding was determined by reading the text and deriving meaning in relation to the communication model.

4.1.4 Critical interpretation

The interview subject also interprets information according to his or her values, experiences and assumptions. The interview is an expression of the interpretive work of the subject, in relation to relevant aspects of life and in connection with the interview situation. What the subject says depends upon various ideas about the interviewer and the context of the interview; this happens at a more or less unconscious level (Alvesson and Sköldberg, 2000: 261).

In a dialogue, the participants' conception of the context of the interview and the researcher's role is also important. Is the researcher only an observer (scientist), an observer and colleague, only a colleague for members of the organization, a superior or specialist-practitioner? An interviewee's perception of the role of the researcher may affect his or her behaviour and attitude. Is the researcher competent enough in the professional field? Is the researcher trustworthy? What sort of language should be used when communicating with the researcher?

On the one hand, the researcher's position in the case company provided an opportunity to become an insider and therefore to gain access to the discourse on actions among members of the field; an outsider would be viewed as a 'tourist' and be adressed as such (Hastrup, 1997; Searle, 2001; Jönsson and Lukka, 2007). Most people in the organization knew the researcher when she worked as the principal specialist in management accounting in the company. That background conferred on the researcher the status of expert (Jönsson and Lukka, 2007). They knew that the changes implemented by her were successful and that was why she was invited back to the company as management accounting specialist. In addition, the researcher was familiar with the processes, people and problems of the

organization. As a result, in this participatory observation study, the researcher was a member (Munro, 2001) of the top-level management team. Nonetheless, she tried to avoid 'going native' to the extent that she failed to recognize events of theoretical significance or failed to assimilate group thought (Janis, 1972) so that critical voices would not be heard (Jönsson and Lukka, 2007).

On the other hand, the researcher did not conceal the fact that she worked as an academic. She made it clear to the senior managers that her main aim while working with the company was to collect empirical material for her research and she could work with the company for only a very limited period. Senior managers were in no doubt about the researcher's position in the company. For other managers, the researcher was more of a colleague. Some knew that the researcher taught at the university and carried out research; others did not.

In her introduction to the interview process, the researcher explained that the aim was to study the role of communication in MAC. However, the researcher had worked with the interviewees for a long time and some thought they could anticipate the direction the research would take (the interpretation of the interview subject). The researcher therefore explained that the interview was necessary for research purposes and that they must express their opinions irrespective of what the researcher (as a colleague) knew or thought.

The interviewees often framed their accounts in a politically conscious manner (Alvesson and Sköldberg, 2000: 268). According to Silverman (1985), interviews are about "moral story-telling". The researcher's part-time fixed-term consultancy agreement provided a better starting point for observations and interviews. There was no formal authority relationship, as she did not rank above of any other member of staff and vice versa. If, during an interview, the researcher felt that the interviewee was talking about what was officially desirable, or polite, she could use her role as an insider to ask direct questions about generally unacceptable things; for example, manipulating data, stealing materials or everyday use and sharing of reports and information. This helped most interviewees to open up because they knew that there were no taboo subjects. In any event, the researcher would be familiar with such subjects which may never have been discussed officially (or unofficially) within the company.

The interviews were conducted in a friendly and trusting environment. The interviewees were happy that they could talk openly about what they were actually thinking and feeling. They therefore tried to help the researcher, to inform her about what was really happening and what was important to them. The researcher was often surprised to find the

interviewees revealed new information. For example, it transpired that there were significant differences in how MAC indicators were used, and in how MAC information was shared with, or hidden from, co-workers.

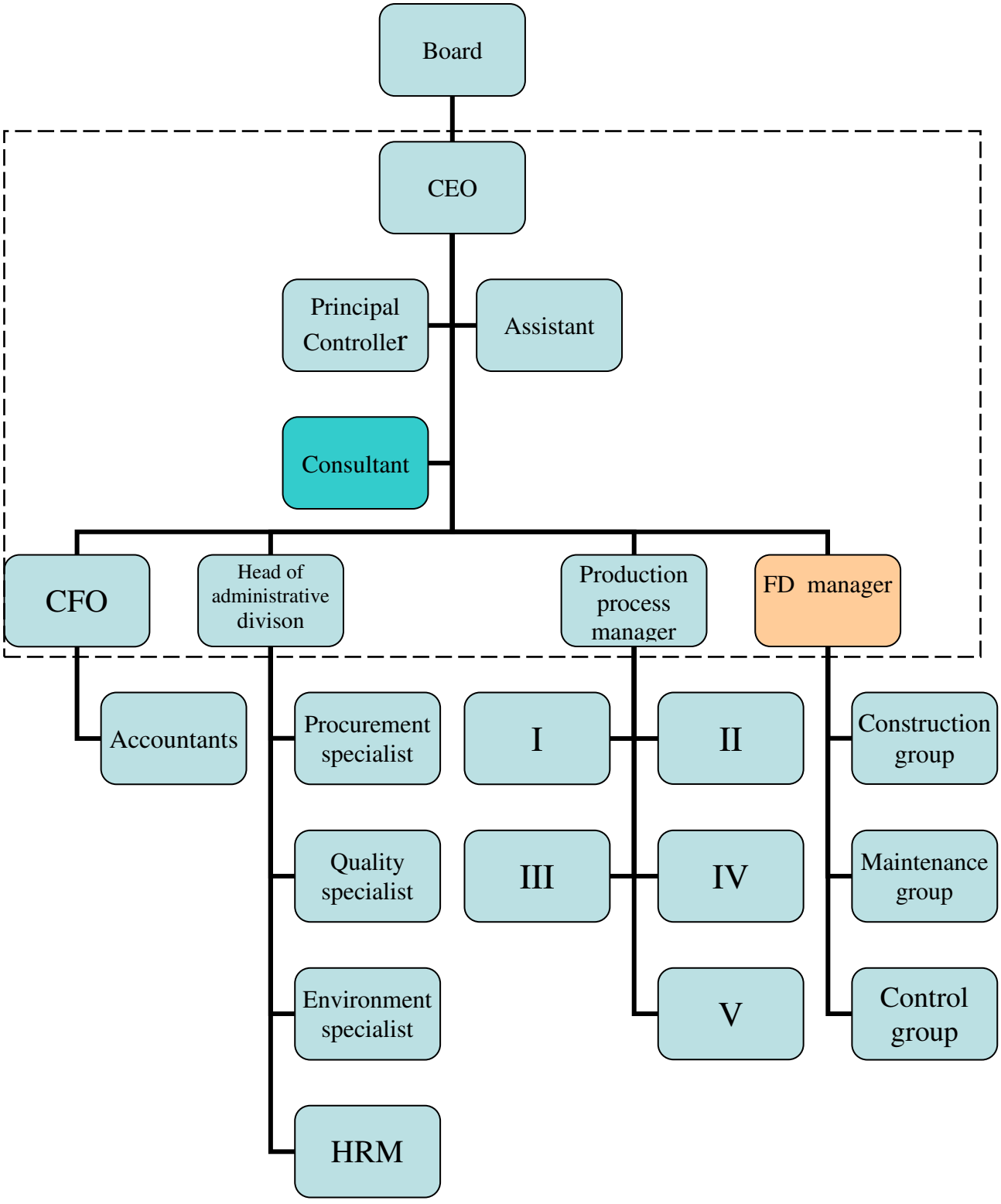
4.2 Description of the case

4.2.1 Overview of the company

PL constructed and maintained power lines in one of the Baltic countries. It was founded in 2000 as a limited stock company. Its predecessor had been part of a monopolistic state-owned corporation (PPL) that handled the generation, distribution and supply of electric power. PPL with about 11,000 employees owned all the shares of PL. Ambitious profit objectives or cost reduction targets were not priorities in the monopolistic environment. The business culture at PL was traditionally based upon the notions of stability and the general interests of the state. The Baltic countries have been subject to diverse regulatory regimes since 2004, when accession to the European Union led to the opening of the energy markets. To cope with the new challenge of deregulated markets, the parent company (PPL) decided that PL would have to compete with private companies on the open market already from 2000.

In 2000, when PL started operating as an independent company, it became clear that there were going to be major changes. In managerial terms, these meant a move from a stable monopolistic environment, in which little attention was paid to generating cash or numbers-driven management, to a financially oriented, numbers-driven hectic business environment. This can be considered quite revolutionary. In this "new" way of thinking, all quality improvement projects had to be expressed in quantitative terms and their financial consequences had to be evaluated and developed. A lot of work had to be done to inculcate a market oriented organizational culture, ways of thinking and patterns of acting.

In engineering terms, PL was generally recognized as a high-class organization with well-educated and experienced engineers; most of the managers and specialists (including the principal controller) had a university degree in engineering and over 10 years' work experience.



Legend: CEO – general manager; CFO – financial manager; FD – functional department ; I, II, III, IV, V - departments; HRM – human resource management

Figure 12 Organizational chart of PL

With about 330 employees, PL can be categorized as a large company. It uses a 5-region geographical structure within the country. These departments are labelled I to V in Figure 12. At PL, one department was functional – specializing in large, top-class engineering projects across the country (in Figure 12 'FD'). The employees in this department were well-educated engineers, with the highest-level professional ranking. The department manager was also an engineer with experience of successfully running large, and in engineering terms original, sophisticated projects. He had worked in PPL and in PL since 1984.

Each department had a management team with a department manager (DM) and a controller. Two departments had nine teams with foremen; two departments had seven teams; and two departments had four teams. In total, there were 40 teams with foremen in PL.

Five departments were based on a regional geographic structure (I-V in Figure 12). Two were located in cities, and were quite similar – from a professional prospective and even in terms of the problems faced. These departments had made a loss in recent years and where the department managers had been replaced many times. At the end of 2007, both department managers were once again replaced by new external recruits. The managers held degrees in engineering but had worked in different fields, and so had gained experience of working for private companies in a competitive environment.

The fourth department focused solely on the construction of power lines. It differed from the others, which had to both construct and maintain the lines. With a focus only on construction, it made the processes more routine, and organizing processes in this department seemed simpler than in other areas. This department employed about 30 personnel, compared to the 45-50 in the other departments.

The remaining two organizational departments were in a different part of the country. Both constructed and maintaine power lines and substations. One department had been successful in financial terms over the years. The manager of that department had worked at PL for about ten years, had a degree in engineering and prior work experience with different companies, and also more than ten years of entrepreneurial experience. The other department recently had made a huge loss and the department manager was replaced during the research period.

The senior management team consisted of three people: the CEO, the production process manager and the head of the administrative division. There was also another management team – referred to by the operative-level employees as 'the third floor'

(surrounded by a broken line with in Figure 12[25]). All decisions made in PL were discussed with that management team.

The head of the functional department (FD) performed a dual role – as a middle manager and as a member of the management team.

The CFO was also the chief accountant, on the same hierarchical level as the principal controller (a member of the management team). There were three accountants in the accounting department. The controllers' group consisted of the principal controller and six management accounting specialists (controllers who worked with middle managers). This group gathered management accounting data, analysed data for middle managers, and provided some clerical support. The controllers' official superior was a middle manager rather than the principal controller or CFO. However, they worked closely with the accountants and with the principal controller.

PL's accounting system was part of PPL's accounting system, which was based on the Oracle database. Accounts charts (containing thousands of accounts), customized reporting systems (based on online databases using special software) and analyses were coordinated from PPL's head office. All changes and improvements made in PL's accounting and reporting system had to be coordinated with and approved by PPL's head office. In the first year of PL's operations (2000/01)[26], the management accounting system in use originated with PL's predecessor. PL developed its management accounting system over the next three years (2001–03).[27] It created its cost accounting systems for construction projects and maintenance teams. At this time the company structure was based on its work profile. There were operative-level teams that constructed power lines and teams that maintained lines and substations. This structure was based on what had existed when the company held the monopoly. Controller I recalled the history of management accounting in PL:

> In the first few years we had long-term contracts for the maintenance of power lines and substations. As there was not yet an open market, the quotation for construction projects was more like a formal game within PPL.
>
> Market competitiveness did not begin until about 2004 or 2005. That was why we made a profit in the early years; there was no competition in the market then.
>
> The departments were not interested in analysing costs for materials and labour. Maybe they were unable to, or had no interest in doing it. There was freedom to handle as much material as was needed. There was a lot of slack.

[25] The Consultant in Figure 12 is the researcher.
[26] PL's fiscal year 1 April to 31 March.
[27] The researcher worked for PL as principal specialist in management accounting from 2002 to 2003. Her main aim was to develop a management accounting system for PL.

> In 2002–03 we created a system to control the costs of materials. Management accounting became more detailed. During this time, the company's profit increased by about 300 thousand euros (around 50%). That was 5% of the cost of material (see Appendix 5).

During the period 2005–2007 the work and structure of the company changed. The sales volume (for the maintenance of lines and substations) decreased. Teams had to be restructured, so there were no longer separate teams for construction and maintenance; they all had to start to compete in the construction market. At the beginning of the millennium, there was no open market for the construction of power lines. In the period 2004-2007 this market had developed, and many construction companies had entered it. Competition was growing year by year.

When this research process began (September 2007), the management accounting system that had been developed in 2001–03 was formally in place but in practice abandoned. Control by the use of financial measures had almost collapsed. Management had no formal control of the company, its processes or its costs. Losses were increasing (Appendix 5). The company needed to change for economic reasons. The management invited the researcher to develop a MAC system or to make use of the existing official system.

4.2.2 Interpreting the situation in the case company

Despite a boom in the construction industry when the research began (September 2007), PL was operating at a return on sales ranging to a loss of up to 15% (Appendix 5). These financial results reflected the chaos and ineffectiveness of the organization. It seemed clear to the researcher that the organization could not survive in this situation for much longer. Accounting reports even revealed that the direct costs of a project (materials) were higher than its sales revenues (see Appendix 6) in some departments. Although this seems inconceivable, sales invoices were never issued on some projects. Accountant I recalls working on accounting and reporting in that time:

> Of course we produced all the reports and calculations, as we had done for many years. The only thing was that nobody had the time to ask for documents, or enough energy left to request them. Sales had stopped; operative-level managers no longer issued sales invoices; everyone was so busy. The customer, PPL, was the most important; deadlines and work were the most important things. That's how it was.

As a result, in summer 2007, PL management sought to recruit a specialist to carry out a thorough analysis of the financial situation, allowing PL to justify an increase in what it charged the customer (PPL). PL was looking for ways to become profitable, and needed to know what changes were needed to achieve this.

Before the researcher could initiate change, the first task was to gain an understanding of the situation at PL as perceived in the company. The researcher inferred that the company's economic situation was extremely poor, but people in the company maintained that the financial information did not reflect the true picture. Everybody in PL knew that they had worked very hard, but the financial indicators showed huge – and growing – losses.

In the company they avoided blaming the poor results on inefficiency. The justification was that there was no time to issue sales invoices after work was completed, or that sales prices were too low. Management referred to a 'bad job'; this meant that the market price did not cover its full costs.

The researcher found that in the company they used various codes to interpret the organization's reality. For example, some managers did not work on the basis that profit and other financial results were important and reliable measures. For them, the efficiency of processes and financial results were not the main problem areas; rather, there were too many orders and too much overtime, especially in the summer. The researcher asked the following question to determine how people saw the situation: *How successful was our company in 2006/2007?* Foreman V, from a department that had produced only losses in recent years, stated:

> There was a lot of work, and the work got done. There were no problems, but we failed to get money from our customers. I know we've been running at a loss, maybe for the last two years, but that doesn't mean anything. Perhaps our company doesn't need to make a profit.

Department manager III, from a department where the financial results had been quite stable over the years, said this about PL's success:

> PL is very good; the only problem is that it has not been accepted by PPL. Clearly, we were not successful in 2006 and 2007- it means our image was not very good. But after we changed the logo of the company, our image improved significantly. We are now a significant producer in our market.

A surprisingly similar answer to the same question came from a specialist who had worked with senior managers (Manager II):

> In 2006/2007 our company was successful. We had enough work and there were no problems with layoffs. Maybe we were running at a loss, but the situation in general seemed good.

Based on these notions, many PL employees generally accepted the monopoly-based understanding (the code based on monopoly) of the organization's situation. Proponents of this view maintained that PL made a significant contribution to the market. However, the board of PL did not share this view. Based on financial indicators the company was in chaos, almost bankrupt, inefficient, and out of control. The CEO was replaced in April 2007.

The researcher's first aim was to clarify senior management's understanding of the financial situation, because management explained the poor results by stating that sales prices were too low, and did not cover the actual expenses of the company. The result was that the company had difficulties competing in the market. Trying set higher sales prices led to a lack of work and a decrease in sales volume (the company seemed to be in a death spiral). In short, there was a need to move away from a monopolistic market code and towards a market-economy code system. The first step was to propose the differences to the CEO and to conduct an analysis to explain the financially oriented reality. This included comparing the results of PL with those competitors that earned good profits in the same market and at the same prices. For example, during the previous year, PL's main competitor had increased its sales turnover by about 10% while PL's turnover had decreased by about 6%. The main competitor had earned three times what PL had from sales, with just twice the number of employees; its return on sales was 5.5% (but PL suffered a drop of 15%).

Clearly addressing management's reality was of primary importance, because economic changes in PL would be possible only if management accepted the idea that financial results depended primarily on the use of appropriate processes and tight control of resources. From the researcher's point of view, in addition to the analysis of efficiency (not only calculations of costs for pricing negotiations), the organization needed to have tight control of resources using the accounting system. Consequently, clarifying the management's reality was a prerequisite to adopting MAC in the change process within the company.

4.2.3 Developing MAC as a dialogical tool

Within about a month of the initial analysis, management accepted that the organization needed MAC to monitor and affect processes. The next step was to create a more detailed

accounting system, which made the company more transparent. The aim was to help management to better understand what actually happens at grassroots level (the project). In other words, the aim was to create a system that would enable *action at a distance* (Hopwood 1990; Robson 1992), thus achieving long-distance control.

The company also needed MAC as a short-distance control (Section 2.1.2.). Most of the company's resources were used at operative level (over 50% of its costs). As a result, operative level is the "key level"; here it is possible to monitor and control costs, for example, of materials and labour. The researcher's previous experience with the company (2002–03) showed that if it were possible to make foremen and employees interested in saving resources, it would be possible to improve the company's economic results in quite a short time. Previous experience combined with analysis during the research period indicated that control of materials and labour at a higher level in this company was almost impossible, at least in the short term. Making things happen in the short term more or less depended on the operative-level employees. If they did not change their patterns of behaviour, it would be impossible to improve the organization's results.

At the same time, the onset of an economic recession led to a rapid change in market conditions. Middle managers and operative-level managers had to decide how to react to these changes; to do this, they needed information and feedback about their own actions and project costs. Those at operative level had to understand what was important and why, how to compete in the market, and how to make things happen. In PL that meant to develop the inter-communication tool for foremen, mid-level managers and senior managers, according to an existing MAC system. Consequently, the development of a MAC system for *acting by accounting* (see Section 2.1.2) began at operative level. The aim was to change MAC from a subsystem operated by accounting specialists and controllers to a system that could be operated by all members of the organization to create social and financial control over resources and processes on every level, including operative level. CEO II strongly supported this view:

> MAC is not just for senior management. MAC is to help every person to understand what is important, and to see his or her role in the organization. This system is the tool by which one can reach every person's brain. Every person has to understand that I (they) can work, but if the company gains no profit from it then nobody needs this work.

The development of MAC involved a lot of arguing and discussion in the management team and between proponents of the monopoly and market-based ways of thinking.

From 2006 to October 2007 the main control and reward system in use was based on sales turnover. Controller II recalled the turnover system:

> Controller: The only measure used in 2006 and 2007 was turnover. Turnover was important because of cash flow.
> Researcher: Was anybody interested in costs too?
> Controller: Only sometimes, but that was not as important.
> Researcher: Do you think it was rational and logical?
> Controller: For workers and operative-level managers, yes it was. But for me…if you see that the company only sustains losses….

Controller I, who had introduced, and now defends, the turnover system during the research process explained why turnover is the best measure.

> For managers, turnover is understandable. Turnover minus direct costs, called 'contribution margin I' in PL, anyway, they didn't use it. The calculations of cost we made in 2006 and 2007 were only to set sales prices, for the sake of negotiations with PPL. But, as I said, what does not kill me, I can do. I have promoted the "new" system a lot, favouring the use of costing information in our measurement system.

This controller was eventually persuaded to work with the researcher and the CEO, but did not believe that the new measures (contribution margin) would be useable. During the research period, she continued to defend the system based on turnover. The figure in Appendix 5 shows how the turnover system worked during the previous period (2005–07). It did not take long for financial results to decline after the company started to use the turnover system. At first there were marked fluctuations in performance. It was a chaotic period; results swung from normal (or even good) to bad. As a result, management lost control over "reality".

During the process of developing and implementing the "new" MAC – calculating costs and contribution margin in 2007/08 – the management team held numerous meetings. At the end of 2007 meetings were held almost daily. The question was whether turnover or contribution margin should be used. One problematic area was that people used the word "turnover" differently. Some used it to denote sales, while others used it to denote contribution margin (turnover minus direct variable costs). This led to two problems: the battle between the monopoly and market economy philosophy and the confusion caused by using the same terms for different things. Manager I explained the differences:

> Researcher's (provocative) question: I felt that we [the management team] understood things in a similar way?

> Manager I: No, at least in two different ways. Fortunately, though, these two different ways finally became one way.
> Researcher: I recall that we defined the same thing many times but when we came to the next meeting, we started again from the same point, again looking for a definition for the same thing.
> Manager I: Yes, that's how it was. It never happened that everyone understood the small details in the same way. But the problem was in how an idea was expressed, which words were used. The ideas themselves could be similar. But after working together for over a year, I think we understand each other better now.

The third phase in the PL change project was to develop a reporting system. Reports and forms act as contacts in communication systems (Figure 11). The aim was to make operative-level processes more visible for reasons of control. Creating this control tool was important because people in PL had accepted the myth that it was impossible to control resources and results because projects are very small and variable; consequently the profiles of operative-level teams are very different and it is impossible to compare them. To sum up, it was believed that it was impossible to control the results and resources of operative-level teams by financial measures (revenue and costs), or to control materials and purchased services, which accounted for about 50% of the company's total costs. The researcher had to disprove the myth and develop responsibility accounting for control purposes by comparing direct costs at operative level.

While the major changes were occurring, there was an obvious need to amplify the accounting information (Section 2.1.4). The researcher and management believed that ranking foremen by their results and using their names on the reports (see Appendix 8)[28] – together with an outcome-based incentive system (based on contribution margin per employee) – could amplify the messages coming from MAC. This ranking and incentive system could give more power to the financial numbers and so help to change patterns of behaviour and hence, the organization's results. Controller I noted:

> Once the reporting system for comparing the [performances of the] foremen and the outcome-based incentive system have been implemented, they must start thinking about the economic aspects.

Accountant II noted that a similar incentive scheme, implemented five years previously (2002/2003), had been successful, and so fully supported the new version (proposed in 2007):

[28] The names in Appendix 6 have been changed (those used are the most popular common names in the US).

> The development and implementation of an incentive system based on financial outcome changed the way of thinking [in 2002/03]. It didn't matter whether they [the managers and employees] agreed with the system or not. This process was useful years ago and we hoped to achieve the same effect and change the way of thinking again in 2007.
> Researcher: As far as I know, the incentive system was not formally implemented in 2003. We only tried to introduce it.
> Accountant II: The inculcation and development process was worked through. The way of thinking was changed because the management team had to first analyze the situation. We explained the new system to employees, talked with people, travel around the company, conducted a lot of meetings, improved and tailored the accounting system to the incentive system. We encouraged employees to think with us. Actually, this process worked already, not so much as an official incentive system but as the planned result of this process.

CEO II explains about the ranking of foremen:

> Those who won after the personal ranking system was implemented were those who have been successful all along. They get additional support. The numbers prove that they work well. It is like a small prize for them. For those who are borderline, comparison with others should help them improve. However, for those who are not able to compete, feeling more negative is not really a problem.
> Before this system was introduced, results were not personalized, and many thought that others had not worked very hard. However, if the foreman is named, is it very personal. It engenders a totally different feeling, and gives a very clear message about what is important.

In August 2007, the company started to work out a more detailed accounting system. By October 2007, the development of a reporting system at project level could begin. This meant using more detailed and tightly controlled data, at least about direct materials and services, which accounted for 50% of PL's total costs. The initial aim of this detailed accounting system (in July–September 2007) was to calculate more precise full costs for negotiation with PPL. However, after changing this reality – the code system – it was possible to use the same technical system to control resources and as a communication tool throughout the company.

In February 2008 the company started to develop an outcome-based incentive system. Therefore, the accounting system that had originally been developed for senior managers formed the basis for the tool for inter-communication across all levels of the company, thus providing a system of *acting by accounting*.

The fourth stage of this research was to run the budgeting process (from November 2007 to February 2008) for the coming fiscal year. The target for the following year was to earn a return of at least 2.3% on sales. All middle managers were engaged in the budgeting

process, which used zero-based budgeting; in other words, all managers had to justify all their budgeted expenses. The aim of the budgeting process was to educate managers in financial terms – making the professional code system (Figure 11) more familiar.

4.2.4 Different local realities of implementing MAC

When the improved MAC had been in use in PL for almost a year, it became apparent that despite the formal MAC system being the same throughout the organization – for all departments and all teams – MAC was being used in different ways in different departments. There was a variety of ways of collecting, using and interpreting data and sharing the reports. Individuals had various reasons for using the systems in different ways.

Senior managers and controllers thought that there could be a problem of using MAC among operative-level managers. Controllers and accountants talked about understanding the system and the terms used within MAC, such as the *first-level contribution margin* and *progress method* in accounting calculations. Although these terms and methods had been in use for many years in PL, the accountants believed that people did not trust them because they failed to understand how and where these figures came from and how they connected with their actions. Manager I reported:

> People have to be able to use the information (from reports) but in reality they do not, especially at the operative level. They feel that financial data are unreliable and incorrectly interpreted; they therefore do not use them. They have no feedback on their own work.

It was important to explain how the system worked and to educate managers about such areas as cost accounting, cost behaviour and management control. It was explained how financial figures are connected with processes and how it is possible to affect costs and profit. Making the accounting code (or language) more familiar to those involved necessitated many meetings, negotiations with managers, training courses, and brain-storming sessions. The controller described the process of explaining the terms as follows:

> My role was like preaching a gospel. It takes a long time to clarify things, such as the meaning of figures in a report. It takes about 15–20% of my time.

CEO II stated:

> If they [the managers] don't understand that financial results – that is, profit – are important and don't know how to change them, nothing can be done.

After one year of running this process, department manager II, said:

> We are now living in a totally different world – in the world of financial results. Seven or eight months ago the operative-level managers did not know much. Now they are getting the financial indicators of the company and the departments, as well as the operative-level team.
> I have noticed that when they get this information, it is totally quiet in the offices for the next two or three hours, as they calculate and analyse, and compare themselves with others.
> Even talking with workers about these figures will make them happy. They feel more like 'white-collar workers'; they feel that we trust them.
> They start thinking about which mechanism would work better, how to reduce expenses, or how to make processes more efficient. They like it. To sum up, the important thing is to talk to people.

To communicate the concepts effectively requires some knowledge and pre-understanding of these concepts. For example, if the recipients of a report do not understand the meaning of terms such as *progress method* or *first-level contribution margin*, or their roles in changing them, the message that senior managers wish to get across about changes in behaviour cannot be understood. Thus the actions needed to complement the organization's objectives cannot be carried out. In other words, some people in the company could not act in a way suited to the organization's objectives because of misunderstandings (see also Section 2.2.3, Figure 7). This is one reason why some people find it difficult to work in an organization where the important management tool is MAC – that is, where MAC is used as a tool for *acting by accounting*. Manager I said:

> Those who understood the meaning of reports and information have been coming with us into the process. But those who didn't, those who believed that the reporting and rewarding system was not useful had to leave the company, or they will have to leave in the near future.

Despite work done during the year, there were some departments where MAC did not work in the desired way. For example, according to the department manager and the foreman from one department:

> Department manager I: [In] this kind of department …only I own and use information about budgets and costs.
> Foremen have to construct; they do not need this kind of information.

Foreman I:

> I have not been engaged in calculations and numbers. We have a department manager here who prepares the numbers for…I do not know for whom.
> Researcher: Do you feel that comparing operative-level teams and these reports and figures does not adequately reflect your team results?
> Manager I: Yes, that's exactly how I feel! It is not under my control. I did not provide this data, and it is clearly of no interest to me. I do not need these numbers at all.

For the researcher, receiving reports like these felt like abject failure, that the effort made during the year had been almost in vain. While not useless, feedback revealed different aspects of working and results of the MAC. This approach ties in with the relational constructivist standpoint, where there can be multiple local ontologies and relationships. According to Latour (1987), the fate of a statement depends on others: those who have to read it, adopt it and apply it. The application of MAC depends on communication. Its functionality depends on how the communication processes in MAC work. It is thus important to understand and analyse the communication process in MAC in the organization.

5 APPLYING THE DEVELOPED MAC COMMUNICATION THEORY IN PRACTICE

Contemporary technological opportunity gave people from all levels of the organization the ability to engage more actively with its internal communication process as mediated by MAC. Moreover, as the case study demonstrates, such an opportunity makes it possible for (almost) every person in the organization to create and use MAC processes. Furthermore, it places the large and important group of MAC information collators and users at the operative level of the organization. In a service framework, changes in the economic environment force operative-level managers and employees to decide how to serve the customer, how to react quickly to market changes and how to act in everyday business situations. Lower-level managers and employees have to understand objectives at a distance to act locally.

To understand the communication process in MAC, researchers must analyse communication between different people and groups. Analysing a communication process involves comparing actors' perceptions of the communication factors of the communication model (Section 3.2, Figure 11). The question is how different actors understand or perceive processes and *to what extent* their perceptions differ. Addressing this question requires an analysis of the differences between and the shared understandings of those actors, rather than simply an analysis of a situation as it "really" is. This chapter examines the differences between actors' perceptions of the MAC communication process to understand which communication factor (see Figure 11) plays a more important role in the process of implementing MAC. The aim of this chapter is to test whether a relatively general and philosophical model of MAC communication can be applied in practice.

5.1 Locating the chain of MAC and its nodal points

It is obviously impossible to analyse every act of communication of every actor in the organization. The first step to apply the communication model in practice was decide which groups and people had to engage in the analysis in the case company. This section concludes the interpretation made in preceding sections in order to identify groups and people whose communication process will be analysed in the case company.

The aim of MAC is to bring about a reality that differs from ordinary situations or practices (Section 2.1.4). Senior management determines what changes are needed in the organization. Their decisions are based on their interpretations of the company's performances as well as their knowledge about processes in the company and about the business environment.

How performance and MAC information are interpreted depends on auto-communication and inter-communication in senior management as well as inter-communication with others in the company. For example, members of the case company evinced a variety of interpretations of its financial situation. Some saw the situation as extremely bad with very inefficient processes, while others believed that everybody in PL had done a lot of (good) work and that it was a very good and notable producer in the market.

The first step in the MAC chain (Figure 13) –[29] ahead of developing and implementing a form of MAC – is senior management's communication and, as a result, an understanding of the actual situation in the company. Implementation depends on self-reference by senior management. For example, if most of the management and the CEO accept the idea that the organization will benefit only from strict control of resources through the MAC system, then (and only then) will it be possible to implement MAC as a tool to control resources. At the same time, the case company decided MAC had to serve as an inter-communication tool for coordinating action throughout the company; that is, it had to be a tool for *acting by accounting* (Section 2.1.2), especially at the operative level.

For the *management accounting department*, the product of communication is the development of the MAC system, which matched well with the objectives and changes required. Inputs to this level include objectives set by management and decisions where changes are essential to achieve the organization's objectives, that is, what needs to be made visible and to whom (Hopwood 1990, see also Section 2.1.1). Such input depends on auto-communication within the management team as well as inter-communication between senior managers and accountants/controllers. Output is the development of MAC. The management accountant (or controller) must develop MAC as an accounting and IT-based tool that could generate information, make the message powerful enough and deliver it with sufficient amplification (see Section 2.1.4 and Figure 10) to achieve changes. At this link, controllers make the decision on what data to collect and in which technical facility to do so. These tools

[29] In Figure 13, broken lines show communication within groups. Arrows show the main direction and the links in the MAC chain. Ovals show those who act and interact. The results from these communications are marked by solid lines.

are to provide managers with enough information about the processes within the organization, and the employees with information about the company's objectives and how their actions and processes support those objectives.

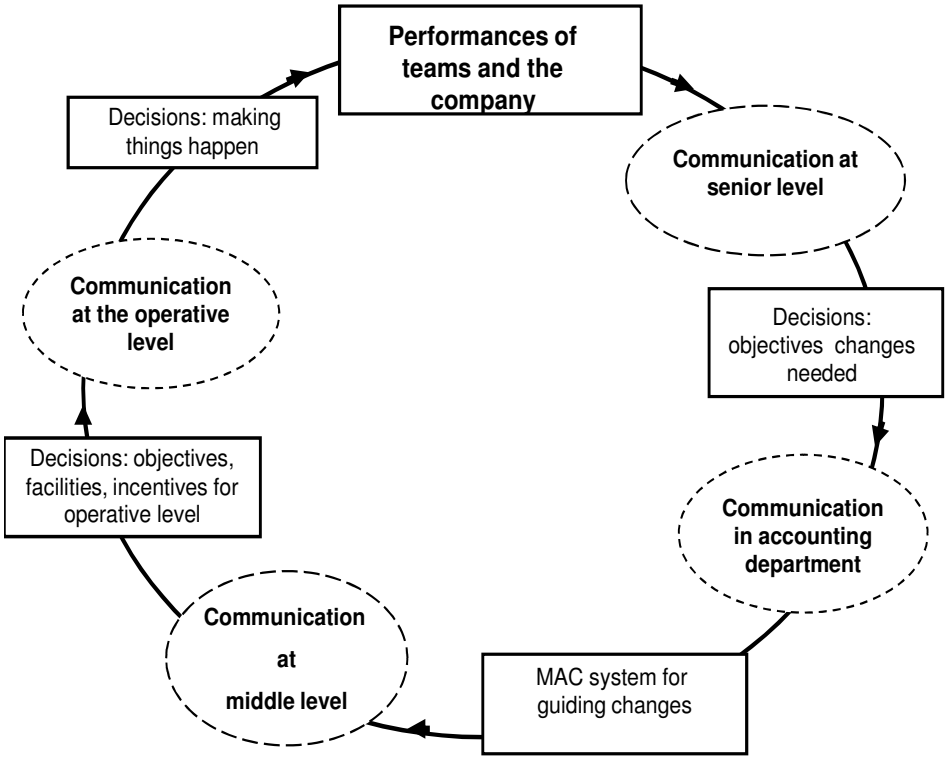


Figure 13 The chain of MAC

The next link in the MAC chain is auto-communication and inter-communication in the *middle-* and *operative-level groups*. The communication process leads to the decision on whether and how to use the accounting and reporting system, and how to respond to the information. Communication between the management accounting department (controller) and unit managers plays a part in this process. The decision on how to act depends on how the *receiver* interprets the result of the action. It is not enough for the receiver to understand the message itself. For example, in the case company, despite running workshops, holding formal and informal meetings and visiting departments and construction sites during the research period (which lasted for almost one year), the final implementation of the MAC system failed in some departments.

Figure 13 shows how the MAC process constitutes a chain. The emphasis on certain measures in the MAC process and the way the system was transformed in the organization

influenced how people used or could use it in practice. The research results of Kadak (2011) suggest that it is important to investigate the entire MAC development process, including its design, implementation and function. Based on this research, a similar conclusion can be made about the social or communicative dimension of MAC. In other words, to understand how and why MAC works as it does in a given part of the organization, researchers have to understand the processes of the entire MAC chain. The way MAC is used, for example, at the operative level depends on the functioning of MAC chain links before the process reaches the operative-level managers or teams. If it is to work at the operative level, all the other preceding links in the chain have to work. Understanding why the process does not work at, for example, the operative level would require an analysis of the communication processes in every link to determine which link caused the system to break down and why.

Analyses carried out during the implementation process described in the previous chapter revealed something about the communication processes used by senior management and the management accounting department (controller). However, little is known about what happened at the middle level and, especially, at the operative level. One opinion held by the controller and accountant, as well as by senior management, was that lower-level managers could not understand the accounting code and, as a result, could not use the financial information to make decisions about processes. To understand why MAC may work in one department but not in another would require a more detailed analysis of the communication processes occurring at the MAC chain links. This will be reported in the next section, using Jakobson's communication model (Figure 8), on which the interview plan was based (see Appendix 14).

Although the researcher used Jakobson's communication model, this was developed to better suit the context of MAC (Section 3.2) when analysing and interpreting, and especially when writing the dissertation. To make it easier for readers to follow the analysis, the next chapter will use terminology and what was learned from the MAC communication model developed (Figure 11).

5.2 Communication analysis in and between links of the MAC chain

5.2.1 Communication in MAC in senior management

We start with the MAC chain from the senior level (Figure 14). Organizational-level self-reference (see Section 2.1.4) is the result of inter-communications and auto-communication on an individual level. Senior management's aim is to create the basis for organizational self-reference. For senior management, communication is through interpretation of the present and future environment and organizational situation; that is, self-reference or auto-communication of the organization by strategic means. The purpose is to set objectives for the organization, and to subsequently determine the actions and changes needed to achieve those objectives. From a MAC perspective, senior management's aim is to commit to creating MAC system, and to determine the tasks to compose of the MAC system.

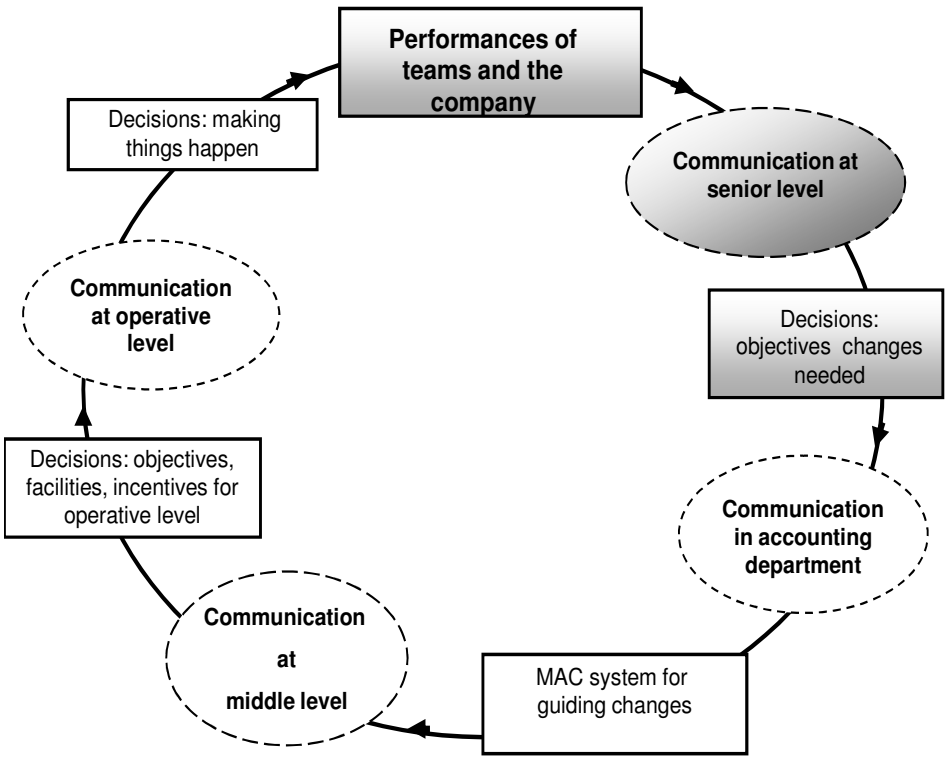


Figure 14 Senior management link in MAC chain

To analyse the communication process at a senior management level, the researcher conducted interviews with senior management team members: CEO I, who worked for PL between 2000–2007; CEO II, who worked for PL between 2007–2008, the production

process manager who worked with PL between 2000–2010. Even though CEO I who worked for PL 2000–2007 had left during the research period, the researcher thought it was worth interviewing him in order to better understand the context of MAC at PL. Furthermore, interpretations and analysis were also based on the researcher's observations from her participation in management team briefings and in senior and middle level managers' meetings. Observations made through participation in these meetings, and from the minutes and agendas of the management meetings (Appendix 7, 8, 9, 11) were collected and analysed for research purposes.

Defining sender and receiver

At the beginning of 2007 the company's economic situation was extremely poor, but everybody at PL knew that they had done a 'lot of work'. A result of the inconsistency between the idea of having done a 'lot of work' and the very poor financial performance was the general perception that the figures from the MAC system did not reflect reality and were not usable in the management process. Accounting was seen as separate from the 'engineering' organization. Based on this, it was thought that MAC was not important and useable in the management process. CEO I, who worked for PL 2000 – 2007, recalled in 2010:

> All the time I tried to watch that we did not overburden people with accounting. Otherwise they would have had no time for professional work – for engineering questions. Do not disturb engineers too much with data collecting and reporting.

In PL it had become common to call reports and analyses after their controller's or accountant's name, such as 'Mary's tables' or 'Helen's analyses', indicating that the reports were not seen to be about the department's results, rather a 'creation' of the controller. In other words, it appeared that accountants and controllers were responsible for the financial results and figures in reports, not managers. This perception was supported by findings from the management meetings. There was usually a monthly meeting to discuss the previous month's departmental results. In these meetings, the controller presented departmental results on the whiteboard and interpreted the figures – explaining why the results in one or the other department were as they were. Department managers listened to their 'financial results story'. Furthermore, accounting and engineering sections were physically separate in PL. Moreover, the engineers were males, accountants and controllers were females – making the separation

even greater. Information from the MAC system was "ladies' stuff" – i.e. not taken very seriously in the engineering (male's) world. Therefore, MAC information came from and was connected with the accounting department, and the author of these results and numbers was the accountant or controller. This meant that the power of the MAC information was impaired - managers kept a distance from the accounting system and figures.

During the research period (2007-2008) the senior management team tried to change this situation. As the economic situation was quite critical – control over the company and its resources had practically collapsed – there was a need for a tool which could have a significant impact on the patterns of actions on a short timescale. Senior management believed that people would adopt the figures in the reports as the reflection of their work, rather than a result of the 'chemistry' of the 'third floor', as senior management and accounting department in PL were commonly referred to. Based on the MAC communication model (see Figure 11) the aim was to change the *receivers*' understanding of who was the *sender* of the MAC reports, thereby giving more power to MAC as a management tool.

The MAC system developed 2001–2003 was targeted at senior and middle managers. Although between 2000 and 2006 the management style at PL was quite autocratic and focused on engineering, some financial information was shared with middle management. Accountant II recalled how MAC was implemented at the lower levels before the research period:

> Accountant: MAC was created for managers.
> Researcher: What do you mean by 'managers'?
> Accountant: Middle managers, and... then there is the 'grey mass'.

Senior management's aim during the research period (2007 – 2008) was to make the organization more transparent, share information with everybody, stop the waste of material and labour resources and make processes more efficient. Senior management introduced MAC as an inter-communication tool between management levels throughout the company. CEO II explained in summer 2008:

> MAC is not for senior management. MAC is for everyone to understand what is important, and see his/her role in the organization. The MAC system is the tool by which one can reach a person's brains.

To conclude, the MAC system developed during 2001–2003, and which officially operated until 2007, for senior and middle level managers - was more a tool for *acting at a distance*.

The ‘new’ MAC system, developed between 2007 and 2008 was for generating economic actions (Hopwood, 1990) at every organizational level, as a tool *for acting by accounting*. Senior management believed it was important to obtain and share financial information from and with people at the operative levels. The aim was to control resources and coordinate economic processes on the level where they actually happened, that is, to create MAC system for *acting at a distance* and *acting by accounting* at the same time. To create economic action at every level of the organization PL extended the list of receivers of MAC to operative level managers.

Professional knowledge

In any MAC process, it is important to analyse the *sender*’s and *receiver*’s *professional knowledge* (code system) (see Figure 11). A *sender* tries to give the *receiver* information which they are able to understand and use, that is, they have a sufficiently similar semiotic space (Figure 7), including the code systems. Therefore the MAC implementation depends on the *sender’s professional knowledge* (accounting and engineering code – see Section 3.2) as well as how the *sender* estimates the *professional knowledge* or code system of the *receiver* and the *receiver*’s professional code system.

As mentioned previously, PL was generally recognized as being a high-class organization with well-educated and experienced engineers, with most managers and specialists (including the head controller) in PL having a university degree in engineering coupled with over ten years’ work experience. The previous MAC system (developed at the beginning of the 2000´s) was grounded on the understanding that financial data is not very well connected with engineering reality. The main code used (until 2007) in the management process was based on engineering, not on finance. It could be said that the engineering expertise was strong and commonly used in PL, but the accounting expertise seemed to be more problematic. Before and even during the research period there was a belief that the accounting code was too difficult for those in the company who were not accounting professionals. CEO I recalls his work with the company 2000 - 2007:

> Reports which Oracle split off were understandable only to accountants and controllers. If I wanted to understand them, I had to make special time and get training - which means that we had to educate all our employees. But work is more important.

Contrary to CEO I, the management team working at PL during the research period (2007–2008) did not see any problem in using financial information at the senior level. For example, CEO II says:

> I use financial information actively. Certainly, there could be details which I cannot see immediately, it depends on experience...but for me with the big picture – I can understand – but for middle level or operative level managers – it could be a big headache

This indicates that members of the senior management team saw problems in using MAC information at the lower levels, and even at the middle level. Manager I stated:

> Reports are created by the logic of senior management. This means that reports sent to lower levels are understandable for us. But if reports go to the lower level, they may no longer be understandable for them. The interpretation could be very different.

Although senior management developed a MAC system for every level of the company (different report formats and measures for different levels), they saw problems in the lower level managers' auto-communication process - interpreting and understanding the meaning of the reports. Manager I explains:

> The question is: are our employees able to use this information? Are they able to draw reliable information from these reports? There we still have a long way to go. We have to give the operative level managers the ability to read the reports. We have to work through the reports together with them.

Institution

The next factor to analyse in communication model of MAC was the *institutional* or social code (Figure 11). For many years there had been a general acceptance at PL of the monopoly-based understanding of the organization, where the financial indicators did not play an important role. Although PL started in 2000 as an independent company, in reality PL was always largely dependent on PPL (the parent company of PL). Initially PPL was the only customer of PL, and later on the most important one. As CEO I recalled the beginning of the 2000´s:

> We had to do any work that PPL needed. Prices or costs did not matter. All work was just from the list. At this time (2000 - 2005) there was no competition in our market. PPL commissioned work from PL and we did it. If there was too much work for PL, then PPL gave the work to some other company.

Based on the monopolistic philosophy, at the beginning of 2007 it had become common to explain the economic results not in terms of inefficiency and waste of time, materials and labour, but with there being no time to issue sales invoices after completing work or by sales prices which were 'too low'. CEO I recalled:

> Our aim was to earn a profit … it meant the price must cover all our expenses. In 2000 when PL started, our aim was to work out our full costs. In 2005/2006 the market situation changed – there was a lot of competition in the market. There were small companies with lower costs … and I don't know which tools they used additionally…anyway, prices fell. The price did not cover our expenses anymore.

Managers at PL thought that: to make a profit, the price just had to cover full costs. If there were more expenses, the price must be higher. It was important to know full costs in order to set the right price.

As managers and accountants recalled, when PL was part of PPL, the management accounting was based on one table, called production cost, which was sent from PPL head office every month. It was the budget for the coming month's expenses. Managers had to write budgeted expenses to the right row. Based on that, MAC was not developed for efficiency analyses but to meet budgeted costs. Matching the expenses to the budgeted costs was called 'budget discipline'. As CEO I recalled about the early years:

> The important thing was to write the expenses to the right row. If not .... at last ... it meant that actual expenses were made to fit the budget ... somehow.[30]

According to CEO I, in the open market environment PL managers found themselves in an unfamiliar situation – not everybody understood that the organization needed cost accounting for analysing and managing costs and thereby processes – to compete in the market.

During the research period there was still a problem with 'budget discipline' at PL. The problem was actually that managers did not write off costs to the account or project

[30] The researcher's interpretation: dots here indicate pauses in the interviewee's narrative when looking for softer or more acceptable words to describe the manipulation of data.

which was substantially connected with the process. They attached expenses to the account or projects with ´enough capacity´ for costs.

At the end of 2007 senior management was no longer satisfied with the quality of the MAC system at PL. They thought that it contained lot of manipulation and a lot of corrections of the previous months' inputs. The result of the corrections was that they perceived two problems: first, the senior managers did not have a picture of the 'reality' of the processes; second, the corrections made it possible to manipulate accounting data, which resulted in weak control over resources. Therefore the MAC chain had destroyed the dialogue between different management levels, or at the very least it was not trustworthy. CEO II described the problem in 2008*:*

> I think our data are not reliable. Not because of the technical accounting system but because of the human factor. I suspect that the primary data was changed…made to match the budget. Nobody wants to be the herald of bad news – something is not right, something is going in the wrong direction. The primary data is already changed at the operational level to better match with the budgets. It gives satisfaction in the short term but in the long term – how do you run this company if the information collected is based on emotions, feelings, and there is no mathematics, analysis! In the short term it could work for operational level managers, but in the long run…it means our MAC analyses do not show what actually happens there at the ground level. I think there is lot of manipulation.

To gain control over resources and to minimize the manipulation of data, senior management saw the need to introduce online data collection. Manipulation was possible if data was collected at the end of the month and/or corrections were made in the accounting system afterwards. CEO II explained*:*

> People manipulate data when they see the final result. Then they start to think how to change the primary data to fit the result in terms of the budgets. All we can do to stop it – is to make the accounting system more online-based, create mechanical data gathering, the 'data gathering machine'. No emotions, no human factor there. It must just be cold mathematics. No retrospective corrections can be accepted.

To sum up, senior management took into account that people at different management levels could be using different code systems which could cause misunderstandings and a situation which could make MAC less useful as a mediating tool and *acting by accounting*. However, senior management saw as the solution trying to justify the code systems (way of thinking and knowledge about MAC) used at different management levels and departments, and so to develop financial expertise at different levels at PL. At the same time, the history of PL and its

role within a monopolistic corporation made it difficult to use a market economy-based (philosophy) code system and organizational culture there. There were two different conceptions of the purpose of the MAC system: it was seen either as a tool to coordinate actions and make processes appear more efficient against budget discipline or as a way of calculating a fair price, a price which could cover full costs.

Genre of the contact

PL's accounting system was part of PPL's accounting system, based on an Oracle database – an accounts chart, a reporting system and analyses based on central software coordinated from PPL's head office. All changes and improvements made to PL's formal accounting and reporting system had to be coordinated with and accepted by PPL's head office. PL had no technically independent accounting system. Staff at PL in early 2000´s thought that an independent accounting system would be too expensive for them to use. Another problem arose from the connection with the PPL accounting system; it was very slow – monthly reports and analyses did not arrive before the twentieth day of the following month. CEO I recalls:

> At PL the big problem was that we had to use the PPL accounting system. It was actually impossible to improve it, to make it more useful for us. PL was too small within the PPL corporation nobody was interested in making changes to the PPL accounting system which were necessary for us. We tried to improve it, but actually failed. The PPL accounting system was too big, and at the same time PL as a company was quite complicated. This size of company needs its own, flexible, online, customized accounting system. To make MAC more online and flexible, we used Excel rather than the official accounting system.

At PL managers were not satisfied with the instrumental side of the accounting system. The accounting department made an effort to make it more usable. Over the years it became possible to change the account chart, add project codes, in addition it used MS Word and Excel resources for separating and producing detailed information and so on. Additionally, from 2006 it was technically possible to get information from the accounting system online, that is, to obtain information about a project's direct costs online, but to the researcher's surprise nobody used it.

At PL it was common to use monthly reports and analyses that were originally based on PPL formats. Every month a controller produced one standard report about the previous month and the fiscal year to date. There was information about department results, compared

with the budget and the previous year. In addition, department managers received huge Excel spreadsheets with detailed accounting data about department and ground level turnover, costs and expenses.

During the major changes in the research period (2007-2008) there was an obvious need for powerful amplification of the financial information and for more detailed information and analyses. Based on these, the second improvement in terms of MAC reporting was connected with the *genre* of the reports. Senior management supported the idea of making reporting more personalized at the operational level (for an example of the report used, see Appendix 7) and connecting it with an outcome-based incentive system. During the research period, PL introduced personalized reports by ranking teams to amplify (give more power) the messages mediated by MAC. The aim was to give more power to the financial measures to help to change the organizational culture and improve results. CEO II said of personalized reporting:

> Before we had this system, there was one mashed soup, results were not personalized everybody thought that somebody else's work was not very well done. But if there is the name of the foreman, and results are ranked, then it is very personal. It is a totally different understanding and feeling! It gives a very clear message of what is important.

To support the improved MAC system work in the company, senior management introduced weekly meetings for middle and senior managers (see Appendix 9). The main topic of these meetings was MAC: budgeting, reporting, incentive systems and ranking the results of foremen.

Conclusion

The MAC tasks at the senior management level were to achieve financial goals and make the company processes more flexible, more compatible with the competitive market environment, and to achieve greater efficiency. Senior management in the company during the research period perceived the need to use MAC as tool for *acting at a distance* and as well as *acting by accounting* (see Section 2.1.2). The latter involves having to engage foremen by giving them information on their own results as well as the company objectives and results. The company moreover had to show trust and educate knowledgeable employees while applying strict control to materials and labour. To conclude in the analysis of senior managers working for

the company before and during the research period, there was a difference in communication factors (Table 3).

First, the understanding of the *sender* (Figure 11), according to CEO I the sender was the accounting department but according to CEO II the managers. This means, in the opinion of CEO II that members of the organization had to adopt financial information as reflection of their actions and the message sent by MAC had to be accepted as supported by senior managers, and not from the accounting department. MAC reports have to reflect the 'engineering world' or processes although they are conveyed in accounting language.

Next, the *receiver* of the MAC system could be any person in the company. One of the most important *receivers* could be a foreman, because this is where changes become reality, where the company's results are mostly produced, where most of the resources are used and customers served.

Table 3 Comparing understanding of MAC among senior managers

Factor	**CEO I (2000-2007)**	**CEO II (2007-2008)**
Sender	Reports produced by accountants and controllers do not reflect outcomes very well.	Reports (have to) reflect outcomes of departments and teams.
Receiver	MAC is useful for senior and middle level managers.	MAC is useful for (almost) everybody.
Professional knowledge	Processes described used engineering terms, sometimes financial terms.	Processes described used engineering and financial terms.
Institution	Stable monopoly. Falsification of data is sometimes accepted.	Competing in market, efficiency of processes. Falsification of data is not accepted.
Genre	Report system used years are still good to use.	MAC needs a strong amplification by personal approach in ground level.
Contact	MAC is an awkward formal system.	MAC (has to be) an online customized systems which is supported by meetings and trainings.

Third, the adaption of code systems (*professional knowledge* in the MAC communication model) throughout the organization: to implement and successfully use MAC, a communication system has to introduce an accounting code system in addition to the engineering code system.

Fourth, based on the large-scale changes required in this company, there was a need for strong amplification in the MAC process. Factors in the MAC communication model more related to amplification are the *sender* and the *genre*. While working with the *sender* factor to more amplify MAC, it is important to give more power to the *genre* factor as well: in this case, the personal approach, ranking, and amplifying of cost information by incentive systems.

Fifth, it is necessary to use a social *contact* system – meetings and training sessions – alongside a technical *contact* system to make the accounting system work better.

Sixth, all previous methods together with different social events have to help change the organizational culture and make it possible to change the management methods and style (*institution*), to make the company more flexible and creative in a very fast-changing business environment. Manager II from head office described the changes in the organization during the period 2007-2008:

> The biggest change during the last year was in the management style. It is better now. Previously, information did not move around the organization. The company was closed — now it is open, friendly. Even people are more open, free. Before, even at head office, the corridor was dark [referring to a long windowless corridor]. Now the lights are on, sometimes people even laugh.

The most important difference and the leading factors in the senior level MAC communication process guiding the changes in MAC were, from the researcher's perspective, the *receiver* factor – who the *sender* (senior management) perceives in the role of *receiver* in the MAC process and the factor *institution.* Although it is difficult to say which one is more dominant (see Section 3.2 pp. 79). The next section addresses how objectives for the organization were set and how, through determined action and the achievement of change, those objectives were transmitted to people throughout the company.

5.2.2 Communication in MAC between senior manager and controller

In the management accounting department (in this case the controller together with accountants) the product of MAC communication was the implementation of an MAC system (Figure 15). Decisions were made about which reports, data and software should be used in the MAC process. Inputs at this level were objectives mediated by senior management, and decisions on which organizational changes were essential to achieve the organizational objectives. The input in the management accounting department depended on auto-communication within senior management as well as inter-communication between senior managers and controller and/or accountants.

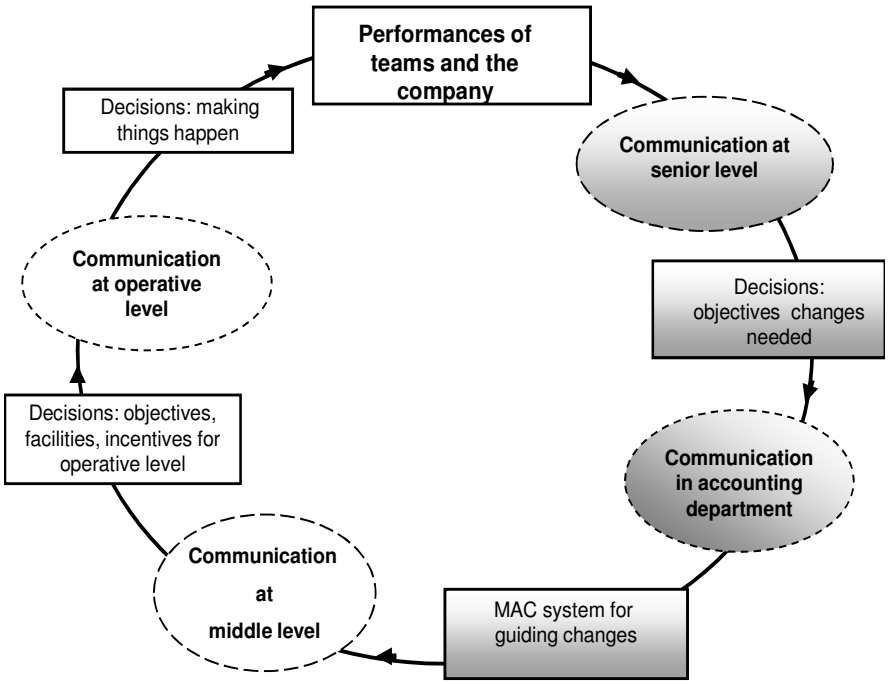


Figure 15 Senior management and controller link in MAC chain

Specify the Sender and Receiver

As mentioned before, it was common at PL to consider that MAC figures did not reflect the engineering reality very well. Connected with that, the MAC world was separate from the engineering world. In the MAC context, it is important to understand how MAC specialists and accountants perceive the situation and their role in the MAC process. Controller I described her role in the organization in 2008:

> My role is to set our objectives for a given period, coordinate them, monitor, analyse deviations – make cost analyses. Our managers are not used to using numbers, financial indicators. They have not grown up with these. We (the controllers and accountants) have to give them figures.

As the controller stated: “Managers are not used to using figures”. Controllers have to give figures to them. When the controller gives figures, she has to explain how those numbers are connected with the engineering reality, and if not connected, why not. She also had to tell managers their financial story, because, as was common at PL, figures given by MAC are accountants’ figures, not managers’ performances. Therefore, by her behaviour, the controller supported the concept that the author of reports (who is responsible for them) or the *sender* is the controller.

At the senior management level the leading factor of the MAC communication process was the *receiver*. This was the key factor on which the tools planned in the MAC system depended. The controller saw problems with offering usable MAC information to both senior managers and operative level managers. At the senior management level, the controller perceived that the main problem revolved around communication between managers and the controller. Controller I explained the problems in communication with senior management:

> I think that our MAC system does not support senior management very well. They could ask for information or say what they need. We, the accountants, try to offer them different information, but we never know whether this is what they really need. I do not think that our MAC system supports senior managers very well.

She felt that she together with the accountants was not able to offer enough usable information to managers. They did their best, but they needed more support and communication from senior levels. The controller thought that the MAC system could support middle managers quite well:

> Our MAC system may be useful to middle management. But at that level there is a number overload. Managers don’t like it.

As seen, at the same time, she did not believe that every manager used the MAC official system actively enough. To introduce MAC as tool for *acting by accounting,* it was important to create a technical MAC system from which to obtain and disseminate information to every level. Controller I agreed with the general idea of using the information at operative level. However, the controller did not actually believe that the system could work in the organizational environment at every level. Controller I explained:

> At the operative level there is still a lot to learn. They are not used to thinking about costs, how costs are related to processes. It will need a lot of explanation before they will understand how their actions are connected with costs and profit. To their mind the owner of the expenses (responsible of expenses) has been the company, it is not the manager's duty to economise resources.

Based on her thoughts, for example, (in the interpretation of the researcher) given the chance, the controller would try to continue in the previous style – tell financial stories to managers at meetings, give them figures and deny managers the opportunity to explain results and situations. Additionally, between the controller and CFO there was an ongoing conflict (lasting for years) over whether to use detailed cost information or not in the responsibility accounting system. There was a situation where on one the hand the controller supported senior management actions in developing the MAC system, but on the other she did not have very much faith in them.

To conclude, the controller saw the main *receiver* of the MAC as being the middle and senior level managers. She was working to include operative level managers in MAC, but she did not have very much faith in them.

Institution and contact

In PL it had become common to explain the economic results in terms of prices which were 'too low'. If there were more expenses, the price must be higher. The important thing was to know the full costs, to be able to ask the 'right' price. The controller shared the same understanding. Controller I stated in June 2008:

> We are here to monitor costs. This is because last year we tried to verify whether the prices in our contracts were right or wrong. We need this accounting system to get information about full costs. Next year we will start once again with negotiations with PPL about prices.

In addition to the right price calculation for earning profit, there was a hangover from the monopolistic era in terms of budget discipline, which included the rule that all budgeted costs had to be fully accounted for on the right row. After implementing projects and team-based accounting, the budget discipline system became more complicated. Before the detailed accounting system, managers were careful to ensure that the estimated total amount of costs equalled actual costs. Now they tried to make estimated and actual costs equal in every

project. This necessitated lot of corrections in the accounting entries. Controller I explained the problem in 2008:

> Now our detailed accounting system causes more corrections. When the project was almost completed it was understood that the way of thinking was wrong - costs have been written to the wrong account or object. There a lot of corrections and it means costs are out of control. To bring materials under control…there is still plenty of space for improvement.

During the research period, senior management understood that it contained a lot of manipulation in the form of corrections to the previous months data. In management meetings there were many discussions regarding the problem. There was even one special senior and middle manager meeting about corrections to the accounting (see Appendix 8). Accountants mentioned the problem when making corrections, and agreed with senior management that corrections and entries made months later caused a lack of resource control. Controller I explains the cause of corrections in 2008:

> People do not take responsibility themselves. Making the budget or quoting the lowest offer in the market results in mistakes in planning the processes during the project. If they see that some project is running at a loss, then it is corrected via another project if the quotation was high enough (in order to cover this project's costs as well).

It was common at PL to explain corrections and mistakes in project calculations as the result of an accounting system that did not fit PL processes and needs. Because PL did not have a technically independent accounting system, it was also thought that making a usable accounting system for PL would be too expensive and almost impossible. Accountant II put it this way:

> At PL the belief was (in the early 2000s) that it is impossible to make accounting more flexible and suitable for PL. Actually I think the point was that everybody was so afraid of the head of accounting at PPL. It seemed simpler to do accounting in Excel than to negotiate with PPL head office. But it was not so! Everybody at PL thought that Oracle was useless for MAC! It was absurd! When we understood these reasons we started to develop our MAC system. Almost everything was possible it just took a little time.

The accounting department made an effort to make accounting data more usable for PL. Over the years it became possible to change the account chart, add projects codes, etc. From 2006 it was technically possible to get direct costs from the accounting system online, but this did not

work in reality. Material and labour accounting entries were also never made before the final deadline – the tenth day of the following month. Controller I explained the reasons in 2008:

> It depends on behaviour patterns in the company – we have official rules that any document should reach the account in a day. It only depends on people. During the month they collect invoices and other documents in their drawers and at the end of the month forward them to accounting.

Accountants and controller agreed with senior management that corrections to entries made months later caused a lack of resource control, but in reality there was a lot of correction every month (and on occasion one or even two quarters retrospectively) to make project information correct or to 'design' monthly results. To decrease the human factor effect on the accounting there was a need for an automated, online accounting system. Although accountants agreed that the MAC system did not work very well, there was no power or natural agency to formally take responsibility for making it work online (which was technically possible). Nobody wanted to spoil their positive relationships with their colleagues. Good relationships between employees seemed to be more important than following the rules and controlling resources and processes.

In addition, controller and accountants thought that MAC was a technical, IT-based system. They thought it was a technical system-based tool for automated, formal accounting and reporting. Controller I pointed out that spending 15 per cent of her time talking with people was quite a lot. She explained:

> I think that if these complicated systems like the operative-level wage system are implemented, it could be work in itself, there is no longer any need to watch it all the time … they get the data, and that's it.

The controller and accountants were busy with the technical side of the MAC process. Whereas in the early years there was a problem with using and implementing accounting software for PL, later the technical side of MAC was almost in place, but it was not used because the 'human factor' problems were barriers. On the other hand, accountants were used to managing technical problems, so they believed that software was the key issue to using MAC system. If the technical side was good enough, the system should work by itself. Unfortunately, this did not happen.

Professional knowledge

As noted in preceding chapters, the controller and accountants did not believe that managers could use relatively complicated financial indicators. Based on this, the controller promoted the simpler, turnover-based control system. There was still some support for the previous senior management approach that could be expressed as *not disturbing engineers too much with data (costs) collecting and reporting.*

Accountants thought that the accounting code in general, and especially some more sophisticated accounting methods like the progress method were difficult for everybody at PL to understand. Although the method had already been in use at PL for many years, during the research period presented here, there were still misunderstandings about it.

The main misunderstanding was related to the history of PL. At the beginning of the 2000s, the major activity was maintenance. At that time PL used the progress method only once a year – for financial accounting for completing the annual report. Later, when construction became the main branch of activity, the company had to use it monthly, and this led to misunderstandings. Eventually, the term turnover assumed a different meaning than it had in the past. Previously it had meant the amount referenced in the sales invoices. Now it could depend on the costs record of the construction reports. But as Accountant II put it, managers used the progress method for 'designing' monthly results:

> Some managers do not understand very well how the progress method is calculated or how it relates to processes, but they use it for manipulation! They manipulate numbers that way, but at the same time they do not understand how it actually works. They believe that it is like one additional tool for manipulation alone. They use it to 'design' the monthly results.

During the implementation of the MAC system developed the accountants and controllers complained that managers did not understand this very complicated system, despite training and explanations of the financial indicators. They saw the biggest problem as being at the operative level. Justifying the use of code systems at operative level, by their opinion, would take too much time and energy.

To conclude, controller and accountants were not sure that the accounting system was familiar enough for managers to use in their management processes. Compared with senior managers, accountants were even more pessimistic; in their view there was a problem at every management level in terms of using the accounting system, but the most problematic was at the operative level. From the accountants' point of view, there was still a long way to go

before it could be said that there was a true understanding and full use of MAC as an *acting by accounting* tool at the operative level.

Conclusion

To conclude the analysis of controller and CEO communication, there was a difference in communication factors between the CEO II and the controller (see Table 4).
The controllers view was more similar to that of the former CEO I (see Table 3). The changes implemented by the CEO II were not very well supported by the controller. The controller was not sure that the CEO's aims for MAC were realistic. She doubted that operative level managers could be the receivers of MAC, or whether they would be able to use MAC information successfully.

Table 4 Comparing understanding of MAC among senior managers and controllers

	CEO II	**Controller**
Sender	Reports (have to) reflect outcomes of departments and teams.	Reports reflect processes in departments and teams (if they are not manipulated).
Receiver	MAC is useful for (almost) everybody.	MAC is useful for middle level managers, not for operative level and top managers
Professional knowledge	Processes described used engineering and financial terms.	Managers, especially operative level managers are not used to using financial terms. MAC needs to contain simpler (turnover) reporting.
Institution	Competing in market, efficiency of processes. Manipulation of data is not accepted.	The aim is efficiency of processes. Manipulation of data is sometimes condoned.
Genre	MAC needs a strong amplification by personal approach in ground level.	Better to avoid personal approach in operative level reporting.
Contact	MAC (has to be) an online customized systems which is supported by meetings and trainings.	MAC (has to be) an online customized automated system.

In the case company during the process of developing the system of MAC, the management team[31] held numerous meetings resulting in intensive communication between senior management and the controller. During this process the code systems were amended to be more alike. In addition, the overlapping area of the semiotic space could be extended making it possible to better understand each other (see Section 2.2.3, Figure 7 and 10).

The most important difference and the leading factors in the accounting department communication process in MAC were, from the researcher's perspective, the factor r*eceive*r, i.e. how the controller perceived the role of the *receiver* in the MAC chain. The second dominant factor between CEO II and controller was the *institution* – how differently the controller and CEO II interpreted the economic and organizational environment in the organisation.

5.2.3 Communication in MAC among middle management

The next link in the MAC chain is middle level management (Figure 16). The communication process leads to the decision on whether and how to use the MAC by middle level managers. For example, in the case company the MAC system did not work in some departments. To understand why a formal MAC can work in one department but not in another would require a more detailed analysis of the communication processes in the links of MAC chain.

To analyse the communication process at a middle management level, the agendas and minutes of meetings with senior managers and middle managers for research purposes were collected and analysed (Appendix 9). The researcher interviewed middle-level managers working for the company during the research period (Appendix 11).

According to Lotman (1970) and Torop (2008) organizational communication differs in stable and dynamic organizations (see Chapter 2.1.4). The aim in the former situation is primarily to preserve the status quo and merely to describe the reality. In the latter organization, the aim of the model applied is to change the reality by affecting actions. In these situations use is made of the conversion model, in which a meaningful encounter with discrepant information can change an organization's accepted goals, acting patterns and culture. Changes are initiated by giving the actors information about their activities, organizational processes, aims and strategies with enough amplification.

[31] The management team in the case company included senior management, the principal controller and CFO, see Figure 12.

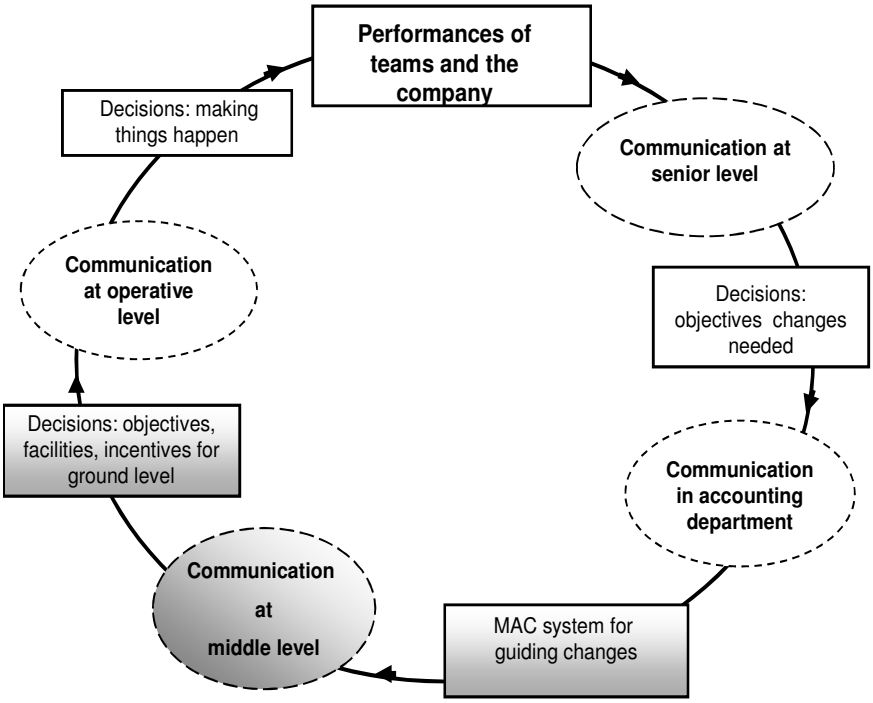


Figure 16 Middle management link in the MAC chain

While the company's economic results in recent years were not good, the situation differed across departments. In the case company we can distinguish stable and dynamic departments. Three of the departments had earned an adequate profit almost all the time (let us call them stable departments) – one of the "rural" department, the "construction" department and the functional department (for more on departments see Section 4.2.1). The managers in those departments had worked with PL for about ten years and continued to do so during the research period. Three of the departments had been making a loss in recent years – two departments were located in cities and one a rural area. The biggest changes were necessary in the underperforming departments. The aim was to make them profitable (call them dynamic departments). The department managers of the dynamic departments were all replaced during the research period. Next we continue by analysing middle managers communication in the MAC process in the two different groups: dynamic and stable departments.

5.2.3.1 Communication in MAC in dynamic departments

Defining the Sender

Managers who joined PL during the research period (2007-2008) were tasked with turning around the struggling departments. They faced an atmosphere of mistrust between employees and managers. Department manager V described the situation and his task:

> I came here to create the team and develop communication. Actions in this department were not visible to senior management, the atmosphere was full of electricity and there was no volition to work.

The primary aim of management was to restore *acting at a distance* in terms of long distance control over these departments. For this reason, it was thought necessary to employ managers who were capable of working together with senior management. Their task was to make MAC work in these departments, and make things happening in departments visible to senior management.

About one year later one could say that the task of the managers had almost been accomplished. The departments financial results were acceptable and the new teams were in place.

In the dynamic departments managers needed to cooperate with senior managers to provide information on operative level to senior management. At the same time they used the official MAC system to transmit the senior level message that financial indicators and performance are important. In other words, they supported creating MAC as a tool for *acting at a distance* and *acting by accounting*.

Additionally, the department managers were sending a clear message to the operative level managers that financial results in MAC official reports reflect their teams' actions quite well. MAC reports mediated the teams' own processes and their results. Department managers explained to operative level managers that the teams' budgets were based on organizational objectives. Budgets mediated the message from the senior management about the task and objectives of the team.

Defining the Receiver

Although sharing company and ground level teams' financial results across the company was a new practice in this company, it was something the managers of the dynamic areas clearly deemed necessary. The researcher asked about sharing official financial information with operative level managers. Department manager V talked about sharing MAC information with foremen:

> I forward everything. As I understand it, they study it very carefully and discuss it later with each other.

Department manager II said*:*

> I forward everything. But I think there are too many figures. I make an extra, smaller and simpler report from these huge reports and write a short analysis below it. I convey out the most important information.

Department manager II added:

> Financial information motivates people. It is impossible to measure everything in terms of salary. For example, our 'grand old' foreman – he ran into my office at the end of the month and shouted that he had reached his target. It is a breakthrough! It must be the 'beauty of the game'.

These department managers considered that the financial information works at the operative level – as *acting by accounting* through the official MAC system that is, the *receiver* in the MAC communication system in the dynamic department is and should be the ground level managers.

Professional knowledge

Although the controller was not very positively disposed to these changes and thought that foremen were not able to use financial information, the MAC in these areas worked as intended. It appeared that middle level managers could use the MAC system as *acting by accounting* because operative level personnel were knowledgeable enough to use it. Department manager V explained:

> For my employees the financial results and the budget is very important. There is no problem with understanding. Only some people whose results are not good enough, they don't think that they are weak at organizing processes. They say that the management and MAC system are wrong and we look at the wrong measures. For example, they propose it is better to use turnover rather than the contribution margin, or it's better to take one month's result rather than three all together, etc.
> Actually here in my department it was never a problem in terms of foremen or even the workers understanding the meaning of financial data, for example contribution margin. On the contrary, in the general meeting with managers and foremen, my foremen proposed to head office that they should use the contribution margin as a key measure in the workers' output salary system as well.

Another department manager talked about understanding measures at the operative levels:

> They are educated engineers, and they understand the meaning of costs or even what depreciation is. Foremen discuss this contribution margin topic in depth.

The department managers perceived no issues in terms of understanding and interpreting MAC indicators. One manager, however, added that if there was a problem with organizing work (that is, with the engineering code or knowledge) then there would be a problem with, or complaints about, the MAC system as well.

Institution

According to the monopolistic philosophy, during the research period there was still a problem with the 'budget discipline' at PL. Senior managers surmised that lower-level managers did not write costs into the account or project which was substantially connected with the process. They used to use periodization of costs of materials to design short-term results and make a lot of corrections to the previous months' inputs. The corrections made it possible to manipulate accounting data, which resulted in weak control over resources. The researcher asked about using the periodization of costs of materials to design short-term result among foremen and middle managers. According to the managers of dynamic departments there was no reason to use methods like this because middle managers and foremen were interested the getting correct data about the processes. Department manager V confidently rejected this belief about his department, he stated:

> If you look – there is over-performance of turnover and profit. This means that the answer is a definite no. They calculate to be sure that they fulfil the plans, not to manipulate numbers.

Department manager II talked about the possibility of designing results at the middle level:

> Of course there is an opportunity to use some methods to dress up results in the short term. I don't use them. We need to work to make results better, not use 'chemistry'.

Although it was common at PL to use the monopoly era-based social code system and designing results to write costs in the "right row", those departments where the managers were replaced and which needed changes could not use such methods. Department managers needed support from the MAC system and senior management to make changes happen. There was no reason to improve or 'design' the data in the short term.

The genre of the reports

Faced with the large-scale changes required in these departments who tried to improve auto-communication or self-reference in the department by increasing the quantity of information. At the same time they tried to improve its quality and in that way to generate change in itself (see also Section 2.1.4 on conversion self-reference model). As shown by Catasus et al. (2007), indicating alone (i.e. the changes in quantity of information) has little relevance for acting: reports and numbers themselves do not affect actions. To affect actions, indicators have to be connected to some amplifying element. During the research period, PL introduced personalized reports and the ranking of teams to amplify the messages mediated by MAC. Although it could be said that ranking teams' results, naming the foreman and sharing the information throughout the company could be seen as unethical, it does seem to provide sufficient amplification to the message sent by the MAC system. Department manager II described the ranking of the results of the foremen teams:

> I have seen that when they get this information, the next 2-3 hours are totally quiet in the offices, as people are calculating, analysing, comparing themselves to others.

The dynamic department managers' opinions were that in order to make changes in the organization happen - to change the way of thinking and patterns of actions - it would be important to use the MAC system as a conversion self-reference model throughout the company. Based on the large-scale changes required in these departments, there was a need for strong amplification in the MAC process by the personal approach of ranking teams' results and sharing the information throughout the company.

Contact

At PL senior managers were not satisfied with the formal accounting system because a lot of correction to entries made months later resulted in untruthful reports and delay of information. In short, the problem was called "online accounting". Although from 2006 it was technically possible to get direct costs from the accounting system online, nobody used thus and the online accounting did not work in reality. Material and labour accounting entries were never made before the tenth day of the following month.

If at the top level the 'online' problem was connected mostly with the reliability or correctness of the information, at the middle level it was more connected with operative

management. There between departments were differences in accessing primary data. Some departments were very well equipped with operative, 'online' data about the processes. Department manager V said that foremen had their own calculations and analyses on an "online" basis:

> Workers and foremen are a team, they work and think together. They own the "online" information about their contribution margin all the time, they calculate it themselves. We – in middle and senior management - get this information a month later.

At the same time some other department managers relied only on formal data which came almost a month later. Another department manager said that the foremen in his department depended upon head office MAC reports making it impossible to get online data at the operative level. Department manager II said:

> The problem is that we have no online information about projects. Foremen do not know their data and results during the month. They do not know how far they are from the budgeted objectives. The problem is that there is no data online.

Although the controller and accountants thought of MAC more as a technical, IT-based system, the CEO introduced the weekly meetings for middle managers and training sessions for middle and operative level managers (see Appendix 8) to make MAC work. Department manager V concluded about methods which made the positive changes in economic results possible in the department:

> The method was cooperation and attention. The message is that it is important to achieve financial results. /…/ the cooperation with senior management was important. We had these weekly meetings. The financial part was most important in these meetings – it was impossible to forget it.

Another department manager said:

> People are lazy. If there is a routine whereby every week we monitor the sales or some other indicator – it works. I do not hang the tables and rankings on the wall. I talk with people every day.

To conclude, both department managers said that it would be important to develop a better formal system of MAC – to make it more online. They would like to have more support from central MAC and at the same time, they were ready to cooperate more with the controller and

accountants. In addition, as the department manager said – besides official reporting it is important to talk with people, to explain things.

Conclusion

The department managers' opinions were that in order to make changes in the organization happen that is, to change the way of thinking and patterns of actions, it would be important to use the MAC system as a conversion self-reference model throughout the company. They thought that it was very important to give information to the operative levels on company results, objectives and plans and to amplify the information through discussions, to monitor, and to make comparisons between teams and departments. They thought it very important for the amplified financial information to send a clear message of what was intended, what was important and why. It is also considered significant how operative level managers' actions conform with organizational objectives mediated by MAC from senior management.

Although the controller was not very optimistic about using MAC indicators in change processes at the operative level, *acting by accounting* seemed to work in this situation and these departments. Managers from the dynamic departments shared MAC information coming from head office with foremen, and were sure that there was no problem in terms of financial indicators such as contribution margin per employee being understood. They thought that sharing and using financial indicators at the opreative level made it possible to achieve better financial results in the department, so as to create a better professional environment, make processes more transparent and efficient and change patterns of action.

5.2.3.2 Communication in MAC in stable departments

Three of the departments of PL had earned an adequate profit almost constantly. The first focused solely on the construction of power lines, the second constructed and maintained power lines and substations and the third was functional – specializing in large, top-class engineering projects across the country. These departments had earned an adequate profit almost constantly. The managers in those departments had worked with PL for about ten years and continued to do so during the research period. But actually these were the departments where the official MAC did not work in the way the researcher and senior management assumed. To understand why MAC did not work in these departments required a more detailed analysis of the communication processes.

Defining the Sender

In the stable departments, the managers had been working for PL for over ten years. They were familiar with processes, rules and routines. In light of the financial results, one could say that the department managers were successful and the processes in these departments worked well. For example, department manager IV described his success:

> I think I have been successful. My task is to make a profit and I have done it all these years. Financial results are good and I have assembled a very good, professional team. I have completed it and saved it throughout these years.

Department manager I talked about his work:

> I think I am successful. First, I have to encourage my team to work. At the beginning it was difficult. The financial results are good as well. People are satisfied.

These managers assessed their work results in terms of financial data and satisfied employees. They said that financial data mediated by MAC reflected their activities and their success over the years.

Defining Receiver

The main aim over the research period was to develop a MAC system as an inter-communication tool as *acting by accounting* at every management level. Middle managers as receivers from stable departments were satisfied with the MAC system. Department manager IV said:

> I get all the information I need. Maybe the problem is that there is too much data, but my controller carries out the technical analyses, and I get information which is really useful.

Department manager III added:

> I have all the information. Additionally I make my own calculations and the controller helps me with the calculations and analyses.

According to these middle managers the middle level was well equipped with MAC information about the department and organizational level. Although there could be a problem with getting too much data, the middle level controllers made additional analyses and this data overload did not seem to be a big problem. From the senior management's and controller's perspective, using MAC information was more problematic at operative level, although the situation looked in different areas. Department manager III described using MAC information at operative level:

> I share all this information with my staff. Then they compare themselves with others.

Department manager IV had a totally opposite position and a very strict standpoint on giving financial information to foremen:

> I do not share MAC information with them. They are educated people maybe they want to get more information – but what they will do with that? I never gave them any financial information.

Department manager IV explained the reasons for not sharing and using MAC information at the operative level:

> Compared with other departments my employees are very well-educated. Almost everybody has a university degree in engineering. They are able to think autonomously and differently. If I share the MAC information I have to spend more time in terms of handling the information. If I share information with them they will come to the wrong conclusion because they are employees, not employers. I never share financial information with them.
> If they know that we make a profit, they will want higher salaries. It is like a snowball – it will grow very fast if you let it roll. They are very well-educated. I do not tell them our department results. I just tell them that our company is in a bad situation, but I have never used numbers.

A similar situation in terms of sharing information was seen in the third department. Department manager I explained the reason for not giving financial information to his foremen:

> Our department is small. Work is simple. We have control over the materials and services, we know what happens here. My employees are satisfied with the work and they do not need data. They have their work and they get an adequate salary. Foremen have to construct, they do not need this kind of information.

Area Manager I thought that sharing information with employees was undesirable or even harmful. He said:

> I can say that sharing information is not good at the moment - if I tell my people that we are making a loss…. then they have no motivation to work. … I have said that the profits are no longer what they were… but…accounting is just numbers, no emotions, we interpret the data here as we… want ... or as we are able to ... or….[32]

The managers evinced different reasons for not sharing MAC information with their employees. If in one department the reason appeared to be foremen being well-educated, for another manager the explanation was the opposite. The MAC patterns accepted and created by senior management were not valid in these departments. The *acting by accounting* system, or inter-communication by MAC introduced by senior management, could not work at operative level in these departments. Fortunately in the third stable department the manager used official MAC to engage employees better in the process.

Professional knowledge of accounting

The one aspect which seemed to be problematic for department managers was the progress method used in accounting to match revenue and costs in long-term construction projects. Department manager IV explained the problem with the progress method:

> Our department differs from others in that our projects are very long-term and have a large budget[33]. That sometimes cause problems with the progress method as it could make it messy and lead to mistakes. The cash-based and accrual accounting conflict with each other. Some technical mistakes could arise …. There are actually a lot of them – a lot of corrections in the accounting system at the end of the month.

Department manager III explained his thoughts about using the progress method:

> The progress method is very elusive. For example, it is not good to embellish results during a holiday period. You have to think how much to take on in sales to get the optimal result.
> Researcher - How do you decide this?

[32] The researcher's interpretation: dots in this citation indicate pauses which the interviewee made when looking for softer or more acceptable words to describe the manipulation of the data.

[33] Whereas the average project is of about 3,000 – 6,000 EUR, in this department, projects are about 600,000 EUR

> Department manager III - My controller somehow decides – she takes care that we do not make a loss. But we cannot take too much in sales. I think that accounting which uses the progress method – it is the 'chemistry' of head office. Behind these numbers – what has actually happened isn't seen. For example, one team in our department has worked very well this month. They completed a lot of projects, but we postpone some of the sales to the next month, because this month was full, there is no more space for the sales. … But these projects are completed, the work is done.

Although the manager called the progress method "the 'chemistry' of head office" and said that it was not useful for describing processes, he used it in his department to design budgeted results (i.e. to manipulate data) in the short term. To summarize, there could be a problem for department managers in implementing the progress method, which could cause technical and human error in the official MAC system. It could not be said that there was a serious problem in terms of using the accounting code system or knowledge, but some technical mistakes could happen which were normally corrected the next month, or there might be human factor problems so that data could be improved to fit short term budgeted results to the actual results.

Genre of the reports

Middle level managers did not mention any problems in terms of the *genre* of the MAC system. The management accounting and reporting systems for middle level managers had worked in a similar way for years, so at this level no surprises were mentioned by managers. The most important change made during the research period was the comparing and ranking of operative level managers. Two managers from stable departments expressed opinions about concealing any information from ground level managers. Although department manager IV did not use the operative level MAC information in his department, he thought that the system was useful and the company needed this tool to stress the importance of economic actions. He explained:

> The personal approach is very harsh. But it was justified in our company. In the situation our company was in, getting worse was not an option, we were at the bottom. We had to clarify, make the first starting shot, to get information from where results could be possible, and understand trends, where it could stop.

Department manager III, who shared MAC information with his foremen talked about the ranking system:

> I share all this information with my foremen. Then they compare themselves with others. They are satisfied with these numbers – it has been like this all the time. In our department we have created the system to analyse the cause of the results, to see why the numbers are like they are.

The department manager gave this information to show to operative level managers that they had worked well and their position in the company was quite good and stable. This department manager is satisfied with the system because comparing operative level managers gives them positive feedback on their work and engages employees better in the process. Department managers in stable departments agreed that the personal approach was useful, at least in the dynamic departments. They did not think that this tool should be mandatory in stable departments. Some department managers used positive MAC information as a tool for engaging employees in the process.

Contact

In analysing the methods department managers used to gather data about ground level processes and results, it was possible to discern differences between them. There was a dynamic department where the information about operative level processes was a problem, but in most departments it was not because they had their own 'online' data gathering and analysing system.

Middle managers from stable departments were generally satisfied with MAC information. They were supported by a department controller in getting information about projects and processes. The department manager III explained:

> I have never relied on the central accounting system! I have my own complete accounting system here. I need timely data. If I get this data from official system about the costs about a month or so later – if I see then that some project has run into the red, the next month is already almost over, if you discover this mistake, this … sin, ... or this ... place... which makes this 'minus' it is difficult to correct it – the next month has already gone the same way.

It appears that department managers in stable departments are very well catered for with primary data, even their own online accounting system. They have a permanent overview of their department and at the same time they use financial data from the official MAC.

Institution

At PL there were different understandings about the institutional code in terms of what is acceptable when using and gathering financial data. Based on the monopolistic philosophy,

there was still a problem with the 'budget discipline' at PL. Senior managers surmised that lower-level managers did not enter costs into the account or project which was substantially connected with the process. The following exchange took place during an interview with a department manager from a stable department, when talking about the success of the department and the researcher who asked about indicators the manager use to get information about the department success. Department manager III said about the indicator which he used to value the success:

> No, I do not talk about profit or turnover I call it 'budget discipline' – the precision of keeping to budgets.

When other department managers were talking about earning a profit, this manager was referring to keeping to the budget. The issue for him was as he says to ´how much costs I can attribute to one or another project´, not how well the processes in different projects were organized. As he said, it was very problematic for him that accounting organized from head office did not work on an online basis, because he had no information about the total costs of projects. He explained:

> The problem is [that] we have no online (official) accounting information. Foremen codify costs to the projects. If one were to enter the information into the accounting system, he would want to see how much he can attribute – for items like labour costs, to this project. He has to be able to note how much there was at the actual time and he has to know how much time he can write to this project. He must ensure that the project will not go into the red, but the problem is we have no online information about total project costs.

Although it was known at PL that some department managers "make data to fit the budget better", the manipulation had been condoned for many years if the department results were good. The department manager who had a problem with fitting data to the budget was actually the best middle manager at PL. As controller I said:

> Many times there have been discussions about if the profit and turnover task is fulfilled, why is detailed project accounting and analyses needed? It doesn't matter what the middle manager does if the task is accomplished - why the hell do we do additional accounting and calculations here?

Actually it was known at the middle and senior levels that some department managers did not give the correct information to head office. Department manager IV said:

> I don't know anything about 'this' department, it is like it runs itself all the time, results are normal, they work all the time just 'enough'.

Accountant II, when talking about the same department, said:

> This department did its own things as it always has done. As there were adequate results, there were no problems with them. They do not need more data and analyses from the central MAC. The result was adequate. For them there was no reason to gather more detailed data.

To conclude, in this stable department accounting was used for two purposes: actual and online local accounting for local management purposes, and official accounting for giving positive feedback to the operative level teams. Sometimes information which went from ground level to senior level was censored and improved. At the same time, ground level managers were well equipped with cost and process information gathered by a local online accounting system.

Conclusion

The MAC communication analyses permit the conclusion that the critical factor involved is the auto-communication process at the middle level. How they explain the message to themselves, and how they relate it to their actions. The result is the decision whether and how to use the accounting and reporting system, and how to react to the information. At middle management level, it is a question of how to amplify the MAC information to the next level, and how to use management accounting as a facility for *acting by accounting*? In the MAC process the middle level managers have an intermediary role between senior management and ground level teams. Their role is to translate organizational goals and intended changes to the ground level teams.

In PL two different styles of using MAC information may be distinguished. One, used in every dynamic department and in one stable department, was very similar to view of CEO's II, that information should be shared with all employees. The other one, used in two stable departments, was more like the former management style, and supports sharing MAC information with middle-level managers but not with operative level managers (Table 5). The former used MAC as a communication tool between upper and ground levels, to forward tasks to the operative level and results of actions at operative level to the senior level. In contrast, the latter did not use MAC as a mediating tool at operative level. Middle-level management proponents of the latter view believed that sharing information with operative level employees

was actually harmful to managing the production process and achieving the desired organizational results.

Table 5 Comparing middle managers' understanding of MAC

	Managers of stable departments	**Managers of dynamic departments**
Sender	Reports reflect processes in departments and teams (if they are not manipulated).	Reports reflect processes in departments and teams.
Receiver	Foremen have no need for MAC. MAC is useful for operative level managers.	MAC is useful for operative level managers.
Professional knowledge	Financial and engineering language used. Both easily comprehensible.	Financial and engineering language used. Both easily comprehensible.
Institution	Efficiency of processes. Manipulation of data is condoned.	Efficiency of processes. Manipulation of data is *not* condoned.
Genre	The personal approach is useful in dynamic situations.	The personal approach is useful throughout the company.
Contact	Concealing information from operative level managers. Have official reports and local calculations for local control.	Have official reports and local calculations. Meetings and training. Well supplied with financial information.

There was one department manager using local MAC as a conversion self-reference model at the operative level to coordinate operations in his department. He very actively used planning, reporting and incentives inside the department to amplify his message to ground level managers.

This department's results had been quite stable and positive for many years, and for that reason there was no need for a formal MAC system to create changes in terms of the organization to gain additional support or amplification from senior management and central accounting. In MAC terms this department worked very much as the interviewees said — independently. However, on the other side the senior management did not have any objective information about processes at operative level in this department. Primary data was improved or modified. The MAC system of *acting at a distance* could not work at the senior management level.

There were department managers who did not share financial information with operative-level employees, or if they did, as they said, the information was censored or "interpreted as we want it to be." Not only did the managers not amplify the financial information coming from head office, they cut off MAC as an inter-communication tool. They made it impossible to use the official MAC system as *acting by accounting* and a dialogical instrument at operative level.

Manager I talked about concealing or sharing MAC information in 2008:

> In this organization we have had a lot of problems with concealing information or distorted information at the middle management level. It depends on the department manager as to whether there is operative-level information about processes or not. We had lots of problems with that and it was one reason why our organization was in such a bad situation.

As Controller I stated in 2010:

> Whether the MAC system worked or not, or how people react to the system is mostly dependent on the department manager. Who the department manager was – how interested he was in the MAC system, how he got on with the system himself.

To conclude, there were two different self-reference models were used in the MAC process at the middle level at PL. One was based on a conversion self-reference model, the main task of which was to create change – and a very important aspect was the amplification of information (see also Section 2.1.4 and Figure 4). Dynamic areas used the model actively to create changes in their organizations. They needed the conversion model to support actions, and the decisions they have to make were quite critical. As they were compelled to use the head office MAC as a self-reference conversion model to 'turn reality into intended actions', they were interested in giving objective data to the accounting system and so to head office.

There was a different situation in the stable departments. There was no need for changes to the stable situation. Managers in stable departments did not need official MAC to support their activities. They used their local MAC system, amplifying it through discussions and local meetings with ground level managers. As they did not need a central MAC system to support their actions, they were more interested in improving the data sent to head office to achieve a better picture of their short-term results. Unfortunately, because of the manipulation of primary data, head office did not have an objective picture of operative-level processes and activities. *Acting at a distance* at the senior level could not work in this situation. In this case there was no objective information about best practices, nor about systematic mistakes in organizational processes.

The most important difference and the leading factors in the middle level communication process in MAC were, from the researcher's perspective, the factor *institution*, i.e. how middle-level managers interpreted the situation of their department and the company and which rules and routines they adhered to for acting and making decisions to use MAC. The second dominant factor at middle level was the *receiver* – how the middle manager understood the role of operative-level managers in the management and MAC process.

5.2.4 Communication in MAC among operative level management

Most resources were used and changes put into practice at the ground level of an organization, given that the senior management of PL made the decision to change MAC from a management tool for *acting at distance* to *acting by accounting* at the operative level (Figure 17). As mentioned, the controller was not very optimistic that *acting by accounting* could effectively work at operative level. Additionally, the analyses at the middle level showed that there were two different patterns of using MAC information at PL. There were middle level managers who used MAC as a tool for coordinating actions at operative level, i.e. they used MAC for *acting by accounting*. Nevertheless, at the middle level of PL there were also those who thought the opposite – that withholding or censoring MAC information was the better approach.

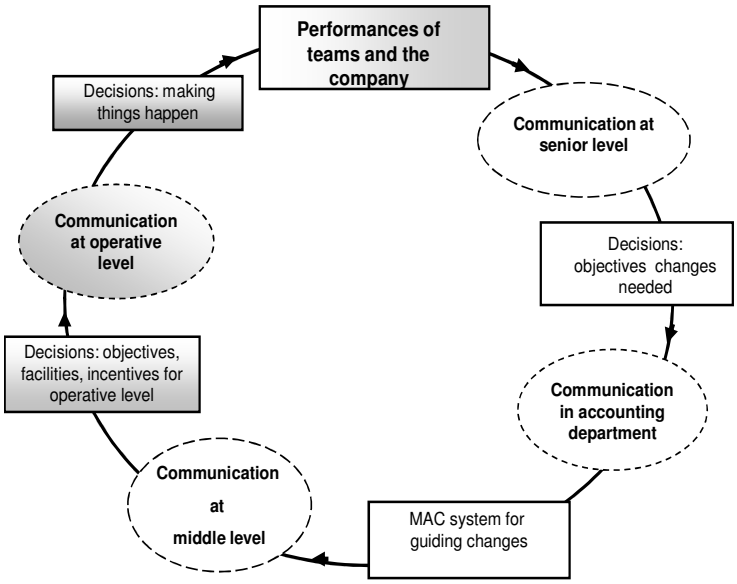


Figure 17 Ground management link in the MAC chain

To understand how things may be made visible by MAC at operative level in terms of making change and action happen, it is important to analyse how MAC works at the ground level in its multiple local-cultural forms.

Sender and Receiver

How the message works depends how and who the *receiver* understands to be the *sender.* The *sender* (who is the *sender* in the mind of the *receiver*) makes the message uniquely situational and personal, powerful and authoritative to the *receiver*. As mentioned before, at PL there was talk of 'Mary's reports', indicating that managers thought reports were more part of the accountants' domain, and were not representative of managers' engineering work results.

Analysis of the communication process in MAC at the ground level of PL illustrated different attitudes about the *sender* of MAC information. The foremen whose results were not very good thought that MAC reports did not correctly reflect their work results. For example, foreman IV said:

> I am successful if the work is correctly done. Our company is successful, but not according to the reports which are given to us.

The foremen whose financial results did not show that they had done good work thought that the data in MAC reports was accountants' stuff, and not related to their work. At the same time, they could not accept the message mediated by the budgeted task from senior level. They did not think that the planning or budgeting was related to the reality of the engineering world. Foreman II claimed:

> These plans are impossible! It is unrealistic to earn so much profit. All this planning is wrong.

In contrast to those foremen, there were, however, foremen who thought that MAC reports reflected the results of their team very well. Foreman VI explained:

> Of course I check reports from head office. I look: the plan is fulfilled it's fine, fits with my calculations as well.

In a department where the foreman used the official MAC system, the effect on the *receiver* at least in some cases resembled that intended by management. Foreman V, who was not used to using financial indicators, said of the changes to his work:

> I don't know, maybe this information is confidential, but I even showed these reports to my workers. They were not interested in them at all, but for me, it excites me – am I able to make this amount of profit with these workers?

To conclude, analysis of the communication process in MAC at the operative level of PL illustrated two different attitudes about the *sender* of MAC information. First, foremen whose financial results did not meet their budgeted task thought that the reporting and planning system was not connected with their work. They thought that the reports and plans were the creations of accountants or someone else. Second, in contrast to these, foremen whose results met the budgeted task thought that MAC reports reflected the results of their team very well.

Professional knowledge

In PL in the early years in senior management there was a belief that the accounting code was too difficult for anyone in the company to understand other than accounting professionals. Yet during the research period accountants believed that the foremen especially did not trust MAC data because they failed to understand how the figures were connected to their actions. However, according on the analyses department managers who shared MAC information with foremen saw no problem in terms of understanding financial indicators and methods such as contribution margin per employee or the process method. One middle manager added that if there was a problem organizing work, problems could arise with the financial knowledge as well.

Communication analyses in MAC chain at ground level supported this viewpoint in conversation with a foreman whose results were not so good. For these people it could be a problem to understand the accounting indicators, and to use the message which came via the MAC system. For example, some personnel still thought that costs were not important, the only relevant measure was turnover. Foreman II explained:

> The sales are important to me, not the contribution margin. I don't care about the contribution margin. I have to fulfill the turnover plan.

In addition to complicated accounting methods like the process method, some personnel at the bottom of the ranking found it somewhat complicated to read and understand the cost reports which came from the MAC system. The problem was not even in complicated methods like the progress method, but with cost classification. Foreman IV explained:

> About the ‘variable costs’ – I don’t understand what it means. It is too complicated for me. I don’t know what it means – I don’t like to delve into that.

Although foremen thought that MAC information might be relevant, some of them did not understand how figures actually reflected their work. Their main thought was that they had done a lot of work but the MAC system did not reflect it correctly therefore they were at the bottom of the ranking. Foreman II stated:

> The accounting data was totally false. Totally!! I did loads of work. It was too much. It was over my head. I worked like mad.

As they were not able to use financial information, they were not able to link the accounting and engineering worlds. For example, foreman II claimed:

> I cannot influence anything – the cost of materials – it is not under my control. … Of course, maybe I could calculate and plan time, but anyway I have too much work to do, I have to run too much anyway, I have no time for paperwork and planning.

One aspect which seemed to be problematic to senior and middle managers was the progress method used in accounting. Although some manager called the progress method “the chemistry of head office”, successful foremen did not perceive a problem in using accounting methods to describe work processes. Foreman III described use of the progress method:

> Of course the progress method is understandable and sensible. If the project hasn’t been completed yet, I only include costs, I don’t include profit until the project is finished not to take a risk.

Furthermore, foreman V explained how financial and engineering code wasconnected:

> I have to watch out that I make a profit, or costs are covered with sales. It means the efficiency of work is very important. How work is organized is very important.

Foremen VI was the manager whose team’s results improved very much during the research period. His team results jumped from the last place of the ranking almost to the first place in the ranking of foremen. He explained the main reason for this:

> Since April (2008), these plans have come in. Before, we just worked as much as we could. Now, when we have the plan, we have very exact tasks, it is possible to

> orientate the business by that. Before we wasted time, now we calculate and plan the time more precisely.

Foreman III added:

> The bottom ones – they never get better if they don't know how projects are planned, or how resources are calculated, that every process is taken into account.

To conclude, those foremen whose results were good (or improved during the research period), accepted MAC indicators as reliable and were able to relate the engineering code to the financial code. They perceived no problem in terms of using financial indicators and accounting methods when describing their work. The main terms they used to described the connection between the accounting and engineering codes were: profit, planning or economizing on time or controlling costs. These foremen believed that MAC reports reflected the engineering world correctly, that the indicators in the reports were connected to ground level team actions and that it was important to obtain and use this information. For foremen whose results were not so good it could be a problem to understand the financial indicators, and to use the message coming via the MAC system.

Institution

Applying the monopolistic philosophy, at the beginning of 2007 in PL it had become habitual to explain the economic results by sales prices which were 'too low'. Usually less well performing operative-level managers thought that they could influence profit only by getting better sales prices from the customer. Foreman IV stated:

> Usually the sales price is set and I do not need this cost data from the accounting system. - If it is possible to ask a higher price – then I start to calculate the costs to ask it.

Applying the same monopoly-based understanding foreman II, who was ranked the lowest explained why the MAC system developed during the research period was not be usable:

> Before, in the time of PPL (the monopoly era), there was no competition. For quotations we had the coefficient 1.73 – it was enough for the costs. We divided costs between different positions, but we didn't think very much about that. There was a form which we just filled in. We could show only very small amounts of profit (laughing). It was a good coefficient. But now we have to use a smaller coefficient …. there is no longer any room for profit. The budgeted contribution margin and profit – it is impossible to reach it.

Seeing a way to increase profitability through higher prices shows that some people still lived in the monopoly dream where one could work, with no haste, with no competition, no problems of efficiency and economizing on time. For example, foreman II claimed:

> PL is a normal company, but of course, the salary could be better and we could work without competition. There could be just some permanent work, you could just do this work and not have to worry about competition.

In contrast to the personnel having difficulties reaching the budgeted task, successful personnel were sure that they earned profit by organizing work better and economizing on time and costs. As foreman III stated:

> The price and costs are known. The price is the same everywhere – but people at PL want to just walk around.

Foreman VI supported this thought and talked about price and full costs:

> Prices are always too low anyway (laughing). It's important to organize the work and economize on time. Sometimes we have to wait for subcontractors. For better results it is critical to choose the right subcontractor so as not to waste time.

And foreman III supported these thoughts by criticizing unsuccessful teams:

> You can see what is going on in some teams: just running around aimlessly, one small thing carried with a huge machine, etc. Hurry-scurry around and kill time until the evening.

At the middle level, at PL there were different understandings about the institutional code in terms of the acceptability of manipulating data. In the stable departments managers were more interested in improving the data sent to head office and withholding information from foremen. Although some department managers thought that employees did not need any MAC information, the researcher and senior management thought otherwise. People in departments where MAC information was not provided did not seem very enthusiastic and happy. Senior management decided to hold a meeting with operative-level managers in one of those departments to introduce foremen to the formal MAC system. After the meeting, the researcher asked about feelings connected with MAC information and rankings of foremen. Foremen I said:

> I feel that by comparing operative-level teams and these reports and figures - this does not adequately reflect my team results. It is exactly how I feel!

Even if the department manager was to share the official MAC reports with ground level staff in this department, the manager from this department did not trust it and the formal MAC system did not affect his actions because as he understood it, this data was not connected with his work. Some operative managers from the stable departments did not trust MAC information because the data was modified and changed. Foreman I claimed about manipulated data in MAC:

> These numbers are not under my control, I did not supply this data, and then it is clear that it is not interesting for me. And I do not need these figures at all. The figures from MAC might be of interest for me if I knew that data is mine. Not somehow modified, made more befitting for some reason.

Based on analyses at operative level we can conclude that some people still live in the monopoly dream. On the other hand there was still a problem in stable departments with the 'budget discipline' and withholding the MAC information. Better performing foremen from any department accepted market-based philosophy and no manipulation of MAC information.

Contact

The analysis of communication in the MAC chain revealed different practices in using the accounting system at operative level. Some foremen tried to evaluate their activity based on head office MAC reports. The problem was that they usually sent their primary data to the accounting department at the end of the month, which made it impossible to get on-time data about their work from the official accounting system. For example, foreman II complained about the lack of cost information:

> I see results and data from reports sent by head office at the beginning of the next month. I have thought that maybe I have to gather data about costs, but I cannot change anything anyway – the costs are fixed.

At the same time some foremen had very detailed and online data about their construction and maintenance objects. They were well equipped with cost and process information and had gathered around themselves a local online accounting system. Foreman VI said:

> My task in this company is to earn money. I calculate all the time. I calculate the budget, costs, result. /.../ If I calculate for myself then I know exactly what is there. I know how much, and why – every day. It does not take too much time. I have my data and overview.
> When I get the plan, then I divide it up into days, write it into a calendar, hang it on the wall – then all my subordinates can see.

Foreman III described his projects' cost accounting and commented on the situation regarding the hidden information system in another department:

> My task is to make a profit. My team is like a small independent company. ... It is very important to calculate, analyse and budget very carefully. I have planned and thought through all my projects. I think and calculate all my projects in great detail…. When I talk with other operative level managers – they don't know how their projects are planned! How can they work like that? Their answer: the department manager knows – how can they work like that!? A few years ago we didn't know anything about money, budgets and results. Our task was to work. Now we are calculating – it makes work easier. Without budget and cost data it is impossible to work. I have exact data and I also add records to the official accounts.

It appeared that some operative managers were very well catered for with primary data, even their own online accounting systems. At the same time some other operative managers were not interested very much in financial information and were not able to gather more precise and online data. They had to use formal data which came almost a month later and were not useful for them.

Genre

A sender has to use a genre which is both sufficiently familiar to the receiver and sufficiently amplified. During the major changes in the research period at PL there was an obvious need for powerful amplification of the MAC information to support the shift to market economy philosophy. The most important change made during the research period at PL was the comparison and ranking of foremen's results (Appendix 6). Senior management supported the approach of making reporting more personalized at the operative level and connecting it with an outcome-based incentive system. The department managers of stable departments agreed that the personal approach was useful in the dynamic departments, while they did not think that the tool should be mandatory in stable departments. Although two managers of stable departments expressed their opinions about withholding any information from foremen, the third department manager shared and used information in the management process. That

manager used the ranking and MAC information as a tool to engage employees in the process. He gave this information to show foremen that they had worked well and their position in the company was stable. Foreman III from that stable department claimed:

> I am successful, as is seen in the ranking. Before there were no rankings, then I didn't know that. The ranking – being at the top, it gives a good feeling. But for others – being at the bottom could be no fun. But at the same time you know where you are. It gives you a task to get better.

One foreman from a dynamic department thought that the ranking system was normal and in his experience, similar systems had been used in various companies. For him it was important to obtain information which was delivered through the ranking. He said that it was important to give MAC information in a positive way to better engage employees in the process. He stated:

> For me this ranking is nothing new. In the previous company there was a similar system. But it is important that workers are satisfied – they work hard and get an adequate salary. If the plan is fulfilled and you get the extra pay, then it is normal. My task in this company is to earn money.

Foreman IV , who had poor results, stated:

> I don't like the ranking. Please take these reports and tables off the wall! It is wrong! It is shock therapy! Nobody has ever said that we have done good work. Who cares!? Maybe somebody knows the real situation but they do not tell us. The information is hidden, it is secret. There was a meeting about our financial results. I say – it is not a meeting, it is just shock therapy! It might help if my boss would talk with me; explain why there are these numbers and results. These graphs are just a heap of paper!

People need positive feedback on their work. If they understand how financial results are affected by their actions and are able to reach them, the ranking system will be accepted. If they are not able to fulfil objectives they feel offended and betrayed, and they do not agree with the *genre* of reports presented.

Conclusion

During the research period, the task of the researcher and senior managers was to develop and implement MAC as an inter-communication, dialogical tool, with which to communicate on every level and with every person in the organization. Although MAC tried to give a message from senior management to the operative-level managers that it was important to make a

profit, and that requires better organization of work (to create *economic actions*) and more effective planning and use of time, the message did not reach every operative-level manager. There were differences in the MAC communication factors (see Table 6) and consequently, in the results.

Table 6 Comparing understanding of MAC among ground level managers

	Managers at the bottom of the ranking	**Managers at the top of the ranking**
Sender	Reports are produced by someone. Reports do not reflect the "real" outcomes of operative-level teams.	Reports reflect outcomes of operative-level teams.
Receiver	MAC is not useful at operative level.	MAC is useful for planning and guiding operative-level processes.
Professional knowledge	Financial language is not understandable. Problems in organizing processes.	Financial and engineering language used. Both easy to understand.
Institution	Dreaming of stable monopoly. Data are manipulated.	The aim of efficiency of processes. Manipulation of data is not accepted.
Genre	The personal approach - ranking of managers is harassment, deceiving, shock therapy.	The personal approach - ranking of managers is useful for engaging employees.
Contact	Have no information.	Have no information.
	Have only formal accounting and reporting systems.	Have official reports and local calculations. Very well equipped with financial information..

First, as stated by some middle managers from the stable departments, they did not share any MAC information with employees or if they did, the information would have to be censored or "*interpreted as we (the department manager) want it to be.*" Therefore, things that senior management tried to make visible were not being made visible by MAC for these operative-level managers in these departments.

Second, during the MAC development and implementation process there was a battle at PL between monopoly-based thinking and the market economy-based ways of thinking. In the former, MAC and economic actions were not important as nobody was interested in material and labour costs analyses. There was 'room to manoeuvre' with materials, and to use the 'very good' coefficient for 'fulfilling costs targets'. Although senior managers believed that during the research period they were able to turn the way of thinking from one which was monopoly-based to a market economy and business type, there were still operative-level managers who did not accept market-based competition and the task of making profits.

Third, some managers had problems understanding the accounting code and data, and using the message which came via the MAC system. Although these managers thought that MAC data might be relevant, they did not understand how it could actually reflect their work or what it meant to *act 'economically'*. Their main thought was that they had done a 'lot of work' but the MAC system did not reflect it correctly. As they were not able to use the accounting code, they were not able to link the economic and engineering worlds, i.e. they did not know how it could be possible to affect financial indicators throughout the engineering worlds, in other words, how to work in so as to make a profit. In addition to not understanding the accounting code very well, they did not have online information about their projects; they lived as if in darkness in this economic world and could not see any way out of it. Their only feelings were that the environment was hostile, some information was being withheld from them, or that someone wanted to place the blame on them.

In spite of the MAC implementation process, the problems described at operative level, in the dynamic departments and in one stable department, foremen used the official MAC system and got the senior management message. Most foremen accepted that financial data and results were important and financial results in MAC official reports reflected their team's actions and results. For those staff whose work results were acceptable or were improving in an economic sense during the research period, it seems that there were no problems understanding and interpreting financial indicators. Their accounts showed them to have taken the figures in the reports as a reflection of their work results rather than the 'chemistry of the third floor'. The official MAC system conveyed the senior level message that financial data and results are important and the task is to make a profit, thereby giving a message to the operative level about the domain of economic actions or guiding the personnel towards making a profit.

Based on the analyses of communication in the MAC chain with managers at the operative level, we can conclude that MAC as *acting by accounting* worked successfully in

many cases at operative level. There were no problems in using the accounting code system and connecting the accounting and engineering worlds. In PL there was a belief that the accounting code was too difficult to understand for anyone in the company except accounting professionals. However, based on the analyses of most of the cases there were no problems in terms of understanding financial indicators and methods such as contribution margin per employee or the process method. However, as a middle manager noted if there was a problem with project management or engineering knowledge, problems could arise with the financial knowledge as well.

The most important difference and the leading factors at the operative level communication process in MAC were, from the researcher's perspective, the factor *professional knowledge*. The *professional knowledge* factor of the MAC communication model contains two elements or codes – accounting and engineering or/and project management. The findings of the analysis of the research at operative level permit the conclusion that the engineering or project management knowledge was even more dominant in this communication factor. Although senior manager and controller thought that for middle-level or operative-level managers MAC could be a "big headache" , managers who were successful in project management and the engineering field perceived no problem in using MAC information for monitoring their projects and engaging employees in the process.

The second dominant factor at operative level was the *institution* – how the operative managers interpreted the situation of their department and the company and which rules and routines they accepted for acting and making decisions. Those managers who were not successful in project management and the engineering field dreamed about the "old" monopolistic company with no competition and no pressure to earn profit and optimize resources.

5.3 Discussion

In attempting to analyse the chain of MAC at PL, this study used the chain links or nodal points described in the MAC chain of the organization. This section concludes the empirical analyses made using the development of the communication model of MAC and discusses some of the findings based on this analysis.

5.3.1 The chain of MAC

As discussed in Section 2.1.2, there have been changes in IT technology, in the business environment and even in business philosophy. Today, we talk about service activities instead of manufacturing. This philosophical shift brings the external market place into contact with every level of the organization, and, what is different from previously, even to operative level actions. Although senior and operative-level managers have different roles in the organizational processes, they are the people who can make things happen, and change organizational actions and results. Both need a good understanding of the actions and decisions at the other end of the organizational hierarchy.

To make strategic decisions at the senior level, management requires an understanding of the external business environment and the internal processes (operative level) of the organization. To make decisions on how to act at the local level raises the question of organizational aims and strategic decisions made by senior management.

Most resources are used and changes put into practice just at the operative level of an organization. In addition to these rapidly changing markets, operative-level employees are directly connected with customers and they are the first to receive information about market changes in the external environment. They are the ones who know best how to serve the customer in the best way.

However, control in organizational forms – team-based organizations premised on concepts such as participation and empowerment - must be understood by considering the connections that individuals have *with* organizations and workgroups, and the influence of these connections on organizational interaction and behaviours. This means, additionally, that making decisions on how to act at the local level raises the question of organizational aims and strategic decisions made by senior management. Ground level actors have to a*ct at the local level* and *understand objectives at a distance*. In order to decide how to act, both senior managers and operative-level employees have to understand each others' processes and thoughts; they have to be in dialogue. This has put senior and operative-level managers in quite a similar situation in terms of using MAC. Both have to take information from the 'other side of the wall' (see Hopwood, 1990), that is, from the other parts of the company as well as from the commercial environment of the organization, and they have to make decisions on how to act. This means that ground level managers and employees are as important users as senior management.

The controllers and middle-level managers have a better understanding of decisions made by senior management and actions taken at operative level, but they cannot make things happen alone. The management accounting department (or controller) has to develop MAC as a dialogical tool that is able to generate, transmit and share information from and for different actors of the organization. The MAC department's role is to make the 'right' things visible – to create an instrumental system which produces indicators. The second role is to give enough amplification to the message and objectives mediated by MAC – by the formal MAC as well as with informal contacts used. In the case company there was a need for strong amplification but changes made by management were not very well supported or amplified by the controller. As the case study illustrates, the amplification and translation process in the MAC department can play an important role in the MAC implementation process.

Middle managers have a powerful impact on the MAC creation and implementation process. In this case study, some managers even cut off access to the MAC system at the operative level. At the middle level we see different ways of amplifying the message coming from senior and ground levels, to talk with people to explain meaning of reports or conversely, no amplifying to 'correct' and 'censor' the information (see Table 5). As was found in the case study, the amplification and translation process at the middle management level could play an important role in the MAC creation and implementation process.

The management accounting department and middle managers are likewise in a key position of in terms of MAC, determining how MAC information travels along the MAC chain (Figure 18) or how MAC is created and implemented. The fact that they could significantly support or counteract actions means they affect the creation and implementation of MAC through its amplification. Controllers and middle level managers act as determinants in the MAC process.

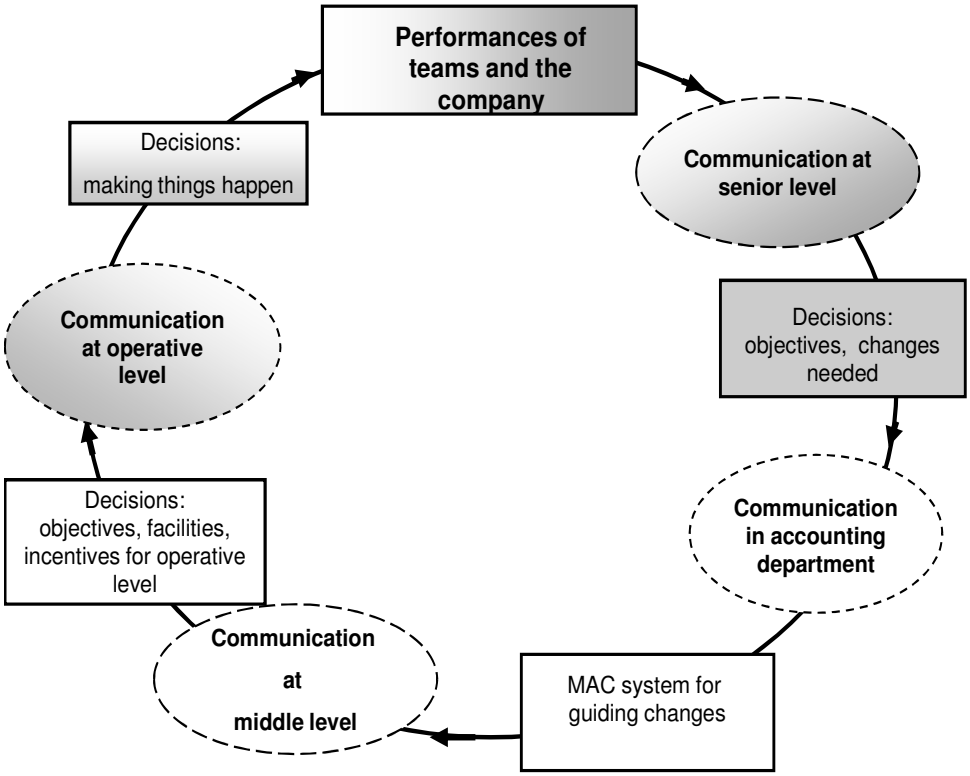


Figure 18 Ground and senior management links in the MAC chain

Figure 18 shows how the MAC process constitutes a chain. Based on this research analysis, we can conclude that to understand how and why MAC works as it does in a given part of the organization we have to understand the processes of the entire MAC chain. The way MAC is used at operative level depends on the functioning of MAC chain links before the process reaches the operative-level managers or teams. If it is to work at the operative level, all the other preceding links in the chain have to work. Understanding why the process does not work at operative level would require an analysis of the communication processes in every link to determine which link caused the system to break down and why.

To sum up, the misunderstanding and understanding of organizational aims and economic actions is largely dependent on how accountants and middle level managers amplify information in the MAC system. To decrease misunderstanding and increase understanding in the company, it is important to understand the processes of the entire MAC chain to support actions at senior and operative levels.

5.3.2 Amplification and meaning generation aspects in the communication model of MAC

There are two elements in MAC: accounting inscriptions and amplification to make the information powerful enough and interesting enough for actors (see Figure 10, Chapter 3.1). In practical terms it is important to analyse and understand how the meaning generation from inscriptions and amplification are produced, and if there is enough amplification in specific situations for MAC to work successfully.

It is important to analyse differences and similarities in understanding and on the other hand, to determine if the amplification (perceived power or importance of the message) is sufficient to change codes and thereby patterns of action in the organization. To analyse these aspects we used a communication model of MAC based on Jakobson's communication theory (1956). The empirical part of this research tried to understand the amplification element in MAC in a real situation. Based on the theoretical framework and empirical analyses we can conclude that some factors in the MAC communication model are more connected with amplification and other factors with meaning generation. Although we cannot draw a clear distinction between them because every factor is connected with others and they affect each other, we propose that for analytical reasons we could distinguish factors in the communication model which are more connected with amplification and the others which are more connected with meaning generation (Figure 19). Next we explain and illustrate this proposition with empirical findings.

The MAC communication a mediated process in which is not always clear who is the sender or receiver in the mind of the parties to the communication in MAC. According to Jakobson (1959), the power of the message to the receiver(s) depends on who they believe or understand the sender to be. Thus, these elements are closely connected with amplification aspects in MAC. For example, in PL it was common to call reports and analyses by their controller's or accountant's name, such as 'Mary's tables' or 'Helen's analyses', indicating that the reports were not seen to be about the department's results, but rather a 'creation' of a controller. In addition, the engineers were males, accountants and controllers were females – making the separation even greater. Information from the MAC system was dubbed "ladies' stuff" – i.e. not taken very seriously in the engineering (male) world. This meant that the power of the MAC information was impaired as managers kept a distance from the accounting system and figures.

The *institution* is the factor which affects the sender's and receiver's understanding of organizational norms and routine. For example, in PL based on the monopolistic philosophy, at the beginning of 2007 it had become common to explain the economic results, not in terms of inefficiency and waste of time, materials and labour, but with no time to issue sales invoices after completing work or by sales prices which were 'too low'

The genre factor refers to how words, colours and numbers are used: how something is said or not said. A sender has to use a genre of contact which is sufficiently powerful or makes the communication process sufficiently amplified. In MAC the genre function could be a very important aspect of communication because the language of different genres can be used as a source of power in interaction (Carter and Sealey, 2000; Askehave and Swales, 2001). The *genre* is the element (see Figure 19) that plays an important role in amplifying the message.

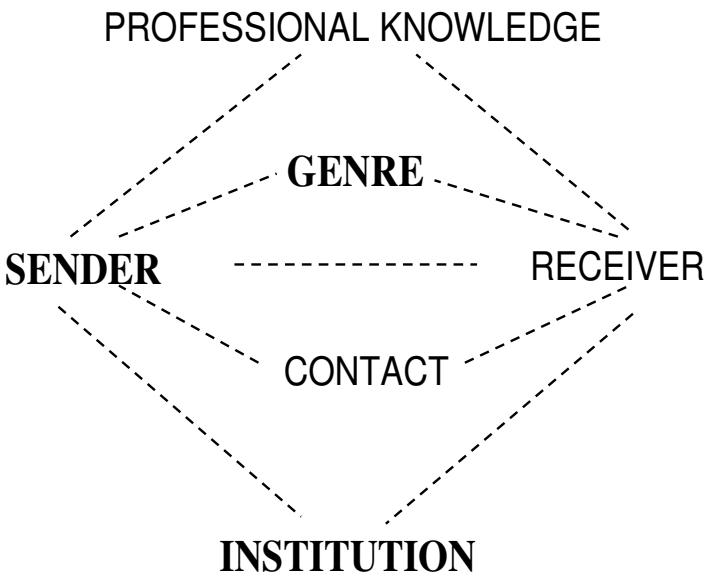


Figure 19 Amplification and meaning generation aspects in the communication model of MAC

In a MAC communication process, one important factor is the contact.. It is important to understand how useful such tools are to the senders and receivers, how this element of the communication works to make information usable and understandable for users.

The management accounting sign is very complicated and situational. (Section 2.2.1). The factor professional knowledge is what makes the message 'true' or understandable for the

users. Thus the factor 'professional knowledge' in the MAC communication model gives the message the reality orientation for the receiver; it determines how well accounting or economic language and engineering language are related to actions.

To conclude, for analytical purposes it is possible to distinguish communication factors which are more connected with amplification – sender, institution and genre – and factors which are more connected with the meaning generation or understanding of the information – professional knowledge, contact and receiver.

5.3.3 The hierarchy of communication factors in MAC

One basic idea of Jakobson's (1956) communication model is that, in the process of communication a hierarchy is presumed to exist in the structure of the process of creating a message. Jakobson explains how in every communication act the hierarchy or dominant factor may be different. In any given situation, one of these hierarchical factors is 'dominant,' and this dominant factor influences the general character of the 'message.' For MAC, this means that people have to know which factor is dominant in a particular situation. In turn, this understanding helps us to further develop that element to make MAC more useful.

While analysing the communication processes in the MAC of the case company, people tried to understand which factor was leading the different links in the MAC chain. To do so, we looked at all levels of the case company: senior management, mid-level management, and operative-level personnel. Although it is difficult to say which factor was most dominant at all levels, we tried to understand their hierarchy in order to better understand how to make the MAC of the case company more effective.

At the senior level, in terms of communication between senior management and the controller, the dominant factors in the case company were the receiver and the institution. In light of the empirical analysis, it could be concluded that there was a notable difference between how different members of the senior management team perceived the receiver of the MAC information, which caused different actions in the MAC implementation process. In terms of the receiver, senior managers also made different interpretations of the roles of operative-level managers in the MAC process. Another factor present at the senior level was the institution; at the case company there were senior managers who had worked for many years in a monopolistic environment, and during the research period they had difficulty accepting the significant changes to their organizational and business cultures.

The institution factor was also prominent at the middle-management level. It affected how mid-level managers interpreted the situations of their departments and the company, and which rules and routines they adopted to guide their actions and decision-making in terms of MAC. The second dominant factor at the middle level was the receiver – that is, how middle managers understood the role of operative-level managers in the overall management structure and in MAC processes.

Although the dominant factors for middle managers were the same as those at the senior level – institution and receiver – we can say that their order (or hierarchy) was different. However, in light of the empirical analysis, we can suggest that the institution factor was more dominant overall, as the companies mid-level managers had a different understanding of MAC in terms of how to use it, which affected the amount of support for (or amplification of) the MAC system.

At the operative level, we suggest that the professional knowledge factor was dominant. The results of the operative-level analysis showed that the engineering or project management knowledge was the predominant issue. The second dominant factor at the operative level was again the institution (that is, how the foremen interpreted the situations of their departments and the company, and which rules and routines they accepted to guide their actions and decision-making in terms of MAC). Those ground-level managers who were not successful in the project management and engineering fields tended to dream about the 'old' monopolistic company, where there was no competition or pressure to earn profit and optimize resources.

Although professional knowledge was a leading factor at the operative level, upper-level managers assumed that knowledge of accounting codes was the main problem for them. As can be concluded from the empirical analysis, the leading factor in the case company's MAC communication structure was the lack of professional knowledge as a whole. It seems that the knowledge-based environment of our contemporary information era, the lack of professional knowledge could be the constraining factor. As we can conclude from the empirical findings, the lack of knowledge about accounting codes or financial language does not cause initial misunderstandings in the MAC implementation process; rather, the problems start with misunderstandings at a more fundamental level. The other factor that should be mentioned is that, at the lower- and middle-management levels, the institution factor played a key role; people tried to escape to a safer, more stable monopoly environment.

To sum up, the factor that was important across every link of the MAC chain in this case company was the institution. This finding means that routines, habits, dreams and beliefs

have caused many misunderstandings in the MAC processes at the case company. The second most important factor was the receiver. There was quite a big difference between how MAC actors at the case company perceived the role of receivers in the MAC chain. Interestingly, professional knowledge (particularly regarding the accounting code or language) was not a leading factor at the case company, even at the operative level.

On the basis of empirical analysis conducted at the case company, it can be concluded that the MAC communication model could be used as a tool for understanding the process of MAC implementation, for improving the MAC system in the company, and for better achieving the organizational goals and accomplishing the tasks of the company.

6. CONTRIBUTIONS AND CONCLUSIONS

6.1 Theoretical, methodological and empirical contribution

The aim of this study was to elaborate the model of communication for the MAC field to better understand the role of communication in MAC. The study investigated the opportunities to intervene in the action generation process by analysing and understanding the communication process in MAC. The present dissertation is valuable in several respects as it makes theoretical, methodological and practical contributions to the MAC field.

Scientists in the MAC field usually view MAC as a research field, where the purpose of the research is to build theories to solve problems that researchers face in a particular domain – the theories and research *about* MAC. The practical applied side of MAC has to be included in the research as well, which means undertaking research and developing theories on MAC that can be used to accomplish something. The outcome of the theoretical and empirical analyses constituting this study is the development of a communication theory for the MAC field and proposed communication model which could be useful in practice. The sections below give a more detailed overview of the contributions of the dissertation.

6.1.1 Theoretical contributions

This study first analysed the differences in current applications of MAC and those of decades ago. In light of theoretical and empirical analyses, this study argues that the aim of MAC was for decades to make things visible at a distance, in other words, to offer managers a means to control subordinates. Today the situation has evolved to the point where almost every person is a collator and user of MAC. It enables *dialogue* mediated by MAC throughout the organization. MAC makes it possible to control resources and coordinate economic processes from a distance and at the same time to use a MAC system to deliver *acting at a distance* and *acting by accounting*. Monitoring actions and results at operative level makes MAC a tool which is able to tie the abstract financial world to everyday realities.

The use of MAC at the different levels of the company is an issue that arose from the real world. Problems of the 'real world' are never mono- disciplinary or intra-disciplinary. The next contribution of this dissertation is its use of an inter-disciplinary approach to understand processes in the MAC field. This study connects the semiotic, linguistic and managerial frameworks. Following Keating's (1995) management accounting case study classification, this study can be categorized as a theory refinement case study, which uses theories and models originally drawn from the fields of linguistics and semiotics.

This study starts from existing communication theories and models and the current criticism of those models and develops a theory about *accounting signs as a relationship.* The study shows that a management accounting sign is very complicated and situational – only the actors from the organization who have professional knowledge (in both accounting and production processes) can fully encode management accounting texts – in the sense of setting or amending the codes – and decode them in the sense of understanding them. Encoding and decoding entails auto-communication and inter-communication at the same time.

The next contribution of the study is to introduce the theory of auto-communication and inter-communication to the MAC field. Starting from the base of auto-communication theory, an important theoretical contribution is to introduce MAC as a conversion self-reference model of the organization making self-control and learning possible for the organization. Using amplification, the conversion self-reference model also enforces certain official or commonly accepted ways of perceiving and understanding.

Ascribing an amplification role to MAC is the next theoretical contribution of this research. The study argues that in the change process, amplification has an important role to play, because the codes for actors' auto-communication processes have to be changed. For this, it is important to give actors a strong and clear message as to why and how they have to change their code system.

The study shows that the communication as translation process includes understandings and misunderstandings, both of which are necessary and important for a meaningful communication process. The dialogue-based and interactional concept of communication does not consider misunderstandings to be necessarily evidence of communication failure or noise. To analyse the misunderstanding and understanding process this study contends that the communication model of Jakobson (1956) is useful. Using this model in practice to analyse communication factors in a company, initially based on the conversion self-reference model concept and then on the empirical analyses, enabled the development of an analytical model of the MAC chain of the organization.

The dissertation provides theoretical propositions about the main ways in which communication in the MAC process can be analysed and this makes it possible to guide the MAC social processes, that is, to use MAC as a tool for *acting by accounting*.

The theoretical and empirical analyses permit to the following conclusions:

- To make the organization more flexible and at same time guided by strategy and organizational aims it is necessary to decrease misunderstanding at both ends of the organizational hierarchy regarding processes and thoughts at the opposite end of the organizational hierarchy.
- The misunderstanding and understanding about organizational aims and economic actions is largely dependent on how accountants and middle level managers amplify information in the MAC system. To decrease misunderstanding and increase understanding in the company, it is important that middle level managers and accountants are supported by a strong amplification the MAC system.
- Changes in organizational financial results are dependent on actions which are driven by information mediated by MAC as dialogical process. For a successful MAC communication process it is important to have enough amplification and a balance of overlapping and non-overlapping areas of communication, which means a balance between understanding and misunderstanding.
- The MAC communication process is a reciprocal interaction between organizational actors. The result of the MAC communication process or, how MAC information is gathered and used depends on inter and auto-communication processes in the organizational communication chain. One option for analysing communication processes is to use the MAC communication model, which illustrates the six factors that together constitute a MAC communication process: sender, receiver, contact, institution, professional knowledge and genre.

To sum up, the study makes the following theoretical contributions. First, the dissertation develops a communication theory of MAC based on Jakobson's communication theory and Lotman's cultural semiotics. Next, the findings of the study extend our understanding of the role of communication in using MAC in affecting behaviour and in achieving objectives. Third, the contribution of the study lies in investigating communication as an action-generating process from an epistemological perspective.

6.1.2 Methodological contributions

This study makes methodological contributions. First, the ontological, epistemological and methodological assumptions of this study are based on 'relational constructivism' as a 'social science perspective' (Alvesson and Deetz 2000; Hosking, 2011). Relational constructivism sees people and worlds as emerging in processes (rather than assuming that "hard" differentiation is "how it really is"); and treats dialogical practices as ways of relating that can enable and support multiple local forms of life rather than imposing one dominant rationality on others (Hosking, 2011). This study tries to understand the logic of the processes, the general logic of the functioning of the processes which occur *before* actions and results.

Second, although this study is mainly based on a hermeneutical framework, it tries to establish some general meanings – where it has found some rules that function as general rules. It therefore tried to find some aspects of the social, interpretive world, which appear objective or even normative so that they straddle the line between subjectivism and objectivism. This study takes account of the subjective factor to understand processes in the social world, but to make knowledge accessible in practice, it tries to discover the objective aspects, fix meanings and locate general rules. This dissertation proposes a model which could be the basis for a practical tool for the MAC world.

Third, an empirical study based on relational constructivism makes it meaningful to do research with others (Pearce, 1992), not on or about others as other social sciences perspectives could usually be said to do (Hosking, 2011). The researcher gathered empirical material in the course of working with people with whom she forged good relationships for many years and could conduct her research with them and create opportunities for dialogue. Conducting enquiries with others means working through dialogue and so opens up the possibility of becoming more multi-logical, that is, of opening up multiple local rationalities.

Fourth, this study used different types of models – "models of" and "models for" (Duranti, 2005: 420) and even a model which could be said to contain both elements. For MAC research the "models for" is not familiar. "Models for" are not linear, so do not contain arrows indicating the directions of the message. These models do not assume a series of steps or stages through which a message passes: rather they concentrate on analysing a structured set of relationships which enable a message to signify something; they concentrate on what it is that makes a message. In these models there is multidirectional causality between variables in favour of the previously held unidirectional view of "models of" between a dependent and an independent variable.

Fifth, in the MAC field radical subjectivism or mainstream social constructivism is more familiar - it assumes that "there is nothing outside text" (Holt and Mueller, 2011: 68), that is there is no "independent reality and static meaning", nothing but language, discourse and metaphors what shape our world (Fairclough, 2005). It is the assumption of this study that society exists as both an objective and a subjective reality (e.g. Berger and Luckmann, 1967; Gergen, 1994; Quattrone, 2000; Kakkuri-Knuuttila et al., 2008) and from this we can stabilize some meanings or look for general processes (not results) in the organization and draw general lines to fix things and events (as processes and relations) and so assist our pragmatic orientation to the world of the organization (Ingold, 2007; Holt and Mueller, 2011).This study uses the model as a path. The path metaphor allows us to appreciate how meaning is fixed – changing direction counts as doing something different – and fluid because changing direction, or avoiding signposts is always possible.

Sixth, this empirical study is based on participatory observation and utilizes the researcher's previous professional (business) experience, something not very common in business dissertations (Paalumäki et al. 2010). In this study the author assumes that it is important in a research report to make clear what experience and knowledge the researcher has. It is important because she uses her participation and observation as the research tool. Sometimes the development of a research tool can be even more problematic than collecting and analysing empirical material. In other words, the research result could be primarily dependent on the tool used in the research process.

6.1.3 Practical implications

This study has practical implications. First, it views communication as a holistic process in MAC. The practical world is holistic, which means tools for practitioners have be able to analyse and understand how the MAC communication works as a holistic process throughout the organization. The MAC communication model is a tool for analysing the communication process and through that for guiding actions and achieving organizational goals. The study demonstrates how to use this model in practice to analyse and understand how and why MAC works or does not work in the company.

Second, using the MAC communication model could provide knowledge of a constellation of models and theories to help accountants diagnose and explain the workings of a system in a more systematic and sophisticated way, instead of forcing them to learn by trial

and error or making do with personal experience gained in several organizations. The result should be greater effectiveness. Thus in a very real sense a communicational approach and using a communication model of MAC can make management accountants and managers more competent and more influential.

Third, the proposed communication theory of MAC may be useful to academics and practitioners as an analytical tool which helps to classify and examine factors in the MAC process. Instead of collecting empirical material from a uni-dimensional MAC perspective, it shows how to explore empirical material on the dimensions of the communication process in MAC. This has implications concerning the design of MAC research instruments in subsequent studies; hence, this study has the potential to become seminal in originating a methodology school for researching MAC communication processes.

Fourth, the communication theory of MAC offers managers a useful way to analyse the implementation of MAC. This may help in both the evaluation of MAC and in improving its actual processes. This tool may be of use when developing MAC as it prompts the inclusion of the different communication factors in MAC in relation to the different steps in MAC. Communication in MAC holds particular promise as a focus for further research on how different factors of communication – understanding the company and its economic context, the sender's and the receiver's backgrounds, reporting modes, budget goals and an outcome-based salary system – affect the application of MAC. This study attempts to help organizations improve the application of MAC by proposing a theory that might improve MAC practice and assist managers in engaging employees.

6.2 Limitations and suggestions for future research

Every study has its limitations and therefore, the findings of the present study should be considered carefully. Firstly, the findings of any study are subject to the inherent limitations of the method selected. Conducting field research cannot be considered as an entirely independent and objective act of investigation. A researcher must always be aware of the risk associated with selective perception in collecting and analysing the empirical material. Researcher bias may be especially significant in studies conducted by an individual researcher. The researcher's background and prior experience influence the process of empirical material collection, documentation and interpretation. Possible researcher bias can,

however, be carefully considered during the research process, and in this study, the collection, documenting and analysis of empirical material were carefully conducted and several methods applied to address possible bias. Nevertheless, the problem of observer bias cannot be entirely eliminated since an individual researcher can never be separated from his or her background, philosophical views and experiences (McKinnon, 1988: 38).

6. 2.1 Validity and reliability of the research

Validity and reliability are criteria used to ensure the quality of the research process. Reliability in quantitative and positivistic research means that it is possible to replicate the findings of the study if the same research is repeated, the same operational steps are followed and the same methods are used. In interpretive research, knowledge is created by the researcher in close relation to the data: a priori knowledge and background are important factors that cannot and should not be eliminated from the research process. Replicating the study would be difficult because those undertaking the process would have their own cultural background and pre-existing knowledge that would differ from those of the original researcher. In qualitative and interpretive studies reliability is more about the soundness of the study and refers to the possibility for an author to document the procedures of the research and confirm the results (Apostol, 2011: 98). Although the interpretation process looks more like a 'black box', to achieve reliability the researcher must operationalize the research process as much as possible. The researcher must carefully explain the operational steps taken show consistency in data collection and analysis and be rigorous in making theoretical inferences.

The validity of qualitative research is established by meeting the test of credibility, or as Silverman (1997: 25) puts it "have the researchers demonstrated successfully why we should believe them?" In the next section will consider the argument of why readers this study should believe its findings.

6.2.2 Pre-understanding and data

It is common in qualitative research to use the perspective described as qualitative positivism (Prasad, 2005). Following Prasad, these researchers "suffer … from positivist anxiety that is

manifested in an eagerness to measure up to conventional positivist standards" (Prasad, 2005: 4). For a qualitative positivist, reality is viewed as concrete, separate from the researcher and best understood by using rigorous research methods for data collections (Alvesson and Sköldberg, 2000).

Based on reflexive interpretation philosophy, a fundamental hermeneutic element permeates the research process from beginning to end. Qualitative researchers are meaning-makers who build on their own experiences, knowledge, and theoretical positions to collect empirical material and to present their understanding to the world (Glesne, 2006). Less consideration should be given to the collection and processing of data and more to interpretation and reflection – in relation not only to the object of study but also to the researchers themselves and their political, ideological, meta-theoretical and linguistic context (Alvesson and Sköldberg, 2000: 241). 'Interpretation' implies that there are no self-evident, simple or unambiguous rules or procedures, and that the crucial ingredients are the researcher's judgement, intuition and ability to 'see and point something out'. Consideration should also be given to the extent of explicit dialogue that should occur with the research subject, as it should to aspects of the researcher themselves that are not entrenched behind a research position, and to the reader (Alvesson and Sköldberg, 2000: 248).

Pre-understanding is helpful in interpreting the data. Moisander and Valtonen (2006) divide pre-understanding into two types: knowledge of the subject matter, and the disciplinary academic knowledge of the researcher. For reasons of validity it is important in a piece of research to make explicit which experiences and knowledge (as pre-understanding) are the researcher's own. Usually academic knowledge is made apparent by using quotations and references to other studies. Making academic knowledge explicit lends academic credibility to the research. Participatory observation research is not common in business dissertations and so perhaps does not make the researcher's knowledge explicit (Paalumäki et al. 2010). As they say: "Nobody wants to take [a] risk in [a] dissertation" (p. 6). For example, Parry and Boyle warn against auto-ethnography as it may constitute a significant risk for scholars in conservative[34] business schools. The risk is greater "for women, junior faculty and anyone in a potentially minority group." (Parry and Boyle, 2009: 699). Although, there seems no rational reason to hide a researcher's knowledge of the subject matter, based on assumptions often used in the (conservative) academic world as Paalumäki et al. show (2010), the most common way of using participant observation is the 'hidden way'. Often a researcher will

[34] Conservative means usually postivistic or normative phisosophical assumptions.

only mention that participation gives them the access to empirical "data" and a deeper understanding of the context, with some cursory link to the usual reasoning for qualitative research. The author felt it was important to establish credibility by making clear the experiences gained outside her academic field (Appendix 1), and the researcher's profound pre-understanding of the research object. For credibility criteria, a researcher with a profound pre-understanding of the research object in addition to her disciplinary academic knowledge has an advantage.

Although the interpretation and pre-understanding are crucial in reflexive interpretation research, the empirical material is still important. Although the main method for gathering empirical material in this research was via observation, to complement these observations and to gain as comprehensive a view as possible, the researcher conducted interviews which were carefully prepared and analysed. Additionally, in order to enhance credibility in the research, different kinds of sources were studied alongside the theoretical literature, archival documents, memos, e-mails, and the report of an employee commitment survey. During the research, the researcher participated in several academic and practitioner workshops and conferences, holding conversations and debates with practitioners and academics. It could be said that the researcher spent several years immersed in the field of study thereby enhancing the credibility of the research.

6.2.3 Doing research by consultancy

One common problem in participatory observation research is the credibility of the research as a science, with the suggestion that it is merely consultancy described using scientific language. Also, although the scientific and consultant paradigms are different, they do overlap (Gummeson, 2000:19). Consequently, in using participant observation the borderline between the academic researcher and the management consultant becomes blurred, particularly as the role of the consultant provides opportunities for intensified inquiry into the behaviour of business firms and other organizations. Six criteria could be identified in order to differentiate between participant observation and consulting in this research.

First, the main factor differentiating consulting from participant observation research was that the former aims at innovations, while the latter aims at a theoretical contribution. Applied research, which is close to consultancy, can be done to make recommendations for solutions to the specific problems of a specific company or industry to improve the

performance of a business (Lukka, 2005). The aim of this case study was not to arrive at a tool for solving case company problems, but while solving problems to develop the MAC communication theory and model.

Consequently, this research as academic participatory observation research is concerned with theoretical and philosophical relevance as well as the long-term and general advancement of management disciplines (Gummesson, 2000:9; Davila and Oyon, 2008; Westbrook, 1995). This research is about an everyday MAC situation in an organizational context but the aim was not just to describe what happens, but to investigate how and why the processes happened, or how communication in MAC works.

Second, the factor differentiating consulting from participatory observation in this research was the role of theory. In participatory observation, theory serves two purposes. Firstly, theory is used to construct an appropriate intervention and to position the findings so that they contribute towards the production of publishable scientific knowledge. Secondly, a theoretical framework is used to provide strategies to accomplish participant observation activities. In this research the purpose was not to create a better MAC based on the case company problems, but to create a theoretical framework. MAC communication theory is based on other communication theories known in linguistics and semiotics. These theories were studied before and during the collection of empirical material and intervention in the company. The theoretical framework was used to analyse the communication process in the case company, to collect appropriate empirical material and to position the findings to contribute towards the production of scientific knowledge.

Third, consultants tend to make an incremental transfer from one specific context to another, without raising broader questions in a wider variety of contexts, or raising issues that link to broader statements made by others. (Eden and Huxham, 1996). In this case study the aim was not to build up management tools or to make MAC "better" but to investigate how communication works in the MAC process. Consultants rarely discuss the context in sufficient detail to permit the reader to make generalizations and make comparisons with other reported situations (Westbrook, 1995).

Fourth, consultants only report on success, but the paths and obstacles to success are rarely explored. Researchers also describe and analyse failed projects in order to learn from them (Davila and Oyon, 2008). The part-time and fixed period consultant's role gave the researcher much needed distance from the company results during the research period, which was important to avoid the "consulting" case. From that point of view the researcher could remain an impartial observer. At the same time it was possible to guide changes in the

organization, as she had enough power and opportunities to run change processes - she designed changes, and guided their implementation, giving an opportunity to analyse processes and results more objectively (if it was possible to do so). In this case study the failure of MAC in some parts of the company provided the most valuable empirical material, which helped to understand the differences in the communication process within the case company.

Fifth, consultants share a single common goal with the company, the completion of an analysis and/or the implementation of change. The researcher will have this goal as part of a larger primary goal, which is to discover new knowledge that the company may not share (Westbrook, 1995). The case company's management team needed changes for economic purposes, but for the researcher, the main goal was to collect empirical material about communication processes in MAC. The company goal was only part of the researcher's primary goal, which was to discover new knowledge.

The last factor differentiating consulting from participatory observation is that researchers reflect on the conditions of the knowledge they produce and on the validity of its propositions rather than on the saleability of their solutions and knowledge (Mouritsen *et al*., 2002). This participant observation research project aimed to create new knowledge about the role of communication and its processes in MAC, not to create a tool to test in a market situation (see Lukka, 2005). Of course, the researcher hopes that the MAC communication theory that developed will be of use in the future to develop a useful tool for managers and consultants.

Communication as interaction is not tangible and static. To better understand processes (e.g. body language etc.) the researcher has to collect empirical material *in vivo*. In the change process the different social processes, problems and contradictions are more clearly seen. Consequently, for research purposes, it is useful to direct those change processes and at the same time collect empirical material for research purposes.

6.2.4 Strengths and weaknesses of the ´practitioner-academic´ divide

The practitioner-academic position entails both strengths and weaknesses. Regarding the strengths, first the practitioner-academic position enabled the researcher to develop sociological insights into the phenomenon in question (Whittington, 2007). The practitioner-academic researcher could become directly involved with actions that were going on in the

case, and had the opportunity to examine what participants actually said and even what was *not* said, what was done and what was *not* done, what was practised and what was *not* practised. Sometimes something which was not said and done contained even more valuable information and meaning than what said and done. The practitioner-academic position offered the researcher a chance to gain emic understandings of what was going on in the case organization and provided the opportunity to collect more subtle and significant empirical material than could have been accessed through more traditional research methods.

Second, from her combined practitioner-researcher role the researcher attempted to carry out research that would be relevant to academia, but also to business and society (Schultz and Hatch, 2005).

Third, longitudinal participation enabled the researcher to "understand and unravel the tacit and deeply embedded nature" of the organizational practices in a way difficult to achieve by relying on more traditional research methods like interviews, meetings or practitioners' diaries (Rasche and Chia, 2009: 725). These observational methods allowed the researcher to record such mundane features of everyday organizational life that tended to go unnoticed even to case company members themselves. The thorough involvement in the case allowed her to follow and note even seemingly insignificant goings-on at the research site, including the suppressed, the marginalized and the unacknowledged (Rasche and Chia, 2009).

However, there are also drawbacks. Theoretical distancing was needed so that the researcher could rid herself of the apparent accounts of the 'natives' (Janis, 1972; Rasche and Chia, 2009: 725). Being too much of an insider can lead to a lack of insight because the actions and explanations of the natives are taken for granted (Järventie-Theseff and Moisander, 2011).

To sum up, a participant observation case study is useful to investigate the communication process and role in MAC processes for different reasons. The research is based on a relational constructivist framework, which means that the organizational reality is not something static and 'out there'. All participants create their own 'reality' at this point in time and space, including the researcher. Being directly involved with the organization's everyday life and trying to change it, gives the researcher a better opportunity to understand and compare different realities which, as Jönsson and Lukka (2005) said, provides understanding about what is going on in the organization.

6.2.5 Suggestions for future research

Communication in MAC is a particularly promising area for further research. There are many questions arising from this research. First, based on Jakobson's idea of the of factors, we should ask whether there are general rules in the hierarchy of MAC communication factors. Are there some factors or functions which are usually more problematic in companies? How could the MAC communication model be developed so that it may be used in a better way to analyse the hierarchy of factors?

Second, the communication model of MAC contains two codes – cultural and professional. Is it enough to distinguish only two? Maybe it would be more accurate to subdivide the professional into operational and accounting, so that the MAC communication model uses the three codes: cultural, accounting and professional.

Third, the study proposes the theory of role of amplification in the MAC process. This concept raises many questions of its own, such as what roles the different factors of communication have in the amplification process? Is there any other method to study the amplification process in the relational framework of MAC?

This study does reveal the important role of middle level managers in the communication process of MAC – they can amplify or cut off the MAC communication in the company. Could we generalise a similar effect elsewhere in companies?

Fourth, this study analysed MAC communication at operative level. Are there differences between companies in the understanding of the role and meaning of MAC at different levels of the company?

Fifth, the study gives one example of how to use the communication model of MAC in practice. Next it would be useful to develop it as a practical tool and to explain how to conduct interviews and analysis in companies. The next step would be to devise guidelines or a manual, so that the model could be used in consultancy and managerial practice.

6.3 Conclusion

The study investigated the opportunities to understand communication in MAC. The aim of the study was to elaborate the model of communication for the MAC field to better understand the role of communication in MAC. If we understand the communication process as it appears in the process of *acting by accounting*, that is, how the acting by information works in an

organization, we will be better equipped to implement MAC as a tool for achieving organizational goals.

The study illustrates the importance of focusing on MAC as a tool for *understanding goals at a distance and acting local* instead of only as a tool *of acting at a distance* (Robson 1992, Hopwood 1990). The study draws on Jakobson's (1896-1982) communication theory, Lotman's (1922-1993) cultural semiotics and analyses the MAC communication process along with the results of the case study. It provides theoretical propositions about the mechanism and the effects of a communication process on coordinating action in the organization and also provides a practical tool for analysing those processes in the organization.

In this dissertation one central phenomenon is language, language users and the role of language as a tool to help us relate to one another. In the 'monological' construction language is assumed to represent, refer to, or 'mirror' a non-linguistic 'real' world of objects (e.g. Rorty 1979). Relational constructivism views language not as a way of representing some independently existing reality but, as a key medium in which interacting 'goes on'. In this view, language derives its significance from the *ways it is used* in human relationships and the particular forms of life it supports (Gergen 1994), e.g. *doing* science and scientific rationality, in *doing* leadership, organizing or organization development.

This study shows that the communication aspects of MAC are more important than was thought in the age when MAC was a tool for top management. This study shows that misunderstanding and breakdowns (or noise) are an integral part of communication in the MAC processes and that misunderstanding is as valuable a mechanism for generating meaning as understanding (Lotman 1970). This study introduces a communication model based on Jakobson's (1956) model to the field of MAC, with a belief that knowledge held in the field of linguistics for over half a century can bring a degree of lucidity to the study of MAC that it has not so far enjoyed.

This study was based on relational constructivism with the *soft* self/other differentiation (Hosking, 2011), that is, on a dialogical approach (Sampson, 1993) which emphasizes multiple self/other relations and their mutual creation and co-emergence in ongoing processes.

This case study can be categorized as a theory refinement and illustration case study. This study uses participatory observation. Participatory observation is a way of doing academic research about a social system and simultaneously trying to change it. Participatory

observation gives the researcher a better opportunity to understand and compare different "realities" thus understanding what is going on in the organization.

This study introduces the communication theory of MAC which could offer managers a useful way to analyse the implementation of MAC. This may help in both the evaluation of MAC and in improving its actual processes. This study attempts to help organizations improve the application of MAC by proposing a theory that might improve MAC practice and assist managers in engaging employees.

Communication in MAC holds particular promise as a focus for further research on how different factors of communication affect the application of MAC.

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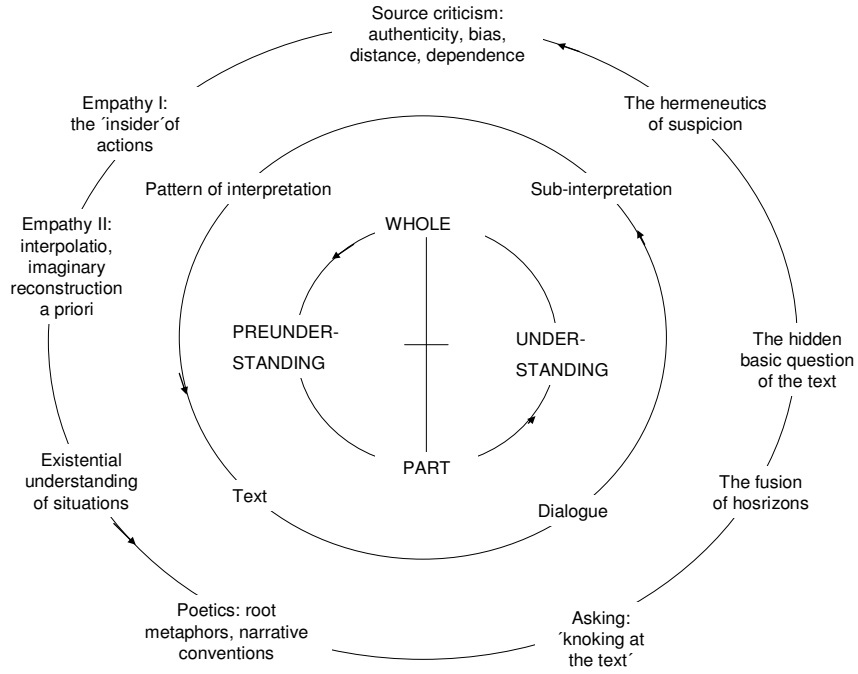
APPENDICES

Appendix 1 CV of the author of the dissertation

2010 – to date	Lecturer, Department of Accounting and Finance, Estonian Business School
2007 - 2008	Management Consultant, AS "PL"[35]
2003 - 2007	Head of Financial Management Specialisation, Lecturer of Accounting, Estonian Entrepreneurship University of Applied Sciences
2002 – 2010	Consultant, Folio Arvestuse OÜ
2002 - 2003	Principal specialist of management accounting, AS "PL"
1998 – 2010	Visiting lecturer at University of Tartu, Estonian University of Life Sciences, Estonian Entrepreneurship University of Applied Sciences. Workshops to practitioners.
1997-1998	CFO, Tartu Student Village
1996-1996	CFO, AS Tapila (Valio OY)
1991-1996	Entrepreneur, AS Sirma
1988 - 1990	CFO, State Farm of Kambja
1987-1988	Researcher, ELVI

[35] The company name is altered

Appendix 2 The hermeneutic process



Source: Alvesson and Sköldberg, 2000: 99

Appendix 3 The monological view of communication

The positivist-rational school defines interaction as a process by which one person relates to others, or affects the behaviour, state of mind or emotional response of another, and vice versa. In this conceptualization of communication, the communication process was seen as primarily *linear* that is, communication moves from a source to a receiver. The linear or monological view sees communication as a process of sending and receiving messages or transferring information from one mind to another, where "one" and "other" appear separately. The functionalist school sees a *message* as something which is transmitted by the communication process. The message is what the sender puts into it by whatever means. In other words it sees communication as a process by which one person affects the behaviour or state of mind of another and it is concerned with matters like efficiency and accuracy.

If the effect of communication is different, than which was intended, this school tends to talk in terms of communication failure or the communication noise, and to look to the stages in the process to find out where the failure occurred. In the transmission theories of communication the noise is anything that is *added* to the signal between its transmission and reception (for example, see Figure 6) that is not intended by the source (Fiske 1990:8). This school looks for "correct communication". These theories of communication are called the "transmission" school (Craig 1999) or "process" school (Fiske 1990) of communication. For example, Lasswell's (1964 (1948)) classic and widely quoted early model of communication asks a series of linear questions:

Who
Says *what*
In *which channel*
To *whom*
With *what effect*

Lasswell argues that to understand the processes of communication we need to study each of the stages in his model. For example, Jönsson (1998) investigates the process of conversation in the MA process - who speaks and what must happen next for a successful conversation to take place. The Lasswell model is linear and sees communication as the transmission of messages. This model is monological, looks communication factors separately, not relation or

in interaction each other. In this model communication transmit messages as objective information rather meaning which is created in the dialogical process. The model does not consider the reaction of the receiver. The model thus suggests that communication is a simple process of injecting our message into receivers.

According to Fiske (1990) and Taylor et al. (1996) another widely accepted communication model originating in information theory is Shannon (1948) and Shannon and Weaver's (1949) communication model (Figure 20). It is another example of the model, seeing communication as the transmission of messages.

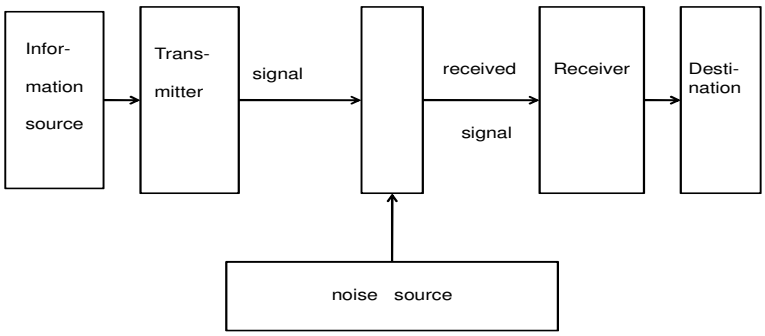


Figure 20 Shannon and Weaver's functionalist model of communication. (Fiske 1990:7)

This theory allows the possibility of variable interpretations on the part of sender and receiver that is, communication included noise or equivocation. This model treats such variability or noise as a soluble problem, or something to be "corrected" (Taylor et al. 1996). In such a theory we take for granted the theoretical possibility of perfect or noiseless communication.

Shannon and Weaver identify three levels of problems in the study of communication. These are:

Level A (technical problems)	How accurately can the symbols of communication be transmitted?
Level B (semantic problems)	How precisely do the transmitted symbols convey the desired meaning?
Level C (effectiveness problems)	How effectively does the received meaning affect conduct in the desired way?

The technical problems of Level A are the simplest to understand and these are the ones that model was originally developed to explain. In the MAC situation it includes, for example, the problems of reports transmission, the software quality, online and internet access. The semantic problems are again common to MAC, but much harder to solve. Shannon and Weaver consider that meaning is contained in the message: thus improving the encoding will increase the semantic accuracy (or as is often said, better communication). For the MAC situation it means improving reports to be clearer to receivers, using better or more sophisticated accounting methods like ABC etc. Or as stated by Robson (1992) more information and translations is needed. The effectiveness problems may at first sight seem to imply that Shannon and Weaver see communication as manipulation: that A has communicated effectively with B when B responds in the way A desires. It means the MAC works well, if manager or employee responds to the report information in the way top management desires.

Shannon and Weaver stress that the three levels are interrelated and are interdependent, and that their model, despite its origin in Level A, works equally well on all three levels. Despite their claims to operate on levels A, B, and C, Shannon and Weaver do, in fact, concentrate their work on Level A (Fiske, 1990: 9). On this level, their term information (message) is used in a specialist, technical sense, and to understand it we must erase from our minds its usual everyday meaning. By Shannon and Weaver's view on the communication theory and model, the point of studying communication at each of these levels is to understand *how we may improve the accuracy and efficiency of the process*. This view of communication is connected in the MAC research world with research questions from Merchant and Otley (2007:790): what can be done to minimize failure or noise of information or assumes that there has to be a system which is good at some point of time and place and the existence of effective control systems for the company (see also for example, Malmi and Granlund 2009).

The other widely accepted communication model is Gerbner's model (1956) (Figure 9). This model is like Shannon and Weaver's in that it claims to be universally applicable:

> "it can explain any example of communication, and in particular draws attention to those key elements that are common to each and every act of communication (Fiske 1990:24)".

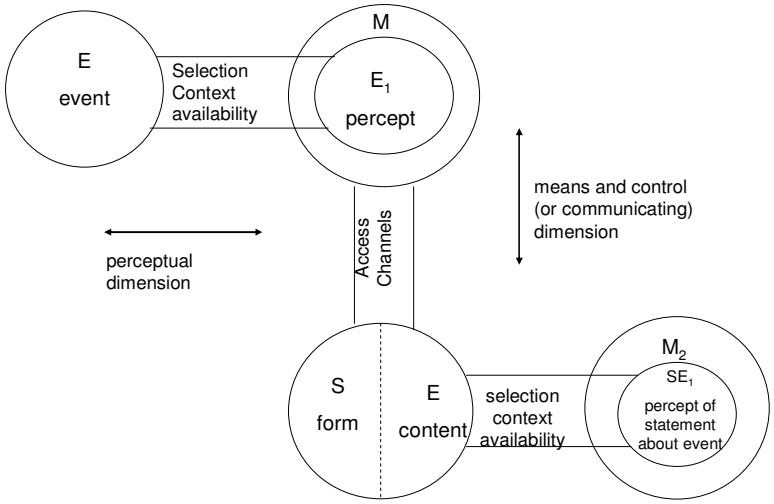


Figure 21 Gerbner's transmission model of communication (1956)
Source: Fiske 1990:25

According to Gerber, the communication process begins with an event E, something in external reality. In the MAC context that would be for example, the economic situation of the company or some results of a project or subdivision. This event is perceived by M. The M may for example be a human (management accounting specialist) or a machine (PC with accounting and analyses software and empirical material).

M's perception of E is a percept E_1, that is, the report produced by software or the MA specialist understanding (knowledge) about the situation/this event. This is the perceptual dimension at the start of the process. The relationship between E and E_1 involves selection, in that M cannot possibly perceive the whole complexity of E (that is, some things made visible and other not).

If M is human, the selection is more complex because human perception is a process of interaction with external stimuli, for example, the aim of the company, the competing environment, the task given from head office etc. To make a parallel with Hopwood (1990), a person who has the power to make some things visible is an important factor in the MAC process. If M is a machine like PC with software, the selection has made anyway by the human by giving patterns or algorithms to the computer. In the MAC context, it accentuates the role of management accountant or controller in the organization. As these choices are made by a human, there could be some loss of information (empirical material) connected with the event, for example, mistakes encoding empirical material to the accounting system, distortions of information about the events, human mistakes, mistakes in calculations etc.

The communication or means and control dimension (the vertical) of the model works when the percept E_1 is converted into a signal (or message) about E, or to use Gerbner's code, SE. It means the process of making reports in the MAC situation for the receivers. In the circle, the S refers to it as a signal, the form that it takes (the report), and E refers to its content, the encoding process. This encoding process of E can happen in a number of different ways – there are possible numbers of different S forms. Gerbner sees the main problem as finding the best S for the given E to the crucial concern of communicator. For MAC this means that the management accounting specialist has to find the best way to construct reports and key performances.

In the third stage of the process, what is being perceived by the receiver, M_2, is not an event E, but a signal or statement about an event, or SE (that is, the report). The same processes as in stage 1 are involved and it is perhaps worth re-emphasizing here that the meaning of the message is not "contained" in the message itself, but is the result of an interaction or negotiation between the receiver and the message. M_2 brings to SE a set of needs and concepts derived from culture or subculture (the individual context) and insofar as s/he can relate SE to themselves so, s/he finds meaning in the message (that is, the report or conversation, meetings). The message itself should be seen as having the potential for many meanings. This potential is never completely realized and the form it takes is not determined until interaction or negotiation occurs between M_2 and SE: the resulting meaning is SE_1 (Fiske 1990:27-28).

However, Gerbner's model is more complex than Shannon and Weaver's. It tries to relate the message to the "reality" that it is "about" and thus enables us to approach questions of perception and meaning, but it still describes the linear process of communication. It sees the communication process as consisting of two alternating dimensions: the perceptual or receptive that is, selection, context and availability - or the horizontal dimension of the model, and the communicating of the means and control dimension – the vertical dimension (Figure 7). Gerbner's basic model is the triangular relationship between event E, the percept of event E_1, and the statement about the event SE. Meaning is to be found primarily in this relationship. Although Gerbner's model is more sophisticated than Laswell's or Shannon and Weaver's, his model is still just an imaginative development of them. It defines communication as the transmission of messages, and although it looks beyond the process itself, outside of E, and thus raises the question of meaning, it never addresses itself directly to the problems of *how meaning is generated*. It takes S, the form of the message or the codes used for granted, whereas to ask how this form or code created, about the process of creating

the Ss. Gerbner assumes that all the horizontal processes are similar, like Giddens (1984:xxiii). Although Gerben's model takes into account that message created by the receiver, his model is monological focusing on sender or on receiver, not on the *dialogical or relational process between them*.

The transmission or process view of communication resonates in many practical settings and is used in many contemporary studies. In the everyday world of organizations, communication is seen as a relatively straightforward activity – sending messages. Examples of research on communication as a monological view of communication within MAC include Malina and Selto (2001), Bean (2001), Siegel (2000), Mouritsen et al. (2009) etc. That is, in everyday life we often think about communication as the process of sending and receiving information (e.g. Cornelissen 2004; Strauss and Hoffmann 2000; Tourish and Hargie 2004), taking communication as monological process of sender or receiver.

Appendix 4 Excerpts from the interview with the author of the thesis

EBS lecturer Ülle Pärl The journey to the theory of MAC communication (Merimaa, 2011)

….

In the context of accounting, it is not common to study communication. How did you come to investigate communication in MAC?

I had worked for more than 15 years with different companies, yet when I started my academic career, I noticed that my perception of MAC and that of the MAC described in the textbooks were somewhat different. I recognised that numerous research papers ended just at the point where the real world problems began. It seemed there was plenty of knowledge about the instrumental side of MAC, but less about using MAC. This aroused my interest: I wanted to know what was contained in the process of 'using MAC'. So I tried to find a theory that I could use in the course of investigating the use of MAC as I had experienced it while working for various companies.

Was the investigation process a smooth one?

No, actually it was not. I studied numerous theories, read a myriad of papers, but I could not find the appropriate theoretical framework for my research. This, of course, was contrary to my expectations. I realized I could be facing wasting two years of doctoral studies without presenting any remarkable results because I found myself facing a dilemma: either write the dissertation as 'normal' using the theories that are common and familiar in the MAC field of science (but do not actually satisfy me as a practitioner) or abandon research work.

I decided not to create something I was not satisfied with. I decided to take a break and go on a biking tour with my children. We stayed overnight in the middle of nowhere, in the very deepest forest with the family of a forest warden. One night, I dug into the bookshelf there and found Juri Lotman's book about cultural semiotics. I experienced the "eureka effect" at once: from the very first sentence I understood that I had found the theoretical framework for my research work!

So, from that moment the writing of the doctoral dissertation accelerated?

Even at that moment, I still had no idea how it could be possible to use the theory in the MAC context. What I perceived was the *feeling* that Lotman's theories *might* fit with the practice of MAC. In order to confirm my ideas and feelings, I started to study semiotics at Tartu University's Department of Semiotics and threw myself into participating in lectures, seminars, reading papers etc.

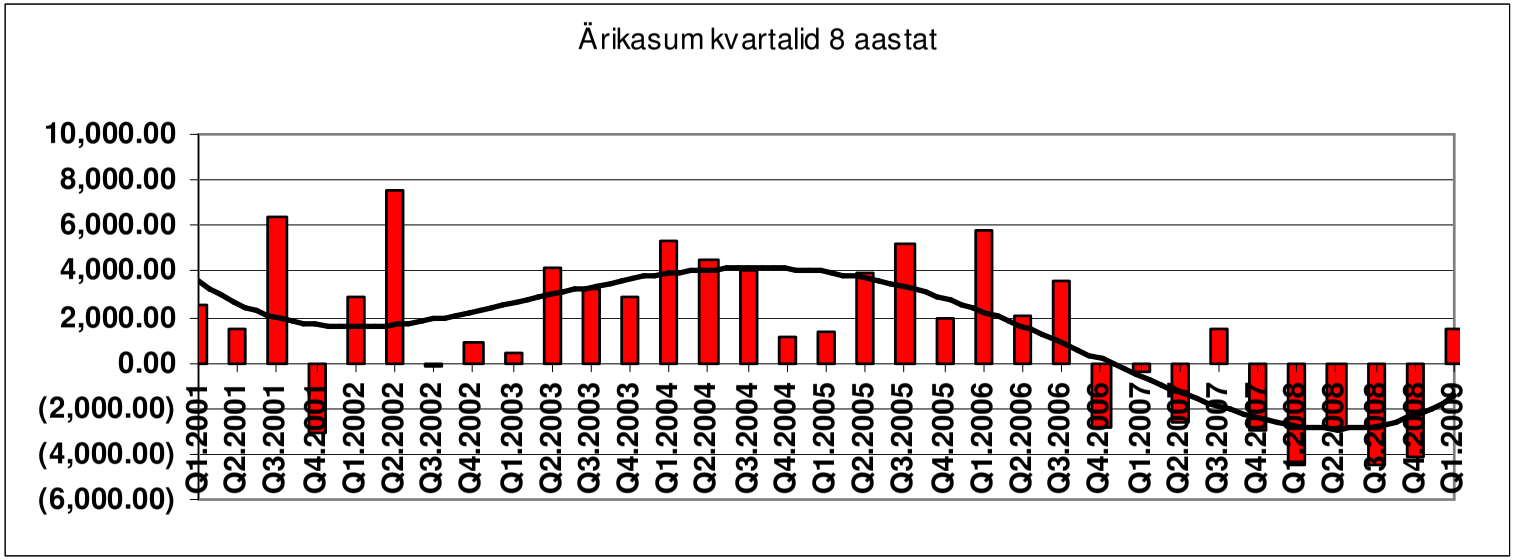
The communication process as a topic of research work seems to be very complicated. How is it possible to gain a deep insight into something totally intangible?

Communication is something that happens as a concurrence between two parties and is very situation-related. It is important to observe and analyse the actions and understanding of both parties – preferably at the exact moment of action. So, in order to investigate the process, it is necessary to be "in the middle of real life".

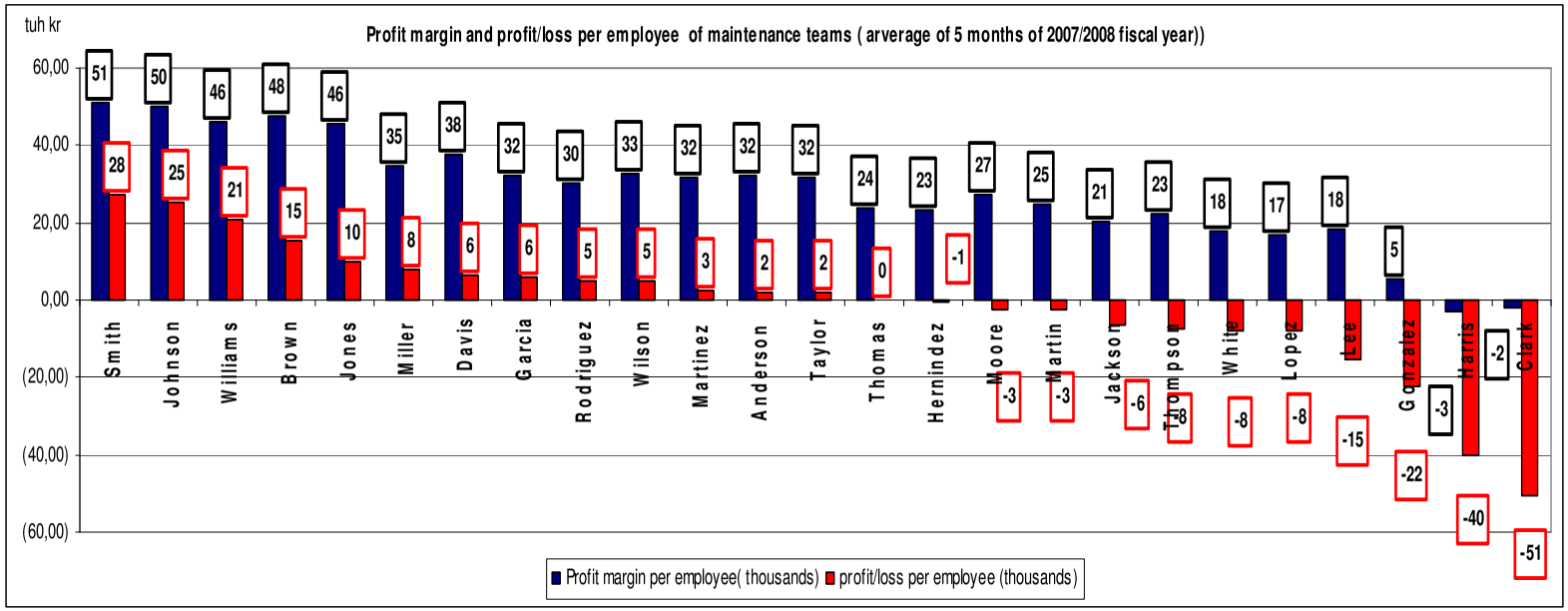
In this context, the second coincidence occurred. Only a few months after starting studying semiotics, a former colleague invited me to work with them as CFO in the company where I had worked some years ago. So I had the opportunity to participate in "real life" and to develop the theory of communication in MAC.

…

Appendix 5 Financial history of PL (Operating profit in local currency thousands*)*



Appendix 6 Personalized report at operative level of PL



Appendix 7 Observations

	Type of observation	**Number of observations**	**Time**	**Total in hours**
Briefings of management team	Participant	25	01.2008 - 11.2008	38
Meetings of senior and middle managers	Active participant	33	10.2007 - 11.2008	122,5
Workshops of senior and middle managers	Chair, lecturer	3	11.2007; 05.2008	8
Workshop of operative-level managers	Chair, lecturer	2	02.2008; 06.2008	3
Meetings of operative-level managers	Active participant	8	11.2007; 05.2008; 09.2008; 10.2008	22
Meeting of PPL financial division	Participant	1	05.2008	6
Total		72		199,5

Appendix 8 Meetings of senior and middle management

Date	Duration (in hours)	Topic
26.10.2007	6	Strategy of PL
14.11.2007	3	Workshop, brain storming
30.11.2007	6	Budgeting, incentive system
19.12.2007	4	Budgeting, prognosis for 6 months
4.01.2008	4	Financial results, sale prognosis
15.01.2008	4	Investments
25.01.2008	4	Incentive system
30.01.2008	4	Incentive system
14.02.2008	2	Financial results, sale prognosis
6.03.2008	6	Finacial results, sale prognosis
19.03.2008	3	Sale prognosis of March, prognosis of I quarter
2.04.2008	3	Management accounting , corrections
14.04.2008	2	Financial results, sale prognosis
23.04.2008	5	Finacial resluts, sales invoices
30.04.2008	3	Annual report of previous year
7.05.2008	3	Understanding of incentive system
14.05.2008	2	Problems in implementing of incetive system.
28.05.2008	2	Incentive system of extraworkers
30.05.2008	8	Strategy meeting
4.06.2008	3	General meeting, workshop
05.06-06.06.08	9	Startegy meeting
18.06.2008	3	Financial results, sale prognosis
25.07.2008	6	Financial results, sale prognosis
6.08.2008	3	Financial results, sale prognosis
22.08.2008	3	Prognosis of II quarter, results
3.09.2008	3	Organizational structure, incentive system
10.09.2008	3	Financial results, sale prognosis
18.09.2008	3	Incetive system
24.09.2008	2	Incetive system
9.10.2008	2	Financial results, sale prognosis
15.10.2008	3,5	Financial results, sale prognosis
22.10.2008	3	Results, sale prognosis
21.11.2008	2	Financial results of 7 months
Total	122,5	

Appendix 9 Documents collected

Documents collected and analysed	**Format**
Minutes of briefings	Printed documents
Minutes of meetings of senior and middle managers	Printed documents
Minutes of meetings of operative level managers	Printed documents
Agenda of meetings of senior and middle managers	Printed documents
Agenda of workshops	Printed document
The report of research of employees commitment in PL	Presentation slides
Monthly statement of ranking of operative level managers	Screen prints
Strategic plan for 2007/2008-2010/2011	Printed document
Budget for 2008/2009	Screen prints
Monthly contribution margin statements	Screen prints
Report of internal audit 18.03-08.05.2008	Printed document
Letters of manager directed to middle managers	Electronic letters printed
Weekly sales analyses/forecasts	Screen prints
Letters of researcher directed to managers	Electronic letters printed
…	

Appendix 10 Recordings of operative-level managers meetings

Date	**Department**	**Number of participants**	**Duration (in hours)**
09.10.2008	Department I	11	1,5
15.10.2008	Department II	14	1,0
30.10.2008	Department III	12	2,5
Total		37	5,0

Appendix 11 Interviews recorded and transcribed

	Position	**Date**	**Duration**	**Transcript (pgs.)**
1	CEO II	21.06.2008	35 min	8
2	Controller I	20.06.2008	43 min	10
3	Manager I	19.07.2008	63 min	12
4	Department manager I	03.11.2008	40 min	8
5	Department manager II	04.11.2008	66 min	9
6	Department manager III	10.11.2008	100 min	13
7	Operative-level manager I	03.11.2008	33 min	6
8	Operative -level manager II	05.11.2008	55 min	9
9	Department manager IV	04.11.2008	66 min	4
10	Manager II	06.10.2008	39 min	2
11	Operative -level manager III; Specialist (logistic)	10.11.2008	78 min	2
12	Operative -level manager IV	05.11.2008	83 min	5
13	Operative -level manager V	05.11.2008	54 min	6
14	Department manager V	10.12.2008	92 min	4
15	Operative -level manager VI	10.12.2008	44 min	2
16.	Controller II	10.12.2008	38 min	3
17	Accountant I	16.03.2010	15 min	0
18	Accountant II	03.04.2010	89 min	15
19	CEO II	06.04.2010	95 min	17
20	Controller I	14.04.2010	82 min	4
			20 hours 10 min	139

Appendix 12 Interview plan for 2nd round interviews

Addressee/küsitletav - juht
Nimi
Haridus
Täiendkoolitus
Kogemused
Roll ettevõttes.
Tulevikuplaanid/õppimine

Kontekst/Context
Kuidas sa hindad praegust üldist **majanduskeskkonda**?
Kuidas sa hindad **ettevõtte** praegust olukorda? **Mille alusel** sa nii arvad?

Kas see ettevõte on hea koht töötamiseks. Kas **inimesed** tunnevad ennast siin hästi.
Miks töötad selles ettevõttes.

Kas ettevõttel on olnud edukamaid perioode/vähem edukaid **perioode**.
Millal ja millest need sõltusid.

Kas sina oled oma ametikohal **edukas**. Mille alusel sa seda arvad?

Sõnum/Message
Kas sa Tunned, et oma töö jaoks **vajalik info on sinu jaoks piisav** nii ettevõtte kui terviku osas kui ka oma üksuse osas.
Kas tunned et ettevõte/osakonna töötajate tegemised on **kontrolli all**.
(Sa tead, mis seisus on ettevõte/osakond, ja oskad ka piisava tõenäosusega ennustada mis juhtub edasi et oma töid ja tegemisi planeerida.)

Kas tunned mõnikord, et **sinust ei saada aru** või sina ei saa aru kui jutt käib kajastamisest finantssüsteemis ning näitajate analüüsist. Kui sageli sa niimoodi tunned. (oma töö kajastamine infosüsteemis).

Kas tunned mõnikord, et arvestusandmete nõuete/ kasutamise pinnalt võib tekkida **konflikt.** Kas on selliseid ka olnud (kas või mõni väiksem). Mis sa arvad, mis on olnud selliste konfliktide põhjuseks. Kuidas need lahendati/lahenesid ja mis oli konflikti tulemus.

Kood/Code
Millises **vormis** levib informatsioon ettevõtte ja sinu osakonna tegemistest ja selle majanduslikust edukusest.

Kas selline info vormistus on optimaalne/hea. Millist eelistad. Mis võiks paremini/teisiti olla.

Millised näitajad on sinu arvates olulised ja millised on kasutud?

Kontakt/Contact
Kuidas Sina **finantsinfot kasutad** või seda toota aitad? Kuidas edastatud majandusinfo (finantsinfo) aitab sind töös või hoopis segab/takistab.

Kas oled alati sama moodi kasutanud? Kas sa oled alati sama moodi arvanud. Kui ei, siis millal ja miks muutsid arvamust.

Kas selle info kasutamine on sinu jaoks **lihtne**? Kas on midagi, mida arvad/tead, et on raske aru saada/kasutada.

Või on midagi, mille alusel tehakse **valesid järeldusi**? Mis see on?

Kas see on alati nii olnud. Kui ei, siis millal ja miks muutus? Kes/mis tekitas muutusi. Mis oli nende muutuste eesmärk ja tegelik tulemus.

Milline on inimestevahelise **suhtlemise roll** finantsinfo kogumises ja selle alusel juhtimisel/kasutamisel. **Koosolekute** roll. Milliseid suhtlus**kanaleid** kasutatakse.

Saaja/Addresser

Kas sa **usaldad** finantsinfot ja selle alusel tehtud analüüse. Miks?

Kuidas sulle tundub, kas finantsinfo on alati objektiivne, ilma moonutuste ja mõjutusteta? Kes ja kuidas saab/ moonutab informatsiooni. Mis eesmärgil see võiks toimuda?

Muutused
Kuidas hindad ettevõtte paindlikkust ja muutumisvõimet. Kas on sinu töötamise aja jooksul toimunud mõni **suurem muutus** ettevõtte

tulemustes ja nende saavutamises, ettevõtte **eesmärkides**, inimeste **arusaamistes (perioodid)**? Suuremad/väiksemad muutused.
Mida pead nende muutuste põhjuseks.

Kas ja milline roll nendes **muutustes** võiks olla **arvestussüsteemil** ja selle kasutamisel. Kas need on seotud, järgnevad teineteisele, käivad koos või ei ole seotud.
Kas võib öelda, et süsteem on pidevas muutumises? Millised muutused ja millest need sõltuvad.

Kuidas muutused mõjuvad sinu tööle, teistele inimestele ettevõttes. Mis on sinu arvates muutuste eesmärk ja tulemus? Kas siin võiks olla võitjaid ja kaotajaid?