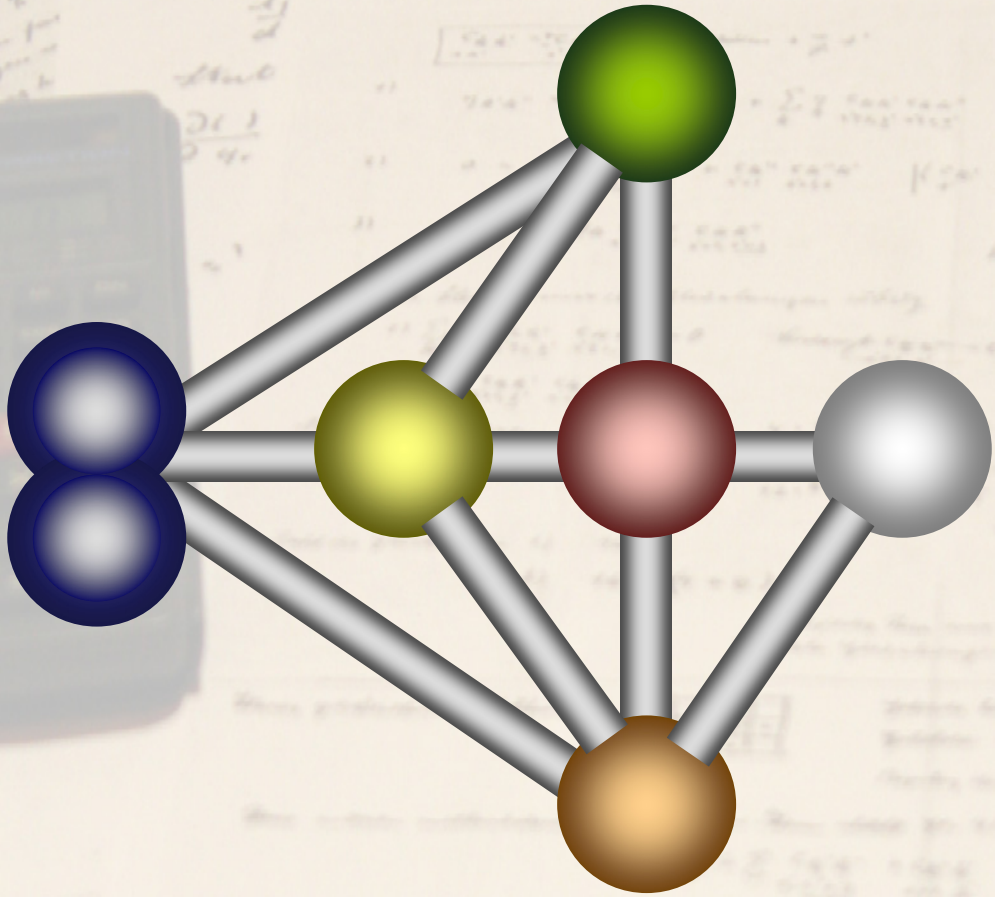

Aptitude and Attitude as Constraints and Enablers in Organisation Development:

An Elementary Model of Organisational Processes

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Aptitude and Attitude as Constraints and Enablers in Organisation Development: An Elementary Model of Organisational Processes

In memory of:

Samuel Ostersetzer

Samuel Spiegel

Lies & Jan

‘Hanna’ & ‘Hen’

.

Preface

"*Look! There …!*" A toddler's little index finger points. Its eyes are opened wide to catch as much as possible of the new and wondrous thing it sees. *What is it*? *What does it do*? *How does it work*? the toddler wonders. Then, seconds later, the toddler's finger points in a different direction. "*Look! There …!*" *All* is new, wondrous and interesting.

I still feel very much like that toddler. Almost daily, many things around me enchant me and I marvel at many, many things. Of objects and subjects that most adults seem to take for granted, I wonder: *What is it*? *What does it do*? *How does it work*? but also: *How could this benefit the common good*?

Having been vocationally trained in Information Technology and university educated in business administration, public management and financial law, I divided my time between addressing organisational and social issues as researcher, consultant and developer on the one hand, and education on the other hand. Against that background, it is perhaps not surprising that subjects such as aptitudes, attitudes, directive structures and socio-technical balance are brought together into one dissertation, with a humanistic approach. Conversely, against that same background, one might have expected more emphasis on economics, managerial styles or governance. Choices are made and what lies before you is the outcome of those choices.

Working to obtain my doctorate, to me, was enjoyable, but also sobering, for it made me even more conscious of how much I do not know, and how much more I would love to learn, for instance by means of additional research and by learning from others. Next to my insatiable appetite for learning, I still have a passion for putting this knowledge to good use and for kindling the same enthusiasm in others, as I have been trying to do the past decades, hoping they too will point and wonder: *What is it*? *What does it do*? *How does it work*? and: *How could this benefit the common good*?

René Van Someren

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1 Introduction

1.1 Introduction

In this chapter, I will describe my research objectives (what), the motivation for having selected that purpose (why) and the applied research methodology (how). Hoping to serve hurried readers, and perhaps others, I will start by giving a summary.

The purpose of this research was twofold: 1. To develop a model, methods and tools to increase our understanding of organisational processes. This model should reflect the core of all organisational processes, of organisations in general, regardless of type, size, location, and so on. The methods and tools are based on that model. 2. To empirically check the applicability of this model, and the methods and tools.

Literature study is applied to create a conceptual framework (Ch. 2), to embed this research into existing literature and to operationalise main variables (Ch. 3). The research also encompassed modelling (Ch. 2) and formalising (Ch. 4) the resulting model, as well as designing a questionnaire to create empirical representations of each model variable (Ch. 3). Quantitative empirical testing was carried out by means of a survey of multiple organisations to test the propositions underlying that model and to test the applicability of the questionnaire (Ch. 5). A partial trend study was carried out by surveying the same organisation twice, with a three-year interval, to improve the questionnaire and to examine the model's applicability further (Ch. 6). Multiple triangulation methods are applied. The final chapter (Ch. 7) contains a discussion about this book's subject matter.

Next, this description of the *why* (Background), *what* (Research objectives) and *how* (Methodology) of this research will be given in more detail.

1.2 Background

Hordes of organisation developers and change agents firmly, broadly and often convincingly contend that it is of vital importance for all organisations to develop and change. Newly appointed leaders too, proclaim to *make a difference*, and many of them intend to fulfil that promise. At the same time, in many organisations that underwent such obligatory change, after a long, tumultuous period, organisation members are left with organisational change hangovers, without experiencing any real improvement to their organisation. Questions, common to hangovers are: *What have I done ...? What are the consequences ...?* and: *Who can I blame?* Answers to the latter of these questions are usually quickly found. Shop floor workers blame management for having reached faulty decisions, for following ill advice, for trying to fix things that were not broken and for directing too much or too little. Managers blame their workers for not having followed given directives, for being too progressive or too conservative and for not behaving as the organisation development goals imply.

Organisation development often starts with a shared belief within an organisation that the organisation could be more effective than it is, if only it would go through certain development stages. What those stages are and what needs further development are subjects of a more contentious nature, since the state of organisational aspects tends to be judged by subjective measures. Subjectivity also complicates determining development results. Furthermore, awakening with a throbbing headache and regret usually happens after, and not before completing an often long and emotionally stirring development or change process, raising the thought: *If only I could have seen where this was going, while we were in the middle of this*.

So how can one establish the status of determinants of organisations' functioning? What aspects determine the functioning of organisations and how can their status be known before, during and after organisation development activities? Finding answers to those questions is the main challenge I set myself when I started this research.

From the volume and richness of literature regarding organisation development, one might be led to believe that we must know everything there is to know about this subject, and that application of that knowledge can only lead to optimally effective organisations and successful organisation development attempts. The content of this literature and real time experience forces us to think otherwise. Many organisations could be

more effective than they are and many passed change attempts did not fully deliver the intended results. These issues could, at least in part, be affected, or even be caused by, equivocal interpretations of key concepts, such as how to define an organisation, or what constitutes organisational effectiveness. Ambiguity about those concepts is certain to contribute to vagueness about all theories aimed at affecting organisations and their effectiveness.

Let me be up-front: I do not presume that this document will hold all answers and solutions to make each organisation optimally effective or to make each organisation development effort successful, but I will make a brave attempt to contribute to moving further. I will do so by searching for and focusing on the core of various matters, starting by trying to define the term 'organisation'. One definition of this term entered my mind many years ago, even though its origin has eluded me long since:

An organisation is an ensemble of human beings, procedures and tools, directed towards achieving commensurable goals.[1]

I realise that this is more prescriptive than descriptive, but I find this a helpful definition, since it encapsulates just about all possible causes for organisational defects. Most, if not all, organisational defects can be reduced to either organisation members doing the wrong things, doing things wrongly, using the wrong tools, using tools wrongly, working towards incommensurate goals, or a combination of these aspects. Traditionally, one tends to find similar definitions containing the word 'common' instead of the word 'commensurable'. I personally feel that commensurable goals is a much more realistic aim than common goals, for it would be quite unrealistic to believe that organisations with more than one organisation member could exist, fully directed towards achieving common goals. Organisation members have individual, personal goals and each has individual reasons for doing things, and for doing things a certain way. Therefore, in effective organisations consisting of more than one member, the maximum one could realistically strive for would be that the organisation is directed towards achieving commensurable goals. I briefly considered the word *commensurate* as substitute for *commensurable*, but quickly dismissed that idea, knowing that the difference between goal commensurability and goal commensuration often lies not in the goals, but in the attitudes and aptitudes of those involved. I pictured the given definition as illustrated in Figure 1 where human behaviour is affected by

[1] Here, the word 'tools' refers to means in general, including base material, realty, financial resources, and so on.

organisation members' aptitudes and attitudes, and by suitability and availability of applied tools and procedures.[2] In turn, suitability of procedures and tools relates to relevant aptitudes and attitudes of organisation members, with respect to achieving commensurable goals.

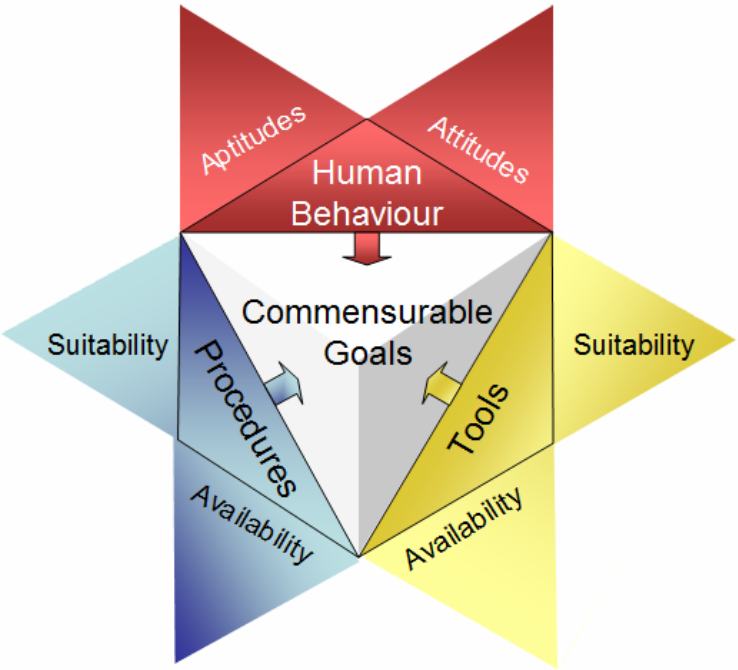


Figure 1: An organisation as an ensemble of *H*uman beings, *P*rocedures and *T*ools (*HPT*), directed towards achieving commensurable goals).

So, what constitutes an effective organisation? I argue that an organisation is effective to the extent of its match between its results and the purpose for its existence. The purpose of an organisation's existence is initially determined by the organisation's founders, usually expressed in a mission, goals and in a strategy to achieve those goals. This purpose can later be changed by the organisation's owners and management in response to external or internal developments, such as changing customer demand or variations in organisational aptitude. By this definition, an organisation is not fully effective if it does not restrict itself to doing what it is meant to do. After all, doing things, other than those that were meant, will probably lead to other results than the purposed effects. Asking why *organisations* do not restrict themselves to doing what they were meant to do, leads us to the

[2] Including working methods such as process design and team composition.

concept of organisations as autonomous entities. That concept suggests that organisations are responsible for their members' behaviour and for the consequences of that behaviour. Friedman (1970) strongly dismissed this notion, referring to an organisation as an artificial person. Following Vicari (2007), Mele and Polese (2011) also noted that organisations depend upon individuals and their networks. Agreeing that organisation members are not organisations' playthings, but that organisations can only exists by means of human behaviour, leaves us with the question: "Why are not all organisations ensembles of human beings, procedures and tools, directed towards achieving goals that are commensurable with the purposes of those organisations' existence?"

Numerous theories claim to answer that question, as does Mintzberg's suggestion that organisations will be more effective the more they resemble his five ideal types (Mintzberg, 1983), refuted by Doty, Glick and Huber (1993) after having tested that theory. Other configurational theories, such as Miles and Snow's claim that organisational effectiveness could be achieved by establishing internal consistency, or fit, among the patterns of relevant contextual, structural, and strategic factors (Miles and Snow, 1978), were followed by conceptual frameworks, such as the 7S-framework (Peters, Phillips and Waterman, 1980) and the Star Model (Galbraith, 1993). Argyris (1962) proposed a social cause of mismatches between organisational results and the purpose for their existence, stating that both the problem and the solution lie within conflict between the individual and the organisation. According to DeCaro and Stokes (2013), this could be overcome by an interdisciplinary approach, based on principles of human agency and institutional analysis from social psychology. This theoretical disparity raised the important question: "Does the primacy of human behaviour lie with structure, or with agency?" which incited many different answers. An authoritative answer is given by Giddens, at least where social structures are concerned, by stating that structure and agency influence one another by means of interaction to the degree of being co-constitutive (Giddens, 1984). This will be addressed further in the next chapter.

Let us now, for the sake of argument, assume that we have created effective organisations as ensembles of human beings, procedures and tools, directed towards achieving commensurable goals, having structured them according to their organisational fit and their goals aligned with their members' goals. What is it that, repeatedly, triggers the need for organisational change? In literature, inertia is often mentioned as a cause for this occurrence, by which is referred to an organisation's failure to keep up with changes in its

environment (Dunphy, 1996; Pfeffer, 1998). To keep up with changes in their environments, according to Weick and Quinn (1999), organisations can either apply episodic change to realign the organisation's structure and its perceived environmental demands, or apply a pattern of endless modifications in work processes and social practice. Weick and Quinn advocated doing the latter. Such methods, described as 'continuous change' tend to be based on the contention that change is emergent, explained by Orlikowski as "*the realization of a new pattern of organizing in the absence of explicit a priori intentions*." (Orlikowski, 1996:65). According to Weick, effective *sensemaking* and effective emergent change are tied together closely in the sense that change effectiveness relies on the fullness of sensemaking activities (Weick, 2000).

Organisation development

This is all quite something to digest. On the one hand, much of what has just been mentioned seems to make perfect sense, but on the other hand, many more questions are raised. Would creating and maintaining effective organisations really be as simple as designing them well and promoting emergent change from then on? Would this not suggest that emergent change is always progressive, directed in line with environmental developments? Can emergent change not be regressive or degressive, for instance when organisation members divert the focus of their actions, regardless of environmental developments? Each organisation is part of its environments' environment. As such, each organisation indirectly affects its own environment. What causes an organisation having to keep up with environmental developments, rather than being able to force its environment to stay aligned with the organisation? If organisations' environments continuously develop, should not organisations too continuously develop, or *do* organisations continuously develop, producing environmental development? I might be straying from the subject now.

It seems to me that some organisational deficiencies and other impediments to achieving effective organisations stem from mistaking organisational change for organisation development. Well-developed organisations are self-aware, flexible, learning entities, able to cope with environmental developments with far less need for organisational change than underdeveloped organisations. On that basis, development of well-developed organisations is continuous, rather than episodic, as are most deliberate organisation change activities. Organisational evolution is gradual

change in an organisation's characteristics. Such change can lead to improvement or deterioration of an organisation's effectiveness and efficiency. Evolution leading to deterioration can be referred to as *devolution*, which manifests itself particularly in loss of effectiveness. A process of adding human activity, procedures or tools, without improving an organisation's effectiveness, can be referred to as *involution*, and is most characterised by loss of efficiency. Involution often occurs in response to noticing loss of effectiveness, caused by devolution. It should be noted that improvement and deterioration of organisations can equally be continuous. In keeping with the assumption that organisations continuously evolve to some degree, for the better, or the worse, the difference between organisational change and organisation development can perhaps be described as organisational change being a, usually rather sudden, deviation from its prevailing evolutional course. Similarly, Weick and Quinn (1999) defined episodic change as "*an occasional interruption or divergence from equilibrium*" (p. 366). As mentioned earlier, these authors distinguished episodic change from something to which they referred to as "continuous change", their description of which serves equally well as a description of organisation development.

When referring to well-developed organisations as learning entities, reference is not limited to human beings within organisations, but reference is made to organisations as *an ensemble of human beings, procedures and tools, directed towards achieving commensurable goals*. This means that continuous development is inherent to well-developed organisations, where tools, such as knowledge based systems and management information systems, evolve, corresponding to internal and external dynamics, and where the relationship between technical and social aspects of organisational processes, as well as procedures supporting that relationship, adapt to demands within those processes. Such adaptation takes place in regular organisational processes, integrated into the ensemble. Transformation of organisations' general characteristics over the past century from standardisation via demand orientation to intertwinement of organisations and their environments, has affected the nature and dynamics of organisation development requirements. Due to this transformation, organisation development needed to be more focused on organisations' responsiveness to their environments, up to the point to which organisation development had to focus more on co-existence with organisations' environments, respecting that organisations' borders can be vague and variable. Consequently, the *ensemble* can be larger or smaller, depending on the organisational context. This forces us to think of organisations not just

as separate ecosystems, but also as organisms within larger ecosystems (Van Dijk, 2014) and considering this is a growing requirement for organisation development.

Organisation varieties

A common mistake is to equate *human beings* within organisations with *labour*. Organisation designs and interventions, based on the misconception of organisation members being (merely) suppliers of labour, in trade of rewards, often fail to some degree, and some fail entirely. Human beings think, feel, wish, act, and interact, as a result of which they respond to many more stimuli than reward propositions. There are also distinct limitations to what human beings can and will do, which has enormous effect on the outcomes of their responses to a wide range of stimuli. Furthermore, no two human beings are identical to one another. Compared to other humans, each human being thinks, feels and acts differently, has different wishes, abilities and limitations. What they do and how they do that, is much affected by context. This context is not just affected by matters such as procedures, tools and goals alone, but also by their mutual correlations and interdependencies. For instance, context is affected by balance between social and technical aspects of organisational processes, but also by one's vantage point within an organisation. Compared to supervisors or managers, shop floor workers often perceive certain situations quite differently. There is also enormous diversity in organisations, as well as in their respective environments.

1.3 Identifying key aspects

By definition

Earlier, an organisation was defined as *an ensemble of human beings, procedures and tools, directed towards achieving commensurable goals*. Consequently, organisational development always affects one or more of the following aspects:

- Organisation members;
- Procedures;
- Tools;
- Goals.

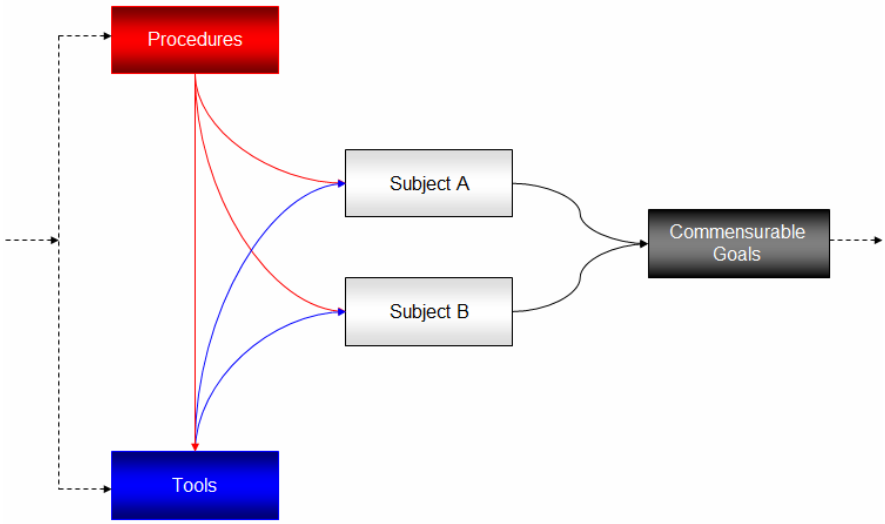


Figure 2: An organisation as an ensemble of human beings (subject A & B), procedures and tools, directed towards achieving commensurable goals (flow chart of HPT-model).

Focus on organisational processes

Given the seemingly numerous variables that affect organisational processes, it seems impossible to tell whether those processes, or an organisation as a composite of processes, is an ensemble of human beings, procedures and tools, and whether or not organisation members' goals are commensurable with relevant organisational goals. Without that information, much of organisational management must be acting blindly and their interventions coincidental and undirected. After all, neither knowing if something is wrong, nor knowing what is wrong exactly, makes every intervention a risky gamble. To know what goes on in an organisation, and to devise theories for organisation development, it seems necessary to select those variables that are most important for specific organisational purposes. A downside to reducing these variables for theorisation is that this tends to drastically reduce organisations and contexts to which those theories apply. To mediate this, we ideally select those variables that are most important for *all* organisations, but given the diversity in organisations, cultures and other aspects, this may seem impossible. Then again, if we would focus on organisational processes rather than on organisations, this might be conceivable. After all, in organisational processes, many organisational aspects manifest themselves in more condensed, basic forms. For instance, all formal procedural, authoritative, remunerative, corrective, conditional aspects of workers' roles and their relationship with the organisation

manifest themselves in organisational processes as: "*What the boss says*", or: *Leadership*. All other human activity, including working, communicating, cooperating, thwarting, flattering, practicing organisational politics, machinating, supporting, and so on, can be captured in one variable *Human Behaviour*. I applied the following selection criteria for variables of organisational processes:

1. At process level, all elements must be substantially variable;
2. All elements must be present in all organisational processes of all organisations;
3. No element is reducible to a higher category.

Since the given definition of an organisation is prescriptive rather than descriptive, for finding aspects that are elementary to organisational processes, it seems appropriate to replace Commensurable Goals with the extent to which goals are reached, or: *Outcomes*. Human behaviour is directly linked to organisational processes' outcomes. In keeping with the humanistic foundations of organisation development, we could even consider human behaviour central to all organisations' functioning.

Procedures and tools too, one way or another, apply to all organisations. Procedures suggest prescription, regulation, ordering or direction of some sort, all of which tend to manifest themselves at process level as authority or *leadership* by means of directives and conditions. Tools, used in organisations, may be anything from something as simple as a piece of paper, to highly sophisticated machinery. The sophistication of the applied technology does not weigh into the definition of an organisation, which is why these tools can be referred to as *applied technology*.

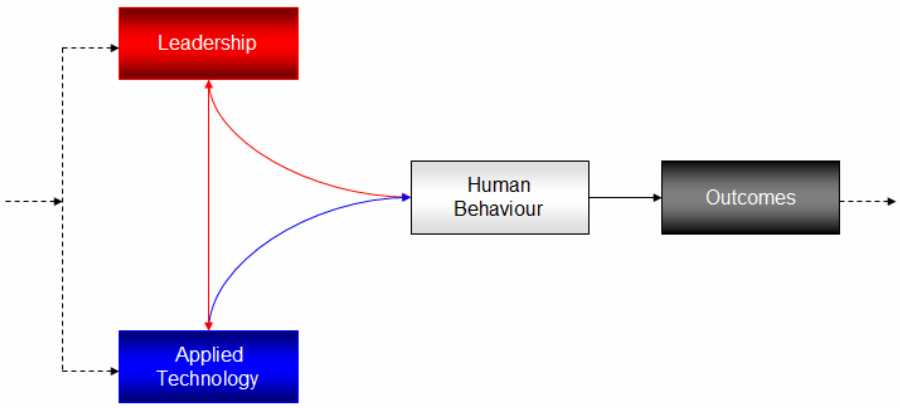


Figure 3: A basic representation of a common organisational process.

In line with these propositions, we can adapt the scheme of figure 2 into the scheme, illustrated in figure 3.[3]

Thus, focussing on organisational processes in general, rather than on a wide variety of organisations and on detailed organisational aspects, enables us to devise propositions that apply to much more organisations, and perhaps even to all organisations. If we would manage to do so for organisational processes, then those results might be carried through to organisations, as organisational processes composites.

Even when focussing on organisational processes instead of on organisations, to create a representative model, we are challenged to identify all variables that are key to functioning of organisational processes. In keeping with our consideration of human behaviour as central to all organisations' functioning, save fully automated processes,[4] instead of focusing on functioning of organisational processes, we could identify variables that are key to human behaviour within organisational processes.

Influence on human behaviour within organisational processes

I argue that human behaviour is restricted by what humans *can* do (aptitude) and what they *will* do (attitude). Here, the word 'attitude' refers to attitudes of mind, defined as: "*deliberately adopted or habitual, mode of regarding the object of thought*" (Oxford English Dictionary, 1969, Vol. I: 553). Consequently, functioning of organisational processes is not just bound by appropriate organisational and process design,[5] but also bound by limits to organisation members' relevant *aptitude* and by commensurability of their *attitudes* towards key aspects, with the organisation's goals and strategy.[6] No organisational process can function optimally if organisation members cannot or will not behave as organisational goals demand. Aptitudes and attitudes are not constants, they develop and deteriorate and they can be affected strongly and suddenly by aspects, such as c*ircumstance* and

[3] In real time, the learning feedback (from Outcomes back to Leadership and Applied Technology) is for many organisational processes prescriptive, rather than descriptive.
[4] The subject of fully automated processes is beyond the scope of this research.
[5] This design relates to the assemblage of human beings, procedures and tools, directed towards certain goals.
[6] Goal: "*The object to which effort or ambition is directed; the destination of a (more or less laborious) journey*" (Oxford English Dictionary, 1969, Vol. IV: 262)

emotions and *mood*. The subjects aptitudes and attitudes will be addressed extensively in this document.

Inherent to *emotions and mood* is that most of us can easily relate to the idea that emotions and mood affect our behaviour. Positive mood is a precursor of organisational spontaneity, expressed, for example in helping co-workers, working to benefit the organisation and to develop oneself (George, Brief, 1992). Mood is contagious. For instance, a message brought in a neutral, slightly sad or happy voice, induces congruous mood states in listeners (Neumann, Strack, 2000). One's sensitivity to mood contagion depends much on one's trait Emotional Intelligence (*trait EI*) (Petrides, Furnham, 2003). Behaviour of one, can also affect emotions and mood of others. For instance, workers' emotions and mood tend to be affected by charismatic leadership (Bono, Ilies, 2006).

One category of aspects can affect functioning of organisational processes, but, as individual aspects, do not do so always, and when they do, they do so in varying degrees. Collectively, by their presence, or their absence, those aspects always affect all organisational processes to some degree. Those aspects, such as weather conditions, workload, organisation members' domestic situation are circumambient to organisational processes and when their state becomes extreme, they can affect those processes. Organisation members' behaviour and their sentiments are contingent, or at least strongly affected, by their personal and organisational situation. I term these, and similar aspects collectively as *Circumstance*. Circumstance of individual workers in organisational processes is formed by their environment, working conditions, home life affecting work, and other borders of organisational processes.

Human behaviour is also highly influenced by *trust and confidence* of organisation members in themselves, in one another, in their own and each other's abilities, in the suitability of procedures and applied tools, in the way these elements are interconnected, and so on. Trust seems to be crucial to an organisation's long-term stability and to its members' well-being (Cook, Wall, 1980). As will be mentioned later in this document, trust can be inspired by many different aspects. One of those aspects is to demonstrate trustworthiness (Hardin, 1996), for instance, managers can initiate trust by displaying trustworthy behaviour (Whitener et al., 1998). British research suggests that human beings are predisposed to fulfil trust when they believe it has been placed on them (Guerra, Zizzo, 2002).

We have now pointed out the following variables that seem to be key to functioning of human beings within organisational processes, and by virtue of human beings, key to functioning of organisational processes: Leadership, Applied Technology, Trust & Confidence, Emotions & Mood, Aptitude, Attitudes, Human Behaviour, Circumstance and Outcomes. Since attitudes are formed by summarising one's evaluation of objects of thought, attitude could be regarded as a function of aptitude.[7] This is why attitude is not included as a separate variable, but, because of its variability and importance to human behaviour, this element will be included at a different level, as will be explained next, under *Measurability*.

Culture strongly influences human behaviour. This holds true not just for organisational culture, but also for ethnical or religious (sub)culture of individual organisation members or groups. Culture is cultivated human behaviour, part of the environment, ingrained in leadership behaviour, amalgamated with aptitude, intertwined with emotional sensitivity, trust and confidence, and often of influence in selection and variability of applied technology. Even though culture affects all other selected variables, and is even inherent to some of those variables, it is not selected as a separate model variable, since it is incorporated into human behaviour.

Recapitulating, from the given definition of an organisation the following variables were derived: *Leadership*, *Applied Technology*, *Human Behaviour* and *Outcomes*. Considering human behaviour central to all organisations' functioning, and focusing on organisational processes rather than on organisations, variables were added that significantly affect human behaviour, namely: *Circumstance, Aptitude*, *Emotions & Mood* and *Trust & Confidence*. Whether these variables together actually can be modelled to represent the core of all general organisational processes, will be subject of this research.

Measurability

If we know where we wish to go, to determine a direction of movement, we need to know where we are, relative to our goal. This also holds true for leading organisations or for designing organisation development strategies. Measuring the organisational aspects that have just been identified as important, or perhaps even elementary to all organisational processes, in a

[7] As defined later, in 3.5, under *Aptitude*.

practical, useful manner, may seem quite a challenge. When organisation members cognitively evaluate those organisational aspects, they form attitudes towards those aspects. Those attitudes could be regarded as representations of subjective measurements. Measuring members' attitudes towards key aspects of organisational processes should yield subjective indicators of those processes, which could possibly be objectified to a certain extent by triangulation. Even though mental representations, such as attitudes, cannot be measured in a traditional sense with a ruler or other such measurement instruments, attitude directions and intensities can be inferred from what people say or do (Smith & Mackie, 2007). Inviting people to report their attitudes, e.g. by means of a survey, is referred to as taking self-report measurements. Such surveys must meet certain requirements, such as guaranteeing respondents' anonymity to limit risk of respondents giving socially acceptable reports, and they require knowledge about which attitudes to focus on and how to operationalise those attitudes. Focus will be on organisation members' attitudes towards the key aspects of organisational processes. Operationalisation and survey requirements will be addressed in Chapter 3.

Coherence of key aspects

Once we have measured organisation members' attitudes towards aspects that are key to functioning of human beings within organisational processes, we need to know how to derive information from those measurements that is valuable and applicable, to increase our understanding of organisational processes. This issue will be approached by designing a model in which those (attitudes towards) key aspects of organisational processes are interconnected, and by deriving information from those measurements, from the interconnections, and by relating this information to data from other sources. If the interconnected organisational variables are elementary to all organisational processes of any organisation, and if their interconnection is common to those processes, the model would be an *elementary model* of *organisational processes*. In sum, the challenge seems to be to design such a model, to test that model and to examine whether this can provide useful information.

1.4 Research objectives

The title of this document is: *Aptitude and Attitude as Constraints and Enablers in Organisational Development: An Elementary Model of Organisational Processes*.

The main objectives of this research are to:

I. *Reduce a maximum amount of organisational variables to a minimal outline of organisational processes, while preserving the core of all organisational processes of organisations in general.*

II. *Learn how such a concentrated representation of organisational processes can be applied to foster organisations' effectiveness.*

When such a model is based on organisation members' attitudes towards (core aspects of) organisational processes, the model would not only serve as indicator of functioning of those processes, but also as predictor of organisation members' behaviour with regard to important organisational aspects (Harrison, Newman, Roth, 2006). This might be utilised in efforts to improve organisations' effectiveness and to foster organisation members' well-being. The relationship between aptitude and attitude will be addressed in the next chapter. During the course of this book, it will become apparent that aptitude and attitude not only *enable* organisational processes and their development, but that limits to aptitude and mismatch between employees' attitudes and organisational goals and strategies also *constrain* those processes and their development.

By placing human beings, their behaviour and their sentiments, central, the model could not only be referred to as attitudinal, but also as humanistic. Also explicitly focusing on the socio-technical balance of organisational processes and of organisations as composites of such processes, allows us to add the adjective socio-technical to the characterisation of this model.

Application of this model to make base-measurements and to measure organisation development results might contribute to understanding of the ultimate effects of organisational interventions. Additionally measuring developments mid-term, might allow altering the intervention course mid-term to prevent the intervention from failing to deliver the intended results.

1.5 Unit of analysis

The primary unit of analysis of this research is organisation members *at operational level* and their relationship with the organisation and with their supervisors. This unit of analysis is chosen because, at operational level, organisation members' attitudes can perhaps be inferred best, if only because there we find the majority of all staff members. Furthermore, at that level, human behaviour influences organisational results and outcomes of organisational processes directly, rather than indirectly as applies to other organisation levels.

1.6 Methodology

In this research, a mix of quantitative and qualitative methods is applied. Data are collected by means of desk research and field research. Field research is conducted by means of interviews and case studies, one of which consisted of repeated measurement of a cross-section of the same organisation with a three-year interval. Data are analysed in several ways, such as by modelling and formalising. These research activities are now addressed one by one.

1.6.1 Literature study

We sometimes try to delude others and ourselves into believing to be inventors and creators of ingenious, innovative scientific theories. However, despite our gallant efforts, it seems fair to question how much actual knowledge has been added to the various fields of science related to the matter of this research, over the past 40 years or so. The tendency to credit the most recent repeater of a remarkable statement instead of the author of the original mark that was cited,[8] not only contributes to burying original sources in oblivion. It also feeds the idea of an ever-growing body of knowledge. Devising new variations on the same themes threatens to obscure our view on the essence of matters and to instil the belief of basic matters being highly complicated. In this research, recent literature is studied as well as exemplary classic literature, not just to support the modelling process and to create a conceptual framework, but also to embed this research into existing literature and to operationalise main variables.

[8] Assuming that the author of the original mark is known, exists or, more philosophically speaking, has ever existed.

1.6.2 Modelling

A reduced model of organisational processes is designed, preserving only the elementary elements of all organisational processes. This is an *attitudinal* model, which refers to how its components are valued and to its architecture. Thus, the model visualises how human behaviour is affected by their attitudes towards key organisational variables,[9] while affecting functioning of organisational processes.

To design such a model, variables of general organisational processes are partly derived from the definition of an organisation as *an ensemble of human beings, procedures and tools, directed towards achieving commensurable goals*, partly selected from literature and practice, combined with filtering those variables, according to the selection criteria, mentioned under *1.3*. According to those criteria, the first step in this selection process was to exclude those aspects that are not, or hardly variable at process level, even though they might be very important at organisation level. The second step was to filter out all variables that are not part of all organisational processes, such as client interaction, or transport. The third step was minimising redundancy of the variables as they are manifest at process level. One example of this is reducing labour contracts, rewards, task assignments and all other directives into the variable Leadership.

Once selected, these variables were subjected to empirical examination by examining correlations between those variables, based on empirical data (see *1.6.6.* Survey (1)). This examination was aimed at double-checking for redundancy and completeness, as well as obtaining information about the interconnection of the model variables.

1.6.3 Conceptualising and operationalising

To devise operational definitions of the variables that have been regarded as elementary to organisational processes in general, first and second order conceptualisation was applied. First order conceptualisation served to minimise *linguistic ambiguity* of concepts relevant to this research. Second order conceptualisation served to minimise *conceptual ambiguity* of those concepts. Literature was studied to examine theories on conceptualising and

[9] Human behaviour is also affected by aspects, such as suitability of process design, including team composition, suitability of procedures, and suitability and availability of applied tools. At process level, these aspects are categorised as part of Leadership and Applied Technology.

operationalising the variables used here, within the context in which they are used here and in search of support for, or discrepancy with, methods of operationalisation proposed in this research. Oxford English Dictionary (1969) is referred to for first order linguistic conceptualisation of those variables. For second order conceptualising and operationalising, literature on sociology, management and psychology is studied, in scientific journals, such as Journal of Applied Psychology, Journal of Personality and Social Psychology, Academy of Management Review, Journal of Management and Strategic Management Journal. Amongst the books that have been consulted were, especially on the subject of member interaction, Handbook of Social Psychology (Vol. 2, 1998) and, e.g. on the subject of mood measurement, Handbook of Psychology (Vol. 2, 2003). The thus acquired knowledge has aided in subsequent operationalisation of the variables that are regarded elementary to organisational processes, resulting in definitions of each of those variables as observable measures.

1.6.4 Questionnaire Design

To obtain empirical representations of each model variable within the concept of elementary organisational processes, the variables are translated into questionnaire items for self-report measurements. Those items are converted into three questionnaire versions, all focused on the same unit of analysis, which is organisation members at operational level and their relationship with the organisation and with their supervisors. Each of the three questionnaire versions targets organisation members at a different organisation level: non-managerial, supervisory or managerial.

1.6.5 Formalising

Grounded on a theory of interdependence of model variables, propositions are made about correlation between interlinking model variable values, as well as about the mechanics by which the model as a whole works. These propositions are supported by literature study, quantitative examination and casuistry. This casuistry consists of three cases, directed at empirically examining (mis)matches between organisation members' attitudes and organisation's goals and strategies, as well as illustrating delimiters to organisation members' aptitudes. The cases also give insight into consequences of mismatches and limitations.

The first case relates to dyadic leadership. The second case relates to an organisation-wide ERP system implementation, with focus on various teams within that organisation. The third case has a team focus and relates to self-initiated change.

1.6.6 Survey (1)

During this research, previously mentioned research steps delivered products, such as a model, a questionnaire, and a proposition about the model mechanics. Thereafter, quantitative empirical examination was carried out by means of a survey of members of multiple organisations to test the assumptions underlying that model and its mechanics, and to test the questionnaire's applicability. For this purpose, three hypotheses were formulated and tested, using quantitative data, collected from multiple organisations, located in the Netherlands and the United Kingdom. Data analysis was aimed at evaluating and adjusting the assumptions made in earlier research stages, as findings implied.

More details about the methodology applied in this research stage are offered in Chapter 5.

1.6.7 Trend study

Realising that models, to some degree, represent a distorted image of reality, a partial trend study was carried out by surveying a cross-section of the same organisation twice, with a three-year interval, to examine the real term applicability of the attitudinal model on which much of this research pivots. Some would refer to this as a longitudinal case study, others would object to doing so, because it consists of not more than two measurements with a three-year interval. This case study also served to improve the questionnaire, to test the applicability of the model and the questionnaire and to evaluate the underlying assumptions.

In this case study, quantitative measurements taken in 2011 were examined, relative to quantitative measurements taken in 2014, supplemented by interviews and document analysis. Data for this case were collected from the Province of Noord-Brabant, a regional public body in The Netherlands. This organisation underwent a series of organisational changes over the course of 2011 into 2014, as part of a reorganisational process that would take at least until 2015 to be completed. Data collection took place within the scope of

these organisational developments and was carried out by document analysis, interviews and a survey.

1.6.8 Document analysis

Document analysis was carried out on documents regarding the organisation development activities that have taken place between 2011 and the moment of this empirical research in 2014. Next to triangulation, an important purpose for these data was to enable to place quantitative data into context.

1.6.9 Interviews

A cross section of organisation members of the Province of Noord-Brabant was interviewed. The open-ended focused interviews had a 10-item base, primarily related to individual perceptions and attitudes and not to professional knowledge. Interviewees did not need to prepare for the interview. Just as data from document analysis, data collected from interviews also served for triangulation and to place quantitative data into context.

1.6.10 Survey (2)

In response to earlier test results of the questionnaire that was designed earlier during this research, a few adjustments were made to that questionnaire. The updated version was applied in 2014 to take quantitative measurements by means of an electronic survey. Collected data were analysed and compared to corresponding data that were collected three years earlier from the same organisation (The Province of Noord-Brabant).

1.6.11 Qualitative Survey Data

Respondents to the survey were also invited to submit comments regarding the pertaining organisational developments, the questionnaire itself, or both. This was done to collect information that might serve to further improve the quality of the questionnaire, as well as an extra means to assess the reliability of the data collected with the questionnaire, by means of triangulation. Additionally, remarks pertaining organisational developments added qualitative data, helping to put quantitative data into context.

In Chapter 6, information about the methodology applied in this research phase is given in more detail.

1.7 Multiple Organisation Levels

During both empirical studies (the first survey to evaluate the research propositions and the partial trend study), self-report measurements were taken from members at different organisation levels. This is done by collecting data from organisational members at non-managerial, supervisory and managerial level. These data were collected separately of members at each organisation level, aimed at the same unit of analysis, which is, as stated earlier, organisation members at operational level and their relationship with the organisation and with their supervisors. To do so, three different questionnaires were used, one for each organisation level. Each item on either of these questionnaires measured the same aspect from the point of view of the organisation member in question. For instance, at non-managerial level the questionnaire contains the item:

I know what my supervisor expects from me

At supervisory level, this item is given as:

My subordinates know what I expect from them.

At managerial level, this item is given as:

Our organisation members know what their supervisors expect from them.

In this last example, managers were invited to give their view on this aspect of the relationship between organisation members at operational level and their supervisors.

1.8 Triangulation

In this research, data is analysed of different data sources, such as document analysis and interviews, of different perspectives of the same data (non-managerial, supervisory and management level), and by applying both quantitative and qualitative methods of analysis (Denzin, 1978; Patton, 1987; Yin, 2003).

2 Elementary Model of Organisational Processes

2.1 Introduction

Several perspectives exist with respect to organisational processes. Well-known examples are the 7S-framework (Peters, Phillips and Waterman, 1980), Star Model (Galbraith, 1993) and the formation of trust model (Avolio, Dodge, Kahai, 2001). These approaches not only help us explain why changes to one organisational element affect workings of another organisational aspect. They also allow more planned development of organisations, and offer guidelines to finding causes of organisational defects. However, unplanned, unwanted and unexpected effects do occur. Organisational diagnostics and development still tend to take place in processes of trial and error and even then, results often lack consistency and risk is taken that outcomes will be more disadvantageous than the initial situation before intervening. Therefore, we need a more general elementary model to increase our understanding of organisational processes. Much of this chapter deals with creating such a model, but first, several important aspects on which this model will be based will be addressed, namely the relationship between structure, attitudes, aptitudes and human behaviour and the subject of *free agency*.

2.2 Structure and its derivatives

In this document, structure refers to constitutions that tend to direct human behaviour. As such, structures can be divided into *material*, *social* and *psychological* structures. Material structures can be either natural or artificial. Examples of artificial structures are manufactured infrastructures, buildings, tools and machines. Natural material structures are, for instance, mountains, rivers and deserts, but also a being's physique and mentality. Examples of social structures are social convention, authority and regulations. Examples of psychological structures are fears, phobias and theolatry. All these structures tend to direct human behaviour one way, or another. Since humans tend to act as free agents, when possible, they do not always conform to the directives that structures imply. Laws are broken, mountains climbed and fears conquered. Even then, structures direct human behaviour. For instance, deliberate lawbreakers tend to act surreptitiously to

avoid getting caught; mountain climbers tend to plan and prepare themselves for such an expedition, instead of going about it the same way they would walk to the corner shop; those who try conquer fears, or phobias, force themselves to cross mental borders they have not gone beyond before.

For proper understanding of the influence of structure on human behaviour, it seems important to differentiate *physical structure* from *interpreted structure* and *adopted structure*. The first, *physical structure*, refers to the objective presence of structural components, such as a road, a law, leadership authority, or a business information system.

"If men define situations as real, they are real in their consequences." This sentence, known as the Thomas Theorem, stems from the 1928 book *The Child in America,* written by William Isaac Thomas and his research assistant Dorothy Swaine Thomas (Thomas & Thomas, 1928: p. 572)[10]. With this theorem, the Thomases acknowledged and emphasised that different human beings may interpret and experience the same events, and the same subjects, differently.[11] The Thomas Theorem illustrates that we can derive *interpreted structure* from physical structure by applying aptitude to assimilate physical structure. Therefore, interpreted structure is a derivative of physical structure. A derivative is mathematically denoted by placing an apostrophe next to its origin. Accordingly, the derivative of structure is mathematically denoted as *structure´*.

Structure x Aptitude =
Structure´ = Interpreted Structure

Interpreted structure is a subjective understanding of physical structure, such as a way in which one individual identifies certain structural components, and the extent to which someone knows a structure's implications for one's own position and for the expectations people have of one another. A door with a sign saying: "Staff Only" has structural function, which should be interpreted as denial of entrance to anyone not being a staff member of the organisation to which that door belongs. To those who do not interpret that sign as such, that door may just be a door.

Congruous to Giddens' division of resources (Giddens, 1984), I distinguish two basic forms of interpreted structure, namely *allocative* and *authoritative*. While allocative interpreted structure refers to the function of

[10] These scientists married one another several years later.
[11] Assuming that the Thomases meant to refer to both men and women with this statement.

structures, authoritative interpreted structure refers to potential consequences of not respecting the function of structures.[12] A certain patch of grass may be allocated as an area one is not to walk on. Ignoring that allocation may elicit a fine from a local authority or being told off by mom.

Human behaviour is more determined by individuals' attitudes towards their own interpretation of situations rather than by the objective situations themselves. This is known to have been documented as early as in the first century (C.E.) by Flavius Arrianus, a student of the stoic Greek scholar Epictetus, in a manual of citations of Epictetus's teachings, translated from Greek to English as follows.[13]

"*It is not the things themselves that confuse people, but rather their views on those things. For example, death is not frightening, but the view of death being frightening, is frightening.*"

Evidently, considering human beings' intense life-preserving instinct, it has been documented very early on that human behaviour is not affected by things (in this example 'death'), nor by their interpretation of things (and end to living), but rather by their attitude towards that interpretation ("An end to living is a frightening experience").

Just as different people can interpret one same thing differently, they can have different attitudes towards certain things, even when sharing their interpretation of those things. William James called the notion that this is not so, or the belief that the same experience will leave the same interpretation or feelings in the minds of different people, the *psychologist's fallacy* (James, 1890).

This illustrates that the third manifestation of structure, *adopted structure*, can be derived from interpreted structure by equating interpreted structure via attitude. This makes adopted structure a derivative of interpreted structure. Since interpreted structure is a derivative of physical structure, adopted structure is a second derivative of physical structure. Similar to denoting a derivate mathematically by placing one apostrophe next to its origin, a second derivative is mathematically denoted by placing two apostrophes next to its origin, like so: *structure´´***.**

[12] Milgram's experimental research and his research findings stunningly demonstrated the directive powers of authority (Milgram, 1964, 1977)

[13] The original Greek title *Encheiridion* (*Εγχειρίδιον Επικτήτου*) tends to be translated into English as 'manual' or 'handbook'.

Interpreted Structure x Attitude =
Structure´´ = Adopted Structure

Adopted structure results in a subjective pose towards how a subject understands structure to be, or to what extent a subject accepts structure to be, as he or she perceives it to be.

There are three main types of adopted structure: *affective*, *facilitative* and *assertive*. Affective adopted structure refers to liking or disliking with regard to the structural aspect, as one understands that aspect to be. For instance, an organisation member may interpret a directive from his or her boss exactly how this boss had intended, but nevertheless behave contrary to what that directive implied, because that worker does not like that directive, does not like the boss who gave the directive, does not like the manner in which the directive was issued, and so on. Conversely, an organisation member may take up much more work than was assigned to him or her, in exchange for personal gratification obtained from knowing to have done something extra for the boss, for the team, for the organisation, or for another common cause.

Facilitative adopted structure relates to questioning: "*How can this structure, as I understand it to be, benefit me, or others?*" Thus, facilitative adopted structure refers to benefit-seeking attitudes towards interpreted structure, either aimed at serving an agent's self-interest, or aimed at serving the interests of a third person or of a collective (Dauenbeimer et al., 2002). The proverbial crossing the stream where it is shallowest is an example of a benefit-seeking approach to navigate structural obstacles. One could cross the stream where it is deeper, but doing so tends to cost more in effort and in risk to one's safety and well-being.

Assertive adopted structure refers to a confidence-building attitude towards (interpreted) structure, purposed to minimise uncertainty (Sedikides, 1993; Dauenbeimer et al., 2002). Assertive adopted structure often compensates aptitude deficiency with regard to interpreting structure. Not fully understanding what to make of certain structures, a subject chooses an attitude that minimises his or her insecurity in acting with regard to those structures. This choice often leads to giving in to herd-instinct, acting as one believes the majority of others do, preferring the possibility to collectively fail to the possibility to succeed as an individual (Nietzsche, 1886).

Obviously, not all give in to herd-instinct. Structures, such as laws and generally accepted standards or common decency, will cause most people to

behave as those structures imply, but some choose to do just the opposite, breaking the law and disregarding social convention (Turiel, 1983). Even though both groups may interpret the structures law and social convention equally, the latter group chooses neither to adopt their allocative implication of *meum* and *tuum*, nor the authoritative implications forbidding usurping the rights of others. Instead, they focus more on the facilitative aspects of those structures, taking them as benefits them most. They may not accept a door ajar as a structural barrier, but instead perceive it as an opportunity to easily access and appropriate valuables of others. The relation between structure and its derivatives is illustrated in figure 4.

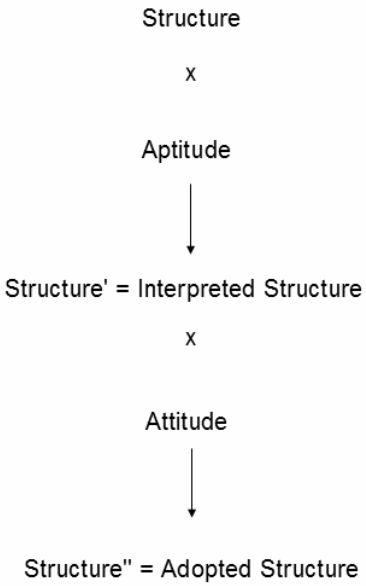


Figure 4: Derivatives of structure

Whereas the second derivative of structure affects human behaviour, human behaviour itself can change structure. This, at least, applies to social structures (Giddens, 1984). When this happens, adopted structure can become the new structure and derivation is repeated. Human behaviour can also change people's attitudes towards structures (often, or perhaps always, through interpretation changes). Someone who goes to work for the first time in his or her life, will likely have a different attitude towards going to work than doing so on the second, or on the one thousandth day.

When changes occur in one's interpretation of structural items, e.g. due to believing misinformation or due to learning, with regard to those structural

items, reality changes to the interpreter, possibly causing adoption of a different attitude towards those structural items. Furthermore, within organisations, certain aspects, such as leadership and organisational culture, also affect learning processes (Chang, Lee, 2007). Thus, behaviour (such as learning or other forms of processing information), interpreted structure and adopted structure influence one another in social structures. In psychological structures, such feedback mechanisms or mutual influence may be less than in social structures, whereas they may not even exist in material structures. Considering how structure, aptitude, attitude and human behaviour relate to one another, it is perhaps obvious that, irrespective of tools or work activity, organisation members' aptitude and their attitudes stand out as predictors of performance (Jex, Britt, 2008).[14]

2.3 Free Agency

The extent to which human beings possess free will and act as free agents, has been a disputed question for many centuries, as in discussions by Christian Theologians and others in the 15th and 17th century about predestination, and the rise of the metaphysical philosophical school of thought named Voluntarism in the 19th century (Wundt, 1874; Tönnies,1887; Paulsen,1892). This subject is still intensively discussed today (Manetti, Zipoli Caiani, 2011). Even now, the thought of human beings possessing free will and acting as free agents when possible, is still contested, for instance, by certain neuropsychologists and neuropsychiatrists who point out that human beings are often unconscious of initiating action, attributed to stem from free will (Spence, 1996). Beyond those fields, current debate seems mainly focussed on *conscious behaviour* and on which structures restrict free will and agency.

Human beings first interpret a certain structure, or interpret changes to that structure (*structure´*), and secondly assume an attitude towards that interpretation (*structure´´*). Deliberate behaviour of humans, acting as free agents, is influenced directly only by *structure´´*, which is a subjective attitude towards the agent's personal interpretation of structure.[15]

[14] These authors split up aptitude into *general mental ability* and *job experience*, and they limited attitude to the facet *conscientiousness*.

[15] In the hospitality industry, new employees are selected more on attitude than on aptitude (Tesone and Ricci, 2012), which may stem from acknowledging this relationship between behaviour, aptitude and attitudes.

To cope with weakening correspondence between supply and demand, consumers can choose between *exit*, *voice* and *loyalty*, (Hirschman, 1970).[16] This choice exists in many human relationships, where *exit* refers to removing oneself from the onerous situation, *voice* refers to engagement aimed at altering the situation and *loyalty* refers to submitting to the situation. As people feel restricted in acting as a free agent, they may regard *exit* or *voice* less as viable options and may be more prone to choose *loyalty*. Much of what causes two individuals to act differently from one another, when both are apparently placed in the same situation, can be found in subjectivity of interpretations and attitudes of those involved.

Important is also that human behaviour tends to be affected by the second derivatives of (= attitudes towards) a *complex* of structures, rather than by the second derivative of just one structure. For instance, a high jumper trying to set an official world record is affected by his personal attitude towards his own understanding of, at least: his own mental structure, his own physical structure, social structure and material structure. His attitude towards his understanding of his physical abilities combined with his attitude towards his understanding of the height of the bar may inspire his confidence in the achievability of him setting a world record. His attitude towards his own intelligence, as he understands that to be, may instil in him the belief that his confidence is justified. His attitude towards his understanding of what his family, friends, and the rest of his audience expect and feel, may have motivated him to even contemplate going for the world record.

Just as attitude can serve as *enabler* of human behaviour, it can serve as *constraint* to human behaviour. Whether or not human beings, such as this high jumper, truly act out of free will, depends largely on the degree in which structures´´ permit them to do so. Human beings can feel restricted in acting freely, for instance, by law, by their culture or by their physique. Generalising the derivatives of structure model (Fig. 4), I propose that the process of thought to behaviour flows as illustrated in Fig. 5.

[16] Obviously, businesses strive for consumer loyalty and prefer their customers (and shareholders) to choose voice over exit, promoted by some businesses by offering financial incentives (Bootsma, 2013).

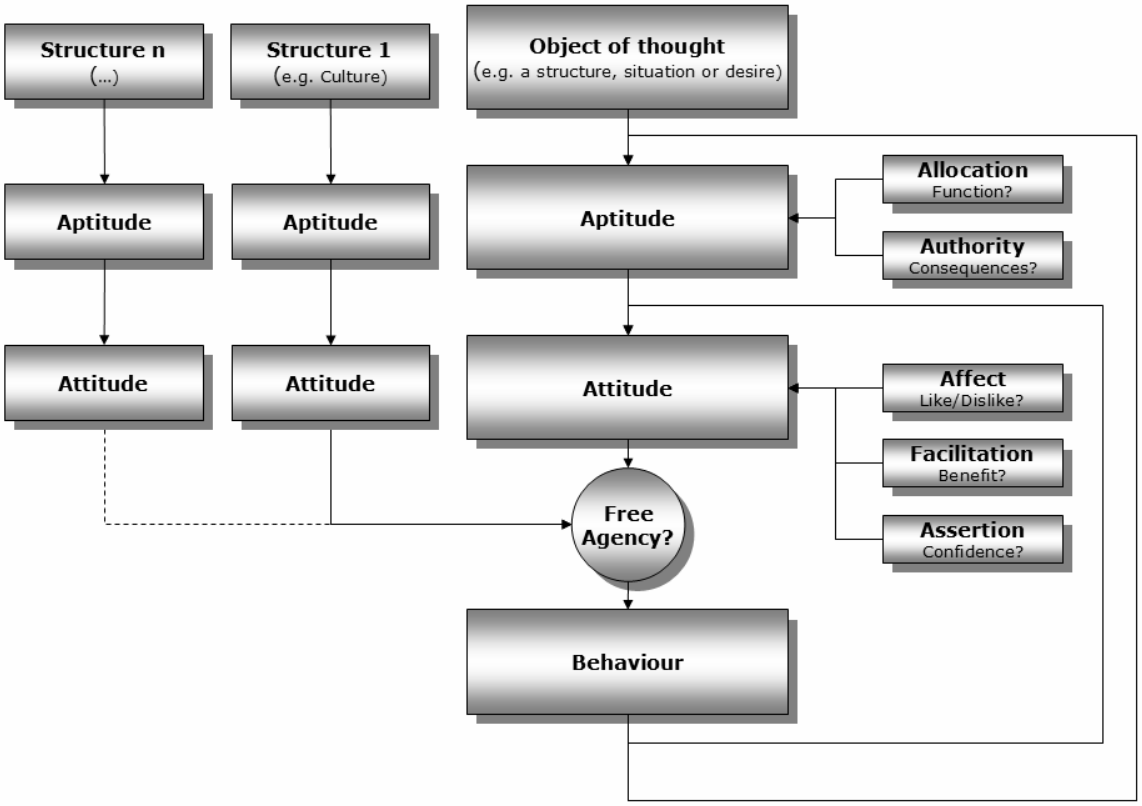


Figure 5: Proposed model of thought to behaviour

2.4 An Elementary Model of Organisational Processes

Figure 6 can be regarded as an extension of the basic representation of a common organisational process (Fig. 3) by the variables mentioned in *1.3*. To identify the core of *organisational processes*, one could focus on what results, at process level, from organisation changes. At process level, this leads to organisation members being assigned different tasks (Leadership), they need to utilise other tools (Applied Technology), or use current tools differently (Aptitude), they will possibly need to work with different colleagues (Human Behaviour) and at different locations (Circumstance), bringing forth different results than they did before (Outcomes), or a combination of these changes. These changes and this new context are likely to affect those organisation members' Emotions & Mood, and will lead them to revalue their Trust & Confidence in their organisation, in its

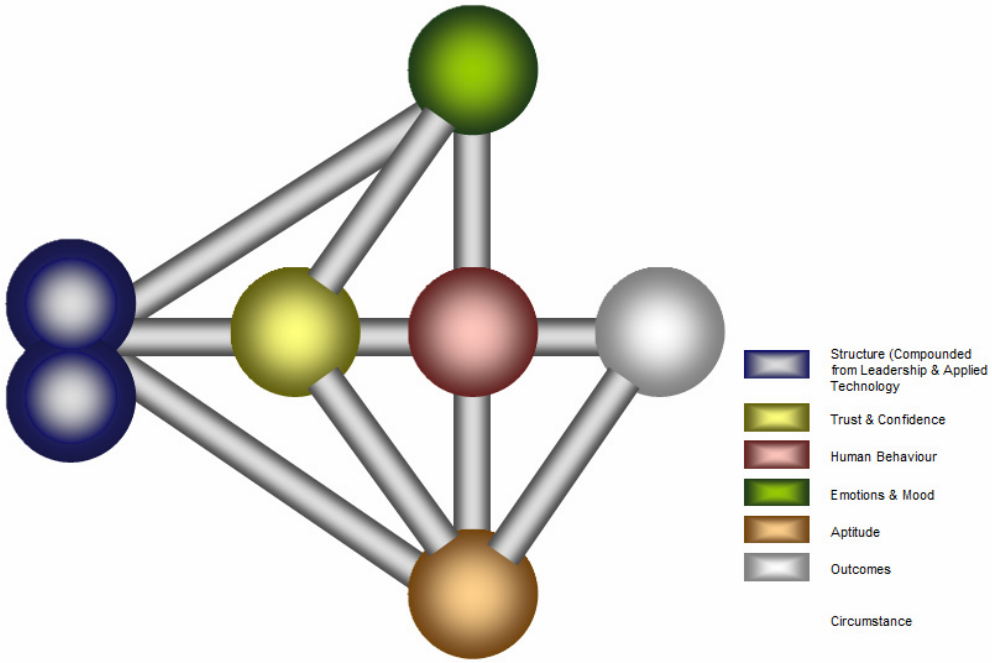


Figure 6: Elementary Model of Organisational Processes (EMOP)

management, in their colleagues, in the applied technology and in themselves. These elements are brought together in an Elementary Model of Organisational Processes (EMOP). This model is inspired by Avolio, Dodge and Kahai's *Formation of Trust model* (Avolio, Dodge, Kahai, 2001, see Figure 7). Unlike the Formation of Trust Model, EMOP is not a causal model. As will be elaborated on later, the elements within the model are interlinked by organisation members' attitudes towards those elements. Combining that with a pivotal role of human behaviour and with the importance of the relationship between social and technological aspects, EMOP can be regarded as a *humanistic socio-technical attitudinal model* representing the core of all organisational processes. Each EMOP element will now be examined more closely.

2.5 Structure

In EMOP, social structure is incorporated in human behaviour as member interaction, whereas situational structure is proposed to be formed by all components, including circumstance. Leadership and Applied Technology

are identified as main *structural components* within organisational processes.[17]

Within EMOP, the variable Structure is compounded by Leadership and Applied Technology. The variable Structure has unique properties, relative to the other EMOP elements, including Leadership and Applied Technology. For one, on balance, structure tends to correlate more strongly with most other EMOP components than the structural components do separately.

In figure 6, Structure is illustrated as the double sphere at the left-hand side of the model. One half of this double sphere represents Leadership and the other half represents Applied Technology. In this humanistic, socio-technical attitudinal model, Structure is directly connected to Trust & Confidence, Aptitude and Emotions & Mood. The adjective *socio-technical* refers to its qualities with regard to diagnosing matters related to the socio-technical balance within organisations and organisational processes (see *6.12*).

The relationship between Leadership and Applied Technology shows inverse characteristics. Having defined structures in paragraph *2.2* as constitutions that tend to direct human behaviour, organisation members could turn to either component of structure for direction. If they obtain this sufficiently from Leadership, they feel less dependent on Applied Technology and vice versa. The ratio of perceiving dependency of one, relative to the other, is a measure of *socio-technical balance*. The importance of this balance is highlighted by Davis et al. (2013, 2011). This will be addressed in more detail later in this document, particularly in Chapter 6. For now, both structural components will first be addressed separately.

2.6 Leadership

Numerous theories exist about what leadership is and the word is categorised in many different ways. For a review of such theories and categorisation, I refer to Avolio, Walumbwa and Weber (2009). For general purposes, I tend to describe what leadership does as: *Leadership differentiates organised action from random action*. At process level, leadership can be regarded as a structural component, without inextricably

[17] From this point on, these variables will also be referred to as the *structural components*.

linking the term to appointed leaders. When regarding leadership as such, I refer to a collection of all authoritative directions and conditions to act, ranging from labour contracts, via team assembly and work procedures, to the degree and methods of enforcing rules and regulations. As such, leadership is part of *situational structure* (Rusbult & Van Lange, 2003, 2011).

In figure 6, Leadership is illustrated as one half of the double sphere, representing the variable Structure. Leadership entails two basic aspects:

1. *Leading* = Directing (leading, goal setting, assigning tasks, stipulating conditions, et cetera) and
2. *Being led* = Following directives (following, obeying, abiding).

If directives are given, but not followed, no one is led and there is no effective leadership.

Leadership can be displayed by anyone, regardless of hierarchical status, but this is only effective if directives of one are followed by others. Thus, leadership authority needs not be derived from hierarchical superiority, but can be derived from other sources, such as having ascendancy over others based on custom, expertise, political influence, charm, strength, or other persuasive powers. As such, leadership tends to be domain specific. For instance, subject *A* may follow directives from subject *B* with regard to accounting, but not with regard to mechanics, since *B*'s expertise within the domain of accounting instils *A* with positive expectations of the outcomes when following *B*'s directives, whereas this is not the case within the domain of mechanics. Domain specificity will be addressed further on in this document.

Regarding leadership as a structural component, at organisational process level, in light of the previously mentioned 7-S framework, we find, certainly at operational level, that leadership both determines and represents the organisational manifestations of strategy, reward systems, HRM policies and business procedures. As such, leadership can also affect, and sometimes even determine, shared values within a group, or even within an organisation. Within organisations, leadership can exist at various levels, such as dyadic, group, and organisational. Attempts to exert leadership potentially affect subordinates' behaviour. Effects of such attempts are likely to depend highly on the suitability of the directives, guidance and leadership style in a given situation. Without advance knowledge of the suitability of given leadership within a certain context, research on

interventions to that leadership within such a context, is bound to lead to inconclusive, or invalid findings. For instance, based on their research, Gibson et al. (2004) concluded that virtual teams' performance improved after decreasing active leadership: as virtual teams were given more responsibilities and authority, their performance improved. This correlation between enhancing team autonomy and team performance was said to be influenced by the degree to which team members personally met: the less they personally met, the stronger that correlation became. Without information about leadership suitability prior to the intervention, one should not jump to conclusions, or generalise conclusions drawn from such research. If leadership within such a research context is unsuitable to the needs at that time, any change in that leadership can potentially improve team performance. If, for instance, instead of decreasing active leadership, leadership that is more suitable is added, researchers may draw conclusions opposite to the conclusions drawn after decreasing active leadership.

Effects of leadership usually rely on more aspects than leadership alone. Influence of applied technology, of information availability and of other circumstantial aspects on (effects of) leadership, will be addressed later in this document.

2.7 Applied Technology

I defined an organisation as *an ensemble of human beings, procedures and tools, directed towards achieving commensurable goals*. Even though, in theory, the tools to which is referred in that definition can be as simple as a stick or a stone, in practice, within the context of organisational processes, this tends to point at technically produced tools, such as construction tools, machinery or computer technology. Both the availability and suitability of applied technology tend to affect human behaviour. This allows us to categorise applied technology also as situational structure, since it potentially creates or changes situations with which subjects within organisational processes deal. Accordingly, in figure 6, as Leadership, Applied Technology is illustrated as one half of the double sphere, representing the variable Structure. In EMOP, Applied Technology tends to have stronger ties with Aptitude than with any other EMOP component.

Applied Technology is, as is the variable of structure Leadership, domain specific. Certain technology is suitable for certain applications, under certain conditions, but not for others. Whether subjects are aware of the degree of suitability of structures, such as leadership or applied technology,

is a matter of interpretation by those subjects. Whether subjects accept their own interpretation and act accordingly, e.g. resulting into not using tools, conceived by them as being unsuitable for the task at hand, is a matter of attitude. As mentioned earlier, this constitutes *structure´´*, or adopted structure, in this case, referring to organisation members' adoption of Applied Technology. Since Applied Technology is important in generating information and in making information accessible to human beings, this structural aspect also affects the sixth dimension of analysis of interdependence situations, as will be addressed later in *2.9* when dealing with the subject *dimensions of analysis*.

2.8 Outcomes

Even though organisations are set up for specific purposes, we must acknowledge that, at organisational processes level, relationships between outcomes and communal goals are sometimes weak or absent. Apparently 78% of organisation members either does not know what the organisations' goals are, or they do not care, and they just "do their thing" (Covey, 1989). As stated in Chapter 1, the best one realistically could strive for is an organisation directed towards commensurable goals. The extent to which this is achieved is debatable for many organisations. Interpretation differences often form the basis of such debates.

In literature too, different sources give different meaning to the word outcomes. Some distinguish intangible organisational effects, such as members' sense of connectedness to the organisation from tangible organisational effects, such as products and services delivered by the organisation. The intangibles tend to be referred to as "outcomes" when referring to the tangibles as "outputs". Some use the word *outcomes* to refer to organisational side effects in general, or to specific side effects. Brickson (2000) wrote about diversity-related organisational outcomes, promoting to minimise the disadvantages and to maximise the advantages afforded by diversity amongst organisation members. Murmann and Tushmann (1998) used the word outcomes to refer to organisational evolution. McFarlin and Sweeney (1992) *categorised* pay satisfaction and job satisfaction as personal outcomes, and organisational commitment and subordinates' evaluation of supervisors as organisational outcomes. Abrahamson and Park (1994) used the word outcomes in reference to changes in companies' asset values. In sum, apparently, "organisational outcomes" is used to refer to anything that "comes out" of an organisation, intended, or not. Correspondingly, in this document, outcomes will be regarded as both tangible and intangible results

and consequences of elementary organisational processes, as well as those, of combinations of organisational processes.

In figure 6, Outcomes is illustrated as a silver sphere, at the right-hand side of the model, directly connected to Human Behaviour and Aptitude.

2.9 Human behaviour - Interdependence Theory

The adjective *humanistic* in defining EMOP as a humanistic, socio-technical, attitudinal model, refers to the pivotal role of human beings within the model. In EMOP, organisation members are not regarded as mere providers of labour, but as human beings that trust, feel, know and act. This comes with acknowledging limitations to all aspects of human beings, such as to what they can learn, can do, or will do, under various circumstances.

As stated earlier, *Structures´´* affect human behaviour. Also, the influence of (derivatives of) structure is reflexive, at least with regard to interpreting structures and with regard to social structure. In addition, within dyads or groups, behaviour of one is also affected by behaviour of an other. How such changes in behaviour tend to take place is known as *social exchange* (Homans, 1958; Blau, 1964; Mitchell, Cropanzano, and Quisenberry, 2012). Social exchange has common ground with non-market exchange of goods or labour, in anthropology referred to as *Reciprocity* (Sahlins, 1972;[18] Levi-Strauss, 1967). With social exchange, literature refers to exchanges between dyads or group members of advantages and disadvantages of their mutual relationship. Such exchange needs not be, nor even appear to be, aimed at gaining personal advantage, although it often is.[19] Within the context of organisational processes, an example of social exchange is a staff member's behaviour to arrive at work on time, in exchange for a positive evaluation from his boss, or for retaining his job.

Interdependence Theory (Kelley and Thibaut, 1959, 1978) emphasised that social behaviour is affected more by the initiator's expectation of the behavioural response, rather than by the actual response itself. Even though ingratiating oneself with the boss does increase chances of rising in the boss's favour (Sibunruang, et al., 2013), the staff member in our previous

[18] The next subject, dimension of analysis, implicitly covers Sahlin's typology of reciprocal exchange (generalised, balanced or symmetrical, and negative reciprocity).
[19] Such economic approach is characteristic for Rational Choice Theory (Smith, 1776, see Oppenheimer 2010, p. 2).

example may still get a negative evaluation, or even get fired, despite of his behaviour being aimed at eliciting opposite behaviour from his boss. Should this occur, then this worker's expectations have obviously been high, compared to the actual behavioural response. According to interdependence theory, that employee had a high comparison level.

Interdependence theory recognises four types of advantages and disadvantages in relationships, referred to respectively as rewards and costs. Those types are: *emotional*, *social*, *instrumental* and *opportunistic*. Examples of these types, within the context of a business environment, are:

Emotional:

- Make someone feel good (reward), by giving a worker a 'pat on the back'.
- Make someone feel bad (cost), by expressing dissatisfaction at a worker's performance.

Social:

- Inviting someone's input, by including a worker in a meeting (reward);
- Excluding someone from the in-group, by keeping a colleague out of various conversations (cost).

Instrumental:

- Delivering high quality work, benefiting co-workers' input quality, or the prestige of all (reward);
- Delivering low quality work, making it harder for colleagues and others to shine as much as they might like to (cost).

Opportunistic:

- Being acknowledged as an expert in a certain field by a boss, and subsequently given a higher position within the company (reward);
- Not being offered the opportunity to prove to be capable of doing more than the work currently assigned (cost).

According to interdependence theory, whether or not a person is committed to a relationship (e.g. a relationship with colleagues, superiors, or an organisation as an entity) depends on the quality of alternatives outside that relationship. Such functions are formulated as:

$$\boldsymbol{I = f\,(S, A, B)}$$

Where I is a function of the interaction between persons A and B in terms of their attributions and emotions to one another, in the context of a certain social situation (S) in which their interaction takes place (Holmes, 2002; Kelley et al., 2003).

When considering 'social situation' as structural, as defined in the beginning of this chapter, one does not link such commitment to the alternatives outside that relationship, but instead to the second derivative of those alternatives. Thus, we state that a subject's commitment to a relationship depends highly on *that subject's perception* of the quality of the *known* alternatives outside that relationship. Perception of quality is an attitude towards that subject's interpretation of what the alternatives are. Accordingly, the structure 'social situation' manifests itself as its second derivative, slightly changing the given formula as:

$$\boldsymbol{I = f\,(S'', A, B)}$$

Dimensions of analysis

Interdependence between human beings can exist in various forms. To analyse interdependence situations, six dimensions have been proposed (Kelley et al., 2003, Rusbult & Van Lange, 2003). They are:

Level of dependence: The degree to which subjects depend upon one another may vary from having full control to being entirely dependent on actions of others to obtain certain outcomes. Workers on an assembly line tend to depend highly on actions of colleagues earlier in the assembly processes, whereas a sales representative may have full control over her outcomes, regardless of actions of her fellow sales representatives.

Mutuality of dependence: Usually, within dyads or groups, there is inequality of dependence level. Subjects that are more independent tend to hold more power over others than vice versa. Within organisations, dependency is not necessarily governed by hierarchy. For their own outcomes, leaders can (and often do) depend highly on their subordinates' expertise and performance.

Basis of dependence: Subject *A* may depend on actions of subject *B*, or subject *A* may depend on joint actions of *A* and *B*. A shop assistant may depend on his branch manager to gain access to the shop to be able to work and to get proof of wage entitlement, to be paid. When two colleagues of a removal firm fully depend on each other to carry and move items from one place to another, the outcomes of each of them depend on their joint actions.

Covariation of interests: The degree in which the interests of *A* correspond with the interests of *B*. When *A* owes his good reputation as an expert to *B*'s

advice and support, leaving *B* to be known as an insignificant assistant, would result in *A* and *B* not equally benefiting from their interaction.

Temporality: As with all social aspects, interdependence too, constitutes a state at a given moment in time. All elements affecting interdependence are subject to change. For example, *A*'s expectations of *B*'s response to *A*'s actions may change once *B* has repeatedly responded differently than *A* initially had expected.

Information: Availability of information to either member of a dyad or group can significantly affect interdependence. The concept 'knowledge is power' is often exploited within business environments to make or keep others dependent on oneself by feigning expertise or refusing to share knowledge. Subject *A* refreshing pages or resetting a colleague's locked computer while blocking the view of others on which keys are pressed, tends to be aimed at making colleagues (feel) dependent on *A* for their ability to continue to operate their computer.

In figure 6, Human Behaviour is illustrated as a red sphere, connected to Outcomes, Aptitude, Trust and Emotion & Mood.

2.10 Emotions & Mood

In figure 6, Emotions & Mood is illustrated as a green sphere, connected to Structure, Trust and Human Behaviour. Human behaviour is affected by an individual's mood and emotions, perhaps even more so during social interaction than while acting alone. It stands to reason that someone who is in a good mood may act differently than he or she does while being in a bad mood. For instance, stress may incite organisational members to intentionally behave in conflict with organisational goals (Sacket and Devore, 2001; Tucker et al., 2009). This is also referred to as counter productive work behaviour (CWB). Affective states that are characterised by energy and positive mood are believed to contribute significantly to initiating proactive behaviour (Parker, Bindl, Strauss, 2010; Seo et al., 2004). Conversely, how human beings interact, and how they otherwise behave, also affect their emotions and mood. For example, recent study seems to suggest that Organisational Citizenship Behaviour (OCB) correlates *negatively* with job satisfaction (Loo, 2013). This holds especially true when workers feel forced to engage in OCB.

Emotions and mood can be affected by suitability and availability of Applied Technology and by suitability and availability of Leadership. Not only leadership behaviour can affect emotions and mood. Behaviour of all with whom one interacts and even one's own behaviour can affect emotions and mood. For example, a person crying, or expressing other emotions, can affect the emotions and behaviour of others. In this regard, in the previous chapter, the term *mood contagion* was used (Bono, Ilies, 2006).

This variables' connection to the variable Trust, might, in part, relate to emotions and mood being linked to affective working memory, as proposed by Davidson and Irwin (1999), causing it to be affected by experience, as is Trust. Emotions & Mood also correlates with confidence related aspects, such as self-esteem (Kim, Chiu, 2011;Olson, Fazio & Herman, 2007).

2.11 Trust & Confidence

The importance of trust in social interaction has been well documented in literature. According to Mayer, Davis and Schoorman (1995), trust is not as much of an affective nature as it is attributive. In figure 6, the variable Trust & Confidence is illustrated as a golden sphere, connected to Structure, Emotions & Mood, Aptitude and Human Behaviour. This corresponds with the theory that trust is not affected merely by sentiments and knowledge, but also by experience (De Monticelli, 2011). Perception of abilities, integrity and benevolence are important antecedents of trust. In accordance with Zand (1972), Mayer, Davis and Schoorman (1995) noted that acknowledgement of abilities as an antecedent of trust implies that trust is domain specific. This also applies to its cognate term *confidence*. That domain is defined by the trustee's perceived expertise. One can imagine a worker having more confidence in himself, his fellow team members and his leader(s), each within their respective own specific range of expertise, than beyond that range of expertise. Incidentally, *actual* abilities, benevolence and integrity are not as much antecedents of trust as abilities, benevolence and integrity a trustor attributes to a trustee. Trust is attributed via perception and emotions, not by factuality.

The relationship between human behaviour, perceptions, trust, emotions & mood, and outcomes is illustrated by example of someone perceiving to being treated unfairly by others in the organisation. This perception negatively affects emotions & mood, lowering of trust in the organisation and weakening feelings of being connected to the group in which one works

(Robinson, Morrisson, 1995; Restubog et al., 2008). Perceptions of organisational politics also correlate negatively with job satisfaction and with organisational commitment (Chang, Rose, Levy, 2009).[20]

DeSanctis' and Poole's Adaptive Structuration Theory (AST) (1990, 1994) lay at the base of Avolio, Dodge and Kahai's formation of trust model (Avolio, Dodge, Kahai, 2001). That formation of trust model deals with the effects of leadership and collaborate groupware on the formation of trust in virtual teams. As illustrated in figure 7, in that model those authors presented attributive characteristics integrity, benevolence and abilities as antecedents of trust. As Avolio et al. (2001: 653) explained about this model: "*Leadership and collaborative AIT provide structures that influence appropriations of trust by members of a virtual team.*[21] *These appropriations then influence group processes reflected in the interaction among team members and their emotions and moods. Team interaction and members' emotions and moods, in turn, structure ongoing appropriations of trust by team members. Finally, outcomes are determined by the nature of interactions among team members.*"

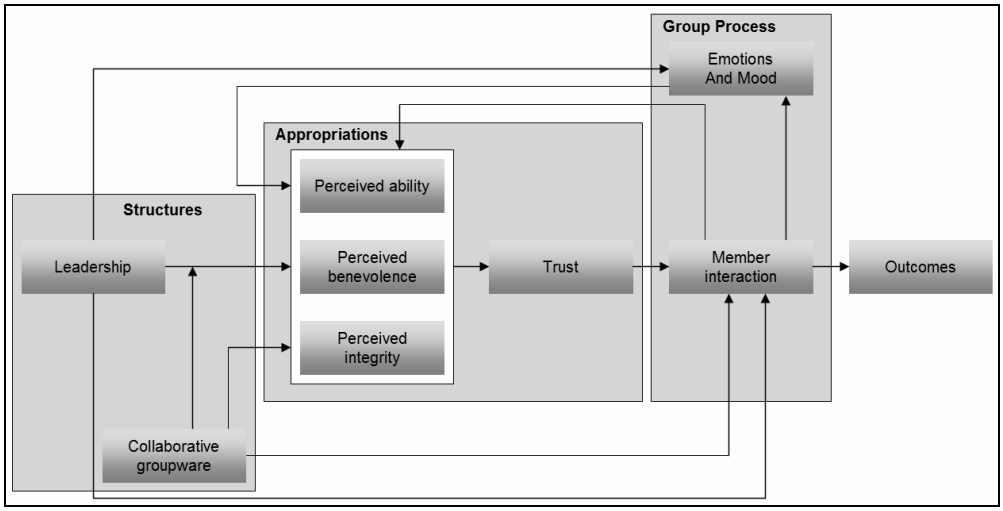
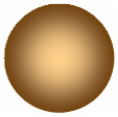


Figure 7: Formation of Trust Model (Avolio, Dodge, Kahai, 2001)

[20] Research confirmed that political behaviour amongst managers is common, and even deemed necessary by those managers. Common tactics are networking, playing key players, buddying up with influential people, bending rules and self-promotion. Less common tactics include misinformation, spreading rumours and blackmail (Buchanan, 2008).
[21] AIT=Advanced Information Technology

While in the formation of trust model the antecedents of trust are referred to as appropriations, with regard to organisational processes those antecedents of trust can best be referred to as attributions, since they represent the ability, benevolence and integrity that organisation members attribute to themselves and to each other. Generally, in human behaviour, agents do not merely respond to their perception of their own integrity, benevolence and abilities, but they respond also to the integrity, benevolence and abilities they attribute to others with whom they interact, in which case the term *confidence* may be more appropriate than the term *trust*. Most individuals will rather take a passenger seat in a car next to a driver to whom they attribute the ability, integrity and benevolence to drive the car well and safely to their destination than, let us say, next to a suicidal blind person, offering to drive the car. The named attributions are context bound, causing us to attribute certain qualities to oneself or to another within a certain context, but not within another. This could be expressed, for instance, by saying: "*She is a competent politician and I voted for her during the previous election, but I would not take her medical advice*."



2.12 Aptitude

Knowing which main aptitudes are relevant for organisational processes in general, can be derived from the definition of an organisation, used in this document. From this, we can take that those aptitudes are, in any case:

a. Understanding leadership directives, translating those directives into appropriate action and acting accordingly;
b. Utilising available tools effectively and efficiently, to achieve commensurable goals (Van Rijssen, Godar, 2000).

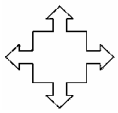
In this regard, next to aptitude *levels*, aptitude *variety* is also important (Johari, 2010). In figure 6, Aptitude is illustrated as the lower brown/coppery sphere, connected to Structure, Trust & Confidence, Human Behaviour and Outcomes. Consequently, aptitude not only directly influences Human Behaviour, but also indirectly, by affecting Trust & Confidence.

Aptitude and attitude each relate to different aspects. While aptitude relates more to questions such as: *What do I know, what can I do*, and *what can I learn*? attitude relates more to the question: *How am I?*

Being is strongly linked to *knowing*. The characteristic way in which individuals process aptitudes into attitudes and subsequently into behaviour, relates to the question: *Who am I*? People can change their ways and their attitudes in consequence to changes in what they know and how they interpret things. However, thinking that we can change *who* people are, is rather naïve, and perhaps even pretentious. It is as if claiming superiority over whatever one might attribute creation to. Grasping and acknowledging the given manifestations of structure and this relationship between aptitude, attitude and behaviour is essential to understanding and solving a wide range of issues. For instance, if we wish to change organisation members' behaviour, we could change the leadership offered to those workers, or change the technology that is placed at their disposal. However, we can also, or perhaps even better instead, focus on workers' attitudes towards those structures, by affecting their interpretation of those structures, for instance through a process of targeted learning or experiencing. Once we know what attitudes organisation members have towards organisational structures, such as leadership or applied technology, those attitudes may be adjusted significantly by increasing organisation members' aptitude with regard to interfacing with those structures, by promoting better understanding of leaders' orders or by improving their ability to translate those orders into appropriate action. Similarly, instead of applying different technology, we can promote better understanding in employees of the function of applied technology and improve their ability to utilise that functionality.

The relationship between aptitude and attitudes is not restricted to structure, but is applicable to all objects of thought that might be affected by understanding or skill.

Next to capacity to learn or understand, aptitude may also relate to propensity or capability. In this regard, the first derivative of a certain aspect can be the extent to which one possesses suitable competencies and the second derivative one's attitude towards those competencies, such as one's acceptance of lacking those competencies, or one's interest in applying those competencies. For instance, when leading a certain project requires specific qualifications, the extent to which someone possesses those qualifications is the first derivative of this position requirement. That person's interest in utilising those qualifications for that purpose is the second derivative of that position requirement, for example affecting that person's choice either to volunteer for this position or to push someone else forward as candidate for that position.



2.13 Circumstance

Circumstance, or contingency, can affect any organisational process, but the extent to which this exists may vary from negligible or non-existent to high or even dramatic (Woodward, 1958). Within the context of organisational processes, individual organisation members' personal circumstance can be distinguished from organisational circumstance. Circumstance is part of situational structure, albeit that it tends to be more fleeting than other elements, such as social structure, leadership and applied technology.

Circumstance can affect organisational processes indirectly, directly, or both, and *effects* of circumstance can be incidental, temporal or structural. For example, circumstance correlates positively with human behaviour, emotions and mood, trust, valuation of leadership and perception of suitability and availability of applied technology (Van Someren, 2011). Working conditions, combined with certain organisation members' attitudes and characteristics, affect those workers' beliefs about their own value and competence as organisation members (Bowling et al., 2010).[22] The perception of being dependent on leadership correlates positively with organisational circumstance, whereas this correlates negatively with personal circumstance (Van Someren, 2011). As the term suggests, circumstance is circumambient to organisational processes, as is illustrated in figure 6 as a white area, surrounding all other EMOP elements.

2.14 Attitudes

EMOP is proposed to be a humanistic, socio-technical attitudinal model. Here, the adjective *attitudinal* refers to the interconnection of EMOP components and to how those components are valued when using the model, for example, for management, development or research purposes. EMOP components derive their values from measuring attitudes of individuals or groups. This relates to all EMOP components, including Aptitude. Attitude is not a separate EMOP component. In paragraphs *1.3* and *2.2*., Attitude was explained as a derivative of Aptitude.

[22] Also referred to as Organisation Based Self-Esteem (OBSE) (Pierce et al. 1989)

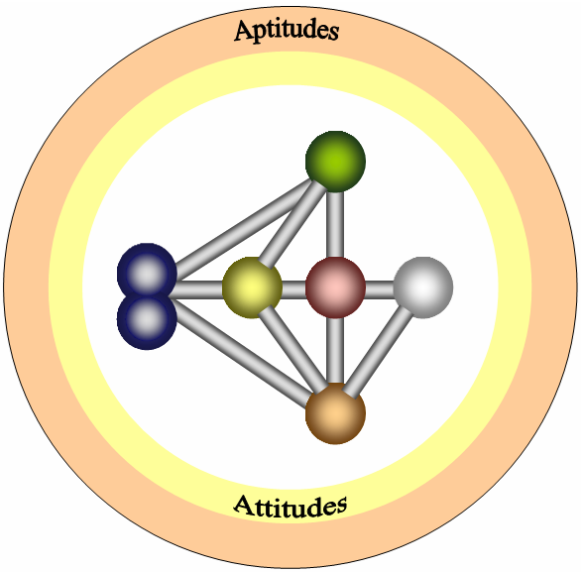


Figure 8: EMOP, a model of attitudes towards subjective understanding of core elements of organisational processes

Unlike the outer circle in figure 8, the component Aptitude within the EMOP model (the lower sphere in the inner circle) does not represent actual aptitude, but organisation members' attitudes towards aptitude. As will be elaborated on in Chapter 4 and in subsequent chapters, EMOP component values represent subjective poses towards subjective understandings of core aspects of organisational processes.

2.15 Other elements

EMOP is proposed as a reduced model of organisational processes, containing elements that exist in all organisational processes.[23] This excludes other variables, such as organisations' environment, since not all organisational processes border that environment. Having selected only variables that affect functioning of organisational processes (or functioning of human beings within those processes), excludes other components, such as time. Relative to organisational processes, time is a constant, rather than a variable. Furthermore, within organisational processes, time is neither

[23] Here, a distinction is made between organisational processes and processes within organisations. Fully automated processes (with the absence of human behaviour) are not considered organisational processes. Examples of such fully automated processes are active computer calculations, database queries and robotic assembly.

consequential (in the sense that it results from other EMOP components, as does Outcomes), nor instrumental (as are all other EMOP variables). Leadership can impose time restrictions on delivering certain outcomes, in which time serves merely as a measure of one aspect of a leadership directive and only to part of all processes. By itself, time, no more than weight, size, space or similar aspects, affects functioning of organisational processes.

2.16 Conclusion

In this chapter, several variables are regarded as elementary to organisational processes in general; EMOP will be further examined and empirically tested. For now, I pose that:

- Human Behaviour is arguably the most essential variable in organisational processes, since organisations are not autonomous entities and organisational processes cannot exist without human behaviour.
- Leadership as a structural component is, *at process level*, a collection of all authoritative directions and conditions to act, without necessarily referring to appointed leaders.[24] Leadership, actualised by following predetermined procedures, also differentiates organised action from random action.
- Applied Technology refers to tools, deployed in organisations, which may be technologically highly sophisticated, not sophisticated at all, or anything in between. Since tools are applied in all organisational processes, applied technology is also an essential variable of organisational processes.
- Human Behaviour is affected not as much by Leadership or Applied Technology itself, but rather by members' attitudes towards their own interpretation of those structures and of what those structures imply.
- Aptitude refers to aptitudes in general, but more specifically to interpreting leadership directives and functions of applied technology, as well as to acting aptly in accordance with that interpretation.
- Trust & Confidence strongly influence human behaviour, especially member interaction. Within the context of this research, this refers to

[24] Leadership in general (without restricting it to its structural manifestation) will be described in the next chapter, where also a definition of leadership behaviour will be given.

Trust & Confidence that organisation members have in themselves and in others with regard to ability, integrity and benevolence, as well as with regard to the reliability and suitability of structures, such as leadership and applied technology. Trust & Confidence are domain specific as well as attributive. Perceptions of integrity, ability and benevolence serve as antecedents of trust (Avolio, Dodge, Kahai, 2001). This refers to the integrity, ability and benevolence that organisation members attribute to themselves and/or to others. Such attribution is highly subjective and may differ significantly from objective valuation of those characteristics.

- The variable Emotions & Mood is inextricably wound up in the variable Human Behaviour, so this too is an essential variable to organisational processes.
- Finally, each organisational process has Outcomes, be it good, bad or anything in between.

More detailed conceptualisation and operationalisation of this model, addressed in the next chapter, is prerequisite to empirical research.

3 Operationalisation of EMOP variables

3.1 Introduction

Additional knowledge about the mechanics of organisational processes could bring us closer to understanding in what ways and to what extent certain organisation members' attitudes and aptitudes may affect organisational development. This chapter is a report on conceptualisation and operationalisation of the EMOP variables, regarded in the previous chapter as elementary to organisational processes in general. This is to enable measuring organisation members' attitudes towards those variables. The variables regarded elementary to organisational processes are Leadership, Applied Technology, Aptitude, Human Behaviour, Emotions & Mood, Trust & Confidence, Outcomes and Circumstance.

The purpose of this operationalisation is to propose empirical representations of each variable that is regarded elementary to organisational processes and to define those variables as observable measures. This should result in operational definitions of the variables that are fundamental to elementary organisational processes in general. These operational definitions may serve to measure those variables, for which a questionnaire will be designed.

3.2 Method

Literature has been studied to examine theories on conceptualising and operationalising the variables used here, within the context in which they are used here and in search of support for, or discrepancy with, methods of operationalisation proposed here. As mentioned in *1.6.3.*, Oxford English Dictionary (1969) is referred to for first order linguistic conceptualisation of those variables. For second order conceptualising and operationalising, literature on sociology, management and psychology was studied. Operationalisation of the EMOP variables formed the basis of subsequently phrasing questionnaire items for self-report measurements. To examine the same data from three different perspectives (non-managerial, supervisory and management level), those items are converted into three questionnaire versions, all focused on the same unit of analysis, which is organisation

members at operational level and their relationship with the organisation and with their supervisors. Each of the three questionnaire versions targets organisation members at a different organisation level.

3.3 Considerations

Operationalisation of the EMOP variables has been done in full awareness that indicators likely provide imperfect representations of the concept (Singleton and Straits, 2005). One reason for this is that the variables at hand are very multi faceted. To mediate this limitation, each variable is operationalised with multiple indicators, leading to a broader coverage of the variables' meaning within the concept.

Operationalisation took place in two phases: firstly, by describing what is measured and secondly by transforming that description into items for self-report attitude measurement, to be posed in interviews or on questionnaires.

When using the variables in self-report measurement, to avoid putting off too many prospective respondents, filling in a questionnaire should not take more than about five minutes, on average. To achieve this, questions must be concise, easy to understand and unambiguous; the interview or questionnaire should have no more than about 50 items. This restricts the amount of indicators to operationalise each variable, increasing the risk of not capturing the entire meaning of each EMOP concept. Within that framework, operationalisation has been carried out.

3.4 Attitudes

The EMOP variables are operationalised as attitudes. This means that focus of operationalisation (and subsequent measuring) was not on, for instance, leadership, but on attitudes that organisation members have towards leadership, as they understand it to be. As explained in Chapter 2, this subjective attitude towards one's personal interpretation of a structure is referred to as the second derivative of structure, where the first derivative is an organisation member's subjective interpretation of a structure. For example, the objective suitability and availability of applied technology can be hard to measure, whereas organisation members' attitudes towards the suitability and availability of applied technology can be inferred from their answers to certain appropriate questions. This attitude is not identical to

organisation members' perception. While certain applied technology may perhaps be unavailable to organisation members for 2% on average within a certain time span, an organisation member may perceive that percentage to be at least 15%, but may refer to this as being: "*Never* available when I need it." The latter is an example of a workers' attitudinal expression.[25] Similarly, operationalisation of the attributions integrity, ability and benevolence are not directed towards objective values of those variables relative to the object or subject to which they are applied, but towards the subjective values that organisation members award to their personal understanding or interpretation of those variables.

3.5 Conceptualisation

Each of the EMOP-variables will now be conceptualised, after which those variables will be operationalised.

Leadership

At higher organisation levels, one finds various officials, such as managers, organisational strategists, organisational architects, and leaders. In common parlance, they are all referred to with the collective term *leadership*. Literature holds multiple theories about what leadership is. Many of those theories stem from a desire to distinguish competent leadership from inferior leadership. In doing so, different leadership styles and focuses were identified, such as charismatic leadership (House, 1977) and transformational and transactional leadership (Burns, 1978). Certain concepts of those theories were subdivided into new concepts, such as the identification of four dimensions of transformational leadership by Bass (1985). With it, leadership styles have been defined and certain effects of various styles have been proposed. In addition, different types of leaders and their personality traits have been identified, such as the Five-Factor Model of Personality (Judge & Bono, 2000). However, finding clear answers to the questions: "What is leadership?", "What does it consist of?" and: "How can it be measured?", is quite a challenge.

Chemers (1997) defined leadership as a process of social influence in which one person can enlist the aid and support of others in the accomplishment of a common task. In dictionaries, we find definitions of leadership such as:

[25] Such expressions are referred to as *explicit attitudes* (Fazio, Olson, 2003), as opposed to *implicit attitudes*, in this example constituted by the 15% perception.

"*The ability to lead*" (The Oxford English Dictionary, 1969: Vol. VI: p. 144), and "*the ability to guide, direct, or influence people*" (Encarta Dictionary, 2004). Such definitions raise questions, such as: Is leadership a process, an ability, or is it something else? Is leadership reserved exclusively to a person? Does leadership exist if the person, who *can* enlist, does not enlist? What if the person enlists in vain, not resulting in the intended aid or support? Does leadership exist if the common task is not accomplished? What if the accomplished task is not common (e.g. parking the boss's car)?

I argue that, peeling it all down to its core, leadership is actually a straightforward concept. As mentioned in the previous chapter (*2.6.*), we find two aspects essential to leadership:

1. *Leading* = Directing by one party (goal setting, assigning tasks, stipulating conditions, et cetera);
2. *Being led* = Following directives (obeying, abiding).

As mentioned in *2.6*, leadership is domain specific. This may justify adding a third aspect to two just named, namely *situation*, or *context*.

If directives are given, but not followed, no one is led. If someone is followed without the intention of leading, no one is led either (herd instinct or stalking). Based on the given essentials, I define leadership behaviour as *giving purposive and deliberate directives that procure behaviour, aimed at following those directives.*

Whether or not the procured behaviour actually results in following the directives will depend on various aspects, such as clarity of directives, followers' aptitude, circumstance, and so on. For defining leadership *behaviour*, the outcomes are irrelevant. At best, outcomes may lead to a distinction between successful and unsuccessful leadership behaviour. Combining this definition of 'leadership behaviour' with the description given in *2.6* of what leadership does (*Leadership differentiates organised action from random action*), we find that multiple subjects are not even required for leadership to exist. Directives can be followed by the same individual that has drawn up those directives, for instance in a business plan, or an honour code. If directives are given to procure behaviour that would have taken place without the directives, no one is led, since the directives had no differentiating effect. If wrong directives are given and followed, followers are not led, but misled. If directives are given, but not understood,

or misunderstood, and the intended behaviour does take place, then this is not because of the directives and, yet again, no one is led. If given directives cannot be followed, for instance, because paths leading to the goals are not cleared, no one is led.

Even though this gives some insight into what leadership behaviour is and what leadership does, leadership still is a multi-faceted concept requiring multiple indicators to capture its meaning. For the purpose of practicality, in operationalising this concept, a selection is made of indicators that should represent the concept well enough to allow sensible measurements to be carried out. Focus of operationalisation was primarily based on:

- Are directives necessary (need)?
- Are directives given (active)?
- Are given directives correct (quality)?
- Can given directives be followed (preparation)?
- Are given directives understood (communication)?
- Are directives followed (compliance)?

Emotions and Mood

With regard to psychology, The Oxford English Dictionary (1969, Vol. III: 124) defines Emotion as: "*A mental 'feeling' or 'affection' (e.g. of pleasure or pain, desire or aversion, surprise, hope or fear, etc.), as distinguished from cognitive or volitional states of consciousness."* Watson and Clark described emotions as multimodal psychophysiological systems, of which they have identified the following manifestations (Watson, 2000; Watson & Clark, 1992):

- *subjective* (e.g., feelings of fear and apprehension);
- *physiological* (e.g., activation of the sympathetic nervous system);
- *expressive* (e.g., facial expressions of fear);
- *behavioural* (e.g., flight from danger).

Even though emotions are commonly considered antonymous to rationality, a growing number of scientists regard emotions as a result of a rational process of appraising a self-relevant object or event (Arnold, 1960). The terms *Emotions* and *Mood* are often used in combination with one another

and distinction between them may not always be apparent. The Oxford English Dictionary (OED) describes Mood as being: "*A frame of mind or state of feelings; one's humour, temper, or disposition at a particular time.*" (OED, 1969, Vol. VI: 638). Watson (2000) defined Moods as *transient episodes of feeling or affect*.

With regard to measuring Emotions and Mood, three important differences between these concepts may be taken into consideration (Watson and Vaidya, 2003; Larsen, 2000; Watson, 2000).

1. Mood research focuses almost exclusively on subjective, phenomenological experience, whereas emotions classically have been viewed as multimodal psychophysiological systems.
2. Emotions tend to be extremely brief, lasting perhaps only a few seconds (Izard, 1991; Larsen, 2000). Moods tend to last longer.
3. The concept of mood subsumes *all* subjective feeling states, instead of merely experiences associated with classical emotions such as fear and anger.

Methods for measuring moods tend to be quite extensive given, for instance, the 62-item Mood-State Introspection Scale (Mayer, Gaschke, 1988), the 58-item Russell Adjective Scale (Russell, 1979), or even the Brief Mood Introspection Scale (Mayer, Gaschke, 1988) holding 16 items.

According to Mayer and Gaschke (1988), Mood experience is comprised of at least two elements: the direct experience of the mood and a meta-level of experience that consists of thoughts and feelings about the mood. It makes sense that, when applying self-report measurement, emphasis will be on the latter, since asking respondents about their experience of mood, is likely to yield, at best, their rational transliteration of mood. Obviously, when using self-report measurement on emotions, focus will be neither on observing behaviour or facial expression, nor on activation of their sympathetic nervous system. In fact, the reported emotions and mood do not even necessarily reflect emotions or mood that exist at the moment of responding, but may rather reflect the way respondents experience their emotions and mood in a presented context.

From a wide range of available parameters, within the context of organisational processes and with focus on effects of work, working atmosphere and of the organisation, based on literature study, I presume that the following measurements are most pertinent:

	Negative	Positive
Emotion	Stress	Relaxation
Related Emotions	Fear, apprehension	Carelessness
Emotion	Anger	Joy
Related Emotions	Frustration	Relief
Mood	Discontentment	Contentment
Related Mood	Resentment	Joy in life, pleasure, satisfaction
Mood	Depression	Sanguinity
Related Mood	Malaise	General sense of wellbeing

Table 1: Selected measurements for the variable Emotions & Mood

Human Behaviour

Within the context of organisational processes, the variable Human Behaviour refers to an important extent to interaction between organisation members participating in one or more organisational processes. The variable Human Behaviour is not operationalised in performance quality resulting from this behaviour, since that is incorporated in operationalising the variable Outcomes. Still, the complexity of the remaining aspects of the concept human behaviour has led to the belief that multiple indicators are required to prevent important meaning of the concept being lost in using this variable in research or in practical application.

Regular close proximity correlates positively with positive interaction, such as friendships (Festinger, Schachter, Back, 1950). Social proximity and interaction not only have social benefits, but via social regulation of emotion, also have biological benefits, such as inhibiting stress, benefiting cardiovascular systems and generally promoting health and longevity, whereas social isolation tends to have opposite effects (Beckes, Coan, 2011).[26] When working relationships flow over into personal relationships, familiarity with those with whom such organisation members interact increases, due to increased exposure to the other members (Bornstein et al., 1987), as well as due to increased familiarity with those organisation members (Moreland, Beach, 1992). Such group members tend to like one another more than group members do without such extra exposure to one another. A sense of cohesion also correlates positively with positive interaction (Bakan, 1966; Cantor & Malley, 1991; McAdams, 1985).

[26] These aspects characterise Social Baseline Theory (SBT), according to which human beings are by nature predisposed to environments that are rich with other humans.

Interaction, similarity and liking are closely connected to one another (Berscheid, Reis, 1998). Mutual understanding between individuals or group members makes interaction rewarding and correlates positively with mutual liking between those who interact (Rusbult, Arriaga, Agnew, 2001). Human beings prefer to interact with people who are similar to them (Newcomb, 1961). Finding that others share our views validates our own opinions (Byrne, 1971). Since human beings tend to view their own characteristics as desirable, those who share those characteristics are considered to have the right attitudes (LaPrelle, Hoyle, Inkso, Bernthal, 1990).

Research has demonstrated repeatedly that as organisation members perceive their own values to align with the values of their colleagues and of the organisation, they value job satisfaction, organisational satisfaction, and organisational commitment higher (Kristof, 1996; Westerman and Cyr, 2004; Kristof-Brown, Zimmerman, and Johnson, 2005; Arthur et al., 2006; Ambrose, Arnaud, and Schminke, 2008; Amos & Weathington, 2008).

Selected are indicators that give information about *common direction, cohesion, homogeneity, communication, comprehension, overflow into private life and flexibility*, as:

The nature and dependence of

- The quality of communication amongst organisation members that are in close contact with one another;

The level of

- team spirit (cohesion);
- group homogeneity;
- comprehension between organisation members that are in close contact with one another;

The extent to which:

- organisation members accept and follow directives;
- group composition meets current needs and preferences;
- working relationships fuse with personal relationships;
- organisation members can adapt to sudden events and new circumstance.

Applied technology

Earlier, I defined an organisation as *an ensemble of human beings, procedures and tools, directed towards achieving commensurable goals*. With regard to this document, the term Tools may be too restrictive if it is defined as "*Any instrument of manual operation*." (OED, 1969, Vol. XI: 136). Instead, here, preference is given to the term Applied Technology, where 'Technology' is defined as "*The terminology of a particular art or subject*" (OED, 1969, Vol. XI: 137) and 'Apply' as: "*To put a thing into practical contact with another*." (OED, 1969, Vol. I: 406). Whether or not technology can be put into practical contact with other elements of organisational processes, will depend largely on the suitability of that technology for the purpose to which it is applied and on its availability when application is needed or desired. It also depends on that technology's compatibility with other elements of organisational processes, such as relevant aptitude of those who aim to utilise that technology (Van Someren, 2011).

Consequently, within the context of the EMOP concept, the variable Applied Technology is operationalised as the extent to which applied technology:

- is needed;
- is suitable;
- is available;
- can be utilised.

Trust & Confidence

Within the context of this document, Trust is defined as: "*to rely upon the veracity or evidence (of a person, etc.)*" (OED, 1969, Vol. XI: 433). Here, Applied Technology must consciously be included as referred to with "*etc*.". Confidence is defined as: "*The mental attitude of trusting in or relying on a person or thing*" and as: "*The feeling sure or certain of a fact or issue*" (OED, 1969, Vol. II: 803).

As mentioned in *2.11*, trust is attributive, with perception of abilities, of benevolence and of integrity as important antecedents of trust. Perceptions may differ from reality. For example, the perception of possessing certain abilities may differ from actual abilities and different people may judge the abilities of a certain individual differently. Amongst human beings

difference not only exists in relevant knowledge, or cognitive representation (Smith, 1998), and in the competence to judge others, relative to that cognitive representation, perceptions are also gained from many other sources, such as physical appearance, behaviour and communication. Impressions can be inaccurate and impressions from one source can influence other impressions. For instance, highly attractive people are expected to have more positive characteristics and skills than less attractive people are (Eagly, Makhijani, 1991). Even interpretation of what someone says, can be affected by someone's looks (Hassin, Trope, 2000).

Perceptions can also be affected by cultural differences and bias, such as stereotyping. One example of stereotyping is what Glick and Fiske (1996) referred to as "*Benevolent Sexism*", a prejudice attribution of pure and good qualities to women in general. Even though it is interesting to know if, how and why responses related to perceptions differ from fact, for the purpose of *this* research, those differences are rather irrelevant, since we wish to infer just this attitude towards respondents' perceptions.

As mentioned earlier, while perceptions can be regarded as interpretations of experiences, using self-report measurements not necessarily yields report of perceptions that respondents have, rather than perceptions *they wish to convey*. This could be regarded as attitudes towards those perceptions. Those attitudes may differ from their actual perceptions, influenced, for instance, by emotions or mood, such as envy, anger, affection or pity. For example, anger can negatively affect one's judgment about someone's expertise and credibility (Bodenhausen, Sheppard, Kramer, 1994), but it may also lead to deliberately falsely report one's judgment of someone's expertise.[27]

According to McAllister, trust is "*the extent to which a person is confident in and willing to act on the basis of, the words, actions, and decisions of another*" (McAllister, 1995: 25). However, measuring trust by asking how willing and confident respondents are to act on the basis of the words, actions and decisions of someone else, may capture only part of the meaning of the concept trust. While McAllister, when defining trust, focused on actions of the self, based on information of others, Mayer, Davis and Schoorman used a reverse approach, defining trust as "*The willingness of a*

[27] In addressing operationalisation of the variable Trust & Confidence, that variable will be referred to with merely the word trust where it is assumed to serve readability.

party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer et al., 1995: 712). These authors also mentioned that trust correlates positively with interpersonal similarity and backgrounds. In other words: we tend to put more trust in those whom we consider similar to us, than in others. Paxton took quite a different road, defining trust as: "*We trust others when we take a chance, yielding them some control over our money, secrets, safety, or other things we value*" (Paxton, 2005: 40). These are just selections of definitions of trust, found in literature. From the diversity in definitions, one might conclude that trust is a multi-faceted concept. As the number of various definitions of a concept is higher, the harder it is to operationalise that concept based on conceptualisation by those definitions and still capture the full meaning of the term or concept. Schoorman and Ballinger (2006) did take on this challenge by measuring trust as the extent to which:

- When making decisions, supervisors keep in mind the interests of followers;
- Followers submit their career within the company to their supervisor;
- Followers openly communicate with their supervisors;
- Followers dare to risk failure;
- Followers desire to monitor their supervisors;
- Followers are prepared to increase their vulnerability to criticism by their supervisors;
- Followers are willing to let their supervisors have influence over decisions that are important to them.

Desire to optimally capture the essence of Trust & Confidence, as described here, and in *2.11,* led to operationalising that variable, differentiated into:

- unconditional mutual trust and confidence;
- confidence in matching task assignment and domain specificity;
- confidence in having relevant aptitudes;
- willingness to submit to the influence of others;

- benevolence of organisation members towards the organisation;
- attentiveness to the interests of others;
- organisation members' integrity;
- organisation members' honesty;
- need for supervision.

Even then, we may not capture all aspects of Trust & Confidence within the context of organisational processes. Empirical findings may reveal whether measurements based on such operationalisation will adequately represent the overall meaning of Trust & Confidence as a relative standard rather than as a subjective standard.

Outcomes

The Oxford English Dictionary defines Outcomes as: "*That what comes out of or results from something; visible or practical result, effect, or product.*" (OED, 1969, Vol. VII: 250). Outcomes of organisational processes can be divided into tangible and intangible outcomes (Kaplan, Norton, 2004). These manifestations of outcomes are also referred to as output and outcomes, respectively (Nogeste, Walker, 2005), where tangible outcomes usually refer to productivity, turnover or profit, and intangible outcomes refer to matters such as learning, job satisfaction, commitment (Hackman, 1987), customer satisfaction (Guzzo & Dickson, 1996), safety and absenteeism (Cohen, Bailey, 1997). Each of these aspects of outcomes can be measured by using multiple indicators. For instance, Brayfield and Rothe measured job satisfaction using a five-item survey (Brayfield & Rothe, 1951) and Allen and Meyer measured organisational commitment using a multi-item Affective Commitment Scale (Allen, Meyer, 1990).

Using self-reporting measurements is likely to yield subjective reports of perceptions that differ from objective measurements in absolute terms, but in relative terms, they do tend to correlate positively with one another (Dess and Robinson, 1984; Venkatraman & Ramanujam, 1987; Geringer & Hébert, 1989; Hansen & Wernerfelt, 1989; Lyles & Salk, 1997). Consequently, correlation between perceived measures of outcomes and other EMOP-variables may well indicate equal or similar correlation between actual, objective measurements and those EMOP-variables. Examining the extent to which this is true, is beyond the scope of this research. Here, Outcomes will be regarded as respondents' attitude towards

their (understanding of their) own perceptions of outcomes, in terms of the following selected aspects:

- Productivity;
- Quality;
- Job satisfaction;
- Sense of connectedness to the organisation;
- Goal-awareness and goal-orientation;[28]
- Absenteeism.

Aptitude

Collins English Dictionary defines aptitude as: "*Inherent or acquired ability; Ease in learning or understanding; The condition or quality of being apt*." (Collins, 2007: 79), whereas Oxford English Dictionary offers the definition: "*The quality of being fit for a purpose or position, or suited to general requirements*." (OED, 1969, Vol. I: 420). When combining both definitions, we do not restrict ourselves to being apt, or being capable of understanding, but being able to put those talents to good use, relative to a purpose or to meet certain requirements. This is to encapsulate both the physical and mental dimensions of aptitude, by operationalising it as the extent to which:

- One is able to perceive and understand relevant signals (understanding);
- Adding relevant experience, training or schooling will no longer lead to performance improvement (being apt);
- These talents are properly directed towards a previously set goal (relevance for a purpose or position).

Effectively, the variable Aptitude is operationalised as the extent to which[29]:

- Organisation members understand leadership directives and the level of leadership skills to convey directives;
- Team members understand one another;

[28] This is to serve as an indicator of the extent to which perceived outcomes align with perceived goals.

[29] These indicators are also applied for several other variables.

- Organisation members adapt to sudden events and to new circumstances.
- Relevant abilities of organisation members in general are optimised;
- Organisation members are competent in utilising the technological means that are placed at their disposal;
- Organisation members are goal-aware and work purposely.

Environment / circumstance

Human beings behave differently, and use structures differently, depending on circumstances (Giddens, 1979, 1993). Within the context of this document, we define Circumstance as: "*the 'condition or state of affairs' surrounding and affecting an agent*." (OED, 1969, Vol. II: 435). This is related to Environment, defined as: "*the conditions under which any person or thing lives or is developed*." (OED, 1969, Vol. III: 231). The amount and variety of imaginable circumstantial aspects that may influence other EMOP variables seem immeasurable, even when limiting our focus to aspects to which organisation members are exposed within organisational processes. For the purpose of practicality, these aspects are divided into organisational circumstance and personal circumstance. The latter refers to circumstances of organisation members that may affect their behaviour or other facets of the organisational processes in which they participate. A link between these types of circumstance was demonstrated by Lapierre et al. (2008) who found that, as organisation members perceived their work environment more as supportive of their personal state of affairs, those organisation members experienced less work-family conflict and more job and family satisfaction. For operationalisation, those types of circumstance are crudely subdivided, where organisational circumstance is subdivided into focus on:

- Current working conditions;
- Organisational concert;
- External disturbances;
- Internal utilisation of available competence.

and personal circumstance is subdivided into focus on:

- Balance between work and private life;
- Commensurability of personal attitudes and organisational goals.

3.6 Operationalisation

Next, for each of the identified variables, operational definitions are created with multiple indicators. Those indicators will be presented as questionnaire items in a survey. The indicators are combined to form an Elementary Model Questionnaire (EMQ) that should be applicable for a wide range of purposes, to a wide range of organisations.

The variable *Aptitude* is operationalised from self-report measurement items that are also applied to other variables.

For documentation, all self-report measurements are formulated positively: when answering on a scale, low values indicate negative response while high values will indicate positive response.[30]

When utilising the EMQ, attitudes are inferred. For instance, with regard to the variable Leadership, EMQ measurements will consist of respondents' attitudes towards their own perception of leadership, as they understand it to be. Operationalisation is not aimed at measuring actual need, quality, and so on of leadership, but at measuring how respondents experience those aspects of leadership.

The full operationalisation table is listed in Appendix A.

3.7 EMQ

The Elementary Model Questionnaire (EMQ) is construed from self-report measurements of the operationalised variables. Measurement takes place on a 5-point Likert scale (Likert, 1932), of which there are three types, namely:

1. Strongly disagree – Strongly agree (DA)
2. Never – Always (NA)
3. None / never – All / Always (NNAA)

Examples of each type are:

[30] This has merely been done for the purpose of operationalisation. When applying this operationalisation in practice, for instance in a survey, all items must be randomly directed to reduce risk of respondent bias.

To what extent do you agree with the following?

1. *Certain team members could probably perform better in an other position.*

❍ **1. Strongly Disagree** ❍ **2. Disagree** ❍ **3. Neutral** ❍ **4. agree** ❍ **5. Strongly Agree**

How often does the following apply?

2. *I know what my supervisor expects from me.*

❍ **1. Never** ❍ **2. Seldom** ❍ **3. Neutral** ❍ **4. Often** ❍ **5. Always**

How often / for how many, does the following apply?

3. *Our organisation members perform optimally. Additional experience, training or schooling would not change that.*

❍ **1. Never/None** ❍ **2. Seldom/Some** ❍ **3. Neutral** ❍ **4. Often/Most** ❍ **5. Always/All**

Direction
To limit risk of respondent bias, for instance respondents blindly giving 5-point responses, questionnaire items are randomly directed. This way 'Strongly Agree', can constitute a positive response for one item, and a negative response for another item.

Triangulation
In the EMQ, different versions of one questionnaire are used to measure the same aspects from perspectives of organisation members at different organisation levels, namely: non-managerial, supervisory and managerial.

Each questionnaire focuses on the same unit of analysis, being organisation members at operational level and their relationship with the organisation and with their supervisors. Of each questionnaire version, with each respective questionnaire item, the same variable is measured. For instance, at non-managerial level the EMQ contains the item:

I know what my supervisor expects from me.

❍ **1. Never** ❍ **2. Seldom** ❍ **3. Neutral** ❍ **4. Often** ❍ **5. Always**

This item is presented to non-managerial organisational members, and thus focuses on their relationship with their supervisors. At supervisory level, this same item is given as:

My subordinates know what I expect from them.

❍ **1. Never** ❍ **2. Seldom** ❍ **3. Neutral** ❍ **4. Often** ❍ **5. Always**

Even though this item is now presented to supervisors, it also focuses on the relationship of supervisors and their followers. At managerial level, this item is given as:

Our organisation members know what their supervisors expect from them.

❍ **1. Never** ❍ **2. Seldom** ❍ **3. Neutral** ❍ **4. Often** ❍ **5. Always**

Here, managers are invited to give their view on this aspect of the relationship between organisation members at operational level and their supervisors. Such triangulation reduces risk of respondent bias, possibly caused by one-sided perception, but instead measures the same aspect from different organisational vantage points.

In Appendix B, the EMQ is listed categorised and in Appendix C, uncategorised. When using EMQ, all three EMQ versions are uncategorised and randomly directed, to limit the risk of respondents' bias, where respondents blindly give positive or negative answers. 50% of all items are directed positively and, consequently, 50% are directed negatively.

Measuring operational indicators is supplemented by three demographical questions, related to age, gender and tenure. Combined with information about the organisation level at which respondents work, the answers to the demographical questions give some indication of respondents' representation of the total population. These questions are posed as follows.

Q	*A. What is your gender?*				
A	*Female*			*Male*	
Q	*B. How long have you been employed with your current employer?*				
A	*0 - 6 months*	*6 - 12 months*	*1 - 3 years*	*3 - 10 years*	*> 10 years*
Q	*C. What is your age?*				
A	*< 25 years*	*25 - 30 years*	*30 - 45 years*	*45 - 55 years*	*> 55 years*

3.8 Conclusion

This chapter reported on conceptualisation and operationalisation of variables that are regarded elementary to organisational processes. In Chapter 2, these variables are said to be: Leadership, Applied Technology, Aptitude, Human Behaviour, Emotions & Mood, Trust & Confidence, Outcomes and Circumstance. I propose that, linked together, these variables form an elementary model of Organisational Processes (EMOP). This conceptualisation should contribute to understanding those variables within the context of organisational processes and of organisation members' attitudes towards those variables.

Operationalisation of those variables was done by creating operational definitions with multiple indicators for each of the identified key variables. These indicators are combined to form the Elementary Model Questionnaire (EMQ), which should allow inference of those attitudes for a wide range of purposes, for a wide range of organisations.

4 EMOP Mechanics

4.1 Introduction

In this chapter, propositions about EMOP mechanics will be construed and examined, including correlation between connecting variables within the model. This Elementary Model of Organisational Processes was presented earlier in Chapter 2 and illustrated in figure 6, and is presented for your convenience once more in figure 9.

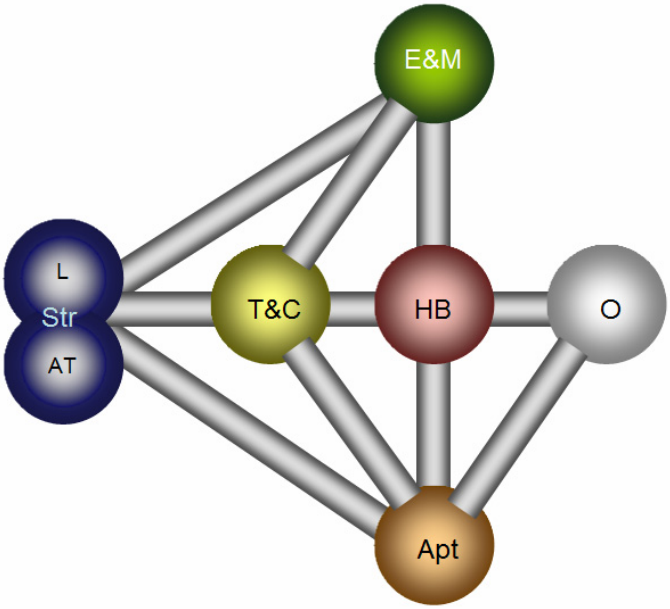


Figure 9: Elementary Model of Organisational Processes.

In *2.9.*, Interdependence Theory (Holmes 2002, Kelley et al. 2003) was addressed and a formula described how a subject's commitment to a relationship depends highly on *that subject's perception* of the quality of the *known* alternatives outside that relationship. This was formulated as:

$$\boldsymbol{I = f\,(S'', A, B)}$$

Unfortunately, this formula seems too limited and too subjective in nature to serve as foundation on which to build a basic linkage model of

organisational processes. Examination of the statistical or mathematical relationships between linking EMOP variables is beyond the scope of this research. Instead, for now, I will treat all connecting EMOP variable pairs as if they statistically basically mutually relate linearly. This approach is, in part, based on preliminary findings of linear characteristics of several combinations of the model's response variables on the one hand and their linking predictor variables and pertaining parameters (see next) on the other hand.[31] This approach also stems from a desire to limit the scope of this document and not to unnecessarily complicate matters. Treating relationships between EMOP variables as linear offers a basic notion of how those variables could mutually relate statistically. Allowing some deviation from a perfect linear relationship between all other connecting EMOP variables, we can design a regression model (Legendre, 1806; Gauss, 1809, 1821; Yule, 1897; Pearson et al., 1903) with the base formula connecting such linking variable pairs as

$$\boldsymbol{\alpha} + \boldsymbol{\beta} \,.\, [V_X] + \boldsymbol{e}$$

where:

- V_X is the value of the predictor variable;[32]
- $\boldsymbol{\alpha}$ is the intercept, or constant (threshold value of target variable when predictor variable = 0);
- $\boldsymbol{\beta}$ is the slope coefficient or the multiplicand for each V_X;
- $\boldsymbol{e}$ is the residual of values off the regression line minus the corresponding line values.

In essence, this means that, statistically, the value of one variable (V_Y) can be found, after observing a value threshold $\boldsymbol{\alpha}$, around the product of $\boldsymbol{\beta}$ and the value of another, linking variable (V_X), within a range of $\boldsymbol{e}$.

One proposition with regard to EMOP is that attitudes towards the aspects, represented as EMOP variables, mutually correlate. Considering also

[31] These linear characteristics, e.g. in scatter diagrams, were more pronounced in some variable combinations than in others and in some combinations their presence was uncertain, possibly due to differences in effects of multiple explanatory variables.
[32] Prediction is relative to the variable to which it is linked, depending on the direction of calculation. Here, the term *independent variable* does not apply, since EMOP variables that are predictors within one linking pair in one calculation direction may be responsive in the opposite calculation direction or in other linking combinations.

individual, or group sensitivity to certain variables, such as Emotions & Mood or Aptitude, a basic statistical EMOP is illustrated in Fig. 10.

For the purpose of modelling and explaining, I pose that predictor EMOP variables affect the values of connecting variables alone, or together with other predictor variables. This refers to all variables, except for the variable Outcomes.[33] Since all EMOP variables have both predictive and responsive characteristics within this framework, they are referred to as *interdependent*.

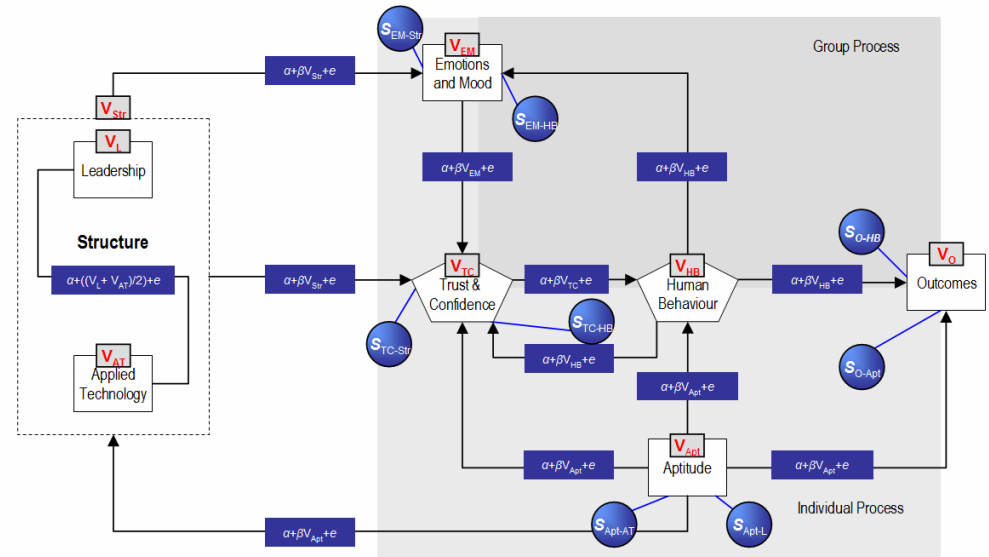


Figure 10: Basic statistical EMOP

The arrows in the model indicate one theoretical method of calculating how values of variable pairs mutually affect one another. Similar to Kelley and Thibaut's interdependence theory (1959, 1978), the strength of the relationship between two interdependent variables within the EMOP framework depends highly on a subject's perception of quality of the predictor variable, relative to alternatives, known to that subject in question. For instance, the link between the variables Human Behaviour and Emotions & Mood is illustrated with an arrow from Human Behaviour to Emotions & Mood. This indicates that, of this linking pair of variables, Human Behaviour is considered the predictor variable, determining (along with the variable Structure) the value of the response variable Emotions &

[33] Not explicitly including Outcomes feedback to other EMOP variables reflects model demarcation and pragmatism, and not denial of existence of such feedback.

Mood. Within the context of elementary organisational processes, these Emotions & Mood are determined by a subject's perception of the quality of human behaviour that he or she experiences, relative to the standard that this subject desires of this human behaviour. When a subject's perception differs from that subject's standard, that standard is considered an alternative to the current perception. If the subject deems a quality of Human Behaviour, such as member interaction, to be high compared to the desired norm, the subject's Emotions & Mood are likely to be affected positively. When the quality of Human Behaviour is deemed below the desired norm, Emotions & Mood are likely to be affected negatively. Response variables can, and often do, affect their predictor counterparts. For example, Emotions & Mood are likely to affect Human Behaviour when an organisation member turns up at work grouchy or elated. In theory, the value of Human Behaviour could be determined from the value of Emotions & Mood by reversing the equation by which Emotions & Mood is determined by Human Behaviour. Such reciprocity is implied further on in this chapter, unless stated otherwise.

4.2 Mechanics

Next, an interpretation outline is offered of values of each EMOP variable.

Outcomes

- *High value (HV)*: A high value of this variable suggests close correspondence of organisation or team performance with laid down standards. This suggestion is inferred from the individual(s) that valued this variable, for instance as a respondent in an EMQ survey, or as an observer of organisational processes or of organisational results. As such, this suggestion is an attitude towards the observer's personal interpretation of the actual outcomes, compared to the observer's personal interpretation of the desired outcomes. An observer's valuation of the variable Outcomes may correspond with actual, objective outcomes, but this is not necessarily so, and correspondence may be accidental. *Values of EMOP variables are quantifications of inferred attitudes, not of actual performance*.
- *Low value (LV)*: A low value suggests that the organisation or team does not meet the laid down standards.
- *Negative value (< 0)*: A negative value suggests counter productivity: not only has the organisation or team not brought forth what it should

have, additional effort (and/or costs) must be exerted to undo the consequences of their failure.

Leadership

- *HV*: The variable Leadership' value reflects organisation members' attitude towards leadership in question. A high value of this variable indicates, within the organisation process(es) at hand, positive attitude towards provided leadership.
- *LV*: A low leadership value indicates, within the context at hand, negative attitude towards provided leadership, compared to perceived alternatives.

Applied Technology

- *0*: The value of Applied Technology reflects organisation members' attitude towards the technology that is applied within the organisational processes at hand. Those, who value this as 0, neither expect the applied technology to contribute positively or negatively to those processes, nor to their outcomes.
- *HV*: With high values, the applied technology is deemed to potentially contribute much to the benefit of the pertaining organisational processes, primarily by supporting human behaviour.[34]
- *LV*: with low values, positive contribution of applied technology to the pertaining organisational processes is deemed low.
- *<0*: When this value is less than 0, the applied technology is considered to work counterproductive. For example: positive contribution of applied technology is more than annulled by burden of training, maintenance, support, unsuitability, and other forms of process disruption.

Aptitude

- *HV*: High valuation of aptitude suggests strong ability to utilise the applied technology, to interpret leadership behaviour, and to transliterate that behaviour into effective actions.
- *LV*: A low aptitude value may indicate poorly developed ability to interpret leadership behaviour into effective actions, being less able to utilise applied technology, or both.

[34] The extent to which it actually contributes to its potential will depend largely on the knowledge and skills of the applicants, on the application method and of human behaviour.

Human Behaviour

- *HV*: A high value of the variable Human Behaviour indicates that behaviour is perceived or proposed to correspond highly with desired behaviour. This value neither refers to intensity of human activity, nor even to quality, effectiveness or efficiency of actions. This value can be high, even with little actual human behaviour.[35]
- *LV*: A low value of this variable suggests low correspondence of perceived human behaviour with targeted or desired behaviour.

Trust & Confidence

- *HV*: A high value of this variable suggests a high level of trust and confidence in oneself, in other team members, including the team supervisor, in the means that are applied and in performing well.
- *LV*: A low value of this variable suggests a low level of trust and confidence (or even distrust) with regard to the elements mentioned under *HV*.

Emotions & Mood

- *HV*: High values suggest that affective conditions (of the individual or team), relative to certain organisational aspects, are positive.
- *LV*: Low values suggest that affective conditions (of the individual or team), relative to certain organisational aspects, are negative.

4.3 Sensitivity

One can imagine that organisation members are not all equally sensitive to (changes in) every EMOP variable. Individuals and groups have their own sensitivity characteristics, represented in the statistical EMOP (Fig. 10) as sensitivity parameters. Those parameters transform norm values into characteristic values for those individuals or groups under certain circumstances. Conversely, we can value *S*-parameters as quotients of individual variable values and norm variable values.

[35] Shared values can affect Human Behaviour (usually indirectly via the antecedents of trust). These concepts are likely to correlate positively, but shared social values may instead correlate negatively with Human Behaviour, e.g. due to ineffectiveness caused by undue socialising between members.

$$S = \frac{V_I}{V_N}$$

A variable's norm value can be a group average variable value, an organisation average variable value, or any other appropriate norm.

Sensitivity parameters are incorporated in the statistical model as a parameter *S*, which stands for *Sensitivity*. An *S-parameter* is a multiplicand of the value of the predictor variable, relative to the value of the response variable to which it is linked. As mentioned, the arrows in figure 10 are not to suggest causality, but to indicate the direction in which the multiplications are calculated, when starting valuation using the values of the structural components as input. For sensitivity effects in reverse direction, reversed multiplicands apply.[36]

Sensitivity of a target variable can be influenced by its source variable, as is proposed with source variable Human Behaviour's effect on the target variable Trust & Confidence (indicated in figure 10 as $S_{TC\text{-}HB}$). Sensitivity of the variable Trust & Confidence to the variable Human Behaviour may be influenced, for instance, by the strength of the mutual bond between team members to the extent that neither member deems criticism of them as a group or criticism of any single team member as valid. In extreme cases they may regard their own (or their fellow team members') integrity, benevolence and skills as unquestionable, despite sound evidence pointing at the contrary.

Individual subjects or groups can be characterised by their *S*-parameter value patterns, either measured as average values of multiple measurements under various conditions, or by (average) pattern values under specific conditions (Table 2). When value patterns differ little to none from a given norm, their *S*-parameters are referred to as *consonants*. Value patterns deviating strongly from norm values are referred to as having *dissonant S*-parameters.

[36] Dividing rather than multiplying.

	Norm Value	Ind Value	*S*-param.
Leadership → Aptitude	80	75	0.9375
Human Behaviour → Trust & Confidence	82	71	0.865854
Aptitude → Outcomes	83.5	40	0.479042

Table 2: Fictional norm values, individual values and *S*-parameters.

When individual group members have dissonant value patterns, relative to a given norm, the group as a whole may have a *homogeneous value pattern* when all group members have similar dissonant *S*-parameters.[37] When individual group members have value patterns with dissentient *S*-parameters compared to others within that same group, the group has a *heterogeneous value pattern*.

Homogeneity of (*S*-parameters of) individual variables can also be examined, for instance, to identify an emotional homogeneous group, when conditional changes affect Emotions & Mood of all group members similarly.

Determining variable values of an individual or group is a snapshot. Determining characteristic value patterns requires multiple measurements, at various moments in time, preferably under various circumstances.

Value pattern stability
When multiple measurements of value patterns of one specific group or individual, measured under different circumstances, mutually vary little, or not at all, the value patterns are *stable* (consistent). Conversely, *unstable* value patterns show significant value changes when mutually comparing the results of multiple measurements.

Value patterns are more unstable as value variation is higher in proportion to changes in circumstances. Accordingly if, over a period of time, circumstance has changed little to not at all, but various measurements aimed at one group or individual show mutually significant differences in value patterns, that group's or individual's value pattern is highly unstable.

[37] Obviously, this can only exist when the given *norm* differs from the group members' value patterns.

Term patterns

Seemingly unstable value patterns can, after multiple measurements taken over a longer period, appear cyclic or correlate over time similarly to similar events. Therefore, I distinguish *short-term patterns* from *long-term patterns*. Long-term patterns can be subdivided depending on the cause of recurring value patterns. Examples of long-term value patterns are periodical value patterns and incident related value patterns (*event related*). Periodical (*cyclical*) value patterns can occur, for instance, at the end or beginning of each colanders year, for example caused by a budget surplus or deficit, annual assessment, -inventory, et cetera. Event related value patterns could occur, for example, each time similarly before or after a vacation period, during or after a group member's sick leave, after appointing a new leader, and so on. Long-term patterns can be recurrent to the extent that it makes them predictable (*ceteris paribus*).

4.4 Linking variables

Since the variable values of almost all linking variable pairs in figure 10 are proposed to relate to one another by the same formula, this will be elaborated on by focus on just one of those linking pairs, the variable Trust & Confidence affecting Human Behaviour.

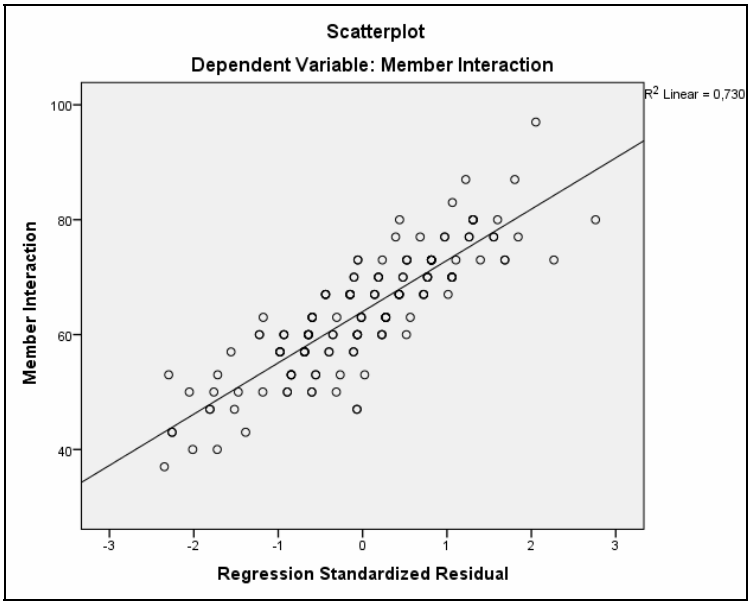


Figure 11: A random example of a regression line with residuals.

The variable Human Behaviour tends to correlate positively with the variable Trust & Confidence. If this relationship between Trust & Confidence and Human Behaviour is linear with residuals, then this would mean that plotting a regression line of the values of Human Behaviour, relative to the values of Trust & Confidence, would not yield one perfect line, but would yield dots close to this (imaginary) regression line. Deviations from that line are referred to as residuals (see Fig. 11).

As mentioned in 4.1, the premise of EMOP mechanics being led mainly by linear relationships between variables is still largely based on assumption. Future research should provide decisive knowledge about the characteristics of these relationships. For now, I continue on the assumption that the formula by which the values of Trust & Confidence and Human Behaviour relate to one another is:

$$\boldsymbol{\alpha} + \boldsymbol{\beta} \,.\, \mathbf{V_{TC}} + \boldsymbol{e}$$

where:

V_{TC}	=	the value of the variable Trust & Confidence
α	=	the threshold value of Human Behaviour when Trust & Confidence = 0.
β	=	the slope (multiple measurements) or multiplicand (single measurement) by which both variables relate to one another.
e	=	the average distance of residuals from the regression line.

The value of e may be affected by Trust & Confidence not being the only variable from which Human Behaviour derives its value.

Obviously, the values of the parameters α and β differ for each linking pair of EMOP variables, while e differs for each single observation.

The values of most EMOP variables are affected by multiple other EMOP variables (see figure 10).

4.5 Case examples

In the previous paragraphs, focus was on theoretical, statistical mechanics of Elementary Model variable values (*EMV*).[38] The following three sections illustrate how these mechanics work in real time. These cases are taken from

[38] *EMVs* are the values attributed to EMOP variables, e.g. by means of EMQ survey.

actual events, where *EMVs* are based on observer estimates. In these cases, the pertaining companies' names and individuals are not mentioned, since doing so seemed to add little to the illustration. Case 1 is compiled from multiple similar cases that I observed over the course of the past 30-odd years, both in the public and the private sector. Case 2 is taken from the public sector, spanning the first years of the 21st century. Case 3 is taken from the private sector in the 1980's, spanning a period of several months. All cases are taken from either European or U.S. American organisations.

Next in this chapter (in the upper rows of the tables), as well as in the next chapters, the EMOP variables are often referred to with the following symbols.[39]

Leadership	-	L	Emotions & Mood	-	EM
Applied Technology	-	AT	Trust & Confidence	-	TC
Human behaviour	-	HB	Outcomes	-	O
Aptitude	-	Apt	Structure	-	Str

[39]To avoid complicating these examples unnecessarily, mechanics of the variable Circumstance (symbol C) are implied, rather than stated explicitly.

4.6 Case 1: Dyadic Leadership

4.6.1 Introduction

Context:
Follower *F* recently started secretarial work for Leader *L*. F spends most of her time behind her desk, whereas L often attends meetings in-house as well as outdoors. Even though L and F spend little time in each other's presence, so far, L has no complaints about F's performance, except for her dissatisfaction with the spelling quality in the texts that F produces. L considers spelling an important aspect of F's overall results. L's estimation of F's attitudes is indicated in Table 3.

L

EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
LEFA	70	70	70	70	70	65	70	65

Table 3: L's initial estimate of F's attitudes (LEFA)

Table 3: L's estimation of F's attitudes is positive, but slightly less so with regard to her behaviour (HB) and the results of that behaviour (O) which, in this case, relates to L's judgement of F's spelling. This is not an assessment of F's performance, but L's estimation of how F perceives herself. L assumes that F is neither yet fully satisfied with how she does her work, nor with the results of her own work.

Purpose:
L wishes F to perform to her potential with regard to spelling, as L assumes this potential to be. This should be expressed by F delivering higher quality texts.

Unit of analysis
In this case, focus is on *attitudes of Follower F*. These attitudes are approached and indicated as follows.

- FA = Follower's attitudes, as perceived by follower;
- LEFA = Leader's estimate of Follower's attitudes;
- FILEFA = Follower's imagination of LEFA (F's imagination of what L's estimates are);
- LWFA = Leader's wished Follower's attitudes (how L wishes F's attitudes to be, to bring about the desired behaviour and desired results).

4.6.2 Proceedings

Intervention 1:
Initially, L does not actively intervene. L is confident that F will perform to her potential soon, once F feels settled in. Stated differently: L expects, or wishes that, with regard to F's spelling, this extra Trust & Confidence (TC) will cause F to behave (HB) more according to L's expectations, leading to the outcomes (O) that L desires, as well as to F becoming aware of these improvements to her behaviour, outcomes and trust & confidence (Table 4, row: LWFA).

L

Intervention					↑			
EMOP var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	70	70	70	70	80	70	70	70
LEFA	70	70	70	70	70	65	70	65

Table 4: L's wished value change of F's attitudes (LWFA), against current estimates

Result 1:
F enjoys her new job. She is blissfully unaware of L's dissatisfaction at her spelling and F believes that she performs well and that she delivers high quality work (Table 5).

F

EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	70	70	70	70	80	70	70	70
FA	80	60	70	75	80	85	80	85
FILEFA	80	80	80	80	80	85	80	85

Table 5: F's self-perception (FA) against LWFA and FILEFA

Table 5: Overall, F's attitudes are more positive than L estimates and for which she strives. F is happy doing the work that she does, although she is not too keen on utilising the technology made available to her. In this case, this relates to utilising a personal computer (AT). F also feels a little insecure in her new work environment (EM). F believes that L's impression of her (FILEFA) is about equal to F's own valuation (FA), and that F's insecurity and aversion against utilising a personal computer goes unnoticed by L.

Intervention 2:
Because L does not see sufficient improvement in the quality of F's spelling, after some time, she decides to address F's spelling deficiencies and asks her to pay more attention to the quality of her work. L expects this display of leadership (L) to result in F doing a better job (HB), giving her more job satisfaction (EM) and leading to higher quality texts (O) (Table 6).

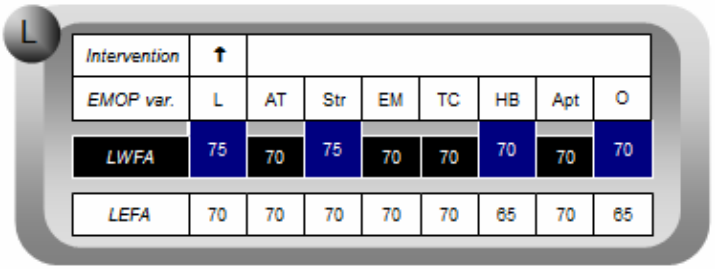


Table 6: L's wished value change of F (LWFA) compared to LEFA

Table 6: L's current estimation of F's attitudes (*LEFA*) differs little from her (desired) estimation of F's attitudes in response to L's intervention (*LWFA*).

Result 2:
F either does not understand or does not share L's feelings about the importance or extent of deficiency of F's spelling and hardly takes note of L's remarks. F's confidence (TC) in L's abilities as a leader (L) has decreased slightly, at least with regard to L's ability to judge F's spelling qualities (Table 7).

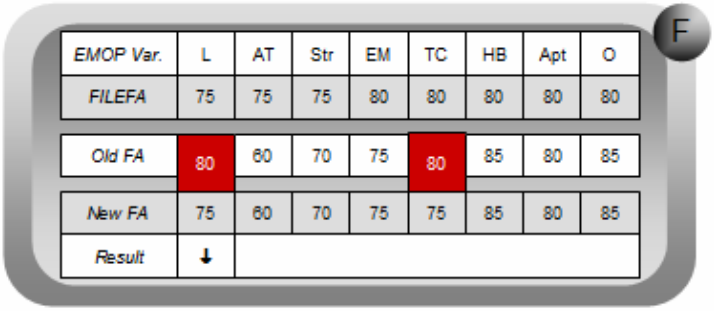


Table 7: F's old and new attitudes, against imagined LEFA (FILEFA)

Table 7: F's former attitudes (*Old FA*) as well the values of her current attitudes, after L's intervention (*New FA*). Row *FILEFA* represents how F believes L values her attitudes.

Having received more output from F after L gave new directions, L noticed no improvement in the quality of F's work. L is certain that her instructions to F were clear (L) and L is starting to believe that she had overestimated F's competence as a secretary (Apt). She also notices other undesired behaviour that L either had not noticed earlier, or that L was less bothered by earlier, such as telephone conversations that L believed were unnecessarily long and F's late returns from her lunch breaks. L believes that F overestimates her own behaviour (HB), aptitude (Apt) and results (O) and that she under appreciates the value of the Trust & Confidence offered by L, and the usefulness of the technology that is available to F (New LEFA -Table 8).

Intervention 3:
L has come up with a new plan (L). She decided to provide F with a spell checker (AT), that should almost automatically help F produce better quality texts (HB), placing less pressure on F (EM) leading to higher quality texts (O) (LWFA - Table 8).

L

Intervention		↑						
EMOP var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	80	80	80	75	75	60	60	60
New LEFA	70	60	65	70	60	70	75	70
Old LEFA	70	70	70	70	70	65	70	65

Table 8: L's new expectations of F

Table 8: According to L, F underestimates the value of (utilising) the technology and overestimates her own aptitudes, work behaviour and work quality. By making additional technology (AT) available to F, L expects that F will value L's leadership (L) even more and that she will appreciate the usefulness of the applied technology (AT) more.

Result 3:
F, to whom her spelling is once more addressed when being notified of the new spell checker, finds the critique unwarranted and the importance of perfect spelling exaggerated. She does not express her opinion to L, but instead smiles kindly, without changing her actual behaviour with regard to spelling, feeling that L undervalues her aptitude (Apt) and under appreciates her efforts (HB) and performance (O) (Table 9).

F

EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
Old FA	75	60	70	75	75	85	80	85
New FA	65	55	60	70	65	90	90	90
Results	↓							

Table 9: F's attitude revaluation, compared to previous valuation

Table 9: L's mentioning of the spell checker unfavourably affected F's aversion against utilising a personal computer, as a result of which she feels added pressure on her to do so. According to F, L underestimates F's proficiency, work attitude and work results.

Having received more output from F, without finding improvement to the quality of her work, L now fears that F does not take her seriously enough (L), that F has some aversion against using a computer (AT) and that her aptitude is much lower than she initially thought (Apt), leading to substandard results (O). L is also starting to question F's benevolence and integrity (TC) and suspects that F cares little about the quality of her work or about L's directives (EM) (Table 10).

L

							↓	
EMOP var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	80	80	80	70	70	40	40	40
New LEFA	60	50	55	70	50	80	80	80
Old LEFA	70	60	65	70	60	70	75	70

Table 10: L's assessment of F's attitudes

Table 10: The row: *New LEFA* contains L's current estimation of F's attitudes. L believes that F erroneously considers her own behaviour, aptitude and work quality much higher than they actually are.

Intervention 4:

L once more addresses this issue with F and asks F if the spell checker is working properly. F answers that she finds it hard to operate the spell checker and that it just made it harder for her to do her job and after several attempts has stopped using it all together. In response to this explanation, L

decided to send F on a course teaching her to use the spell checker (Apt), expecting her to do a better job (HB), deliver better results (O), to start appreciating L more, and to feel more comfortable using a computer (AT).

L

Intervention							↑	
EMOP var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	70	70	70	70	70	70	70	70
LEFA	60	60	55	70	50	80	80	80

Table 11: L's targets for F's attitudes after successful completion of the course

Result 4:
F finds all the attention on spelling nonsense (L) and regards her having to take this course as an unwelcome and unnecessary burden on her (EM). Utilising her computer, and certainly drawing up texts, is starting to pall upon her (AT). F is starting to believe that L just has it in for her, and that L's criticism actually has little to do with spelling (TC). In fact, F feels that, if anything, she is overqualified for this job, rather than under qualified (Apt) and that she has worked harder (HB) and better (O) than L should have expected her to do (Table 12).

F

EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
Old FA	65	55	60	70	65	90	90	90
New FA	40	40	40	50	50	70	90	70
Results	↓							

Table 12: F's self-perception

Table 12: F has given up trying to go out of her way to please L, and has lost much of her appreciation for, and confidence in L.

Intervention 5:
In her attempts to improve the quality of F's spelling, L feels that she has tried almost anything from increasing Leadership, via improving the Applied Technology to improving F's Aptitude, without noticeable

improvement to F's Outcomes. If anything, F's Outcomes have dropped, rather than improved. L now becomes cross with F and expresses her anger to F, demanding that F does a better job from now on. L expects this display of authority (L) will result in F utilising her spell checker (AT) better and more consistently, doing a better job (HB) and delivering better results (O). L also hopes that, from now on, F will demonstrate true dedication to contribute positively to the organisation and to the working relationship between L and F and that F will be much happier (EM) if she gives L no new cause to be dissatisfied with her work (Table 13).

L

Intervention				↓				
EMOP var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	80	80	80	50	70	40	40	40
LEFA	60	60	55	70	50	80	80	80

Table 13: L's new expectations of F

Table 13: By lowering F's Emotion & Mood, L hopes to spur F on to do a better job, knowing that this would please L, which, in turn, should please F (ultimately uplifting her own emotions & mood again).

Result 5:
The following day, F arrives at work late, happily smiling. She has *great* news. She has found a new job! She had been applying for a new job shortly after L started to comment on the quality of her work and today she learned that she was hired and therefore can resign from her current job. In terms of Interdependence Theory (Holmes 2002, Kelley et al. 2003): F perceived the quality of her relationship with L, or F's relationship with her current employer, to be less than alternatives known to her.

L is not sorry to see F go. Unwilling to repeat some of past experiences, when interviewing new candidates for the job, L made certain to inquire after each applicants' views towards work quality, towards utilising computers and towards communicating with bosses and others. L also explicitly stated the expectations that she has of the new secretary and stated what the new secretary may expect from her, as a leader. These expectations do not relate merely to quality levels and work attitude, but also to open communication between her and the new worker.

4.6.3 Case Evaluation

This case deals with limited proficiency, wrong assumptions and mismatching attitudes between a leader and a follower. Several times, L tried to manipulate one EMOP element, assuming that this would affect certain other EMOP elements such, that this would lead to the desired value pattern, with the desired outcomes. During these attempts, F experienced changes to her working relationship with L increasingly negatively, usually affecting her attitude towards more than one EMOP element.

Chances on mutually making wrong assumptions between leaders and followers increase as distance between them increases. According to Ferris and Napier (1993), three dimensions of distance between leaders and followers exist, namely structural, functional and psychological. This refers not just to physical distance between leaders and followers (structural), but also to closeness and quality of the functional relationship between them (functional), as well as to psychological effects of actual and perceived differences between them (psychological).

From L's precautionary behaviour when selecting a new secretary after F resigned from her job, one might conclude that, intuitively, L knew exactly what prevented F from meeting L's standards. When selecting a new secretary to replace F, L made an effort to avoid new misalignment of attitudes between her and the new secretary by assessing those attitudes, comparing the candidates' attitudes with her own attitudes and selecting a secretary whose attitudes most match her own attitudes.

Good communication between leaders and followers lowers reliance on assumptions for either party. Knowing each other's attitudes and expectations prevents assumed value patterns to deviate too much from actual value patterns.[40] This builds and enforces trust, confidence and understanding between leaders and followers and lowers the threshold to giving directives and feedback. Since deviations are smaller, to achieve desired value patterns, the nature of this direction and feedback needs not be as dramatic as it otherwise must be.

[40] Attitude misalignment may not always be apparent from value patterns, since different people may value things differently. For instance, subject A may be dissatisfied and value this as 6, whereas subject B may be equally dissatisfied and value this as 3. According to this norm, the value 6 given by both these subjects could indicate dissatisfaction in subject A and satisfaction in subject B. Obtaining uniform, objective measurements is an important challenge when measuring attitudes.

4.7 Case 2: Major Organisational Change

4.7.1 Introduction

Context:
An organisation with multiple business units, many of which use their own accounting methods and tools, finds it increasingly hard to consolidate its financial data. Criticism from auditors and stakeholders, with regard to financial management and financial reporting, is growing in frequency and gravity.

Purpose:
Organisation management aims to take away the cause of criticism against them for the way the organisation keeps records.

Unit of analysis
In this case, focus is on attitudes of (groups of) followers and on how some leaders respond to those attitudes. These attitudes are approached and indicated as follows.

- FA = Followers' attitudes, as perceived by followers;
- LEFA = Leaders' estimate of Followers' attitudes;
- LWFA = Leaders' wished Followers' attitudes (how L wishes F's attitudes to be to bring about the desired behaviour and results).

4.7.2 Proceedings

Intervention
Management has decided to standardise administrative procedures and accounting methods as well as to implement one uniform ERP system throughout the organisation to replace all existing accounting systems. With regard to producing and reporting financial data, management expects that this new technology will be a huge improvement compared to the current myriad of information systems (AT). This should make everybody happier (EM), build confidence in the technology, grow trust in the output of that technology and strengthen trust and confidence in management that provided the organisation with this technology (TC). Management also expects that, because of this technological advancement, employees will become more proficient in doing what they need to do (Apt), perform accordingly (HB), leading to better organisational results (O). Management communicates its intentions throughout the organisation and sets up a program to prepare and execute the organisational intervention.

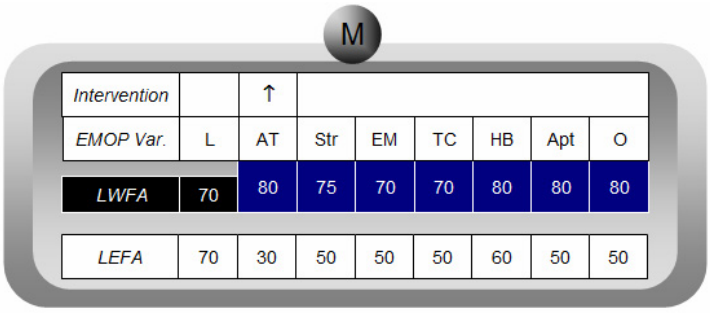


Table 14: Management's end result targets of the organisational intervention

Response
In the run up to the actual implementation, most organisation members seem to have resigned themselves to the outcome of events. Followers' attitudes (FA) are about equal to their Leaders' estimates of those attitudes (LEFA).

However, as the implementation date draws nearer, aversion towards the intended organisational change grows. Organisation members are insecure and uncertain of what lies ahead of them (EM). They do not know if management has decided on this organisational intervention for the right reasons (L), nor do they know if management had the required competence to select this new system and if the appropriate expertise is deployed to implement this system (TC). The commotion hinders organisation members in doing their regular job (HB) which affects business results (O) (Table 15).

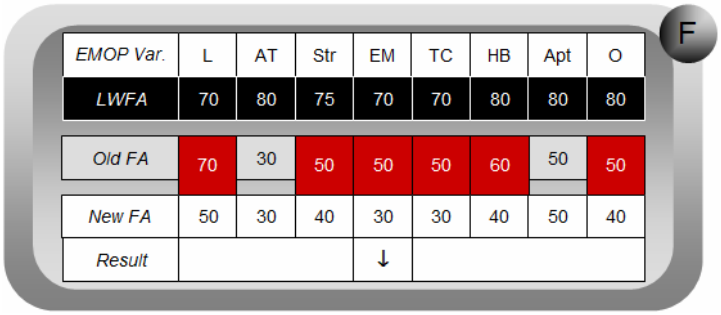


Table 15: Response attitudes

Leaders A
Some leaders display empathy and support for their followers' uncertainties. By doing so, they may try to deflect discontent from themselves as leaders and onto other decision makers, as well as onto the prospective changes, so they themselves can remain in their followers' favour. They hope that this

will lift their followers' mood (EM) and will cause their followers to attribute more ability, integrity and benevolence to them, their leaders (TC), as well as value them more as leaders (L). Furthermore, they hope that, in exchange for their leaders' support, their followers will reciprocate by remaining loyal them to and do their best in their jobs (HB), resulting in increased outcomes (O) (Table 16).

Intervention				↑				
EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	70	30	50	60	60	60	50	60
LEFA	50	30	40	30	30	40	50	40

Table 16: Leaders A Intervention aimed to deal with the intended change

Leaders B

Other leaders choose an opposite path by focusing on changing their followers' attitudes towards the prospective changes, by providing them with relevant information, preparing them for those changes (Apt) and assuring them (EM) that all will benefit from those organisational changes (TC). These leaders hope that this approach will cause their followers to embrace the new technology (AT), utilising it to its full potential (HB), leading to higher outcomes (O) (Table 17).

Intervention							↑	
EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	70	70	70	70	75	70	75	75
LEFA	50	30	40	30	30	40	50	40

Table 17: Leaders B Intervention aimed to deal with the intended change

Compared to the type A leaders, these latter type B leaders risk more damage to their credibility, losing their followers' trust and confidence (or failing to restore it) if the prospective organisational changes do not deliver on their promises. This may negatively affect their followers' valuation of Leadership, Trust & Confidence, and Emotions & Mood, pulling down Human Behaviour and Outcomes with it (Table 18).

L								
Eventuality	↓							
EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	70	70	70	70	75	70	75	75
Risk	40	30	35	40	30	40	50	40
LEFA	50	30	40	30	30	40	50	40

Table 18: Type B risk

This risk seems less present for the type A leaders, since disappointment with the implementation results is more likely to affirm their views and justify their sentiments (EM), to validate their leaders' judgement (L) and to trust their leaders to stick by them (TC) when they feel they need it. Ironically, these attitudes may just cause the failure of the implementation, since those attitudes may incite organisation members, acting as free agents, to resist the changes, by refusing to cooperate with the changes, for instance by working as they always have done, using the same tools as they have always done. Such attitudes increase the risk of creating a self-fulfilling prophecy when foretelling failure of the organisational change.

L								
Eventuality	↑							
EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	70	30	50	60	60	60	50	60
Risk	80	30	55	50	50	50	50	50
LEFA	50	30	40	30	30	40	50	40

Table 19: Type A risk

Despite resistance by part of the work force, realisation of the new information system steadily proceeded. A secured test environment was set up in which initially technical tests were conducted, followed by functional tests and acceptance tests. Subsequently demonstrations, workshops and trainings were given, informing organisation members of the new system and familiarising them with that system and with their own role within the organisation, after the change. This growing awareness (Apt) strengthened their confidence (TC) in the new system (AT) and in their leaders (L) and put their minds at rest (EM). Since they now worried less about the

upcoming organisational change, they could focus more on their work (HB), improving not only their production and quality, but also their work satisfaction and their sense of being connected to the organisation (O).

EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
New FA	60	50	55	50	50	60	65	60
Old FA	50	30	40	30	30	40	50	40
Result							↑	

Table 20: Main group of followers' attitude after hands on experience with new system.

Perhaps driven by desire to belong to the winning team, this change of mind and heart in many organisation members led quite a few type A leaders to convert into type B leaders. Still, for no obvious reason, a handful of organisation members wilfully stuck with the obstructive attitudes they had adopted earlier, supported by scarce type A leaders, albeit this support was less decisive than it was before.

Shortly after the first roll out phase of the new system, type A leaders' followers resisted this change by refusing to use the new information system and sticking with using the 'old' system. A few followers of the type B leaders, who did try to use the new system, became insecure and quickly reverted to using the old system, with which they were much more familiar.

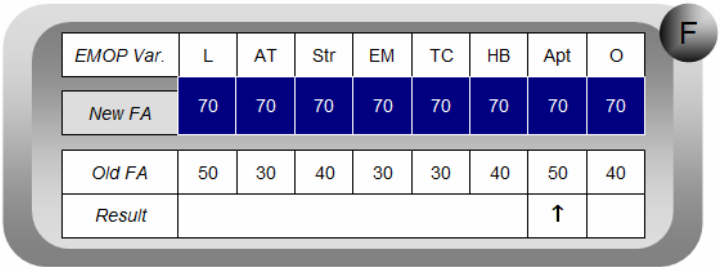
EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
New FA	50	40	45	40	40	50	50	50
Old FA	60	50	55	50	50	60	65	60
Result				↓				

Table 21: New attitudes of reverted group organisation members

To mediate this occurrence, users to whom the new system was made available were given a fixed time to switch to using the new system, after which access to the old system was denied them. To the followers of the type B leaders who had reverted to using the old system, this seemed to be

the push they needed to fully adopt the new system as their own. These workers soon became comfortable with, and accustomed to using the new information system. The majority of remaining the type A leaders' followers realised that they had been fighting a losing battle and they gave up their resistance. After a short while, they became equally comfortable with, and accustomed to, using the new information system (Table 20). Their leaders expediently became type B leaders.

Just a few type A leaders' followers remained. To them, their resistance had become a matter of principle. Urged on by their followers to convey their discontent to the organisation's management, the few remaining type A leaders met with management. The managers delicately informed the leaders that, by then, the project had run for more than two years, during which all employees had been given ample opportunity to participate and to comment on the intentions, content and procedures related to the change. Since their followers had chosen not to participate then, their objections and resistance now seemed rather unreasonable. The managers added that the organisation's interests of implementing this new system were very high. The leaders refused to be persuaded and insisted that their followers were wronged by management that showed too little consideration for their followers' emotions and points of view. The discussion seemed at a stalemate. Then, one person, who had not spoken earlier during that meeting, addressed the leaders. He explained to them that their employer has decided for this new system to be used. "*Now, it seems that you have only two options: 1. use this new system, or 2. seek employment elsewhere*." This stunned the spokespersons into speechlessness, and even startled the other attendants of the meeting. In one instance, the resistance was broken. After having regained their composure, management representatives affirmed the two options that had just been brought forward, albeit more diplomatically. Fearing the loss of their own position more than fearing the loss of their followers' favour, the leaders switched their attitudes directed towards pleasing and appeasing their employer rather than pleasing and appeasing their followers. They conveyed their defeat to their followers. Consequently, ultimately, one or two followers left the organisation and some were transferred to other positions within the organisation. All remaining organisation members reconciled themselves to the new situation, including to using the new information system to the best of their abilities. After a while, even they admitted that using the new system was not such an ordeal as they had previously imagined, even though some of them insisted that their voices had not been given a proper hearing.



EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
New FA	70	70	70	70	70	70	70	70
Old FA	50	30	40	30	30	40	50	40
Result							↑	

Table 22: Average overall attitudes after embedding and habituation

4.7.3 Case Evaluation

Fortunately, in this case, the new information system appeared to provide much of the functionality and ease of use that management had expected it to do. Given those circumstances, the constructive approach of the type B leaders lined up their followers better for the prospective change, fostering smooth transition from the initial organisational state to the new situation.

Type A leaders' obstructive approach appeared conducive to organisation members' resistance to prospective change, increasing the risk of such change to fail. Ultimately, most remaining type A leaders and their followers perceived the quality of their relationship with their current employer to be higher than alternatives known to them. This made them give up their protest and resistance to the organisational change. Even under the given circumstances in which the new technology did live up to many of its promises, followers of type A leaders needed to play 'catch up' with the rest of the organisation, since they had fallen behind in preparing themselves emotionally and functionally for the new situation.

The proposed Elementary Model of Organisational Processes (EMOP), can relate to more than one organisational process at one time, as was the case with the groups of Type A and Type B leaders. EMOP can even relate to all organisational processes combined, as was demonstrated with the organisational intervention.[41] At each level, from each vantage point, certain EMOP variables are related to one another and manipulation of one or more EMOP variable tends to be associated with changes in one or more other EMOP variables.

[41] Since the EMOP value patterns of different organisation members within a group or organisation will be different from one organisation member to another, average value patterns are used to represent the average group, or average organisation attitude levels.

When human beings act as free agents, certain attitudes correlate strongly with certain human behaviour. Consequently, free agents adopting a certain attitude can behave in realisation of their own wishes or fears. To prevent such attitudes from compromising intended organisational interventions, one could try to condition the attitudes of those involved by trying to optimise all EMOP aspects, thus affecting human behaviour and outcomes. Another method to prevent such attitudes from compromising intended organisational interventions is to restrict organisation members' abilities to act as free agents, for instance by removing the option of *Voice*, leaving merely the options *Exit* or *Loyalty* (Hirschman, 1970). In this case of implementing a new ERP system, restriction was incurred by removing the older systems, or denying organisation members access to those means, making it impossible for them to act as they always have done and forcing them either to adopt the changes, or to seek employment elsewhere. This is bound to result in a grievance period, the duration of which depends much on the benefits of the organisational change and on possibilities to reap those benefits. After this grievance period, a new equilibrium in EMOP values came into being.

Restricting organisation members' ability to act as free agents may also be done via the other variable of structure, leadership. Strong, hands-on leadership may also persuade or force organisation members to behave in favour of the purposed direction, fostering the organisational intervention.

Charismatic leadership tends to appeal to organisation members' emotions & mood, in part by means of *mood contagion* (Bono, Ilies, 2006). Since such appeal tends to be rather fleeting, its effects may last shorter than, for example, restricting workers' freedom of action. This may be disadvantageous for organisational interventions that take a long period to fully implement.

4.8 Case 3: Self initiated change

4.8.1 Introduction

Context:
An international manufacturer of fuel injection pumps employs a number of timers. Those timers are assigned to perform several quality inspections on assembled pumps and to determine and mark the optimum alignment with the engines to which they are to be fitted. Each timer must process a specified number of fuel pumps per working day.

F

EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
FA	70	70	70	60	70	70	60	65

Table 23: Initial average attitudes of timer group

To do this work, the timers are directed to strictly follow certain procedures. Shortly after a new timer was appointed, he found out, by means of experimentation, that the same results can be obtained by following a shorter list of self-designed procedures, making the job easier and more enjoyable.

Purpose:
Make work easier and more enjoyable.
Unit of analysis
In this case, focus is on attitudes of one group of followers. These attitudes are approached and indicated as follows.

- FA = Followers attitudes', as perceived, on average, by a group of followers;
- LEFA = Leader's estimate of Followers' attitudes;
- LWFA = Leader's wished Followers' attitudes (how L wishes F's attitudes to be to bring about the desired behaviour and results).

4.8.2 Proceedings

Intervention:
The new timer switched to following his self-designed procedures and shared this with his colleagues who willingly adopted those new procedures, since doing so enabled them to strain themselves less, producing the same output.

F

Intervention						↓	↑	
EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
New FA	70	70	70	70	70	65	70	65
Old FA	70	70	70	60	70	70	60	65

Table 24: Working smarter, and less

Management response

After a while, management came to know that new procedures were followed, upon which they immediately prohibited doing this job 'the easy way' for fear of jeopardising product quality, giving customers cause for dissatisfaction and, ultimately, negatively affecting business results. The timers insisted that following these new procedures did not compromise quality, and quality control affirmed this to be true. Ultimately, the new procedures were approved, but since following them made the work easier, the specified number of fuel pumps each timer needed to process daily, was raised by 20%. According to management, this would lower production costs, enabling lower product prices and/or increasing company profits.

L

Intervention						↑		
EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	70	70	70	70	70	80	70	80
LEFA	70	70	70	65	70	70	60	65

Table 25: Management's expectations

Timers' counter response

Higher production demands took away the benefits of the new procedures for the timers, who reverted to using the old procedures, assuming that, in that case, they would need to deliver only the older, lower production levels (and secretly use the new procedures to make work easier). This incident lowered their opinion of their leaders (L), causing them to become less confident of their leaders' benevolence towards them (TC). The incident also made the timers feel rather bad (EM), not in the least because management now insisted on following the new procedures, or at least to raise productivity by 20%. Since the timers would not share in the benefits

of such a production increase, and even would create 20% staff redundancy amongst them if they would agree to the production increase, the timers were unwilling to meet management's demands on this issue.

F

EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
New FA	50	70	60	50	60	65	70	65
Old FA	70	70	70	70	70	65	70	65
Result	↓							

Table 26: Effect on timers

Management's counter response

Management acknowledged that the newly assigned timer had capabilities beyond the position of timer and promoted him to a position in which he could serve the company better. His promotion reduced the number of timers and the remaining timers were ordered to do the same total amount of work, with less people to do so. Management realised that this would initially disappoint the timers (LEFA), but was confident that the timers would come around soon, and new equilibrium would be established (LWFA).

L

Intervention	↑							
EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
LWFA	70	70	70	70	70	80	70	80
LEFA	60	70	65	55	65	75	65	70

Table 27: Management's estimates of future equilibrium

By following the new procedures, meeting the new production levels took these timers almost as much effort as meeting the old production levels by following the old procedures. Still, the timers' opinion of their leaders (L), their confidence in their leaders' benevolence towards them (TC) and the extent to which the timers experienced their work as pleasurable (EM) did not fully bounce back to the initial levels.

EMOP Var.	L	AT	Str	EM	TC	HB	Apt	O
New FA	60	70	65	55	65	75	65	70
Old FA	50	70	60	50	60	65	70	65

Table 28: Actual new equilibrium in average attitudes of timer group

4.8.3 Case Evaluation

In this case, intra-individual non-hierarchical leadership was provided by the newly assigned timer, who demonstrated a sufficient amount of expertise to lead his colleagues to follow his example in following the new procedures rather than to keep following the old procedures. Even though aptitude may tend to correlate positively with human behaviour, in real terms, working smarter may instead lighten workloads without necessarily annulling this advantage by performance increase. Such lack of motivation to perform better despite of having the opportunity to do so, correlates positively with the absence of obvious (economic) stimuli for organisation members to increase performance (Mikulić et al., 2013), such as in the public sector and in position-independent equal reward environments, as under a strict communistic regime.

4.9 Conclusion

Even if values of linking pairs of EMOP variables statistically relate to one another according to the formula $\alpha + \beta \, . \, V_X + e$, value change in one EMOP variable not automatically provokes value changes in all other EMOP variables. Value change in one EMOP variable can affect anything in between none or all other EMOP variables, depending on both the nature of the attitude to which the value change relates as well as the cause of the value change.

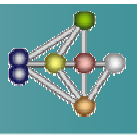
It seems reasonable to assume positive correlation between organisation members' willingness to promote achieving organisational goals and their knowledge of those goals, of the meaning of those goals and of how they can contribute to achieving those goals. More chance of this willingness may be expected from organisation members knowing that they would personally gain by promoting achievement of organisational goals. Stated

differently: workers are more likely to promote achieving organisational goals if those goals are commensurate with their own, individual goals. Aligning organisation members' goals with the organisation's goals *can* make good business sense.

An organisation is effective to the extent of its match between its results and the purpose for its existence. This holds true for the organisation as a whole as well as for the organisational processes that constitute the organisation. An organisation is efficient to the extent in which the organisation consists of processes that are strictly necessary to reach the organisational goals and the extent to which those processes are geared to one another. In Case 1 the process of drawing up texts was not sufficiently effective, since results, intended by the leader, were not obtained, while the available means were not optimally utilised to achieve that goal. In Case 3, the process of timing fuel pumps was effective, even after the change that was initiated by the timers. However, after that change, that process appeared to have been insufficiently efficient, according to management, since it had revealed unused labour potential. After all, by following the new procedures, the timers still restricted themselves to doing what they were meant to do, namely timing a certain amount of fuel pumps, but it just made their work less demanding, allowing them to work at a slower pace.

The dynamics of value changes depend much on the magnitude of the attitudes in question. For instance, in Case 1, events and reported value changes took place within a matter of weeks, in Case 3, in months and in Case 2 several years. This all depends on the context within which one examines values of EMOP variables. This context can be varied by varying measurement items. When using the EMQ, this could be done with or without maintaining the default item set, adding or replacing measurement items, depending on the context one wishes to focus on.

5 First Empirical Examination



5.1 Introduction

The concept of derivatives of structure as a source of influence on Human Behaviour (Chapter 2) was applied in constructing an Elementary Model of Organisational Processes. The variables of that model are conceptualised and operationalised (Chapter 3) and propositions about the mechanics of this model are devised (Chapter 4). So far, much of this has been hypothetical. Acquiring more factual knowledge about these matters requires empirical evidence. Obtaining such evidence evidently demands conducting empirical research, the findings of which may also contribute in redefining, refining and complementing the propositions. Aware of the profusion of questions that one might imagine, and at the same time, cautious of being too ambitious of what can be achieved within this particular research, this first empirical examination is demarcated by focus on the main hypotheses regarding the proposed Elementary Model of Organisational Processes that have been brought forth so far. These hypotheses are:

1. Basically, organisational processes can be described as predominantly positive relations between the variable Structure, composed of Leadership and Applied Technology; the variable Trust & Confidence; Human Behaviour; Emotions & Mood; Aptitude; Circumstance and Outcomes;
2. EMOP variables are interconnected as illustrated in figure 6;
3. Elementary model variable values can be measured by applying the Elementary Model Questionnaire;

5.2 Method – Testing hypotheses

For each of the listed hypotheses, the research method and reasoning for that method is reported, followed by describing the method of this quantitative research.

Supposition 1.
Testing this hypothesis is based upon the following basics:

a. Since variables of organisational processes, by definition, must correlate with one another, variables that do not correlate with other variables cannot inherently be part of organisational processes;
b. In a complete model, representing general (continuous) processes, all variables together should mutually correlate significantly and substantially;
c. The variable Structure correlates significantly differently with other EMOP variables than the elements from which it is composed (Leadership and Applied Technology) do, separately.

Method supposition 1
Quantitative analysis is conducted to examine mutual correlations of EMOP variables. Variables not correlating significantly and substantially with any of the other identified variables, unlikely belong in the model as part of a description of general organisational processes. If all (remaining) variables do not mutually correlate significantly and substantially, then one or more significant variables are likely to be either missing from, or superfluous within the model.

To examine whether the variable Structure behaves differently than the elements from which it is composed, the relationship between Leadership and Applied Technology and the other EMOP variables is examined by focus on Leadership and Applied Technology as separate elements, as well as by focus on those elements combined into one variable 'Structure'.

Supposition 2
Testing hypothesis 2 is based upon the following basics:

a. Correlation between variables is stronger as variables are more closely linked to one another.
b. Variables that do not correlate with one another significantly and substantially are unlikely to be strongly connected to one another;

Method supposition 2
Quantitative analysis is conducted to examine correlations between EMOP variables. Variables, not mutually correlating significantly and substantially, are considered not to be directly linked to one another. Correlation differences likely occur between different populations and even between different measurements within one population. Therefore, minor differences between these findings and what the model (figure 6) prescribes, will not be cause for rejection of this hypothesis.

Supposition 3
Testing hypothesis number 3 is based upon the following basics:

a. Using the Elementary Model Questionnaire (EMQ) will yield applicable data from targeted populations;
b. Precaution is taken to reduce risk of respondent bias;
c. Checks are in place to distinguish valid responses from invalid responses;
d. Precaution is taken to reduce risk of researcher error;
e. Respondents' objection to EMQ items is low;
f. The EMQ responses can be quantified such that EMOP variables are valued to a common denominator.

Method supposition 3
Authorities of targeted populations were invited to examine the EMQ and were asked to invite representatives of their organisation to fill in the questionnaire.

EMQ Items were offered uncategorised, and in mixed direction (Ch. 3).

The EMQ was offered as an electronic survey, supported by software that automatically rejects responses that are complete for less than 75%.

Further data processing, such as converting the data into variable values of a common denominator, is also supported by computer software, reducing risk of researcher error.

On the EMQ, respondents were invited and enabled to submit questions or remarks with regard to the survey.

5.3 Method - Total quantitative research

By applying the Pearson correlation coefficient (Pearson et al., 1903) on data, collected by means of surveys, statistical correlations were examined and compared to EMOP propositions with regard to these correlations. Examination and comparison are based upon the idea that EMOP variables that correlate stronger with one another can be regarded as being more closely linked to one another than those aspects that mutually correlate weaker. To place these correlation values into context, also other statistics

of absolute EMQ values are examined, such as means, standard deviation, minimum and maximum value, range and median.

Data are examined for the total research population, as well as for separate sub populations, provided their data – as a separate data set – are deemed statistically significant.[42]

The primary unit of analysis is organisation members at operational level and their relationship with the organisation and with their supervisors.

The same data are approached from three different perspectives, by holding the survey of organisation members of three different organisation levels: non-managerial, supervisory and managerial/advisory. For each organisation level, a separate EMQ version is offered to respondents (Ch. 3). Each EMQ version is constructed to solicit the same information, focused on the same unit of analysis from respondents of these organisation levels.

Data collection

Data are collected both in The Netherlands and in the United Kingdom. To collect these data, all EMQ versions were translated into the Dutch language for Dutch respondents, while UK respondents were offered English versions. Consequently, six EMQ versions were offered, all aimed at the same unit of analysis and each item of each EMQ version measuring the same as the corresponding item of all other EMQ versions. Although interpretation differences may occur even when one subject views the same questionnaire twice, or when two subjects view the same questionnaire, attention is given to reduce these risks by using plain language. In addition, with regard to the different language versions, effort is made to prevent semantic or pragmatic differences between the language versions, to optimise chances of measuring the same in each language version. This is done by carefully selecting the wording of both language versions, as well as by inviting and enabling respondents to submit questions or remarks about the survey.

Data are collected electronically, using a specially designed Internet application (web survey). This computer software application was available on-line full time during the research period, allowing participants to respond at their convenience. All survey data are collected electronically, which

[42] For correlations, this significance is either at the 0.01 or 0.05 level (2-tailed).

allowed further electronic data processing, limiting the need of retyping or other manual handling of the data, reducing risk of (typing) errors.

Compared to other survey methods such as mail survey, telephone survey and in-person survey, Schutt (2009), named the following advantages of a web survey:

- Low costs
- Quick implementation
- Low risk of interviewer distortion
- Low risk of social desirable bias
- High ability to control question sequence
- Low ability to include tedious, boring questions
- Convenience for respondents to participate (any time, any place)

As one of the disadvantages of a web survey, compared to the other survey methods listed above, Schutt named the little knowledge researchers have about the extent to which respondents represent the total population. To mitigate that disadvantage to some extent, on each EMQ version, three demographic questions are posed to examine to what extent the respondent population mirrors the total population with regard to those demographics. Those questions relate to respondents' age, tenure and gender.

Along with the questionnaires, an explanatory page was presented containing information about the research purpose and relevant concepts. Little detail was given to participants about why certain statements or questions were included in the survey, to mitigate risk of respondent bias caused by respondents answering as they believed they should, instead of answering as they felt or wanted (with the intention of having respondents focus on answering the questions, rather than on manipulating research findings).

Criteria for population selection
To reduce risk of organisational or process characteristics affecting research findings, data were collected from multiple organisations matching the following population profile:

- Organisational processes taking place within a hierarchy (having both leaders and followers);
- Technology applied within the organisational processes and a clear and shared understanding of all respondents of what is meant when reference is made to technology applied within the organisational processes in which they partake.
- Technology is important, but not critical in the sense that organisational processes will come to a complete standstill when the technology is not available (such as in automated processes);
- Same or similar organisational processes (to allow the collected data to be regarded equally);
- Organisational processes and environments that enable organisation members to act as free agents.

Recruited populations
Considering the profile just mentioned, populations were sought within the public and semi-public sector, such as city councils, provincial councils and educational institutes. Participating organisations were the University of Applied Science Leiden, in the city of Leiden, The Netherlands, the Leeds (UK) city council, The Province of Zeeland, and the Province of Noord-Brabant.

Preparation
All questions and propositions on the questionnaires were mixed in direction and in category to reduce risk of structural error, due to response tendencies.

The actual survey was preceded by a pretest that consisted of presenting the questionnaires to a small selection of individuals that were deemed to represent the total targeted population. Pretest participants were invited to express critique, pose questions or submit suggestions related to form and/or content of the questionnaire. Pretesters could state, for example, that a specific question was unclear or ambiguous, or that it would raise unfounded expectations.[43] An electronic pretest version was created and technically tested before conducting the pretest. The pretest led to rejection

[43] Organisation members can be sensitive to being posed certain questions. The thought that they themselves, their work or the work of others might be subject of investigation, may stir emotions. In addition, inadvertently, expectations of improvement can arise when respondents feel they have expressed their dissatisfaction about certain matters.

of one survey item, which was suspected of being too unclear or ambiguous to respondents.[44] After having completed the pretest, the questionnaire was adjusted accordingly and put through technical testing before inviting the targeted research population to participate in the survey.

Research Period
The pretest was conducted between 12 July 2011 and 29 July 2011. The main data collection started on 9 August 2011 and ended on 5 September 2011.[45] A third collection run started on 1 November 2012 and ended on 15 January 2013.

5.4 Data

Quantitative data were collected by means of several surveys, using an early EMQ version that differed little from the pretest version. The EMQ consists of a number of questions and propositions. Apart from answering three demographical questions (related to the respondents' age, gender and tenure with that organisation), respondents were asked to express their level of agreement with each item on a 5-point scale.

Data collection
Pretest data were received from 14 respondents. Subsequently, survey response was received from 144 individuals bringing the result to 158. The third data collection yielded 34 responses, making a total response of 192 from all sub populations combined.

After commencement of the survey, electronic data collection was monitored for technical and procedural processing, response count and response flow. Remarks made by respondents were also monitored and relevant information obtained from those remarks was fed back to coordinators within the participating organisations.

After data collection, all responses were tested for completeness. Questionnaires that were not completed for at least 75% were rejected as invalid response. Unanswered questions on questionnaires that otherwise had been completed for at least 75% were deemed as medial answers

[44] That item was excluded from subsequent EMQ updates and from further research.
[45] This is referred to as 'main data collection' for no other reason than that this yielded the highest response amount.

(agree/disagree, or "*I don't know*"). Next, all response was directed one way (from negative to positive) to allow certain data analysis methods to be applied. For each EMOP variable, values of the corresponding EMQ items were collected, compiling the respective variable values.

Two responses did not pass initial reliability checks and were rejected, leaving 190 valid responses.

Data were categorised and processed by which each EMOP variable was valued and converted into a common denominator. This denominator is a percentage of the theoretical maximum value of each variable. The possible values and value variation depend on the number of items from which they are comprised. For instance, a variable value measured by one survey item, on a 5-point scale, can yield either one of the values: 20, 40, 60, 80 or 100 (100% / 5). A variable value measured by two survey items, averaging both values, doubles the possible value variation, ranging it from 20 – 100 in increments of 10. When valuing multi-item variables in percentages on a 5-point scale thus, the variables always have a threshold value of 20. After all, the lowest response is 1 and the highest 5, where 5 is a maximum score of 100%, making 1 1/5 of 100% = 20%. This would restrict the response range to 20 – 100. To mitigate this threshold, after establishing the average response as a percentage of the maximum valuation, the threshold value of 20 is subtracted, leaving a range of 0 – 80, after which that result is factored by 10/8, to obtain a response range of 0 – 100.[46]

Data preparation
Summarising data preparation, before starting actual analyses, the following steps were taken to prepare the research data.

- Retrieve data;
- Check validity;
- Direct data;
- Compound variable values;
- Convert values to a common denominator (percentages).

The structural components (Leadership and Applied Technology) and their relationship with the other EMOP variables will be examined as separate

[46] In future research, different value ranges can be used for analyses, for instance allowing the inclusion of negative variable values to examine the effects of counter productivity.

elements, as well as a combination making up one variable Structure. This variable represents attitudes towards a combination of the structural components: Leadership and Applied Technology. Mathematically determining the value of one variable from the values of two other elements can be done in many ways. In this chapter, during this research stage, for the variable Structure, these ways have been limited to averaging and multiplying the values of the structural components. These resulting variables are referred to as Structure(AVG) and Structure(X) respectively. Structure(AVG) obtains its value as result of (Leadership + Applied Technology) / 2. Structure(X) obtains its value as result of (Leadership * Applied Technology) / 100. This causes the values of both variations of the variable Structure to conform to the common denominator, within the 0 – 100 range.

5.5 Results

General Statistics

Table 29 contains information about value dispersion and central tendencies for the total research population. For the sub populations, this information is listed in Appendix E. The potential value range of each variable was 100. The total population consists of all valid responses of sub populations combined (N = 190). In the following tables, the sub populations are referred to as either B, H, or P, indicating:

- B-Population: responses of employees of the Provincial governmental administration office of Noord-Brabant (N = 143)
- H-Population: - responses of employees of University of Applied Science Leiden (*Hogeschool Leiden*) (N = 34)
- P-Population - pretest data = responses of employees of the City of Leeds and the Province of Zeeland (N = 13).

Correlation
Correlation amongst EMOP variables in the collected data, including the generated versions of the variable Structure, is listed in Appendix F. Note that the variables Structure(X) and Structure(AVG) are both derived from Leadership and Applied Technology and that substantial correlation between those elements should therefore be expected. In addition, the

variable Aptitude consists of elements of other variables, which also affects correlation between Aptitude and those other variables.[47]

	N		Mean	Median	Std. Dev.	Var.	Range	Min.	Max.	Sum
	Valid	Missing								
Leadership	190	0	54.03	55.00	12.96	167.96	80.00	15.00	95.00	10265.00
Emotions & Mood	190	0	53.95	56.25	12.00	143.89	68.75	25.00	93.75	10250.00
Human behaviour	190	0	53.49	54.17	14.06	197.67	95.83	0.00	95.83	10162.50
Perceived Ability	190	0	47.86	50.00	14.65	214.69	93.75	0.00	93.75	9093.75
Perceived Benevolence	190	0	46.91	50.00	11.94	142.51	62.50	18.75	81.25	8912.50
Perceived Integrity	190	0	71.74	71.88	13.62	185.48	62.50	37.50	100.00	13631.25
Applied Technology	190	0	45.57	41.67	18.32	335.58	83.33	0.00	83.33	8658.33
Circumstance	190	0	43.47	45.00	13.02	169.62	80.00	0.00	80.00	8260.00
Trust	190	0	63.32	62.50	13.56	183.89	75.00	25.00	100.00	12031.25
Outcomes	190	0	57.79	58.33	12.74	162.38	70.83	25.00	95.83	10979.17
Aptitude	190	0	52.26	53.57	13.01	169.14	82.14	7.14	89.29	9928.57
Structure(X)	190	0	24.84	23.13	12.40	153.84	67.50	0.00	67.50	4719.17
Structure(AVG)	190	0	49.80	49.58	11.70	136.83	65.00	17.50	82.50	9461.67

Table 29: General statistics of the total research pop. (rounded at 2 dec. N = 190).

Population	L	AT	StrX	Str	HB	Apt	EM	TC	O
Total	54.03	45.57	24.84	49.80	53.49	52.26	53.95	63.32	57.79
B	54.13	48.84	26.79	51.48	55.22	54.07	54.46	64.69	58.45
H	51.77	34.80	17.66	43.28	50.00	47.48	54.41	59.74	56.50
P	58.85	37.82	22.15	48.33	43.59	44.78	47.12	57.69	53.85

Table 30: Average EMQ response values for EMOP variable per population.

The following data are extracted from Tables 60 – 63, of Appendix F.

EMOP Linkage

The main correlations for each EMOP variable are as follows.[48]

[47] These are all other EMOP variables, except for Emotions & Mood and Circumstance.

[48] Findings from P-population (pretest) are not included as separate findings, since most of those findings, on their own, are deemed not to be significant and/or insubstantial.

Leadership

Total Population (N=190)		B-population (N = 143)		H-Population (N=34)	
Structure(AVG)	0.626**	Structure(AVG)	0.669**	Structure(AVG)	0.516**
Structure(X)	0.571**	Structure(X)	0.653**	Emotions & Mood	0.387*
Outcomes	0.455**	Human behaviour	0.515**		
Trust	0.417**	Outcomes	0.475**		

Table 31: Main correlations between Leadership and other EMOP variables.

Applied Technology

Total Population (N=190)		B-population (N = 143)		H-Population (N=34)	
Structure(X)	0.847**	Structure(AVG)	0.839**	Structure(X)	0.840**
Structure(AVG)	0.834**	Structure(X)	0.828**	Structure(AVG)	0.735**
Aptitude	0.474**	Aptitude	0.434**	Circumstance	0.452**
Circumstance	0.377**	Human behaviour	0.399**		

Table 32: Main correlations between Applied Technology and other EMOP variables.

Human Behaviour

Total Population (N=190)		B-population (N = 143)		H-Population (N=34)	
Outcomes	0.616**	Outcomes	0.601**	Outcomes	0.600**
Aptitude	0.606**	Structure(AVG)	0.584**	Trust	0.542**
Trust	0.567**	Aptitude	0.581**	Aptitude	0.462**
Structure(AVG)	0.498**	Structure(X)	0.566**		

Table 33: Main correlations between Human behaviour and other EMOP variables.

Emotions & Mood

Total Population (N=190)		B-population (N = 143)		H-Population (N=34)	
Human behaviour	0.478**	Structure(X)	0.488**	Trust	0.427*
Trust	0.469**	Human behaviour	0.476**	Leadership	0.387*
Structure(X)	0.442**	Structure(AVG)	0.465**		
Structure(AVG)	0.422**	Outcomes	0.456**		

Table 34: Main correlations between Emotions & Mood and other EMOP variables.

Aptitude

Total Population (N = 190)		B-Population (N = 143)		H-Population (N = 34)	
Perceived Ability	0.795**	Perceived Ability	0.823**	Outcomes	0.638**
Outcomes	0.700**	Outcomes	0.695**	Structure(AVG)	0.472**
Human Behaviour	0.606**	Human Behaviour	0.581**	Perceived Ability	0.463**
Structure(AVG)	0.566**	Structure(AVG)	0.521**	Human Behaviour	0.462**

Table 35: Main correlations between Aptitude and other EMOP variables.

Trust & Confidence

Total Population (N=190)		B-population (N = 143)		H-Population (N=34)	
Human behaviour	0.567**	Outcomes	0.538**	Human behaviour	0.542**
Outcomes	0.523**	Human behaviour	0.509**	Emotions & Mood	0.427*
Aptitude	0.474**	Structure(AVG)	0.509**	Aptitude	0.360*
Structure(AVG)	0.473**	Structure(X)	0.480**		

Table 36: Main correlations between Trust & Confidence and other EMOP variables.

Outcomes

Total Population (N = 190)		B-Population (N = 143)		H-Population (N = 34)	
Aptitude	0.700**	Aptitude	0.695**	Aptitude	0.638**
Human Behaviour	0.616**	Human Behaviour	0.601**	Human Behaviour	0.600**
Perceived Ability	0.569**	Perceived Ability	0.591**		
Structure(AVG)	0.524**	Structure(AVG)	0.554**		

Table 37: Main correlations between Outcomes and other EMOP variables.

Structure(X)

Total Population (N=190)		B-population (N = 143)		H-Population (N=34)	
Applied Technology	0,847**	Applied Technology	0,828**	Applied Technology	0,840**
Leadership	0,571**	Leadership	0,653**	Aptitude	0,428*
Aptitude	0,545**	Human behaviour	0,566**	Circumstance	0,427*
Outcomes / Human behaviour	0,496**	Outcomes	0,527**	Perceived Integrity	0,376*

Table 38: Main correlations between Structure(X) and other EMOP variables.

Structure(AVG)

Total Population (N=190)		B-population (N = 143)		H-Population (N=34)	
Applied Technology	0,834**	Applied Technology	0,839**	Applied Technology	0,735**
Leadership	0,626**	Leadership	0,669**	Leadership	0,516**
Aptitude	0,566**	Human behaviour	0,584**	Aptitude	0,472**
Outcomes	0,524**	Outcomes	0,554**	Perceived Integrity	0,341*

Table 39: Main correlations between Structure(AVG) and other EMOP variables.

EMOP Architecture and Mechanics

To find empirical support for the proposed EMOP architecture, in the data collected, we needed – at least –significant correlation between the following variables.

- Trust & Confidence ←→ Human Behaviour
- Human Behaviour ←→ Emotions & Mood

- Human Behaviour ←→ Outcomes
- Aptitude ←→ Human Behaviour
- Aptitude ←→ Outcomes
- Leadership ←→ Emotions & Mood
- Leadership ←→ Aptitude
- Applied Technology ←→ Aptitude
- (Leadership, Applied Technology, Emotions & Mood, Human Behaviour, Aptitude) ←→ Trust & Confidence

For these combinations of EMOP variables, the Pearson correlation coefficients are listed in Table 40 for the total research population and for the sub population B.

The findings shown in Appendix F and Table 40 seem to support the EMOP architecture as it has been proposed.

Furthermore, the variable Circumstance correlates with all other variables combined (R = 0.555 in the total population and R = 0.589 in B-population).

	Total	B
Trust ←→ Human behaviour	0.567**	0.509**
Human behaviour ←→ Emotions & Mood	0.478**	0.476**
Human behaviour←→ Outcomes	0.616**	0.601**
Aptitude ←→Human behaviour	0.606**	0.581**
Leadership ←→ Emotions & Mood	0.374**	0.420**
Leadership ←→ Aptitude	0.351**	0.353**
Applied Technology ←→ Aptitude	0.474**	0.434**
Structure(X) ←→ Emotions & Mood	0.442**	0.488**
Structure(AVG) ←→ Aptitude	0.566**	0.521**
Trust ←→ Mix[49]	0.652**	0.634**

Table 40: Correlation of key linking EMOP variables (Total: N = 190; B: N= 143)[49]

[49] All values in this table represent Pearson correlation coefficients.

5.6 Conclusions

Based on the results, the following conclusions are drawn with regard to the hypotheses, presented at the beginning of this chapter.

Hypothesis 1:
Basically, organisational processes can be described as relations between the variable Structure, composed of Leadership and Applied Technology; the variable Trust & Confidence; Human Behaviour; Emotions & Mood; Aptitude; Circumstance and Outcomes;

Each of the identified EMOP variables correlates with one or more other EMOP variable significantly. Some of these correlations are more substantial than others.
All variables together mutually correlate significantly and substantially.

The quantitative findings revealed strong correlation between Aptitude and Outcomes. They also showed that the structural components (Leadership and Applied Technology) combined into one variable Structure, affect certain other model variables stronger than each of those elements does separately. When examining the separate structural components, (Leadership and Applied Technology) and their correlation with other EMOP variables, some correlation appeared between Leadership on the one hand and Outcomes and Human behaviour on the other hand, and some correlation between Applied Technology on the one hand and Aptitude and Circumstance on the other. Once combined, the product value of those two components, referred to as Structure(X), and the average value of those two components, referred to as Structure(AVG), both appeared to correlate stronger with *all* other variables of the total population (Table 60). This seems to indicate that respondents' attitudes towards structure, as a combination of various structural aspects, differs from their attitudes towards those individual structural components. Their attitudes towards those elements combined are more pronounced than their attitudes towards those elements individually.[50]

Hypothesis 2:
The identified variables describing generic organisational processes are interconnected as illustrated in figure 6.

[50] There appeared to be little difference between both versions of Structure (product and average), which is why they will be referred to as one variable from this point on.

Based upon correlation coefficients found for the collected research data, a rough sketch was made to illustrate the main links amongst respondents' attitudes towards EMOP variables (Figure 12). Figure 12 corresponds to a high extent with figure 6, which seems to support this hypothesis.

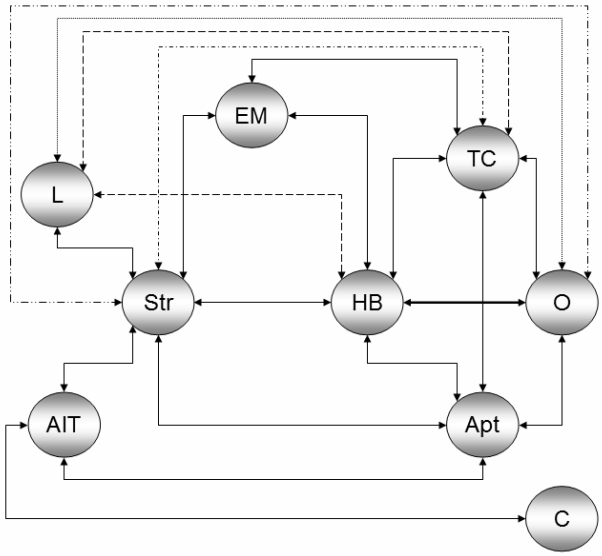


Figure 12: Rough sketch of main mutual *attitudinal* links between EMOP variables.[51]

Hypothesis 3:
The values of the identified variables can be measured by applying the Elementary Model Questionnaire.

EMQ application produced applicable quantitative data with regard to EMOP variables, as they have been operationalised (Ch. 3). Precaution is taken to reduce risk of respondent bias, for instance by presenting EMQ items on the questionnaires uncategorised, and in mixed direction (see Ch. 3).

Several checks were in place to distinguish valid responses from invalid responses, such as through support of the electronic survey by software that automatically rejected responses that are incomplete for more than 25%.

[51] C = Circumstance

To reduce risk of researcher error, further data processing, such as converting the data into variable values of a common denominator, is also supported by computer software.

Even during the pretest, respondent data and respondent feedback increased insight into how respondents interface with EMQ, which inspired to making several adaptations to the EMQ. Even though respondents questioned or objected to few EMQ items, their feedback and other data inspired to making further improvements to the measuring tool.

6 EMOP Application

6.1 Introduction

In the previous chapters, I reported having modelled, formalised, conceptualised, operationalised and empirically tested EMOP and its underlying assumptions. This chapter reports on an empirical check of the applicability of the model and the EMQ, and of re-examining the underlying assumptions. This examination was conducted by means of a case study, by collecting data from the same organisation twice, with a three-year interval. While some would refer to this as a longitudinal case study or as a trend study, others would object to doing so, because it consists of no more than two measurements, taken over time. Perhaps this can be described best as a *partial* trend study.

During this case study, quantitative measurements of EMOP variables taken in 2011 were examined, relative to quantitative measurements of EMOP variables taken in 2014 within the same organisation. This organisation was the Province of Noord-Brabant, a regional public body in The Netherlands. Data triangulation was carried out by means of survey, interviews and document analysis.

To pursue the research goals, the following propositions were tested:

1. EMOP is comprehensive;
2. EMOP results are supported by triangulation;
3. EMOP can be applied …
   a) indiscriminately;
   b) discriminately;
   c) longitudinally;
   d) at various development stages;
   e) in combination with other theories and techniques;
   f) for both generic and specific examination.
4. The EMQ …
   a) serves well for measuring EMOP variables;
   b) can be improved, e.g. with regard to item formulation.

5. EMOP's characteristics as a framework is …
   a) humanistic;
   b) socio-technical;
   c) attitudinal.

6.2 Background

In 2011, I measured and analysed EMOP variables on data collected from the Provincial government of Noord-Brabant, a regional public body in The Netherlands (N = 143),[52] while conducting research on organisational effectiveness relative to virtual leadership (Van Someren, 2011). As part of that research, I surveyed this organisation, for which I used an early version of the Elementary Model Questionnaire (EMQ), based on the proposed Elementary Model of Organisational Processes (EMOP). In 2014, I surveyed this organisation once more (N = 278), this time within the scope of a series of organisational changes that this organisation went through over the course of 2011 into 2014, as part of a reorganisational process that would take at least until 2015 to be completed. Utilising EMOP and EMQ for this research also, allowed me to compare measurements, taken in 2011, with new measurements of 2014.

6.3 Research population

In 2011, The Province of Noord-Brabant embarked on an organisation development journey with a programme that would run into 2015. The development activities were aimed at making the organisation leaner, more effective and more cost efficient, while improving working conditions for its employees. These changes were partly driven by the national government's austerity policy, affecting also local and regional public bodies. The changes were also driven by refocus on the organisation's goals and strategies, according to plans presented under the title: *Brabant's Agenda* (in Dutch: *De Agenda van Brabant*) (G.S. van Noord-Brabant, 2010; Noord-Brabant, 2012). Where organisation development is concerned, execution of those plans included changing tasks, organisational structure, and application and support of office automation tools. Bringing about culture change within the organisation was also part of the development plans.

[52] Henceforth referred as The Province of Noord-Brabant, or 'the Province'.

The primary research objectives regarding the organisation development activities of the Province of Noord-Brabant were to examine …:

1. … general effects on its organisation members of development activities, carried out between 2011 and the moment of re-examination in 2014;
2. … whether adjustment of the current organisation development course, midterm of the development programme, might contribute to achieving goals or to development of the organisation in general.

Even though I did counsel this organisation in 2011 and 2014 with regard to my research findings, I was not involved in the organisation development activities that took place in the intervening period.

6.4 Method

For this case study, both quantitative and qualitative research methods are applied. The quantitative research part consisted of a survey and of comparing its measurements with those, taken in 2011. Within this quantitative study, data are also analysed relative to qualitative data.

Qualitative data were obtained by document analysis and by feedback from survey respondents. Additionally, interviews are taken from a cross section of the organisation members of the Province of Noord-Brabant.

The unit of analysis is the Province of Noord-Brabant's organisation members at operational level and their relationship with the organisation and with their supervisors.

6.5 Data

Qualitative

Document analysis
The documents analysed are related to the organisation development activities that have taken place between 2011 and the moment of concluding this empirical research in 2014.

Interviews
In the period between 18 February 2014 and 4 March 2014, a cross section of organisation members of the Province of Noord-Brabant was interviewed. Interviewees were selected by the organisation. At the researcher's request, this selection consisted of:

- 2 members of the board of directors;
- 2 cluster managers;
- 2 representatives of supporting/consulting departments;
- 6 non-managerial organisation members.

The open-ended focused interviews had a 10-item base, primarily related to individual perceptions and attitudes and not to professional knowledge. Interviewees did not need to prepare for the interview. When applicable, interviewees were asked to amplify on given answers. A research assistant took the minutes of the interviews, while the researcher led the interviews. Due to time restrictions, not all items were put forward to all interviewees. The essential questions were posed to, and answered by, all interviewees (see *6.6* and *6.9*).

Qualitative Survey Data
On the electronic questionnaire forms, respondents were enabled and invited to place comments. Part of the respondents did so. Nearly 5% of all respondents made observations on part of the questionnaire, more than 7% of the respondents commented on the organisational developments within the Province of Noord-Brabant.

Quantitative

Quantitative measurements are taken by means of an electronic survey, based on a Dutch EMQ version. This survey is held between 19 February 2014 and 17 March 2014. Due to an update in 2014, the EMQ versions used in 2011 and 2014 are not identical to one another. Therefore, data comparison is limited to items of both versions that mutually correspond sufficiently (65.4%).

6.6 Brief outline of qualitative results

According to a board agreement between the national government and the provinces, all Dutch provincial governments were to narrow their previously broad focus to a primary focus on environmental-economic and cultural issues in relation to one another (environmental policy).

In 2010, the Provincial States (*Provinciale Staten*) decided on applying certain organisational changes in response to national government's budget cuts on regional government bodies, to criticism of various parties on the focus and functioning of the Province of Noord-Brabant, and to recommendations of various parties. Spearheads of these changes were:

1. Refocus on the organisation's goals and strategies, including its tasks and roles;
2. Economisation;
3. Sustainable investments in Noord-Brabant's future.

Based upon the belief that Western economy is highly knowledge driven, in effort to attract and retain businesses in the region, the organisation's mission is to remain at the European top of knowledge and innovation regions. The purpose of this mission is to guarantee sustained prosperity and well-being in Noord-Brabant and to promote sustainable regional development.

It was said that € 75 million structural spending cuts from altering activities, could not be fully realised before 2015 due to legal commitments, without stating how cuts would be realised in the interim (from 2011 – 2015).

The Province of Noord-Brabant's strategic information policy with regard to leadership, control, accountability and auditing had been regarded inadequate by the Southern Audit Office (Zuidelijke Rekenkamer, 2012).

A programme was set up, aimed at enabling organisation members to work independent of time, place and hardware platform (Noord-Brabant, 2013). This programme's official goal was to foster flexibility, efficiency and internal and external cooperation. During the midterm examination in 2014, flexibility seemed to have increased some, but the programme did not appear to have contributed significantly to reaching its other goals yet.

With regard to functioning of the organisation, the main goals of the intended organisation development were to make the organisation leaner, more effective and more cost efficient, while improving working conditions for its members. Execution of those plans started effectively in 2011, and included changing the organisational structure, tasks, and changing the application and support of office automation tools. Bringing about culture change within the organisation was also part of the development plans.

In 2014, employee satisfaction seemed to have improved some. This was probably stimulated by perception of organisation members that their working conditions had improved since 2011. The organisation had started to reduce its workforce by restricting new hires and hiving off 150 workers to public bodies that are more decentralised.

At different organisation levels, new behavioural directives were issued with regard to outcomes, attitude and behaviour. This was introduced under the acronym *ORA*, which stands for *O*wnership, *R*esult orientation and calling one another to *A*ccount. Putting this into practice has proven to be quite difficult. There is especially a high threshold to calling one another to account.

There is no consensus amongst interviewees about whether internal cooperation within the organisation has changed, compared to 2011. Some experience less internal cooperation, some experience more internal cooperation.

In theory, compared to 2011, the Province of Noord-Brabant's approach of external cooperation shifted from being an external inspectorate and subsidiser to becoming an equal partner. In practice, apart from occasional events, no real changes are perceived, and the organisation is still searching for ways to put theory into practice.

Internal flexibility has improved, judging by, for instance, the (internal) wave of job openings. There is more deliberate management on flexibility. Telecommuting has become easier and more accessible. This is said to give members more freedom and to create extra space. It is decided that managers should not hold one position longer than 5 years. They too, must remain fresh and versatile. On the other hand, internal flexibility is hampered by work force reduction. While internal mobility is improved, for instance due to judging workers more on aptitude and less on familiarity with certain content, existing contracts still lead in determining workers'

applicability for internal job openings. For instance, one, who has a 30-hour contract, can only apply for 30-hour contract job openings.

No evidence was found of improvement to the organisation's effectiveness or to its efficiency.

At different organisation levels, organisation members tend to place different emphasis on possible causes and solutions with regard to organisational deficiencies. Non-managerial employees tend to point at the Provincial Executives and organisational management as both causes and potential solutions. At higher organisation levels there is a stronger tendency to attribute a mismatch between what the organisation has to offer and what is demanded of the organisation to external causes and to see solutions more in adaptation of organisation members to cope with environmental changes, for instance by means of culture change within the organisation.

Part of all respondents in the survey commented on the organisational developments. Almost 73% of those comments were negative or disapproving in nature and 50% of the comments were about, or rather against, provided leadership relative to the developments. The emotional nature of many of these remarks made it apparent that the developments did not leave organisation members unperturbed. Since these remarks are made anonymously, authors held back less, colouring their remarks somewhat differently than information gathered from other sources.

Various qualitative results will be reported on in more detail in *6.9* in reference to triangulation.

6.7 Brief outline of quantitative results

In Table 41, Elementary Model variable values (*EMV*) are listed from the 2014 survey. Based on comparable differences, also 2011 *EMVs* are listed, on the same tenet as the 2014 values. Subsequently, value differences between both are listed as well as differences of 2014 values in percentages of 2011 values.

	Non-managerial				Supervisory				Management			
Variable	**2014**	**2011**	**<>**	**%**	**2014**	**2011**	**<>**	**%**	**2014**	**2011**	**<>**	**%**
Leadership	55.0	54.7	0.3	0.5	61.0	56.0	5.0	8.9	52.3	49.2	3.1	6.3
Emotions & mood	57.6	55.6	2.0	3.7	60.7	55.4	5.4	9.7	54.5	51.6	3.0	5.8
Human Behaviour	52.2	53.4	-1.2	-2.3	55.5	53.4	2.1	3.9	44.9	42.5	2.4	5.6
Applied technology	58.2	53.4	4.8	8.9	60.5	43.8	16.7	38.2	54.0	37.7	16.3	43.1
Aptitude	54.7	64.2	-9.5	-14.7	53.7	55.5	-1.8	-3.3	39.9	40.3	-0.4	-1.0
Trust & Confidence	55.9	55.2	0.7	1.4	56.3	53.1	3.2	6.0	51.3	45.0	6.2	13.9
Outcomes	53.5	59.5	-6.1	-10.2	59.4	58.3	1.0	1.8	45.8	49.0	-3.1	-6.4
Circumstance	51.0	40.3	10.7	26.5	51.5	41.8	9.7	23.2	47.7	31.0	16.7	53.9
Average	***54.8***	***54.5***	***0.2***	***1.7***	***57.3***	***52.2***	***5.2***	***11.1***	***48.8***	***43.3***	***5.5***	***15.2***

Table 41: Differences 2011 - 2014 Elementary Model variable values (*EMVs*)

Non-managerial (N = 239)
Supervisory (N = 28)
Management (N = 11)

(*Relative value decreases are printed in red.*)

General (absolute quantitative)
In 2014, assessments of respondents at all organisation levels were generally more positive than in 2011. This is even more prevalent for working conditions (Circumstance) and Applied Technology. In 2014, they were more negative about the available Aptitude than they were in 2011.

Per organisation level, there were striking differences (see Tables 41 - 42 and paragraph *6.9*). It is also notable that, despite improvements, compared to 2011, of all 2014 values, the maximum value was 61 (on a scale of 0 – 100). The lowest appreciation was 39.9. Part of this may be caused by the many facets that make up each EMOP variable and apparently, it is not easy to 'score' high on each of those aspects. Also, respondents tend to answer moderately, avoiding 'very' (good or bad) options (see Fig. 14).

Relative quantitative

The following EMOP correlations with change aspects are filtered, leaving data from respondents with tenure, exceeding 5 years.[53]

Position	A	B	C	Σ
Organisation members agree with the formal organisational goals.	59.62	58.04	59.09	59.4
The current approach for reaching organisational goals is the right approach.	42.99	50.89	56.82	44.3
Current work activities differ from those, three years ago.	64.23	64.29	56.82	63.9
Work is more enjoyable now, compared to three years ago.	58.68	59.82	68.18	59.2
Aptitudes fit work better now.	55.23	52.68	56.82	55
Personal ambitions match organisational goals better now.	57.85	57.14	54.55	57.6
The organisation now is better than it was 2 – 3 years ago.	53.14	62.50	65.91	54.6
Consequences for my work of an organisational change are well known prior to the change.	49.06	50.89	40.91	48.9

Table 42: Measurements change aspects

A= non-managerial, B= supervisory, C = management, Σ = all (no sum of the other columns)

- No substantial, relevant correlations were found between opinions on the changes on the one hand and gender, tenure or age, on the other hand.
- As organisation members find the current organisation better than it was prior to the changes, they agree more with the methods that were chosen to reach the organisational goals (0.5).
- Respondents perceiving their personal goals and ambitions to match the organisational goals better now, tend to like their current job better (0.5).
- Several other correlations are:

[53] N = 217

		Leadership	Emotions & Mood	Human Behaviour	Applied Technology	Aptitude	Trust & Confidence	Outcomes	Circumstance	Structure
Organisation members agree with the formal organisational goals	*R*	0.14	0.33	0.22		0.17	0.16	0.20	0.30	0.15
	S	0.04	0.00	0.00		0.01	0.02	0.00	0.00	0.02
The current approach for reaching organisational goals is the right approach.	*R*	0.23	0.23	0.17				0.16	0.17	
	S	0.00	0.00	0.01				0.02	0.01	
Work is more pleasant now, than it was three years ago.	*R*	0.31	0.41	0.31		0.19	0.38	0.26	0.33	0.27
	S	0.00	0.00	0.00		0.01	0.00	0.00	0.00	0.00
Aptitudes are now better aligned with work.	*R*	0.25	0.36	0.24		0.15	0.16	0.22	0.15	0.24
	S	0.00	0.00	0.00		0.03	0.02	0.00	0.03	0.00
Personal ambitions are now better aligned with organisational goals.	*R*	0.25	0.37	0.30		0.27	0.30	0.30	0.35	0.22
	S	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
The organisation is now better than it was 2 or 3 years ago.	*R*	0.30	0.38	0.24	0.24	0.25		0.30	0.21	0.34
	S	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
The consequences of an organisational change are known prior to the change	*R*	0.14	0.23	0.25	0.18	0.28		0.35	0.15	0.20
	S	0.04	0.00	0.00	0.01	0.00		0.00	0.03	0.00
R = Correlation coefficient, *S* = Significance										

Table 43: Correlations between EMOP variables, org. goals and change aspects.

6.8 Hypothesis 1: EMOP Comprehensiveness

Data are examined to learn whether all major aspects of organisational developments can be categorised under one or more EMOP variables and whether EMOP variables significantly and substantially mutually correlate.

Calling, once again, to mind the definition of an organisation as *an ensemble of human beings, procedures and tools, directed towards achieving commensurable goals*, one can recognise that the organisational development activities of the Province of Noord-Brabant could affect the organisation's:

- Staff characteristics;[54]
- Procedures;
- Tools;
- Goals.

At process level, these activities affected all EMOP components. Organisation members were assigned different tasks and responsibilities (Leadership), their technical means were altered (Applied Technology), some of which they utilised differently than they did before (Aptitude), some got to work with different colleagues on different teams (Human Behaviour) and at different locations (Circumstance), bringing forth different results than they did before (Outcomes). These developments and this new context affected the organisation members' Emotions & Mood, and led them to revalue their Trust & Confidence in their organisation, in its leadership, in their colleagues, in the applied technology and in themselves. These developments will be amplified on per EMOP variable next, when addressing triangulation results.

Mutual correlation EMOP variables

All EMOP variables mutually correlate positively with 0.01 significance (2-tailed). Consequently, value increase or decrease of one of those variables, tends to coincide with equally directed value changes in one or more other EMOP variables. The most significant correlations are listed below, categorised per EMOP variable.

- *Leadership*: Emotions & mood (0.5),[55] Human behaviour (0.5), Circumstance (0.4), Aptitude (0.4).[56]
- *Applied Technology*: This correlates most substantially with Aptitude (0.3).

[54] Examples are: composition, aptitude and attitudes.
[55] The correlation coefficients are rounded at one decimal. The correlations are given in order of weakening correlation.
[56] This means that, as respondents valued Leadership higher, they also valued other aspects, such as Emotions & Mood higher, and vice versa.

- *Structure*[57]: Emotions & Mood (0.5), Human Behaviour (0.5), Aptitude (0.4), Circumstance (0.4).
- *Emotions & Mood*: Circumstance (0.6), Human Behaviour (0.6), Outcomes (0.5), Leadership (0.5), Structure (0.5), Trust & Confidence (0.5), Aptitude (0.4).
- *Human Behaviour*: Aptitude (0.6), Trust & Confidence (0.6), Emotions & Mood (0.6), Outcomes (0.5), Leadership (0.5), Circumstance (0.5), Structure (0.5).
- *Aptitude*: Trust & Confidence (0.6), Human Behaviour (0.6), Outcomes (0.5), Circumstance (0.4), Emotions & Mood (0.4).
- *Trust & Confidence*: Aptitude (0.6), Human Behaviour (0.6), Circumstance (0.5), Emotions & Mood (0.5), Outcomes (0.5).
- *Circumstance*: Emotions & Mood (0.6), Trust & Confidence (0.5), Human Behaviour (0.5), Outcomes (0.5), Aptitude (0.4), Structure (0.4).
- *Outcomes*: Emotions & Mood (0.5), Human Behaviour (0.5), Aptitude (0.5), Circumstance (0.5), Trust & Confidence (0.5).

No known significant organisational development manifested itself that cannot be categorised as one of the EMOP variables.

6.9 Hypothesis 2: EMOP results are supported by triangulation;

In this section, report is made of comparing general results of quantitative EMOP measurements (using EMQ), to data from other sources, for falsification, confirmation or support.

- ***Leadership***

	Non-managerial				Supervisory				Management			
Variable	2014	2011	<>	%	2014	2011	<>	%	2014	2011	<>	%
Leadership	55.0	54.7	0.3	0.5	61.0	56.0	5.0	8.9	52.3	49.2	3.1	6.3

Table 44: Totalised EMOP measurements

[57] This variable is composed of the elements Leadership and Applied Technology.

More detailed relevant EMOP measurements indicated that:

a) [EMOP/EMQ →] Supervisors and managers are more positive than they were in 2011 about the extent to which organisation members knew what their supervisors expect from them.

b) [EMOP/EMQ →] Compared to 2011, non-managerial workers perceive higher dependency on their supervisors.

c) [EMOP/EMQ →] Supervisors are, more than they were in 2011, of the opinion that they provide just the right leadership.

a) Public attention given to this subject seems to have contributed to, or perhaps even led to, better understanding in workers what is expected of them.

[Document analysis→] *Acting upon a committee's recommendations (Lodders, 2008) and a subsequently settled board agreement between the national government and the provinces, it is decided that provinces will primarily focus on environmental-economic and cultural issues in relation to one another (environmental policy). Consequently, in between 2011 and 2015, the Province of Noord-Brabant will change and narrow its current broad focus to its social and economic climate as a place of business, aspiring to become a fully-fledged knowledge and innovation area. The following core activities are said to correspond with that focus.*

- *Environmental development and design (including water- and rural policy, nature, energy and climate);*
- *The region's accessibility;*
- *Regional economic policy;*
- *Culture.*

For these activities, the following basics are determined:

- *Clear and recognisable profile;*
- *Integral perspective;*
- *Added value;*
- *Individual responsibility; Cooperation.*

b) Even though <u>what</u> may seem clearer than it was in 2011, <u>how</u> still appears rather vague.

[Interviews→] *Shop floor workers needed more direction, for instance by leaders setting good examples. With regard to former organisation management, it was noted that they did not always do what they were good at, that they were not inspiring and did not always set a good example for the rest of the organisation. At*

all organisation levels, several members were searching for their new roles, relative to the organisational changes.

c) Leadership execution and interpretation tends to be highly subjective in nature.

[Interviews→] *Depending on which leader a worker has, workers are free either to contribute to realising the intended organisation development or to withdraw themselves from these activities entirely. Some leaders actively try to lead their workers into embracing and supporting the organisational changes, and other leaders do not. Certain freedoms will be limited once the provincial government building has been renovated and (almost) no one will have their own desk (expected to be in effect in 2015). For many organisation members, this is not an issue yet. For them, much has remained the same during the past three years: they still have the same boss, the same teams, the same work, and so on.*

- ***Applied Technology***

	Non-managerial				Supervisory				Management			
Variable	**2014**	**2011**	**<>**	**%**	**2014**	**2011**	**<>**	**%**	**2014**	**2011**	**<>**	**%**
Applied technology	58.2	53.4	4.8	8.9	60.5	43.8	16.7	38.2	54.0	37.7	16.3	43.1

Table 45: Totalised EMOP measurements

EMOP detail:
Respondents at all organisation levels feel (although in different degrees), more than they did in 2011, that organisation members have all the required technical means at their disposal, and that those means function as they should. (Low 2011 values seem to point more at decreased dissatisfaction than at increased contentment.)

[Document analysis→] *Because of the strategic importance of the combination of information provision and information and communication technology, in 2011, the Southern Audit Office conducted research on the Province of Noord-Brabant's strategic information policy. This research was primarily aimed at the basic requirements of that policy with regard to leadership, control, accountability and auditing. With regard to those aspects, the Southern Audit Office's judgement was quite disapproving (Zuidelijke Rekenkamer, 2012). This spurred the organisation on to commission a programme to improve the IT infrastructure and service.*

- ***Human Behaviour***

	Non-managerial				Supervisory				Management			
Variable	2014	2011	<>	%	2014	2011	<>	%	2014	2011	<>	%
Human Behaviour	52.2	53.4	-1.2	-2.3	55.5	53.4	2.1	3.9	44.9	42.5	2.4	5.6

Table 46: Totalised EMOP measurements

a) [EMOP/EMQ →] A majority of respondents feels that organisation members now associate more formally with one another than they did in 2011.

[Document analysis→] *The Province wanted to implement organisational and culture change, with strong focus on operational reliability, managerial quality, processes and behaviour. During this research, the phased implementation programme was ongoing.*

b) [EMOP/EMQ →] Compared to 2011, improvement is perceived in mutual communication, but respondents are nevertheless more negative about the extent to which workers are geared to one another.

[Interviews→] At different organisation levels, new behavioural directives were issued with regard to outcomes, attitude and behaviour. This was introduced under the acronym ORA, which stands for Ownership, Result orientation and calling one another to Account. Putting this into practice has proven to be quite difficult. There is especially a high threshold to calling one another to account.

c) [EMOP/EMQ →] The perception that team composition can be improved is shared by a vast majority but compared to 2011, this has deteriorated amongst non-managerial staff and management, but improved amongst supervisors.

[Document analysis→] *A new directorate was installed with three members instead of the previous six. The previous organisational segmentation was exchanged for a nine-cluster structure. The organisation had begun reducing its work force by restricting new hires and hiving off 150 workers to local public bodies.*

[Interviews→] *Promoting positive, and discouraging negative attitudes are considered management's responsibility. With regard to organisation development on the subject of attitudes, interviewees expect management to inspire, communicate better (at least paint a clear picture of the future), introduce a suitable punishment and reward system and be good role models.*

Some organisation members refuse to adapt, are insecure or see no need to do things differently. These employees were not characterised further in comparison to other employees, except by one manager, who claimed that failure to adapt was age related, whereby employees over the age of 35 were allegedly less inclined to adapt than others. One interviewee remarked that organisation members' adaptability is stunted by management introducing organisational changes and subsequently letting go, failing to monitor further events and attaching no consequences to disobeying (development) orders. This is expected to cause the organisation to revert to its former patterns quickly, despite some changes to names and structures, while maintaining the old culture.

- ***Aptitude***

	Non-managerial				Supervisory				Management			
Variable	2014	2011	<>	%	2014	2011	<>	%	2014	2011	<>	%
Aptitude	54.7	64.2	-9.5	-14.7	53.7	55.5	-1.8	-3.3	39.9	40.3	-0.4	-1.0

Table 47: Totalised EMOP measurements

a. [EMOP/EMQ →] Respondents at all organisation levels are, compared to 2011, less of the opinion that workers have enough experience, schooling and/or training to perform well.

[Interviews→] *Organisation members have insufficient aptitude to carry out all the assigned work correctly. Due to work force reduction, little aptitude is added. Even though internal mobility has increased recently, there are still organisation members in positions for which they are not really qualified. Despite recent improvements, in this regard, interviewees still see room for improvement with regard to management. According to those interviewees, it is still left too much up to organisation members themselves to what extent they fill positions for which they are best suited. Out of sheer necessity, the organisation fishes in its internal pool for aptitude. It fails to cultivate sufficient aptitude internally, leading to qualitative deterioration.*

Next to organisation functioning, organisation development is also affected by aptitude insufficiency. The organisation clusters have transition teams to which development activities are assigned. Members of those transition teams carry out those activities next to their regular jobs, but they lack knowledge, skills or experience relating to the transition activities that are assigned to them. This is said to act prohibitively on development processes.

Several interviewees acknowledged disadvantages of labour turnover causing the organisation loss of aptitude and loss of external contacts. This seems especially relevant when so-called soloists leave the organisation. These have been described as workers, usually operating within a narrow field of expertise, who refuse to share information with colleagues to acquire a higher status within the organisation. In doing so they force others to include them more often in matters than they would if that information would be readily available. When they are excluded, they feel passed over and offended, because they consider themselves special. When such people leave the organisation, they can leave behind a void.

b. [EMOP/EMQ →] Non-managerial staff and management feel to a lesser extent than in 2011 that workers know the organisational goals and that their activities are always directed at those goals. According to supervisors, this has improved since 2011.

[Interviews→] *To interviewees, it appears unclear what constitutes events, or a series of events, within an organisation, organisational change. They generally agree that such events must have lasting impact on more than one department. What causes need for organisational change, or for further organisation development, also appears unclear. Amongst suggestions were aspirations for more efficiency, flexibility and connection to organisational goals. However, it remained unclear how those aspects, which apparently were deemed adequate in the past, are increasingly deemed inadequate over time, growing into a need for organisational change.*

The possibility that organisation members' activities and work methods gradually change and deviate from initial organisational goals did not occur to the interviewees. When the interviewer put forward this possibility, most did not recognise this in his or her own work environment. Mention was made of incidental emergent changes on a very small scale, considered positive by pertaining interviewees, such as a certain team of workers abolishing face-to-face meetings in exchange for social media deliberations.

- ***Circumstance***

	Non-managerial				Supervisory				Management			
Variable	2014	2011	<>	%	2014	2011	<>	%	2014	2011	<>	%
Circumstance	51.0	40.3	10.7	26.5	51.5	41.8	9.7	23.2	47.7	31.0	16.7	53.9

Table 48: Totalised EMOP measurements

[EMOP/EMQ→] Across the work force, the outside world is, compared to 2011, regarded less as a nuisance.

[Document analysis + Interviews→] *As a consequence of the organisation refocusing its goals and strategies, it consciously aims to change its relationship with other parties. Instead of maintaining its former main role as subsidiser and auditor, emphasis is more on cooperation and facilitating.*

[EMOP/EMQ→] Organisation members see, compared to 2011, improvement in working conditions.

[Document analysis→] *A programme was set up, aimed at enabling organisation members to work independent of time, place and hardware platform. Its official goal was to foster flexibility, efficiency and internal and external cooperation.*

- ***Outcomes***

	Non-managerial				Supervisory				Management			
Variable	2014	2011	<>	%	2014	2011	<>	%	2014	2011	<>	%
Outcomes	53.5	59.5	-6.1	-10.2	59.4	58.3	1.0	1.8	45.8	49.0	-3.1	-6.4

Table 49: Totalised EMOP measurements

[EMOP/EMQ→] On balance, compared to 2011, except for operational leaders, respondents are more negative about their outcomes.

[Interviews→] *All budgets, on average, are to be cut by 25%. Still, most interviewees did not experience efficiency improvement, compared to 2011. Some even consider it possible that the organisation has become less efficient.*

[Document analysis + Interviews→] *In 2014, three years after having made teleworking more accessible to all organisation members, no evidence was found that this contributed significantly to fostering the organisation's flexibility, efficiency or internal or external cooperation, as it formally was purposed to do.*

- ***Emotions & Mood***

	Non-managerial				Supervisory				Management			
Variable	2014	2011	<>	%	2014	2011	<>	%	2014	2011	<>	%
Emotions & mood	57.6	55.6	2.0	3.7	60.7	55.4	5.4	9.7	54.5	51.6	3.0	5.8

Table 50: Totalised EMOP measurements

[EMOP/EMQ→] Supervisors and management see improvement with regard to work related stress and the working atmosphere, compared to 2011. Non-managerial organisation members get less frustrated with what goes wrong in the organisation, compared to 2011.

[Document analysis→] *When the 2014 measurements took place, many of the intended organisational interventions had already taken place and more was publicly known about the interventions that still lay ahead. Several tasks had been changed, as well as the organisational structure, including management composition, and new behavioural guidelines were introduced.*

- ***Trust & Confidence***

	Non-managerial				Supervisory				Management			
Variable	2014	2011	<>	%	2014	2011	<>	%	2014	2011	<>	%
Trust & Confidence	55.9	55.2	0.7	1.4	56.3	53.1	3.2	6.0	51.3	45.0	6.2	13.9

Table 51: Totalised EMOP measurements

EMOP details:

a. Respondents at all organisation levels are, more than they were in 2011, confident that organisation members are attentive to the interests of others.

b. Supervisors feel, more than they did in 2011, that organisation members trust others to make decisions that are important to them. However, management sees on that issue, compared to 2011, decrease in trust.

c. Respondents at all organisation levels are, compared to 2011, less confident that organisation members work in positions in which they function best. They also are, compared to 2011, less confident that organisation members perform optimally, without needing additional experience, training or schooling.

[Interviews→] *According to some interviewees, in 2011, there were multiple directorates of which organisation members had the impression that each did just about what they wanted to do. Within a highly compartmentalised structure, they focussed mainly on what they personally were interested in, neglecting other important matters. Shop floor workers' activities were discerningly monitored, but management was far less scrutinised. Plans, made 'higher up', completely dissolved on their way down to the shop floor. There was much discontent within the organisation. The transfer of a large amount of their colleagues to a local public body added a little extra to that.*

[Document analysis→] *When the 2014 measurements took place, many of the intended organisational interventions had taken place and more was publicly known about the interventions that still lay ahead. Several tasks had been changed, as well as the organisational structure, including management composition, and new behavioural guidelines were introduced. Possibly, this has instilled a small majority of organisation members with Trust & Confidence in addressing the right organisational aspects.*

6.10 Hypothesis 3: EMOP can be applied …

Indiscriminate application

EMOP measurements seem good indicators of respondents' attitudes towards basic aspects of organisational processes. This in itself can serve as important management information. Value can be added by regarding EMOP measurements relative to data stemming from other sources, such as production figures, quality control results, absenteeism, and so on. Comparing EMOP data with data from other sources may show, for instance, to what extent respondents' attitudes align with fact. When respondents value Outcomes high, while objective data indicate that outcomes are actually low, respondents apparently overestimate their performance. Communicating such disparity to pertaining organisation members may give them better insight (Aptitude), possibly leading to change in their attitudes and subsequently to change in their behaviour, now aimed at higher performance levels. Conversely, such communication could also lead to information exchange within an organisation, giving rise to adjustment of objective measurement methods.

Mutually correlating *EMVs* also provides valuable management information, since that reveals which organisational aspects respondents, often unconsciously, associate with each other. For example, significant and

substantial correlation between Leadership and Emotions & Mood indicates that workers' sentiments are strongly influenced by their perception of leadership. Another example of valuable management information obtained from correlating EMOP variables is comparing the correlation of Leadership and Structure with the correlation of Applied Technology and Structure, rendering an indication of the perceived socio-technical balance, or *LAT*-ratio.[58] This *LAT*-ratio is proposed to indicate to what extent organisation members (from whom measurements are taken) rely on leadership for direction, confidence and support, versus the extent to which they rely on Applied Technology for those same aspects.[59]

Instead of focusing only on the main EMOP variables, one can also examine facets of empirical representations of those variables separately, or relative to EMOP variables as a whole. One example of this is to examine organisation members' sense of aptness in utilising applied technology, relative to the extent to which they feel dependent on leadership.

Discriminate application

Measuring *EMVs* separately per organisation level revealed interesting attitude differences amongst members at different organisation levels. Since those measurements are all based on the same unit of analysis, they can serve as indicators of leaders-followers misconnections or misalignments. For instance, non-managerial staff might value Outcomes high, compared to low valuation of that same EMOP variable by leaders and managers. Underlying this disparity might be discontent of leaders and managers with current outcomes of which non-managerial staff is unaware, or that this aspect is regarded differently at different levels of the organisation. In the latter case, additional information might be found by examining the

[58] *LAT*-ratio = ratio between the correlation coefficient of Structure and Leadership, versus the correlation coefficient of Structure and Applied Technology (see p.p. 137 - 138).

[59] Cherns (1976) set up several principles that might foster socio-technical balance when creating socio-technical solutions. These principles are extended and regrouped by Bamber and Lansbury (2013) into two divisions: 1) *Flexibility and the need for balance*, and 2) *Organic humanism*. The principles in the first division are: limit specification of details, limit tool specialisation, restrict information provision to what is relevant and required. The principles of the second division are: do not make systems too rigid, standardisation and reliability, harmonisation between technology and support systems, sufficient support of (prospective) users. I believe that these principles can add value to the main principle to only apply *available* and *suitable* technology that corresponds with users' *aptitudes* and *attitudes*.

valuation of this variable in more detail, by looking at the valuation of each (EMQ) item by which the variable Outcome is measured. This might reveal, for instance, that, at different organisation levels, different aspects of Outcomes are valued differently, which can serve as specific management information.

Longitudinal application

EMOP has proven to be even more valuable when comparing measurements of different periods to one another. Such comparison shows differences in organisation members' attitudes towards the core organisational aspects as they have grown in the intervening period.

Applying EMOP with data collected by the EMQ can reveal quantified development effects on organisation members' attitudes *during the development process*. By combining that data with data from other sources these effects can be placed into context. Not having to wait until all development activities are completed to learn of certain consequences allows midterm adjustment to development activities, increasing chances to reach set goals on time and within budget.

EMOP combined with other theories

EMOP and Design theories

The definition of an organisation, employed in this document, prescribes an organisation not as a mixed lot of people, rules and tools, but as an *ensemble* of those components, directed towards achieving commensurable goals. When striving for organisation effectiveness and efficiency, such an ensemble must consist of not just any people, rules and tools, but of the right one's, well-aligned with one another and attuned to one another. When working towards achieving such nirvana, configurational theories and other design theories, such as the 7S-framework (Peters, Phillips and Waterman, 1980) and the Star Model (Galbraith, 1993), are likely to provide more support than EMOP does. However, EMOP combines well with such design theories, e.g. by providing information about the extent to which an organisation is indeed such an ensemble. For instance, when organisation members at different organisation levels value the same organisational aspect, by the same unit of analysis, differently, one easily finds some misalignment with regard to that aspect. In addition, the *LAT*-ratio promises

to be a valuable design indicator with regard to the socio-technical balance within an organisation or within an organisational unit.

EMOP and sensemaking

Communication is important with regard to promoting aptitude. For example, communication serves to feed back dissonance between EMOP measurements and objective measurements, intending to cause attitude change, leading to more desired behaviour. In certain cases, application of the sensemaking concept (Weick, 1995), may well serve this purpose. The communication method is less important than the communication message, since messages leading to organisational deterioration can be conveyed to make equal sense as messages leading to organisation improvement. For example, a message based on wrong assumptions can make sense to some people. Apart for interpretative aspects of sensemaking, attitudinal aspects can also affect outcomes of such activities. For example, opportunism can lead organisation members to regard all immediate potential personal benefit as sensible, even when such benefit comes at the expense of the organisation as a whole, and at risk of being put at a disadvantage themselves in the long run. Important is also that communication methods suit pertaining audiences, as well as pertaining situations. The basic properties of Weick's sensemaking concept are: *Grounded in identity construction*, *Retrospective*, *Enactive of sensible environments*, *Social*, *Ongoing*, *Focused on and by extracted cues*, and *Driven by plausibility rather than accuracy*. When, for instance, the message one wishes to convey and the aimed communication effect have no bearing on identity construction or when one wishes one's audience more to focus on fact rather than on what may seem plausible, strictly following the prescribed sensemaking basics may not be the best method of choice.

EMOP and Quality Management

EMOP also combines well with Quality Management. One way of bringing this into practice, is by discriminating EMQ responses by organisational processes. To do so, a selection option could be added to the standard EMQ allowing respondents to indicate which organisational process the pertaining questionnaire relates to. In addition, Six Sigma, having much in common with the principles of TQM (Total Quality Management), combines well with EMOP. The Six Sigma Improvement Model consists of five steps, aimed to improve process performance. These steps are; *Define, Measure, Analyse, Improve* and *Control*. The first step (Define) could lead to adding specific items to the standard EMQ, to be used for the next step (Measure). Subsequently, methods of analysing the data, as mentioned in this book, can

be added to other methods, common to Six Sigma. After having taken measures, aimed at improving process performance, EMOP can be applied to monitor the process, in support of the final step (Control).

EMOP and Culture Change

In Chapter 2, culture was mentioned as a component of social structure. As within most other communities, within organisations, cultivation of human behaviour is not as much characterised by refinement, as by commonalities in behaviour and beliefs. As holds true with regard to all structures, this behaviour is determined by subjects' individual pose towards their personal interpretation of specific cultural aspects (adopted culture, or *culture´´*). Learning often seems an ideal method of changing one's interpretation of matters. However, culture's susceptibility to learning appears limited. Community members can be guided less by rationality than by emotions or instinct in adopting their pose on cultural aspects. Typical for beliefs is, that they can be affected by changes in one's understanding of the subject at hand, but human beings may have embraced an attitude by which they reject or ignore information or knowledge that might contradict or refute those beliefs. An individual's adherence to a certain culture can be split up into two parts: one's adherence to pertaining cultural aspects and one's adherence to the pertaining cultural community. When adherence to both parts is weak, an individual may be more willing to accept information that contradicts certain cultural aspects than when that adherence is strong. Douglas referred to similar types of cultural adherence as *grid* and *group* (Douglas, 1970, 2003, 2007). With *grid,* she referred to how an individual sees his or her own role with respect to the pertaining culture (cultural regulation). With *group,* she referred to how an individual sees his or her own role with respect to the pertaining social community (general boundary around a community). In Chapter 2, an individual's pose towards his or her personal interpretation of a structure is referred to as *adopted structure* (Ch. 2).

Affective adopted culture refers to cultural aspects that make adopters feel good, such as taking pride in collective achievements, versus striving to outshine others, or preferring to be favoured by others, versus wishing to be perceived as a good leader or professional. Facilitative adopted culture refers to shared attitudes aimed at serving subjects' self-interests, such as preferring easy working methods to methods that lead to better outcomes. Gregory et al. also acknowledged a relationship between organisational

culture, workers' attitudes and their effectiveness. From their research, conducted in the healthcare industry, these authors suggested that the relationship between organisational culture and effectiveness is mediated by organisation members' attitudes (Gregory et al., 2009).

With regard to the relationship between culture, trust, behaviour and outcomes, Chen, Tsui and Zhong found that culture might also affect responses to psychological contract breach. From their research, conducted in China, they concluded that negative correlation between employer breach on the one hand and organisation members' commitment and performance on the other hand, was weaker for employees with traditional values than for other employees (Chen, Tsui, Zhong, 2008).

EMOP and specific examination

EMOP is a base model, with focus on elementary aspects of organisational processes. Examination can easily be expanded, for instance by adding specific items to the EMQ. In 2011, this was done when taking EMOP measurements within the Provincial organisation of Noord-Brabant with teleworking as the main research theme. In 2014, this was done taking measurements within that same organisation when the practical research was more focussed on organisational development that had taken place in the intervening period. Using EMOP as base for all measurements allows comparison of those measurements, taken over different periods, regardless of the immediate cause or theme of individual measurements.

6.11 Hypothesis 4: The EMQ …

… Serves well for measuring EMOP variables;

Collecting data with electronic EMQ versions was relatively easy and placed little burden on respondents. On average, filling in one questionnaire took about 5 minutes. There were no peculiarities with regard to processing the data and analysing was carried out by utilising common statistical tools, such as Excel® and SPSS®.[60]

[60] These are registered trademarks of Microsoft and IBM respectively.

Measuring *EMVs* in groups or in individual subjects, for instance by using the EMQ, can reveal value patterns for these groups or individuals. Sensitivity towards EMOP aspects of these groups or individuals can also be quantified, relative to earlier measurements, to other groups or individuals or to any other standard one chooses to apply.

EMQ measurements rendered much of the data reported on in chapters 5 and 6. Even though only a fraction of EMQ's estimated potential has been used so far in this research, the results seem to indicate that the Elementary Model Questionnaire potentially offers a wealth of information about organisational processes and related subjects. This information can be taken from the EMOP variables that obtained their value from individual EMQ items, but also from individual items themselves, as well as from other combinations of those EMQ items, such as those, used to examine the relationship between virtual leadership and organisations' effectiveness (Van Someren, 2011).

… Can be improved.

Several respondents made observations on the survey itself. This revealed that some respondents found the (Dutch) wording of several items difficult and a few respondents expressed concerns about ambiguous wording of several items. They believed that this ambiguity might cause respondents to give different, or perhaps even opposite answers, while meaning the same. This has been examined using trend analysis, comparing respondents' interpretations to the researcher's intentions and consulting with a Dutch specialist. This resulted in acknowledging that wording of several items could be simplified and that certain items could be interpreted in more ways than one. The examination just mentioned also made clear that the likelihood that such interpretation errors indeed had occurred is low and that the maximum impact of such errors on the total findings, should such errors have occurred, is also very low.

6.12 Hypothesis 5: EMOP's characteristics as a framework is …

a) … Humanistic;

EMOP revolves around human beings, their aptitudes and their attitudes and what tends to affect them most within organisational processes. These

aspects can be approached for individual organisation members, as well as for groups or even entire organisations. EMOP propositions can also be applied to measure part of symbiosis of organisation members. Longitudinal EMOP measurements can provide information about changes in attitudes of organisation members in between measurements, which can be related to events or interventions that have taken place in the intervening period. Interpreting differences in *EMVs* of different periods can be a challenge. Next to requiring placing measurements into context by relating them with qualitative data from various sources, this may also require some understanding of human nature. For instance, those, wanting to bring about culture change within an organisation, might benefit from understanding and acknowledging differences between what someone knows, can, feels and does, and who someone is. Each individual is limited in achievable aptitude, emotional resilience, adaptability and physical abilities. Nevertheless, at least in most western cultures, those aspects are far more susceptible to influence than someone's individuality.

For example, as part of an attempt to change an organisation's culture, an organisation could demand of all its workers, even those without formal authority over others, to call to account co-workers who have not met their commitments. In effect, this means that organisation members are held accountable for their results, as well as for the process(es) leading to the results, not only by their leaders, but also by other co-workers. This increases their burden of accountability, which tends to increase stress and to adversely affect their well-being (Morgan, 2013).

When one individual does not call another to account for failing in one's duty out of ignorance or inaptitude, one might intervene by trying to increase that subject's relevant competence. When calling to account does not take place in observance of convention, one might try to alter that convention, for instance by demonstrating the desired behaviour in appropriate role models. Those, who do not call others to account to avoid conflict, are limited by their individuality. It would be unreasonable to expect workers to be different on command. Even if they would want to obey such a command, they would unlikely succeed in doing so.

Calling other workers to account is traditionally a task, responsibility and power of supervisors and managers. Delegating this to shop floor workers increases self-regulation within the organisation, and can cause ambiguity about the roles of organisation members. Such ambiguity correlates negatively with organisation member's performance, even more so in

managers than in non-managers (Gilboa et al., 2008). Self-regulation, usually in workgroups, is part of a socio-technical systems organisation development approach to optimise the social and technical aspects of organisational processes (Trist et al., 1963; Cummings, 1978; Cummings & Worley, 2008). Self-regulation requires knowledge, information and authority to manage one's own task behaviour with relatively little outside interference. Functioning of self-regulation depends on staff composition, process interventions and organisational support systems (Dumaine, 1994; Cummings & Worley, 2008). Consequently, when wanting to cultivate or otherwise change workers' behaviour, one usually needs to appropriately address the entire ensemble and not disproportionately depend on process interventions, while leaving available opportunities unutilised, such as to obtain additional advantages from design, organisational support systems and optimising coherence of all those aspects.

b) … Socio-technical;

EMOP can yield the *LAT*-ratio, which serves as an indicator of the extent to which organisation members rely on leadership for direction, confidence and support, versus the extent to which they rely on Applied Technology for those same aspects. As such, the *LAT*-ratio is a measure of socio-technical balance. Balance shifts, over time, can be noticed by multiple measurements over the desired time.

For instance, in the Province of Noord-Brabant, in 2011 the correlation ratio of Leadership and Applied Technology, with the compounded variable Structure was: Leadership 44.4% : Applied Technology 55.6%. In 2014, that ratio was: Leadership 51.7% : Applied Technology 48.3% (Fig. 13).

In that same organisation, in 2011, Structure correlated more strongly than Leadership and Applied technology with Emotions & Mood, Circumstance, Trust & Confidence, Aptitude and Outcomes. In 2014, this was true for Circumstance, Trust & Confidence and Aptitude. Correlation between Structure and Emotions & Mood was about equal to the correlation between Leadership and Emotions & Mood. Leadership correlated slightly stronger with Outcomes than Structure did.

Within organisational processes, the relationship between Leadership and Applied Technology shows inverse characteristics. Well-exerted leadership differentiates organised action from random action. As utilising applied

technology becomes more difficult, relative to workers' aptitude and to pertaining goals, workers' actions shift from organised to random, because they lose sight of the consequences of their actions. To compensate this, their need for direction, trust, confidence and support increases, for which they logically turn to their superiors. Conversely, dependence on leadership, as a source of direction, trust, confidence and support, decreases as utilising technical means becomes easier (e.g. due to added functionality of these means, or due to increased aptitude in utilising these means). Due to this inverse function, organisation members relate their attitudes (and consequently their behaviour) more to structure as a whole, than to the separate aspects from which it is compounded.

The shift in correlation ratios, within the compound variable Structure in 2014 compared to 2011, indicates that organisation members perceive to be less able to function independently and to be less supported by technical means to fulfil their need for direction, trust and confidence. Stated differently: In the Province of Noord-Brabant, within the ratio Leadership : Applied Technology (*LAT*-Ratio) the centre of gravity shifted from Applied Technology in 2011 in the direction of Leadership in 2014.

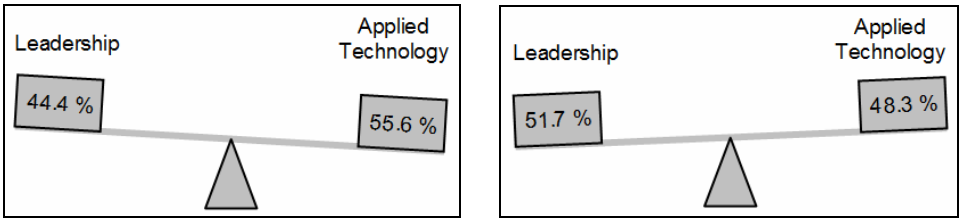


Figure 13: Left: LAT Ratio 2011, Right: LAT Ratio 2014

This shift in *LAT*-ratio coincides with 48% increase of the perception amongst non-managerial staff, to depend on their supervisors. This can point at inadequacies in team composition, process interventions and/or organisational support systems. With regard to organisation development, it is important not to focus just on those aspects separately, but to focus especially on coherence of those aspects.[61]

[61] A combination of data with regard to Applied Technology and Aptitude seems to indicate that organisation members have more technical means in 2014 than they did in 2011, but that those technical means are not required or suitable for the work they need to do and/or the workers lack the aptitude required to utilise those technical means professionally.

c) … Attitudinal.

When utilising EMOP and the EMQ, respondents' attitudes are inferred, quantified and mutually correlated. Comparing measurements, taken in 2011 with measurements, taken in 2014, allowed inference of changes in attitudes within the same organisation between both measurements. Such changes can also be mutually correlated. For instance, amongst respondents of the Province of Noord-Brabant there was in 2014, compared to 2011, growing perception of lacking relevant aptitude. This is indicative of increasing risk that workers cannot fully calculate the consequences of their actions. Their actions shift from goal oriented to random. This altered perception with regard to aptitude coincides with a drop in perceiving that workers deliver intended outcomes (see Table 41)[62]

6.13 Conclusions

The basic elements that determine the functioning of organisational processes are captured in an Elementary Model of Organisational Processes (EMOP). This model and its underlying propositions can be applied to foster effectiveness of organisations, as composites of organisational processes.

The presupposed generality and wide-range applicability of EMOP and its underlying propositions show promise of high compatibility with other organisation development theories and methods, such as those, focused on organisation design.

On the grounds of this case study, no cause was found to regard any of the hypotheses as falsified. It must be noted that this case study was an empirical check with regard to the applicability of the model and the EMQ, and the pertaining assumptions. Even though the findings are promising, additional empirical research will be required to pronounce on the validity of all the propositions, especially on the extent to which this validity can be generalised to other organisations.

[62] Amongst supervisors, this value has hardly changed, compared to 2011.

7 Discussion

7.1 Introduction

This chapter contains a discussion about this book's subject matter, in accordance with its title: *Aptitude and Attitude as Constraints and Enablers in Organisation Development: An Elementary Model of Organisational Processes*. Paragraphs *7.2 – 7.4* contain reflections on EMOP propositions, as well as a retrospection of various questions, posed at the beginning of this book (*1.2*), such as:

- Why do organisations not restrict themselves to doing what they were meant to do?
- Why are not all organisations ensembles of human beings, procedures and tools, directed towards achieving goals that are commensurable with the purposes of those organisations' existence?
- Does the primacy of human behaviour lie with structure, or with agency?
- What, repeatedly, triggers the need for organisational change?

Also, the concept of organisations as autonomous entities will briefly be touched upon, as well as incommensurate attitudes or limited relevant aptitudes, relative to an organisation as an ensemble of human beings, procedures and tools, directed towards achieving commensurable goals.

Paragraph *7.5* contains a discussion about matters related to EMOP application, such as application of EMOP value patterns, mentioned earlier in Chapter 4. Paragraph *7.6* is dedicated to addressing the question: *How does EMOP add value to existing models and theories?* This chapter concludes with suggestions for future research with regard to this dissertation's subject matter.

7.2 Aptitude vs. Attitude

Vernacularly, there is sometimes confusion between the terms *aptitude* and *attitude*, in the sense that criticism against (limitations in) aptitude are regarded as criticism against personal attitudes. This can be expressed in statements, such as: "Don't you think I am giving it my full 100%? I *am*

doing the best I can!", whereas the cause for dissatisfactory outcomes may instead lie in personal aptitudes: One's *best* is simply not good enough.

Stating that anyone can do anything and reach any goal, as long as they set their minds to it (and work hard), is to lie. It instils people with delusionary expectations. If reaching goals requires nothing more than effort, then not having reached one's goals can only be caused by not having made enough effort, and one has only oneself to blame. That is the theory. In practice, blaming oneself is often prevented by the attitude to attribute failure to causes beyond ourselves, perpetuating the delusion (Miller & Ross, 1975).

Self-enhancement illustrates that the process of deriving attitude from aptitude not always travels a path of logic. *Self-concept* is the first derivative of the structure *human qualities*; it is a person's personal interpretation of his own physical and mental structure. *Self-esteem* is the second derivative of the structure *human qualities*; it is an adopted attitude, or a subjective pose towards his own interpretation of his own physical and mental structure. On average, human beings have average qualities. Still, most people believe their desirable qualities are above average (Larwood & Whittaker, 1977; Svenson, 1981; Weinstein, 1987; Smith & Mackie, 2007).

All beings are limited by their own material structure, manifested by their physique, emotions and mentality. We might interpret those structural characteristics such, that it leads us to understand that no human power exists anywhere in the world that enables any one of us to do whatever we wish, merely by setting our minds to it. Despite of this understanding, many adopt an attitude towards those structural characteristics that seems designed to make themselves believe to be exceptions to those universal rules. Such attitude leads them to behave quite differently than they would, if their attitude would align with fact, for instance by injudiciously making business decisions, or accepting assignments without knowledge or skills to carry them out. Self-enhancement and self-effacement are associated with greater vulnerability to depression (Kim, Chiu, 2011). This may seem to support the idea that self-enhancement and self-effacement are emotional, or even unconscious attitudes, rather than rational, conscious attitudes. Olson, Fazio and Herman (2007) concluded from their research that processing one's self-concept into one's self-esteem is very much a conscious process. Apparently, we, human beings, tend to knowingly deceive ourselves.[63]

[63] This is moderated by culture, spirituality, age and gender (Gebauer et al., 2013)

The proposed Elementary Model of Organisational Processes (EMOP) illustrates how, within organisational processes, certain attitudes tend to be interrelated. Understanding how various organisational aspects are interrelated and how they affect one another, combined with added means of introspection, contribute to organisation development since the extent and quality of an organisation's introspection is an important determinant of its capacity to change (Soparnot, 2011). For example, when organisation members overestimate their performances, comparing data obtained from EMOP application with factual data may lead to a different understanding (aptitude), possibly causing a different attitude and hopefully fostering behaviour aimed at reaching goals that are more ambitious.

The basic EMQ can be applied to measure relevant variables, such as attitudes towards Human Behaviour, Trust & Confidence, Leadership, Aptitude and Outcomes after which those data can be compared to objective data sources, such as performance, production or quality data. For specific purposes, items can be added to the EMQ to measure additional variables, or specific aspects of certain variables. One could, for example, focus on the extent to which organisation members identify themselves with the organisation. Ashforth et al. referred to such identification as: "*I am A, I value A (it's important to me), and I feel about A*" (Ashforth et al., 2008: 328). These authors explained that identification with the organisation of which one is a member correlates positively with various individual and organisational benefits, such as self-esteem, motivation and reduction of turnover intentions. However, identification can also be enacted too literally and zealously. Ashforth et al. refer to this as *dysfunctional overidentification* (Ashforth et al., 2008; Dukerich, Kramer & McLean Parks, 1998).

Positive attitudes correlate positively with a range of behaviours that support organisational change, such as engagement and promoting the organisation's interests, and they correlate negatively with behaviours that frustrate organisational change, such as cynicism and workplace deviance (Avey et al., 2008).[64] Workplace deviance is organisation members' behaviour that opposes organisational norms, such as tardiness and treating colleagues badly (Bennet, Robinson, 2000). Such behaviour correlates positively with workers' self-esteem, but less in workers whose self-esteem is contingent with their workplace performance (Ferris et al., 2009). This invites to reversing these findings into assuming that self-conceited

[64] An employee's positive attitude is also referred to as *psychological capital*, defined as a core factor consisting of hope, efficacy, optimism, and resilience (Luthans et al., 2007)

organisation members are more likely to adopt a negative attitude towards the organisation and its members, and are less likely to commit themselves to promoting the organisation's interests than others do.

More important than aptitude, is relevant aptitude. For instance, a highly skilled carpenter without management skills is unlikely to make a good manager at a carpenter's yard. Considering the importance of appropriate combinations of attitudes and aptitudes at the correct moments in time, EMOP links up well with configurational theories, including theories related to social fit of organisation members within the roles that they play within the organisation (Argyris, 1962).

Misalignment can also exist between our pose (attitude) and understanding (aptitude) relative to abilities and limitations of other human beings. For instance, when leaders insufficiently take into account their followers' limitations in aptitudes and attitudes, they might make unreasonable demands of their followers, entertain unrealistic expectations or set unachievable goals. It seems important to realise that actual behaviour is not affected by leaders' wishes (LWFA) or leaders' estimations (LEFA), but by actual followers' attitudes (FA), save restrictions on them to act as free agents, and within the range of their aptitudes. Even though all EMOP variables may tend to mutually correlate positively to some degree, Chapter 4 has illustrated that value increase in one EMOP variable *can* coincide with value decrease in another EMOP variable. Effective attitude changes may be different from, or even opposite to, the changes that leaders had aimed at. This can be caused, for instance, by followers experiencing events and interventions differently than leaders conceive or intend.

Differences in leaders' estimates of followers' attitudes (LEFA) and actual followers' attitudes (FA) are influenced by distance between followers and leaders. When leaders and followers are physically close, leaders can constantly measure followers' attitudes by means of observation and (mini-) interviews, such as talks about assignments, behaviours, tools, output, sentiments, and so on. As distance between leaders and followers increases, leaders rely more on assumption rather than on experience, increasing chances that their directions and interventions will be ill directed. Ill-direction may negatively affect the functioning and effectiveness of organisations. This *may* be true, but not necessarily. After all, leadership can be ineffective in the sense that leadership directives are not followed.

The cases reported on in chapters 4-6, demonstrate the appropriateness of the definition of the term 'organisation' as: *An ensemble of human beings, procedures and tools, directed towards achieving commensurable goals*. While doing the wrong things, doing things wrongly, using the wrong tools and using tools wrongly all relate primarily to aptitude, working towards certain goals is predominately attitudinal in nature. We see disparity of leaders' and followers' goals in Case 1 where the leader's main goal seems to be getting (near) perfect results, whereas her secretary's main goal seemed to be enjoying work without too high demands being placed on her. In Case 3, management's goal was to get maximum labour of maximum quality, at minimum cost. The timers' goal was to maximise their convenience while earning a living. Case 2 presented various goals, some of which shifted over time. For example, initially, management's goal was to appease external critics. Quite a number of organisation members aimed to hold on to a familiar, stable work environment. Some leaders aimed to remain in their followers' favour, while other leaders strove to be good leaders. There were organisation members who aimed to come out of the change better than they went into it and they worked towards achieving that goal by learning and adapting to the changes. There were also those, resigning to the change, who just wanted to get the change 'over with' and return to a new, stable work situation. A few organisation members' held on to their goal of receiving acknowledgement of their grief as a matter of principle. Ultimately, most of the remaining resistance against the change was broken by organisation members adopting *keeping their job* as a new goal. In that case, the goals to be good leaders, wanting to get the change over with and keeping their job, appeared commensurate with the organisation's goal to execute the intervention.

7.3 Human behaviour within organisations

When focusing on organisational processes, the concept of organisations as autonomous entities seems immensely distant. At process level, it becomes obvious that an organisation remains inanimate without action of its members. This casts different light on theories that ascribe organisational deficiencies to circumstances beyond one's control. Perhaps such organisational deficiencies are more likely to exist due to incommensurable attitudes, contextual inaptitude, or a combination of both.

Not all organisations are ensembles of human beings, procedures and tools, directed towards achieving goals that are commensurable with the purposes

of those organisations' existence. This was established at the beginning of this document. With regard to procedures, organisation members doing the wrong things, tends to be caused either by incommensurate attitudes of leaders or followers, or by limits to their aptitude: they either *will not*, or *cannot*. Organisation members doing things wrongly seems more often caused by limits to their aptitude but, as was apparent with the secretary of Case 1, can also be influenced by, or even caused by incommensurate attitudes of leaders and followers. Using the wrong tools, and using tools wrongly, also seems to relate more to aptitude than to attitude.

The primacy of human behaviour seems to lie neither with structure nor agency, rather than with a combination of both. Human beings behave as free agents to the extent that they are not restricted in doing so by structure.[65] Structure can manifest itself in different levels of dynamics, ranging from near static, such as a building or other material structures, to highly dynamic, such as certain social structures, like emergent non-hierarchical leadership (Case 3 of Ch. 4). Social structures are not as much created and affected by human behaviour, as proposed by Giddens (1984), rather than by human attitudes towards human behaviour. We have seen this in all cases presented in the previous chapters, for instance, the new timer of Case 3 did not briefly become a leader because of his leadership behaviour. Instead, his short-term leadership was established by his colleague's attitudes towards his display of expertise that brought them to follow the new timer's lead. The leader in Case 1 displayed various forms of leadership behaviour, but her follower's attitude seemed not to acknowledge that social structure to the extent that would lead her to follow her leader's directives.

Even if we have created effective organisations as ensembles of human beings, procedures and tools, directed towards achieving commensurable goals, structured according to their organisational fit and their goals aligned with their members' goals, after a while, a need for organisational change can arise. This is quite peculiar, since established organisations are used to dealing with internal and external dynamics. As long as those dynamics can be dealt with by the same human beings, procedures, tools and goals, there does not seem to be a need for organisational change. Moreover, even though the organisation adapts to all kinds of dynamics, most organisation members do not experience those dynamics as organisational changes. However, internal or external dynamics can become too extreme for human

[65] This refers to the freedom of choice between voice, exit *and* loyalty and not being restricted to mere loyalty (Hirschman, 1970).

beings, procedures, tools or goals to remain attached to what they are exposed to. If such situations occur too often, or if they last too long, a sensation of a need for organisational change arises. Such detachment can be attributed to the dynamics as well as to limitations in adaptability of the named aspects to those dynamics. Regarding dynamics and adaptability, a large proportion of causes can be reduced to incommensurate attitudes or limited relevant aptitudes. A few examples are listed in Table 52.

	Aptitudes	Attitudes
Human Beings	Inability to appropriately adapt to changing circumstances; too specified aptitudes, limited aptitude to acquire new knowledge and skills, or inability to apply existing knowledge and skills to varying subjects and/or in varying circumstances (aptitude specificity).	Unwillingness to adapt appropriately to changing circumstances; inflexible attitudes.
Procedures	Limited aptitude to apply existing procedures to dynamic circumstances; Limited aptitude to make effective, subtle adjustments to existing procedures.	Failure to recognise, or refusal to acknowledge a broader, under new conditions, more appropriate interpretation of existing procedures.
Tools	Limited aptitude to utilise existing tools creatively for a wide, dynamic range of purposes. Limited aptitude to adapt utilisation of existing tools in response to dynamic demands. Failure to recognise alternate applicability of applied technology.	Refusal to acknowledge alternate applicability of applied technology. Unwillingness to adapt utilisation of existing tools in response to dynamic demands. Preconceived ideas about needing to keep applied technology 'updated', regardless of its suitability to current and foreseeable needs.
Goals	Limited understanding of pertaining goals; limited aptitude in inferring required behaviour from set goals.	Tenacity: Lack of willingness to release existing goals in favour of more opportune, or more achievable goals, under given circumstances. Over ambition by setting unachievable goals. Under ambition by setting uninspiring goals.

Table 52: Examples of causes of organisation/environment misalignment

7.4 Organisational change

Interval measurements of *EMVs*, and comparing values of one period to values of the next period, can support examination of how an organisation or an organisational unit deals with dynamics that have taken place in the interim. Information that is more detailed can be obtained by taking a closer look at certain individual EMQ-items, and by comparing values by organisation levels.

Evidently, the need for organisational change does not just arise from an organisation's failure to keep up with changes in its environment as suggested, for instance, by Dunphy (1996) and Pfeffer (1998). This need often arises from perceiving too frequent or too long lasting detachment of human beings, procedures, tools and goals from their organisational points of contact under the influence of internal and/or external dynamics. Preventing such detachment, or alienation, is a regular management responsibility rather than a change management challenge. In practice, such detachment is often prevented by subtle adjustments by organisation members at all organisation levels, which may not even be recognised as adjustments. In other cases, more often than not, observant day-to-day management succeeds in taking adequate precautionary measures with regard to organisational design and maintenance of aptitudes *and* attitudes, in which communication plays an essential role. *Sensemaking* can serve in promoting this flexibility and adaptability. I object to the term 'continuous change'. A course is either uninterrupted, or it changes. It cannot do both simultaneously. Organisations can very well carry out ongoing processes to adapt to all kinds of internal and external dynamics. While such adaptation processes are inherent to organisations' functioning, there is no change. In such cases, change occurs only when such adaptation processes are interrupted. Obviously, adaptation can cause differences that may be perceived by observers as organisational change, but not by those who perceive the organisation as a learning, adaptive entity. Analogous to organisational change, one could image a bus route from A to B to be constant, even when the bus comes into motion from a stationary position, when it turns a corner, when it yields to other traffic and when it stops at bus stops. A change in the bus route can be perceived as a change by some, for instance by passengers whose bus stop is relocated. To others, the bus route will still be perceived as the route connecting places A and B. Similarly, organisations are inherently dynamic, as are their environments. Organisation members constantly react to variations in internal and external events. Different people contact the company, order different things, in

different quantities, asking different questions, and so on. Those variations are not considered changes to the organisation, while those variations can be dealt with by the same human beings, procedures, tools and goals. Whether adaptations to those variations are considered organisational changes, depends on observers' vantage points and perception levels. A client, judging an organisation by its products or prices may deem an organisation to have remained the same, while a deliverer, judging an organisation by its staff composition may find the organisation to have changed significantly over time. This opinion may be shared by a supplier, but perhaps based on the procedures and formalities related to selling and shipping goods to the organisation. In brief, the perception of an organisational change relates to one's own ability to, emotionally or rationally, connect the old situation to the current situation. Therefore, organisation change is a subjective concept.

At micro level, new patterns of organising are realised almost continuously. Most of those new patterns occur unintentionally, for instance, due to loss of aptitude because of labour turnover or non-routine work activities (forgetting). Next to such regressive or degressive changes in organising patterns, progressive changes also occur, for instance due to learning or importing aptitudes (labour turnover). Controlling these forces is part of regular organisational management. In organisations with mainly standardised organisational processes, it is primarily management's responsibility to promote that organisation members know where they are going (goals), how to get there (procedures), which means to use (tools), how to use them (aptitude) and how to adapt to variations. But also in demand oriented organisations and organisations fused with their environments, it is equally important for management to make sure that organisation members' attitudes are, and remain, commensurate with the organisational goals and strategies, to ensure that organisation members' competencies are utilised to realise the organisation's goals. Carrying out those management tasks successfully reduces organisations' risk of having to struggle to keep up with environmental developments. A necessity to carry out those management tasks is knowing organisation members' attitudes. Leaders can keep in touch with what drives their followers, by minimising the structural, functional and psychological distance between them (Ferris and Napier, 1993). For example, in Case 1 (Ch. 4), the leader and follower did not work closely with one another. This played an important part in that leader's reliance on assumptions. In Case 2, leaders and followers worked closely with one another and their *LEFA* (*Leaders Estimate of Followers' Attitudes*) and *FA* (*Followers' Attitudes*) were about equal.

Still, even excellent management cannot always prevent the organisation having to adapt to environmental developments. Despite optimal relevant aptitude, appropriate attitudes and, consequently, optimal flexibility and adaptability, market forces can suddenly compel organisations to set new goals (see Ch. 6). New goals usually require different tasks, different procedures, different tools, different aptitudes and sometimes even different staff members. The organisations best able to acquire the new required aptitudes and appropriate attitudes, will adapt better and faster than others, which gives them a huge competitive advantage over other organisations.

Organisational adaptations can be reactive, pre-emptive or constructive, aimed at meeting requirements that, respectively, have changed, are expected to change, or that the organisation intends to change autonomously. High adaptive qualities also inspire the organisation's environment to try to keep up with that organisation, instead of the other way around. Once an organisation has adapted exemplary to initial environmental developments, or when it has made successful pre-emptive or creative adaptations, the need to repeatedly respond to various fluctuations subsides. While the organisation's competitors strive to level the playing field by following the organisation's lead, their suppliers seek to meet changing demands to optimise their own results.

7.5 Further Considerations

Several considerations with regard to EMOP application are as follows.

Value patterns
As is demonstrated in Chapter 5, a wide range of value patterns can be revealed, based on EMQ data. Such patterns can, for instance, relate to correlation coefficients, means, dispersion, central tendency or frequency. Value patterns that are directly based on EMQ response values, such as frequency or means, often contain absolute figures. Such value patterns can be used for static diagnostic purposes, for instance by comparing patterns of one individual or group to a certain norm, which could be the value pattern of another group, a total average, and so on (Table 53). When diagnosing, it is important to keep in mind that *EMVs* represent inferred respondents' attitudes towards the aspects in question. This may relate to attitudes respondents actually have, or attitudes that respondents wish to portray, but with most EMQ surveys, this is likely to be a combination of both. Either way, responses may typify respondents. By no means should these values be

taken as objective valuations. For instance, it would be fallacious to conclude, solely on the contents of Table 53, that B-population produces an almost 5% higher outcome than P-population does, for there may be many other reasons why, on average, P-population's attitude towards Outcomes is, on average, lower than that of B-population.

Population	L	AT	Str(X)	Str(AVG)	HB	Apt	EM	TC	O
Total	54.03	45.57	24.84	49.80	53.49	52.26	53.95	63.32	57.79
B	54.13	48.84	26.79	51.48	55.22	54.07	54.46	64.69	58.45
H	51.77	34.80	17.66	43.28	50.00	47.48	54.41	59.74	56.50
P	58.85	37.82	22.15	48.33	43.59	44.78	47.12	57.69	53.85

Table 53: Average EMQ response values for EMOP variable per population.

Sensitivities

From value patterns of different entities (individuals, groups, organisations, and so on), sensitivities of one can be determined, relative to sensitivities found in others. For instance, we could consider the *EMVs* of each single population relative to the total research population, which then serves as norm. The ratios between that norm and values of corresponding variables of the other populations are indicators of sensitivity with regard to the aspects that those variables represent (Table 54).

Population	L	AT	Str(X)	Str(AVG)	HB	Apt	EM	TC	O
Total	1	1	1	1	1	1	1	1	1
B	1	1.07	1.08	1.03	1.03	1.03	1.01	1.02	1.01
H	0.96	0.76	0.71	0.87	0.93	0.91	1.01	0.94	0.98
P	1.09	0.83	0.89	0.97	0.81	0.86	0.87	0.91	0.93

Table 54: Sensitivities per population as ratios (or multiplicands).

There are multiple ways to present relative indicators. For instance, in Table 54 relative values are obtained by dividing means of each variable of each sub population by the value of corresponding variable of the total population. In Table 55, the same is done, by subtracting, instead of dividing the values.

Population	L	AT	Str(X)	Str(AVG)	HB	Apt	EM	TC	O
Total	-	-	-	-	-	-	-	-	-
B	0.10	3.27	1.95	1.68	1.73	1.81	0.51	1.37	0.66
H	-2.26	-10.77	-7.18	-6.52	-3.49	-4.78	0.46	-3.58	-1.29
P	4.82	-7.75	-2.69	-1.47	-9.90	-7.48	-6.83	-5.63	-3.94

Table 55: Sensitivities per population as value differences.

Typology
Typifying individuals and groups by sensitivity patterns might be more telling than doing so by response values. Individuals or groups can be typified, relative to one single EMOP aspect, to one single linking pair of variables, or to multiple EMOP aspects. Similar characters can be categorised in groups, whereas unique characters can be regarded as 'one of a kind'.

Static diagnostics
Absolute value patterns can be used for *static diagnostics*, for instance by comparing average response values of certain EMOP variables, obtained from one group to corresponding averages obtained from another group or from part of the same group. This could, for example, reveal that, at the time of measuring, the average value of the variable Leadership was lower in one group than in the organisation as a whole. This may give cause for further investigation. Perhaps leadership does not suit the current needs of that particular group, or perhaps that group has higher expectations than the rest of the organisation. When applying EMOP in practice, individuals and groups may be typified by their respective value patterns. Deviations in value patterns from an organisation's average, or from another established norm, can be regarded as sensitivity differences, based on absolute values.

Dynamic diagnostics
Next to using absolute value patterns for static diagnostics, they can also be used for *dynamic diagnostics*, by comparing measurements taken in one period, with measurements taken in another period.

Once characteristic individual value patterns are established, it may be more informative to monitor dynamic changes in those individual value patterns, by comparing the measured value pattern of one group or individual at one moment in time, to its measurements taken another moment in time.

Using such value patterns for dynamic diagnostic purposes – for example to examine effects of a certain event or intervention – requires multiple EMQ-measurements and comparing value patterns of one group or individual at one moment in time to value patterns of the same group or individual, measured at a different moment in time (see Table 56).

Measurement	L	AT	Str	HB	Apt	EM	TC	O
Y1Q1	54.70	41.76	22.86	48.22	50.58	49.65	52.49	61.36
Y2Q3	53.60	40.92	22.40	47.26	49.56	48.65	51.44	60.13
Y3Q1	55.61	52.16	28.18	53.14	53.34	55.26	51.85	63.32

Table 56: *Fictitious* value patterns of EMQ-averages of different periods.

Relative and Absolute Value Changes

Value patterns based on correlation coefficients (e.g. Tables 60 - 63) contain relative figures, referring to how attitudes towards EMOP aspects relate to one another in individuals or in groups. The difference between relative and absolute value patterns may be significant for diagnostic purposes, since absolute value changes without significant correlation changes, might point at factual changes to EMOP aspects, such as changes in leadership or in applied technology. Correlation value changes seem more likely to point at shifts in attitudes towards EMOP aspects. Such attitude shifts could, for example, be caused by learning, for instance when a group of organisation members becomes more apt in utilising certain applied technology, increasing their appreciation for this technology as well as for their leadership that is held responsible for providing them with that technology.

For instance, 2011 measurements of the Province of Noord-Brabant' organisation members' attitudes towards Applied Technology, relative to other EMOP variables, showed significant and substantial correlation with Emotions & Mood, Human Behaviour, Trust & Confidence, Circumstance and Outcomes. The absolute value of the variable Applied Technology was *EMV* 53.4. The item: *disposition of all required technological means* was valued as *EMV* 42.[66] By 2014, this organisation's leadership apparently had given in to the wishes of its followers, judging by a rise in the absolute value of the item: *disposition of all required technological means* to *EMV* 60, and an absolute value of the variable Applied Technology of *EMV* 58.2. Relative value changes seemed to suggest that many of the organisation

[66] *EMV* = Elementary Model variable value

members who had been given the gadgets lacked either the aptitude, or the motivation to utilise those for business purposes. Compared to the named 2011 correlation data, in 2014 these correlations all dropped in substance, while the correlation between Applied Technology and Aptitude had become more substantial. In addition, in 2014, non-managerial workers valued their Aptitude 14.7% lower than they did in 2011 (see Table 41).

Prognostics

It could be nice to think that the formula $\boldsymbol{\alpha} + \boldsymbol{\beta} \,.\, \mathbf{V_X} + \boldsymbol{e}$ implies predictability of one EMOP variable value, based on the value of another, linking EMOP variable. It is inviting to think that multiplying V_X by $\boldsymbol{\beta}$ and adding $\boldsymbol{\alpha}$ will result in a calculated value that equals V_Y, within a range of $\boldsymbol{e}$. For example, one might wish to predict the value of the EMOP variable Human Behaviour (V_Y), based on the value of the EMOP variable Aptitude (V_X), using the formula: $V_Y = \boldsymbol{\alpha} + \boldsymbol{\beta} \,.\, \mathbf{V_X} + \boldsymbol{e}$. If this would indeed be successful, the measured V_Y should correspond strongly with the calculated V_Y, at least stronger than it does with the input variable V_X. In effect, this does not seem to be the case. Several tests have shown that even varying $\boldsymbol{\alpha}$'s and $\boldsymbol{\beta}$'s maximally results in calculated V_Y's correlating with measured V_Y's as measured V_X's correlate with measured V_Y's. In other words, one cannot get more out of this formula than one has put into it. Adding measured V_X's as input to calculate V_Y, by using more measured EMOP variables to calculate the value of another, tends to weaken correlation with measured V_Y's rather than strengthen this correlation, possibly due to cumulating errors ($\boldsymbol{e}$'s).

Interdependence

Interdependence of EMOP variables refers to the way EMOP variables mutually affect one another. Interdependence exists when multiple variables mutually function as both predictor and response variables. Such interdependence exists within EMOP for all EMOP variables, such as Aptitude that partly responds to (information about) Outcomes and Human Behaviour and serves as predictor relative to Trust, Human Behaviour and Outcomes.

Causality

Despite interdependence, from the research that has been conducted so far, we cannot determine, within a work environment, to what extent human behaviour and sentiments depend on their attitudes towards the structures that help create that work environment. After all, correlation does not imply causation. We can conclude that attitudes towards behaviour, sentiments and

structure are connected to one another and that change to one of these attitudes is likely to coincide with change in one or more other attitudes. Members' attitudes towards organisational structures could change, for instance, as a result of changes to those structures, by changing their knowledge and skill related to those structures, or by changing their position relative to those structures. This could be done, for instance, by promoting a worker towards leadership level, or by increasing a worker's authority with regard to applied technology. Each of those changes is likely to affect the pertaining worker's actual sentiments and behaviour and not just his attitudes towards his sentiments and behaviour. On the other hand, if an organisation member decides to change his or her own behaviour towards structural aspects, e.g. by displaying more interest in the use, workings and potential benefits of certain applied technology, this organisation member's attitude towards that those structural aspects is likely to change, depending on the outcome of such a show of interest.

Structural components

Leadership differentiates organised action from random action. Applied Technology refers to any type of tool, regardless of its technological sophistication. Utilising a tool can become more complex, for instance due to an increasing number of possible uses or decreasing user friendliness, relative to users' aptitude. As utilising a tool becomes more complex, the risk increases that, in doing so, organised action shifts to random action, since users of those tools lose sight of the consequences of utilising that tool. To mediate this, users tend to feel an increased need for direction and confidence, for which they turn to leadership as a logical source. Conversely, as utilising a tool becomes less complex, for instance due to increased user proficiency, dependency on leadership for direction and confidence becomes less. Such inverse relation between Leadership and Applied Technology is assumed to cause organisation members to link their attitudes more strongly to structure as a whole, than to the individual aspects from which structure is made up.

Leadership and attitudes

Since human behaviour is affected by attitudes, and by changes in attitudes, rather than by structure or structural elements such as leadership or applied technology, it is important for leaders to 'read' their followers' attitudes. This can be done in different ways, such as through observation. For instance, by monitoring how organisation members respond to their leaders and to those leaders' directives (Leadership). Much information can be gathered from interaction and asking questions, such as: "*How do you feel?*"

(Emotions & Mood); "*What have you done?*" (Human Behaviour); "*What did you use?*"(Applied Technology); "*How did you use it?*", or: "*Do you understand what I said?*" (Aptitude); "*What were your results?*" (Outcome). Knowledge about workers' attitudes can be compared to the organisation's goals and strategies for commensurability, upon which action can be taken, for instance focused on changing certain attitudes or on adjusting certain strategies. This brings us close to certain leadership styles, such as *Empathetic Leadership*, which strongly appeals to human attitudes. Not all leaders have equally well-developed empathetic radars, while observation and interaction may not provide all leaders with enough information in this regard. Some may find support in using tools, such as the EMQ, to contribute to their knowledge about relevant attitudes of their organisation's members. While inferring attitudes from interaction and observation tends to be more difficult and more prone to error due to observer bias and observer error, holding the same survey within a relatively short period promotes conditioning error.

Leadership attentive to organisation members' attitudes is only part of what is needed to make organisational (development) processes successful. Organisation members also require clear direction and the disposition of suitable tools as well as relevant aptitude to understand the directives, to translate that into appropriate action and to utilise the tools effectively to perform those actions.

Attitudes affect human behaviour by directing organisation members' activities. If this direction corresponds with the direction prescribed by the organisational development, then processes are geared to flow as the organisational development requires. Conversely, if attitudes direct human behaviour in directions, different from the direction prescribed by the organisational development, realisation of that development will be interfered with, or even obstructed. The extent to which attitudes affect human behaviour is influenced by one's freedom to act as free agent.

While attitudes affect human behaviour by directing organisation members' activities, aptitude affects human behaviour by enabling the flow of processes as attitudes or restrictions direct. Organisation development places certain requirements on various organisation members. Even if those workers' attitudes are exactly in line with those requirements, their mental or physical capacity (see aptitudes mentioned above) may be inadequate to realise the behaviour required by the development.

Mismatch between organisation members' attitudes towards key aspects and organisation's goals and strategies, can constrain organisational development, due to misdirection of their activities, relative to the organisation's goals and strategies. Limits to organisation members' aptitude can constrain organisational development by not being sufficiently apt to:

a. Understand leadership directives and/or to translate those directives in appropriate action.
b. Utilise available tools effectively and efficiently, to achieve commensurable goals.
c. Communicate (give timely, comprehensible feedback about one's understandings, emotions, wishes, ambitions, intentions, and invite and understand feedback of others).
d. Distinguish fact from assumption and gossip from information, to determine the relevant abilities, integrity and benevolence of others and of one self, relative to specific tasks or to pursuing organisational goals in general.

7.6 Relevance

As mentioned in *1.2*, literature regarding organisation development is rich and extensive. This includes many valuable theories and models that have been proven practically useful. This raises the question: *How does EMOP add value to existing approaches?*, stated differently: *What problem does EMOP solve?*

I make no claims to EMOP's superiority over other models or organisation development (OD) approaches, nor that it renders other organisation development models or theories superfluous. I do propose that EMOP can add value to existing means to support leading and developing organisations. EMOP can be applied to provide certain information. The value of this information will be determined largely by aptitudes and attitudes of those who have this information. Obviously, when misinterpreted, misunderstood, shelved or ignored, the information value will be far less than when information is well interpreted and appropriately acted upon, but that is not a distinguishing feature.

EMOP includes a relatively simple correlation approach. Knowing how essential organisational aspects mutually correlate (as inferred organisation members' attitudes), generates insight into causes and consequences. For instance, from establishing strong, positive correlation between Leadership and Emotions & Mood, one can deduce that how leadership is perceived, strongly affects workers' sentiments. Additionally establishing low valuations for these elements may point at perceived leadership deficiencies (relative to perceived, known alternatives) as an important cause for organisation members' dissatisfaction. This shows that EMOP is not limited to a correlation approach, but that insight is often generated by combining information. For example, organisation members' sentiments may also correlate strongly and positively with Applied Technology and with Circumstance. When leaders then try to placate their followers by presenting them with new technological means or with more favourable working conditions, organisation members' Emotions & Mood may respond positively, even without affecting their valuation of Leadership. In this regard, EMOP is relatively easy to understand and to apply, but this also holds true for many other models.

What distinguishes EMOP most from other approaches is perhaps the *combination* of a) its focus on elementary aspects of organisational processes and their coherence, b) its characterisation as a humanistic, socio-technical, attitudinal framework c) explicit consideration of aptitudes and attitudes affecting human behaviour, and d) its universal orientation.

a) Various models do regard multiple organisational aspects in relation to one another but, in doing so, focus predominantly on one essential aspect, affecting organisational processes, such as 'trust' (Avolio, Dodge, Kahai, 2001; Mayer, Davis, Schoorman, 1995; Yui-Tim, Chi-Sum, Hang-Yue, 2012), or 'leadership' (Clarkea, 2013). Several other approaches focus on aspects affecting certain outcomes, for instance focussing on effect of organisational commitment on job satisfaction (Pool, Pool, 2007), or relating more to sustainability (Bartenhagen, Feyerherm, 2013).

b) There are models that focus less on organisation members or their attitudes, than on certain outcomes within certain branches of industry, such as measuring productivity in service organisations (Sahay, 2005). Other OD approaches do focus on organisation members, but in a limited way, such as establishing that organisation members' problems correlate negatively with organisation members' behaviour and outcomes (Mathew, Renganathan, Joseph, 2012). Models aimed at fostering organisations' socio-technical

balance often have more consideration for information systems and technology than for organisational social aspects (Pun, Balkissoon, 2011).

c) Literature does address relationships between certain attitudes and certain organisational outcomes, but those relationships tend to be rather specific, such as relationship between entrepreneurs' growth intentions and actual organisational growth (Kolvereid, Bullvag, 1996), or effects of managers' communication style on organisation members' attitudes and behaviour (Dasgupta, Suar, Singh, 2013).

d) Many approaches serve specific purposes, such as knowledge management (McAdam, McCreedy, 1999), or even serve specific purposes for specific organisations, such as rapid development of virtual organisations (Hai et al., 2002). Some models are aimed at specific industries, such as organisation development for the mining industry (LeRoux, 2009), or ISO 9000 implementation in the manufacturing industry (Srivastav, 2011).

Various configurational theories and other design theories, such as the 7S-framework (Peters, Phillips and Waterman, 1980) and Galbraiths' Star Model (1993) are holistic in nature and also quite universal, but provide less opportunity to establish design imbalance quickly. Nevertheless, all these, and many more OD approaches may be very valuable in their own right, with regard to their specific purposes. As mentioned in *6.10*, some of those approaches may also combine well and effectively with EMOP, supporting leadership, organisation development and, ultimately, organisation effectiveness.

7.7 Future research

During this research, I made a tentative attempt to examine to what extent the variable Trust equals the antecedents of trust combined. In retrospect, I found room for improvement in operationalising those variables, and in particular in converting that operationalisation into survey items, which is why I did not report on this examination further in this document. Re-examining this in the future may prove informative. There are numerous other possibilities to conduct additional meaningful research on EMOP and on matters related to it. Its multidisciplinary and interdisciplinary nature becomes apparent when listing various fields in which such research might take place.

With regard to *business administration* or *management*, such research could be related, for instance, to determining the external validity of the EMOP propositions, to improving the EMQ, or to adding knowledge about value patterns and other application. The propositions presented in this document may serve as foundation to theories and applications that promote effectiveness and understanding of organisations.

Regarding *sociology*, research could be focused on EMOP applicability within other communities than organisations.

Further EMOP related research possibilities might be found, for example, in:

- *Psychology*: to examine to what extent certain behaviour is conscious, by comparing EMQ correlation findings with data from other sources, such as interviews or surveys;
- *Mathematics*: to further study methods to discern value patterns, or to examine the nature of mathematical relationships between various EMOP linking variables;
- *Computer science*: applying knowledge of mathematical relationships between various EMOP linking variables to create computer models of organisations and organisational processes;
- *Statistics*: to study commonalities in sensitivity characteristics in different organisations;
- *Econometry*: to research correlation between economic business results and organisation member characteristics;
- *Biology*: to examine correlation between organisation members' medical condition and their EMOP value patterns;
- *Anthropology*: to examine correlation between organisation culture and member characteristics;
- *Humanities*: to study organisation members' well-being relative to attitudinal harmony amongst organisation levels.

Summary

In this document, various concepts are presented, such as the HPT-figure that portrays an organisation as an ensemble of *H*uman Beings, *P*rocedures and *T*ools, directed towards achieving commensurable goals (Fig. 1). In Chapter 2, the concept of derivatives of structure was presented (Fig. 4), as well as the process of thought to behaviour (Fig. 5). Central to this research was the EMOP model, proposed to contain all fundamental aspects of general organisational processes and the way they, attitudinally, tend to be interconnected (Fig. 6).

Within this document, an organisation is defined as *an ensemble of human beings, procedures and tools, directed towards achieving commensurable goals*. This prescriptive definition encapsulates just about all possible causes for organisational defects, such as organisation members doing the wrong things, doing things wrongly, using the wrong tools, using tools wrongly, working towards incommensurate goals, or a combination of these aspects.

In correspondence with the given definition of an organisation, one could regard *organised action* as action that confirms or reinforces the symbiosis of organisational components for the purpose of the organisation's existence.

The Elementary Model of Organisational Processes (EMOP) is a humanistic, socio-technical, attitudinal framework. Apart from illustrating the elementary organisational components and the way in which they are interrelated, EMOP can be applied to support identification of misalignments of organisational components that prevent symbiosis by examining organisation members' attitudes towards core aspects of organisational processes.

EMOP is a humanistic framework, because it places human beings central in all organisational processes. Within that context, human beings are not regarded as mere providers of labour, but as rational, emotional and social creatures, the behaviours of whom are driven and restricted by their aptitudes and attitudes. Symbiosis of organisation members is reached when the efforts and outputs of one, are instrumental in achievements of one or more others, contributing more to achieving the organisational goals than would have been the case otherwise.

As a socio-technical framework, EMOP addresses the socio-technical balance within organisations and organisational processes. A socio-technical balance is reached when social and technical organisational aspects symbiotically complement and reinforce one another. According to the socio-technical systems approach (Trist, 1950, 1993), this balance and alignment with the external environment, relative to the organisation's goals, determine an organisation's effectiveness. One indicator of a socio-technical balance is the *LAT*-ratio, which indicates to what extent organisation members rely on leadership for direction, confidence and support, versus the extent to which they rely on Applied Technology for those same aspects.

EMOP is an attitudinal framework since the interconnections of its components reflect how organisation members' attitudes towards those components tend to mutually correlate. Measuring organisation members' attitudes and comparing them with their aptitudes, with organisational goals, and with the availability and suitability of tools and procedures, may also help establish the extent to which they function as an ensemble, directed towards commensurable goals.

Structures are constitutions that tend to affect human behaviour. Rather than doing so directly, human behaviour is affected by one's personal pose (attitude) towards his or her subjective understanding (aptitude) of the structures to which one is exposed. Consequently, relative to a certain structure, aptitude is referred to as a derivative of that structure (*structure´*), whereas attitude is referred to as a second derivative of that structure (*structure´´*).

Within EMOP, the variable Structure is explicitly represented by the elements Leadership and Applied Technology, which are also referred to as *structural components*. When regarding leadership as a structural component, reference is made to a collection of all authoritative directions and conditions to act, ranging from labour contracts, via team assembly and work procedures, to the degree and methods of enforcing rules and regulations. By means of such directions and conditions, leadership differentiates organised action from random action.

When regarding applied technology as a structural component, reference is made to any type of tool, regardless of its technological sophistication. Utilising technology can become increasingly complex relative to users' aptitude, for instance due to a growing number of utilisation options or due

to declining user friendliness. As utilising a tool becomes more complex, the risk increases that organised action shifts to random action, since users of those tools lose sight of the consequences of utilising that tool. To mediate this, users tend to experience increased need for direction and confidence, for which they turn to leadership. Conversely, as utilising a tool becomes less complex, for instance due to increased user proficiency, dependency on leadership for direction and confidence becomes less. The proportions of such inversion between leadership and applied technology are referred to as the *LAT*-ratio. This particular relationship between these structural components is assumed to cause some organisation members' attitudes to correlate more strongly with structure as a whole, than with the individual components that make up structure (leadership and applied technology).

Apart from Structure, composed of Leadership and Applied Technology, the proposed Elementary Model of Organisational Processes consists of the variables Human Behaviour, Trust & Confidence, Emotions & Mood, Aptitude, Circumstance and Outcomes. To measure these variables, they are operationalised to define them as observable measures. During this operationalisation, wide applicability (to organisations in general) is chosen over detail. For instance, by collecting all authoritative directions and conditions to act into one variable Leadership, detailed information about those individual directions and conditions may not be distinguishable in measurements. Such distinctions can be made for aspects of which measurement items are included in the general operationalisation, or if appropriate items are added to the current selection. The latter case illustrates the elementary character of EMOP. It combines well with other theories and can be extended and expanded according to specific detailed requirements.

Similar to natural organisms, organisations can evolve to their benefit or to their detriment. Unlike natural organisms, organisations do not necessarily perish from development to their detriment, and loss in functionality is often compensated by adding organisational components. For instance, declining performance quality can be compensated by adding to quality control and repair to restore end product quality, or by strengthening public relations or marketing activities to promote principals' acceptance of the lower quality. Compensation costs are incorporated into taxes by the public sector and into sales prices or wage control by the private sector. Organisation development can be progressive or regressive; it can be rapid, slow or stagnant; it can be promoted or thwarted by human beings, intentionally or unintentionally.

When intentionally promoting organisation development, focus is often on improving organisations' effectiveness. An organisation is effective to the extent of its match between its results and the purpose of its existence. However, an organisation serves different purposes to different organisation members. This can be a major obstacle to organisation development, since promoting the purpose of one, can thwart the purpose of another. Therefore, the level of goal commensurability amongst organisation members must be high before working towards symbiosis of human beings, procedures and tools. Bringing together the right human beings, procedures and tools and attuning them to one another is an organisation design challenge. EMOP can serve to determine how this turns out in practice, the information of which can be fed back to adjust existing strategy or tactics. To obtain this information, the basic Elementary Model Questionnaire (EMQ) can be utilised. Depending on specific information requirements, items can be added. For instance, to measure goal commensurability, open questions could be added such as: "*What are the organisation's goals?*" and: "*Which main goals would you set for the organisation?*"

Since, next to organisation design and as part of organisation design, organisation members' relevant aptitudes and attitudes determine organisations' functioning, they too are essential organisation development aspects. To some extent, relevant aptitudes can be measured by school diplomas, degrees, performance data and other aptitude tests. Organisation members' attitudes can be inferred by asking, for instance by means of the EMQ. Such measurements, and comparison of those measurements with information from other sources, such as aptitude tests, for instance workers' output data and other workers' assessment data, can serve in selecting appropriate leadership behaviour. Depending on the outcomes of such examination, appropriate leadership behaviour might be to maintain the current course, to provide individual workers with relevant training or schooling, to alter or realign staff composition, procedures and tools, or to socially exchange either costs or rewards for desired attitudes and behaviour.

An organisation can be made into *an ensemble of human beings, procedures and tools, directed towards achieving commensurable goals*, by selecting the right human beings and place them in the right positions within the organisation, bringing the right procedures into place and making the right tools available to those human beings to efficiently and effectively work towards specific goals. Staff selection is based on relevant aptitudes as well as on relevant attitudes. All these aspects are dynamic due to various causes.

With passing of time, aptitude in non-routine activities weakens, attitudes change, observance of procedures dwindles, tools wear out; goals can be changed, requiring a different ensemble of human beings, procedures and tools; human beings, procedures and tools can be added, removed or replaced, affecting the ensemble. As most organisation design theories prescribe, restoring the symbiotic nature of the ensemble requires a holistic approach, focussed on all components of the intended ensemble. Just as any other norm alteration with respect to deemed appropriateness of organisational aspects, culture change by dictate has less chance of success than adjusting and realigning (reorganising) all components within the ensemble in line with the desired outcomes.

EMOP application does not directly yield objective information about the availability and suitability of tools and procedures, and not even about the organisation members' aptitudes. It does yield information about organisation members' subjective attitudes towards those aspects. Measurements of a large amount of organisation members of all organisation levels, using the same unit of analysis, to a certain extent objectifies the information obtained from the data collection. As such, this information is a valuable indicator of (mis)alignment of those core organisational aspects. Obtaining this indication is even possible while organisation development is taking place. Comparing such midterm measurements with base measurements can provide information about the extent to which development activities have the intended effect, allowing timely adjustment to the development activities when necessary.

Since attitudes derive from aptitudes, and human behaviour is guided by attitudes, organisation members' attitudes can serve as indicators of relevant aptitudes and behaviour, determining organisations' functioning. This is done by making and following procedures and by making, selecting and utilising tools to achieve certain goals, where appropriate aptitudes and attitudes serve as enablers and instruments of organisational functioning. Aptitudes and attitudes constrain organisation functioning by limitations on aptitudes and misalignment of attitudes with goals that promote the functioning or an organisation. In management, as well as in organisation design, explicitly factoring in these aspects, increases understanding of organisational processes and increases the success rate of those activities.

EMOP combines well with other organisation development methodologies and can be applied to virtually all types of organisations.

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Appendix A: EMQ Operationalisation table

Leadership

A.1. Supervisors consistently meet actual needs of the organisation, of their followers;

A.2. Workers are dependent on their supervisor;

A.3. Supervisors succeed in removing obstacles for their subordinates;

A.4. Supervisors spend their time efficiently and effectively;

A.5. Followers know what their supervisors expect from them;

A.6. Organisation members follow their supervisors' directives and orders.

A.7. Organisation members find existing rules, regulations and procedures to be appropriate and adequate and abide by them conscientiously.

Emotions and Mood

B.1. Work contributes to organisation members' joy in life;

B.2. Work induces stress in organisation members;

B.3. The organisation is affected by the current working atmosphere;

B.4. Organisational defects frustrate organisation members.

Human Behaviour

C.1. Subordinates pattern themselves to their supervisors;

C.2. Team members empathise with one another and are attuned to one another;

C.3. Teams are appropriately composed;

C.4. Team members are alike;

C.5. Team members communicate well with one another;

C.6. Team members understand one another;

C.7. Organisation members associate with one another outside their work environment;

C.8. Organisation members adapt well to sudden events and to new circumstances.

Applied technology

D.1. Organisation members depend on certain tools to do their work;

D.2. The applied technology functions as is intended;

D.3. The required technological means are available;

D.4. Organisational members are apt to utilise the applied technology.

Trust & Confidence

E.1. Organisation members trust one another unconditionally;

E.2. Team members are assigned the work that they do best;

E.3. Certain organisation members would be able to perform better if they would get additional relevant experience, training or schooling;

E.4. I have confidence in others within the organisation to make decisions that are important to me;

E.5. Our organisation members cannot do more to benefit the organisation;

E.6. In their work, organisation members are attentive to the interests of others;

E.7 In their work, our organisation members prove to be of high moral standing;

E.8. Our organisation members are honest;

E.9. Organisation members' activities must be monitored.

Outcomes

F.1. Teams are productive;

F.2. The performance quality is optimal;

F.3. Work satisfies organisation members;

F.4. Organisation members feel connected to the organisation;

F.5. Organisation members know, and focus on formal organisational goals;

F.6. The absentee rate is considered low enough.

Aptitude

G.1. Followers know what their supervisors expect from them (A5);

G.2. Team members understand one another (C6);

G.3. Organisation members adapt well to sudden events and to new circumstances;

G.4. Organisation members need additional experience, training or schooling to perform optimally (E3);

G.5. Organisational members are apt to utilise the applied technology (D4);

G.6. Organisation members know, and focus on formal organisational goals (F5).

Environment / circumstance

Measuring organisational circumstance pertains to the extent to which:

H.1. Current working conditions suit current needs;

H.2. Organisational elements are in concert with one another;

H.3. External disturbances affect organisational processes;

H.4. The organisation optimally utilises the available knowledge and skills.

Measuring personal circumstance pertains to the extent to which:

H.4. Organisation members have balance between their work and their private life;

H.5. Organisation members' attitudes do not clash with organisational goals.

Appendix B: EMQ, categorised

Self-report measurement

Categorised

Leadership

1. Without supervision, workers within our organisations cannot carry out their work.
2. Better results would not be achieved if supervisors would spend their time differently
3. Our supervisors give the leadership that is required.
4. Supervisors succeed in removing obstacles for their subordinates.
5. Subordinates know what supervisors expect from them.
6. Organisation members do what their supervisors tell them to do.
7. Rules, regulations and procedures are appropriate and adequate and organisation members follow them conscientiously

Emotions and mood

8. Work contributes to organisation members' joy in life.
9. Organisation members do not get stressed from work.
10. The current working atmosphere benefits the organisation.
11. Our organisation members do not get frustrated about things that go wrong within the organisation.

Human Behaviour

12. In their work and in their behaviour at work, subordinates take example from their supervisor;
13. Team members are attuned to one another and they are in accord.
14. Teams are well composed.
15. Teams are homogeneous by composition.
16. Team members communicate well with one another;
17. Team members understand each other well.
18. Our organisation members have no unofficial contact with people they work with.
19. Organisation members adapt well to sudden events and to new circumstances.

Trust & Confidence

20. Organisation members trust one another implicitly and unconditionally.
21. Certain team members could probably not perform better in an other position.
22. Our organisation members perform optimally. Additional experience, training or schooling would not change that.
23. Organisation members trust others within the organisation to make decisions that are important to them.
24. Our organisation members cannot do more to benefit the organisation.
25. In their work, organisation members are attentive to the interests of others.
26. In their work, our organisation members prove to be of high moral standing.
27. Our organisation members are honest.
28. Organisation members' activities must be monitored.

Applied technology

29. Organisation members depend on applied technology to do their work.
30. The applied technology works as it should.
31. Organisation members have all required technological means at their disposal.

32. To fully utilise all the applied technology, our organisation members do not need more experience, training or schooling.

Organisational circumstance
33. Current working conditions are optimal.
34. Our organisational units work perfectly with one another.
35. The 'outside world' interferes neither with our work, nor with what we deliver.
36. The organisation utilises available knowledge and skills well.

Personal circumstance
37. In general, our organisation members' private life is well balanced with their work.
38. Our organisation members' attitudes promote reaching our organisational goals.

Outcomes
39. Teams deliver the maximally attainable productivity.
40. The quality of our results cannot possibly be higher.
41. Work satisfies our organisation members.
42. Our organisation members feel closely connected to the organisation for which they work.
43. Our organisation members know the formal organisational goals, and they do not engage in unrelated activities.
44. The current absentee rate within our organisation is low enough.

Aptitude
The variable Aptitude is measured by combining measurements 5, 17, 19, 22, 32, 43.

5. Subordinates know what supervisors expect from them.
17. Team members understand each other well.
19. Our organisation members adapt to sudden events and to new circumstances.
22. Our organisation members perform optimally. Additional experience, training or schooling would not change that.
32. To fully utilise all the applied technology, our organisation members do not need more experience, training or schooling.
43. Our organisation members know the formal organisational goals, and they do not engage in unrelated activities.

Occasional annex related to change activities[67]
45. My current work activities are different from those, prior to the change.
46. I enjoy my work more than I did prior to the change.
47. My knowledge and skills match my current work more than they did prior to the change.
48. My personal goals and ambitions coincide more with the organisational goals than they did prior to the change.
49. Realising the organisational change required additional knowledge and skills within the organisation.
50. The organisation after the change is better than the organisation prior to the change.
51. The change process is well organised and well managed.
52. The change process went well.

[67] Having measured prior to an organisational change, for re-measuring after the organisational change, instead or using the phrase "*prior to the change*" in the EMQ items, reference was made to the moment of the previous measurement, as: "*three years ago*".

Appendix C: EMQ, uncategorised

EMQ (V3) in order of questionnaire items
All items are mixed in direction: 21 positive, 21 negative
All items are mixed throughout categories

I non-managerial / operational level

❍ 1. Strongly Disagree ❍ 2. Disagree ❍ 3. Neutral ❍ 4. Agree ❍ 5. Strongly Agree

1. I am a typical member of our team.
2. The composition of our team could be improved.
3. Organisation members' activities must be monitored.
4. In general, my private life is perfectly balanced with my work.
5. To optimally utilise all the applied technology, I will need more experience, training or schooling.
6. The current absentee rate within our team is much too high.
7. Certain members of our team could probably perform better in an other position.
8. I trust others within the organisation to make decisions that are important to me.
9. My current working conditions are optimal.
10. My work contributes to my joy in life.
11. Within our team, there are one or more people who could perform even better once they have received additional experience, training or schooling.
12. I feel strongly connected to my organisation of employment.
13. At work, I take example from my supervisor.
14. The current working atmosphere benefits me.
15. Work could give me more satisfaction than it currently does.
16. I need certain tools to do my work.
17. I find it hard to adjust to sudden events or to new circumstances.

❍ 1. Never ❍ 2. Seldom ❍ 3. Neutral ❍ 4. Often ❍ 5. Always

18. With people I work with, I talk only about work related matters (rather than about personal, or other matters).
19. Within our team, we understand each other badly.
20. My supervisor fails in removing obstacles for me.
21. My work puts stress on me.
22. I do exactly what my boss tells me to do.
23. I know exactly what my supervisor expects from me.
24. I have all required technological means at my disposal.
25. Our performance quality could be higher.
26. Better results could be achieved if my supervisor would spend some of his/her time differently.
27. I get frustrated over things going wrong within the organisation.
28. Communication within our team is perfect.
29. My work interferes with my private life and/or vice versa.
30. I receive exactly the leadership I need.

31. The ‘outside world’ interferes with our work, or with what we deliver.
32. I need my supervisor to be able to carry out my work.
33. I do not (always) exactly know the formal organisational goals, and I am sometimes engaged in unrelated activities.
34. Our team delivers the maximally attainable productivity.

❍ 1. Never/None ❍ 2. Seldom/Some ❍ 3. Neutral ❍ 4. Often/Most ❍ 5. Always/All

35. Our team members prove to be of high moral standing.
36. Technical means, placed at my disposal, work as they should.
37. Our team members are honest.
38. Our team members could be better attuned to one another.
39. Existing rules, regulations and procedures are appropriate and adequate and I follow those conscientiously
40. Cooperation between our organisational units could be better.
41. Within our team, members are attentive to the interests of others.
42. Our team members could do more to benefit the organisation.
43. My colleagues and I trust one another implicitly and unconditionally.

II EMQ – supervisory / team level

❍ 1. Strongly Disagree ❍ 2. Disagree ❍ 3. Neutral ❍ 4. Agree ❍ 5. Strongly Agree

1. My subordinates have much in common with one another.
2. The composition of the team that I supervise could be improved.
3. Organisation members’ activities must be monitored.
4. In general, my subordinates´ private life seems to be perfectly balanced with their work.
5. To optimally utilise all the applied technology, my subordinates will need more experience, training or schooling.
6. Within the team that I supervise, the current absentee rate is much too high.
7. Certain subordinates of mine could probably perform better in an other position.
8. My subordinates and I trust others within the organisation to make decisions that are important to us.
9. For my subordinates and me, current working conditions are optimal.
10. Work contributes to my subordinates' joy in life.
11. Additional experience, training or schooling would allow me and/or some of my subordinates to perform even better.
12. My subordinates and I feel strongly connected to the organisation.
13. At work, my subordinates take example from me.
14. The current working atmosphere benefits both my subordinates and me.
15. Work could give my subordinates and me more satisfaction than it currently does.
16. My subordinates need certain tools to do their work.
17. My subordinates find it hard to adjust to sudden events or to new circumstances.

❍ 1. Never ❍ 2. Seldom ❍ 3. Neutral ❍ 4. Often ❍ 5. Always

18. My subordinates and I only talk about work related matters with people that we work with (rather than personal or other matters).
19. Within our team, we understand each other badly.
20. I fail in removing obstacles for my subordinates.
21. Work puts stress on my subordinates.
22. My subordinates do exactly what I tell them to do.
23. My subordinates know exactly what I expect from them.
24. My subordinates have all required technological means at their disposal.
25. Our performance quality could be higher.
26. Better results would be achieved if I would spend some of my time differently.
27. My subordinates get frustrated over things going wrong within the organisation.
28. Communication within our team is perfect.
29. Work interferes with my subordinates´ private life and/or vice versa.
30. I give exactly the leadership that is required.
31. The 'outside world' interferes with our work, or with what we deliver.
32. Without my supervision, my subordinates cannot carry out their work.
33. My subordinates do not (always) exactly know the formal organisational goals, and they are sometimes engaged in unrelated activities.
34. The productivity of the team that I supervise could be higher.

❍ 1. Never/None ❍ 2. Seldom/Some ❍ 3. Neutral ❍ 4. Often/Most ❍ 5. Always/All

35. My subordinates prove to be of high moral standing.
36. Technical means, placed at my subordinates' disposal, work as they should.
37. My subordinates are honest.
38. My subordinates could be better attuned to one another.
39. My subordinates find existing rules, regulations and procedures appropriate and adequate and they follow those conscientiously.
40. Cooperation between our organisational units could be better.
41. My subordinates and I are attentive to the interests of others.
42. My subordinates and I could do more to benefit the organisation.
43. My subordinates trust one another implicitly and unconditionally.

II EMQ – managerial / organisation level

❍ 1. Strongly Disagree ❍ 2. Disagree ❍ 3. Neutral ❍ 4. Agree ❍ 5. Strongly Agree

1. For the most part, teams are homogeneous by composition.
2. The composition of certain teams could be improved.
3. Organisation members' activities must be monitored.
4. In general, our organisation members' private life seems to be well balanced with their work.
5. To optimally utilise all the applied technology, our organisation members will need more experience, training or schooling.
6. The current absentee rate within our organisation is much too high.

7. Certain organisation members could probably perform better in an other position.
8. Our organisation members trust others within the organisation to make decisions that are important to them.
9. For our organisation members, current working conditions are optimal.
10. Work contributes to our organisation members' joy in life.
11. Additional experience, training or schooling would allow some of our organisation members to perform even better.
12. Our organisation members feel strongly connected to the organisation.
13. At work, our organisation members take example from their supervisors.
14. The current working atmosphere benefits our organisation members.
15. Work could give our organisation members more satisfaction than it currently does.
16. Our organisation members need certain tools to do their work.
17. Our organisation members find it hard to adjust to sudden events or to new circumstances.

❍ 1. Never ❍ 2. Seldom ❍ 3. Neutral ❍ 4. Often ❍ 5. Always

18. Our organisation members only talk about work related matters with people that they work with (rather than personal or other matters).
19. Within certain teams, members understand each other badly.
20. Supervisors fail in removing obstacles for their subordinates.
21. Work puts stress on our organisation members.
22. Organisation members do exactly what their supervisors tell them to do.
23. Our organisation members know exactly what their superiors expect from them.
24. Our organisation members have all required technological means at their disposal.
25. Our performance quality could be higher.
26. Better results would be achieved if supervisors would spend their time differently.
27. Our organisation members get frustrated over things that go wrong within the organisation.
28. Communication within all teams is perfect.
29. Work interferes with our organisation members´ private life and vice versa.
30. Our supervisors give exactly the leadership that is required.
31. The 'outside world' interferes with our organisation members´ work, or with what they deliver.
32. Without supervision, operational organisation members cannot carry out their work.
33. Our organisation members do not (always) exactly know the formal organisational goals, and they are sometimes engaged in unrelated activities. (Agree / Disagree)
34. The productivity of certain teams could be higher.

❍ 1. Never/None ❍ 2. Seldom/Some ❍ 3. Neutral ❍ 4. Often/Most ❍ 5. Always/All

35. Our organisation members prove to be of high moral standing.
36. Technical means, placed at the disposal of our organisation members, work as they should.
37. Our organisation members are honest.
38. In certain teams, members could be better attuned to one another.
39. Our organisation members find existing rules, regulations and procedures appropriate and adequate and they follow those conscientiously.

40. Cooperation between our organisational units could be better.
41. Our organisation members are attentive to the interests of others.
42. Our organisation members could do more to benefit the organisation.
43. Our organisation members trust one another implicitly and unconditionally.

Appendix D: Respondent's demographics

Respondents' demographics of the 2011/2012 survey

Total Population							
Gender	Male	Female	Unknown	***Organisation level***	Non-managerial	Supervisory	Managerial
N	104	81	5	***N***	161	20	9
%	54	43	3	***%***	84.7	10.5	4.74

Age range	< 25	25 - 35	35 - 45	45 - 55	> 55
N	0	10	44	67	65
%	0	5.38	23.7	36	34.9

Tenure range	0 -1	1 - 5	5 - 10	10 -20	> 20
N	12	12	13	65	88
%	6.32	6.32	6.84	34.2	46.3

B-Population							
Gender	Male	Female	Unknown	***Organisation level***	Non-managerial	Supervisory	Managerial
N	94	45	4	***N***	121	14	8
%	65.7	31.5	2.8	***%***	84.62	9.79	5.59

Age range	< 25	25 - 35	35 - 45	45 - 55	> 55
N	0	5	34	51	51
%	0	3.5	23.8	35.7	35.7

Tenure range	0 -1	1 - 5	5 - 10	10 -20	> 20
N	4	0	11	56	72
%	2.8	0	7.69	39.2	50.3

H-Population							
Gender	Male	Female	Unknown	***Organisation level***	Non-managerial	Supervisory	Managerial
N	4	29	1	***N***	32	2	0
%	11.8	85.3	2.94	***%***	94.12	5.88	0

Age range	< 25	25 - 35	35 - 45	45 - 55	> 55
N	0	5	8	13	7
%	0	14.7	23.5	38.2	20.6

Tenure range	0 -1	1 - 5	5 - 10	10 -20	> 20
N	8	12	2	8	4
%	23.5	35.3	5.88	23.5	11.8

P-Population							
Gender	Male	Female	Unknown	***Organisation level***	Non-managerial	Supervisory	Managerial
N	6	7	0	***N***	8	4	1
%	46.15	53.85	0	***%***	61.54	30.77	7.69

Age range	< 25	25 - 35	35 - 45	45 - 55	> 55
N	0	0	2	3	7
%	0	0	15.38	23.08	53.85

Tenure range	0 - 6 mths	6 – 12 mths	1 – 3 yr.	3 – 10 yr.	> 10 yr.
N	0	0	0	1	12
%	0	0	0	7.69	92.31

Appendix E: General Statistics

B-Population									
	N		Mean	Median	Std. Deviation	Variance	Range	Min.	Max.
	Valid	Missing							
Leadership	143	0	54.13	55.00	12.92	167.01	80.00	15.00	95.00
Emotions & Mood	143	0	54.46	56.25	12.25	149.99	68.75	25.00	93.75
Human behaviour	143	0	55.22	54.17	13.02	169.57	75.00	20.83	95.83
Perceived Ability	143	0	49.21	50.00	14.63	213.95	75.00	18.75	93.75
Perc. Benevolence	143	0	49.48	50.00	11.04	121.86	56.25	25.00	81.25
Perceived Integrity	143	0	72.20	75.00	13.61	185.23	62.50	37.50	100.00
Applied Technology	143	0	48.84	50.00	17.68	312.60	83.33	0.00	83.33
Circumstance	143	0	44.90	45.00	12.93	167.07	70.00	10.00	80.00
Trust & Confidence	143	0	64.69	62.50	13.17	173.45	75.00	25.00	100.00
Outcomes	143	0	58.45	58.33	12.13	147.19	70.83	25.00	95.83
Aptitude	143	0	54.07	53.57	12.65	160.00	71.43	17.86	89.29
Structure(X)	143	0	26.79	25.00	12.47	155.54	67.50	0.00	67.50
Structure(AVG)	143	0	51.48	51.67	11.74	137.88	65.00	17.50	82.50

Table 57: General statistics of B-population (rounded at 2 dec.).

H-Population									
	N		Mean	Median	Std. Deviation	Variance	Range	Min.	Max.
	Valid	Missing							
Leadership	34	0	51.77	50.00	11.99	143.76	55.00	20.00	75.00
Emotions & Mood	34	0	54.41	56.25	10.94	119.63	50.00	31.25	81.25
Human behaviour	34	0	50.00	50.00	14.18	200.97	62.50	16.67	79.17
Perceived Ability	34	0	43.57	40.63	11.15	124.26	50.00	25.00	75.00
Perc. Benevolence	34	0	39.89	37.50	11.72	137.35	43.75	18.75	62.50
Perceived Integrity	34	0	70.40	68.75	14.29	204.33	56.25	37.50	93.75
Applied Technology	34	0	34.80	33.33	15.14	229.25	66.67	0.00	66.67
Circumstance	34	0	40.59	40.00	9.83	96.61	40.00	20.00	60.00
Trust & Confidence	34	0	59.74	56.25	12.33	151.97	43.75	37.50	81.25
Outcomes	34	0	56.50	56.25	13.30	176.97	58.33	25.00	83.33
Aptitude	34	0	47.48	46.43	10.12	102.45	42.86	28.57	71.43
Structure(X)	34	0	17.66	17.08	8.36	69.96	35.00	0.00	35.00
Structure(AVG)	34	0	43.28	42.50	8.65	74.87	32.50	26.67	59.17

Table 58: General statistics of H-population (rounded at 2 dec.).

P-Population									
	N		Mean	Median	Std. Deviation	Variance	Range	Min.	Max.
	Valid	Missing							
Leadership	13	0	58.85	60.00	15.30	233.97	60.00	30.00	90.00
Emotions & Mood	13	0	47.12	50.00	10.40	108.17	31.25	31.25	62.50
Human behaviour	13	0	43.59	54.17	19.44	377.94	62.50	0.00	62.50
Perceived Ability	13	0	44.23	43.75	20.49	419.67	81.25	0.00	81.25
Perc. Benevolence	13	0	37.02	37.50	10.03	100.66	31.25	18.75	50.00
Perceived Integrity	13	0	70.19	68.75	12.54	157.25	37.50	56.25	93.75
Applied Technology	13	0	37.82	33.33	20.87	435.36	66.67	0.00	66.67
Circumstance	13	0	35.39	45.00	17.61	310.26	55.00	0.00	55.00
Trust & Confidence	13	0	57.69	56.25	18.25	333.03	68.75	25.00	93.75
Outcomes	13	0	53.85	54.17	17.39	302.26	54.17	25.00	79.17
Aptitude	13	0	44.78	46.43	18.01	324.44	64.29	7.14	71.43
Structure(X)	13	0	22.15	20.00	13.82	190.85	46.67	0.00	46.67
Structure(AVG)	13	0	48.33	46.67	12.71	161.46	40.83	27.50	68.33

Table 59: General statistics of P-population (rounded at 2 dec.).

Appendix F: Quantitative data, 2011 measurements.

The next four tables contain findings of the following populations:

- *Table 60* [Total Population] - all valid responses (N = 190)
- *Table 61* [B-Population] - responses of members of the Province Noord-Brabant (N 143)
- *Table 62* [H- Population] - responses of members of University of Applied Science Leiden (*Hogeschool Leiden*) (N=34)
- *Table 63* [P-Population] - pretest data (responses of members of the City of Leeds and the Province of Zeeland) (N = 13).

In those tables, grey cells indicate data significance less than the 0.05 level,[68] which is indicative of a relatively high likelihood that the pertaining values have come about by chance, rather than from a statistically relevant pattern. Black cells indicate significant correlations with substantiality exceeding 0.499.

Correlation between Perceived Ability and Aptitude has obviously not been taken into consideration, since three of the four measurement items of the variable Perceived Ability are included in the seven items measuring the variable Aptitude.

Reliability statistics of all items of the total research population yields a Cronbach's alpha of 0.896 and a Cronbach's alpha based on standardised items of 0.900.

In Table 60 we find Human Behaviour correlating with Leadership (R = 0.413), but less with Applied Technology (R = 0.344). Interestingly, Human Behaviour correlates significantly stronger with the variable Structure(AVG) (R = 0.498). This correlation is less than the correlation between Human behaviour and Aptitude (R = 0.606), which is stronger than the correlation between Aptitude and Structure(AVG) (R = 0.566)

Both versions of this variable Structure, Structure(AVG) and Structure(X), are very similar to one another, in the total research population correlating by R = 0,980.

[68] This is indicated with a value on the *S*-line *higher* than 0.05.

Measurements indicated strong correlation between the variable Outcomes on the one hand and on the other hand the variables Aptitude, Human Behaviour, Perceived Ability, Structure and Trust. The strong correlation between Aptitude and Outcomes ($R = 0.695$) can only in part be subscribed to both variables sharing one measurement item. Aptitude also shares one measurement item with the variable Leadership with which it correlates significantly less ($R = 0.353$).

We also find Emotions & Mood correlating with Structure(AVG) ($R = 0.422$) more strongly than it does with the separate structural components, Leadership ($R = 0.374$) and Applied Technology ($R = 0.274$). This correlation between Emotions & Mood with Structure(AVG) is slightly weaker than the correlation between Emotions & Mood and Human behaviour ($R = 0.478$).

		Emotions & Mood	Human behaviour	Perceived Ability	Perceived Benevolence	Perceived Integrity	Applied Technology	Circumstance	Trust	Outcomes	Aptitude	Structure(X)	Structure(AVG)
Leadership	*R*	0.374**	0.413**	0.259**	0.220**	0.090	0.092	0.167*	0.417**	0.455**	0.351**	0.571**	0.626**
	S	0.000	0.000	0.000	0.002	0.219	0.206	0.022	0.000	0.000	0.000	0.000	0.000
Emotions & Mood	*R*		0.478**	0.220**	0.138	0.204**	0.274**	0.373**	0.469**	0.417**	0.409**	0.442**	0.422**
	S		0.000	0.002	0.058	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Human behaviour	*R*			0.384**	0.378**	0.214**	0.344**	0.378**	0.567**	0.616**	0.606**	0.496**	0.498**
	S			0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Perceived Ability	*R*				0.192**	0.134	0.291**	0.300**	0.307**	0.569**	0.795**	0.360**	0.371**
	S				0.008	0.066	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Perceived Benevolence	*R*					0.134	0.268**	0.194**	0.339**	0.290**	0.242**	0.335**	0.332**
	S					0.066	0.000	0.007	0.000	0.000	0.001	0.000	0.000
Perceived Integrity	*R*						0.105	-0.047	0.190**	0.248**	0.191**	0.123	0.132
	S						0.148	0.521	0.009	0.001	0.008	0.091	0.069
Applied Technology	*R*							0.377**	0.309**	0.347**	0.474**	0.847**	0.834**
	S							0.000	0.000	0.000	0.000	0.000	0.000
Circumstance	*R*								0.374**	0.350**	0.405**	0.426**	0.388**
	S								0.000	0.000	0.000	0.000	0.000
Trust & & Confidence	*R*									0.523**	0.474**	0.453**	0.473**
	S									0.000	0.000	0.000	0.000
Outcomes	*R*										0.700**	0.496**	0.524**
	S										0.000	0.000	0.000
Aptitude	*R*											0.545**	0.566**
	S											0.000	0.000
Structure(X)	*R*												0.980**
	S												0.000

Table 60: Summarised correlation table of all valid response (N = 190)

For Tables 60 – 64, the following applies:

**. Correlation is significant at the 0.01 level (2T).
*. Correlation is significant at the 0.05 level (2T).
R = Pearson Correlation Coefficient, *S* = Significance (2-tailed)

In Table 61, we also find that Human Behaviour correlates more strongly with Structure(AVG) (*R* = 0.584) than it does with Leadership (*R* = 0.515) or with Applied Technology (*R* = 0.339), although the difference between its correlation with Structure(AVG) and Leadership is slightly less pronounced than it is for the total research population. Human Behaviour correlates about as strongly with Aptitude (*R* = 0.581) as it does with Structure(AVG), which exceeds the correlation between Aptitude and Structure(AVG) (*R* = 0.521)

		Emotions & Mood	Human behaviour	Perceived Ability	Perceived Benevolence	Perceived Integrity	Applied Technology	Circumstance	Trust	Outcomes	Aptitude	Structure(X)	Structure(AVG)
Leadership	*R*	0.420**	0.515**	0.261**	0.245**	0.042	0.157	0.286**	0.464**	0.475**	0.353**	0.653**	0.669**
	S	0.000	0.000	0.002	0.003	0.616	0.061	0.001	0.000	0.000	0.000	0.000	0.000
Emotions & Mood	*R*		0.476**	0.250**	0.152	0.160	0.310**	0.357**	0.451**	0.456**	0.401**	0.488**	0.465**
	S		0.000	0.003	0.070	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Human behaviour	*R*			0.383**	0.260**	0.204*	0.399**	0.357**	0.509**	0.601**	0.581**	0.566**	0.584**
	S			0.000	0.002	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Perceived Ability	*R*				0.125	0.141	0.229**	0.349**	0.289**	0.591**	0.823**	0.307**	0.316**
	S				0.136	0.093	0.006	0.000	0.000	0.000	0.000	0.000	0.000
Perceived Benevolence	*R*					0.135	0.234**	0.185*	0.301**	0.246**	0.147	0.314**	0.311**
	S					0.108	0.005	0.027	0.000	0.003	0.080	0.000	0.000
Perceived Integrity	*R*						0.041	-0.164*	0.148	0.234**	0.155	0.039	0.054
	S						0.625	0.050	0.078	0.005	0.064	0.641	0.519
Applied Technology	*R*							0.314**	0.337**	0.388**	0.434**	0.828**	0.839**
	S							0.000	0.000	0.000	0.000	0.000	0.000
Circumstance	*R*								0.375**	0.427**	0.390**	0.408**	0.394**
	S								0.000	0.000	0.000	0.000	0.000
Trust & Confidence	*R*									0.538**	0.423**	0.480**	0.509**
	S									0.000	0.000	0.000	0.000
Outcomes	*R*										0.695**	0.527**	0.554**
	S										0.000	0.000	0.000
Aptitude	*R*											0.496**	0.521**
	S											0.000	0.000
Structure(X)	*R*												0.983**
	S												0.000

Table 61: Correlation table B-population (Noord Brabant, N = 143)

The variable Emotions & Mood correlates slightly stronger with Structure(AVG) (R = 0.465) than it does with Leadership (R = 0.420) and notably stronger than with Applied Technology (R = 0.310). This correlation between Emotions & Mood and Structure(AVG) is weaker than the correlation between Emotions & Mood and Human behaviour (R = 0.515).

		Emotions & Mood	Human behaviour	Perceived Ability	Perceived Benevolence	Perceived Integrity	Applied Technology	Circumstance	Trust	Outcomes	Aptitude	Structure(X)	Structure(AVG)
Leadership	*R*	0.387*	0.256	0.010	0.104	0.203	-0.203	-0.131	0.252	0.318	0.345*	0.323	0.516**
	S	0.024	0.143	0.957	0.559	0.248	0.251	0.460	0.151	0.067	0.045	0.063	0.002
Emotions & Mood	*R*		0.326	-0.148	-0.186	0.308	-0.117	0.125	0.427*	0.182	0.268	0.109	0.166
	S		0.060	0.402	0.291	0.077	0.511	0.482	0.012	0.302	0.125	0.541	0.349
Human behaviour	*R*			0.090	0.366*	0.051	-0.250	-0.063	0.542**	0.600**	0.462**	-0.072	-0.041
	S			0.613	0.033	0.776	0.154	0.722	0.001	0.000	0.006	0.686	0.817
Perceived Ability	*R*				0.031	0.002	0.133	-0.085	-0.030	0.216	0.463**	0.074	0.123
	S				0.863	0.991	0.455	0.631	0.868	0.220	0.006	0.678	0.490
Perceived Benevolence	*R*					-0.038	-0.074	-0.350*	0.137	0.211	-0.033	-0.028	0.007
	S					0.829	0.678	0.043	0.439	0.230	0.852	0.874	0.967
Perceived Integrity	*R*						0.229	0.175	0.168	0.199	0.235	0.376*	0.341*
	S						0.193	0.323	0.343	0.259	0.180	0.028	0.048
Applied Technology	*R*							0.452**	-0.231	0.092	0.266	0.840**	0.735**
	S							0.007	0.188	0.604	0.128	0.000	0.000
Circumstance	*R*								0.061	-0.049	0.162	0.427*	0.305
	S								0.733	0.781	0.359	0.012	0.080
Trust & Confidence	*R*									0.329	0.360*	-0.061	-0.028
	S									0.057	0.036	0.733	0.875
Outcomes	*R*										0.638**	0.248	0.301
	S										0.000	0.158	0.084
Aptitude	*R*											0.428*	0.472**
	S											0.012	0.005
Structure(X)	*R*												0.958**
	S												0.000

Table 62: Correlation table population Hogeschool Leiden (N = 34)

Table 62 contains many more grey cells, indicating significantly lower measurement reliability due to the limited amount of respondents of this sub population. However, where correlations stronger than R = 0.500 were

found, they did prove to be significant at the 0.01 level (2-tailed).[69] In this population, we find no significant correlation data with respect to Human Behaviour and Structure; Human Behaviour and Leadership or Applied Technology; or with respect to Human Behaviour and Emotions & Mood. Correlation between Human Behaviour and Aptitude was $R = 0.462$.

		Emotions & Mood	Human behaviour	Perceived Ability	Perceived Benevolence	Perceived Integrity	Applied Technology	Circumstance	Trust	Outcomes	Aptitude	Structure(X)	Structure(AVG)
Leadership	*R*	0.174	0.230	0.567*	0.556*	0.335	-0.037	-0.215	0.436	0.658*	0.506	0.367	0.572*
	S	0.570	0.450	0.043	0.048	0.263	0.905	0.481	0.137	0.015	0.078	0.218	0.041
Emotions & Mood	*R*		0.749**	0.465	0.516	0.509	0.665*	0.803**	0.727**	0.547	0.687**	0.732**	0.650*
	S		0.003	0.109	0.071	0.076	0.013	0.001	0.005	0.053	0.009	0.004	0.016
Human behaviour	*R*			0.591*	0.828**	0.611*	0.491	0.753**	0.799**	0.695**	0.757**	0.582*	0.541
	S			0.033	0.000	0.027	0.089	0.003	0.001	0.008	0.003	0.037	0.056
Perceived Ability	*R*				0.556*	0.225	0.594*	0.158	0.607*	0.854**	0.874**	0.781**	0.829**
	S				0.049	0.460	0.032	0.606	0.028	0.000	0.000	0.002	0.000
Perceived Benevolence	*R*					0.498	0.115	0.487	0.644*	0.721**	0.716**	0.342	0.429
	S					0.084	0.709	0.091	0.017	0.005	0.006	0.253	0.144
Perceived Integrity	*R*						0.338	0.504	0.559*	0.460	0.366	0.473	0.479
	S						0.258	0.079	0.047	0.114	0.219	0.103	0.097
Applied Technology	*R*							0.467	0.495	0.387	0.642*	0.904**	0.799**
	S							0.107	0.086	0.191	0.018	0.000	0.001
Circumstance	*R*								0.509	0.273	0.462	0.385	0.254
	S								0.076	0.368	0.112	0.194	0.402
Trust & Confidence	*R*									0.665*	0.721**	0.646*	0.668*
	S									0.013	0.005	0.017	0.013
Outcomes	*R*										0.842**	0.673*	0.714**
	S										0.000	0.012	0.006
Aptitude	*R*											0.794**	0.831**
	S											0.001	0.000
Structure(X)	*R*												0.963*
	S												0.000

Table 63: Correlation table pretest population (N = 13)

As one may expect with a sub population limited to 13 respondents, significance levels in Table 63 dropped even further, compared to previous tables (despite the many black cells). Nevertheless, for what it is worth, this table does suggest significant correlation between Emotions & Mood and the variable Applied Technology ($R = 0.665$), which is hardly reinforced by

[69] Using IBM SPSS Statistics, version 20.

Leadership, judging from its correlation with Structure(AVG) (R = 0.650) and Structure(X) (R = 0.732).

From this table, with regard to Human Behaviour, perhaps most strikingly is the strong correlation between Human Behaviour and the variable Perceived Benevolence (R = 0.828).

Appendix G: Metadata Quantitative Research (2014)

In total, 284 questionnaires were submitted. All submitted questionnaires were received in good order. 278 questionnaires were considered valid. All invalid questionnaires were incompletely filled in. On a total work staff of 1.225[70], almost 23% submitted a valid questionnaire.

Non-managerial	Supervisory	Management
86%	10%	4%

Female	Male
40%	60%

Tenure				
0 - 1	1 - 5	5 - 10	10 – 20	> 20
9.7%	12.2%	21.6%	37.8%	18.7%

Age (years)				
< 25	25 - 35	35 - 45	45 - 55	> 55
0.8%	10%	26.5%	38.5%	24.2%

Table 64: Metadata respondents[71]

Female	Male
44%	56%

Tenure				
0 - 1	1 - 5	5 - 10	10 – 20	> 20
0.3%	5.3%	23.8%	38.9%	31.6%

Age (years)				
< 25	25 - 35	35 - 45	45 - 55	> 55
0.5%	6.5%	25.6%	37%	30.3%

Table 65: Metadata research population

On the Internet website where the questionnaires were placed, an information page and a page with Frequently Asked Questions (FAQ) were offered. On those pages, respondents could turn for answers to questions they may have had about the survey.

- The information page was read by three individuals who subsequently did not participate in the survey.
- Four individuals read the information page before participating in the survey.
- Six individuals read the information page after having participated.

[70] According to data issued by the personnel department of 26 March, 2014.
[71] As reported by respondents.

The FAQ-page was read by 12 individuals, all after having submitted their questionnaire.

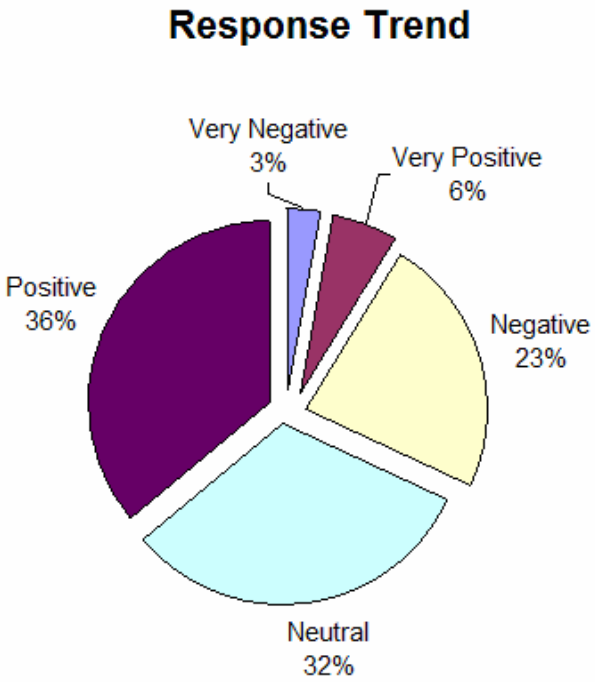

Figure 14: Response trend questionnaire choices

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Contrary to common belief, leadership *never* links directly to an organisation's results. By definition, within organisational processes, leaders must incite others to achieve desired results. However, organisation members' behaviour is guided and influenced by more than leadership alone. Central to this dissertation are the elementary aspects of organisational processes. Part of this research consists of examining what influences organisation members' behaviour, how this takes place and how organisational results come about. These aspects are brought together in an Elementary Model of Organisational Processes (EMOP), which also illustrates how those aspects tend to relate to one another. A method is developed to quantify those elements and to measure them within organisations. Furthermore, examination has taken place into practical application of such measurements on behalf of leading and developing organisations.

For this dissertation, various methods and techniques are applied, such as literature study, modelling, formalising, case studies, interviews, surveys, quantitative analysis and qualitative analysis. The resulting model is applied in multiple organisations, and in one organisation twice with a three-year interval between measurements, after which those measurements were examined separately, as well as relative to one another.

Next to the elementary aspects of organisational processes, behaviour of organisation members is affected strongly by their Aptitudes and by their Attitudes with regard to certain aspects. As such, those aptitudes and attitudes both enable and constrain organisation development. To achieve optimal leadership effectiveness, organisation development and organisation effectiveness, organisation members' aptitudes must be relevant within an ensemble of available and suitable procedures and tools, and this unity must be directed towards reaching commensurable goals.

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