ECONSTOR
Make Your Publications Visible.

A Service of
ZBW
Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Kane, Brian

Doctoral Thesis

Performance Talk: Next Generation Management of Organizational Performance

PhD Series, No. 11.2010

Provided in Cooperation with:
Copenhagen Business School (CBS)

Suggested Citation: Kane, Brian (2010) : Performance Talk: Next Generation Management of Organizational Performance, PhD Series, No. 11.2010, ISBN 9788759384220, Copenhagen Business School (CBS), Frederiksberg,
https://hdl.handle.net/10398/8015

This Version is available at:
https://hdl.handle.net/10419/208746

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

https://creativecommons.org/licenses/by-nc-nd/3.0/

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

Performance Talk

Next Generation Management of Organizational Performance

Brian Kane
Performance Talk
Next Generation Management of Organizational Performance

1st edition 2010
PhD Series 11.2010

© The Author

ISBN: 978-87-593-8422-0
ISSN: 0906-6934

LIMAC PhD School is a cross disciplinary PhD School connected to research communities within the areas of Languages, Law, Informatics, Operations Management, Accounting, Communication and Cultural Studies.

All rights reserved.
No parts of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage or retrieval system, without permission in writing from the publisher.

Performance Talk

Next Generation Management of Organizational Performance

http://performancetalk.net

Brian Kane

LIMAC PhD School; Programme in Informatics
Copenhagen Business School
Center for Applied Information and Communication Technology

2010

a-priori-knowledge ability-to-prioritize abstract-language action adaptable aesthetical agility ambiguity anarchy anecdotes antithetical argumentation art artistic attention-to-detail attritionautonomy basic-research belief bottom-up broad-objective building-threads bureaucracy business calibration central centralized-decisions chance-coincidence chance-prone change change-the ame clarity codification coherency collaboration comfort comment comparison competitive-product compromise conceputual-mediation conditioning conducive-environment confusion conjecture consensus consistency conversation convincing coordination craft create-situations creative-product creativity crowding-behavior crystalization curiosity data debate decentralization deep demarcation democracy dependencies design desire-to-be-part-of-community development dialogue difference difficult-to-quantify disagreements discontinuity discourse discussion disruptive diversity division-of-labor documentation early-phase eclectic economies-of-scale effectiveness efficiency elegance email emotionally-detached emotionally-involved empathy empowerment engineering essential-information establishing-optimum excitement experience experimentative explorative face-to-face factory-like faster-change feature-rich-product feeling-based feeling-of-control fewer-controls fewer-variations flat-org-structure flexibility flexible-product fluidity focus formalized-communication formula freedom freewheeling friction-prone frictionless fun functional-org-structure fuzzy gaming-behavior general-problems generation-of-ideas good-motivation greater-expectation hard hard-culture health hierarchy high-granularity high-level-of-abstraction high-measurability high-predictability higher-risk holistic-thinking human immersion in-stream-communication incomplete-representation independency individual individual-values inertia influence informational-blinding ingenuity initial-representation innovation innovation-management instinctive integrated-product integration-in-teams interdependence internal-competition interpretation intrinsic-value intuition iterative knowledge-in-context kpi larger-org-size larger-teams late-phase less-maturity less-org-growth less-repetitive-process less-stable-organization lessens-cooperation listening local logistical long-term longer-distance longer-reach loose low-measurability low-predictability lower-risk lower-target-objective luck-chance maintain make-decisions make-estimations make-generalizations

manage-strictly management management-as-reactive management-maturity management-system manufacturing-process mature-market meaning measure mechanical meeting-customer-needs memorable mental-balance methods metrics mingling monitor-deviation more-controls more-information more-maturity more-org-growth more-repetitive-process more-variations morphing multi-dimensional multi-disciplinarity multiple-and-dynamic-aspect multiplicity narrative narrow-behavior natural-opportunities need-for-color need-for-thought no-barriers not-have-metrics not-meet-expectations not-perfect objective-of-impact one-way-communication openness opportunity organic-decision organic-interaction organization organizational-risk ownership parameters peer-to-peer-communication people people-dependent perceived-illegitimate perceived-objectivity perfect persistent personal-risk plain-causal-links play play-the-game pointers poor-motivation poor-product-quality post-mortem-analysis predictable-product prescriptiveness process process-orientation product-centric-org-structure product-complexity production-orientation productivity progress project project-management prototypical purpose pursuing-organizational-interests pursuing-own-interests qualitative quality-product quantitative questions radical-thinking random reality refine reinforce-culture relationships reliability reporting research results-orientation retrospective-evaluation retrospective-predictability right-amount-of-data right-social-dynamic routinization rule-based scalar scheduling scientific scorecard see-potential seeding-mutation seeing-signs self-actualization self-motivation shepherding short-termism shorter-distance single-aspect situationally-dependent slow-speed smaller-org-size smaller-teams social-computing soft soft-culture solve-problems specialization specs speculative speed stories strategic strategy stronger-responsibility structure structured-communication sub-optimization subjective suggestion synchronization synergies systems tactical targeted team template the-good thinking-process tools top-down-org-structure triangulation trust uncertainty understanding unspecified-process unstructured-communication unstructured-process use-of-heuristic using-evidence utility valid-quantification validity value value-based value-system variation vectoring verbal-reporting visibility well-defined why wiki

Abstract

Managers must aspire to *understand* their organization in a way that allows them to take appropriate actions when necessary and to be able to utilize tools which encourage the organization to *behave* in a desirable way. The field of *performance management* deals with these objectives and is becoming increasingly pervasive.

However, the author's personal experience and substantial scholarship suggest that performance management is linked to dysfunctional behavior in organizations. Various current explanations for the link between measurement and dysfunction revolve around *observability* or *knowledge of the transformation process*, but seem simplistic and inadequate. This work examines measurement as *one* representational form out of many others, for example text. It is proposed that the representational *form* used in performance management practice is implicated with dysfunctional behavior.

This demands an exploration of the relevant *facets of organizational reality* which influence the *relationship* with various representational forms. After a theoretical positioning, the relationship is explored empirically through onsite visits at two Microsoft Corporation locations in Copenhagen and Redmond. Thirty stories of performance management, based on interviews with senior managers, are presented. The stories provide the basis for establishing a rich understanding of organizational reality and the implications of using various representational forms in terms of dysfunctional behavior.

These implications lead to a fundamental rethinking of the form and boundaries of performance management theory and practice, and emphasize the need for a multi-paradigmatic approach to performance management, which is presented.

Acknowledgements

There are quite a few people whose knowledge and experience I attempted to take advantage of during my endeavors to complete this thesis. First in line to receive praise are the three wise men I call my advisors. Professor Niels Bjørn-Andersen gave me fantastic support in pursuing my interests and has been instrumental in giving me an awesome learning experience. Professor Jan Mouritsen, whose analytical sharpness I can only dream of, consistently took my puzzlement arising from my own work to new heights and was a steady source of deep reflection. Professor Robert Austin was an important inspiration for pursuing questions of dysfunctional behavior and has motivated me to take the path less travelled.

Outside CBS, two titans of performance management were particularly helpful. David Norton was more than generous with his time and gave me a much more balanced perspective on the Balanced Scorecard. Andy Neely gave me critical, yet sympathetic, input which I took to heart. I am thankful to them both.

My real heroes, though, are all the people at Microsoft who took precious time to speak to me. There are too many to mention but you know who you are. Without the consent of Director Kim Ibfelt in Copenhagen and Managing Director Rico Malvar in Redmond, this work would have been impossible. Likewise, Claus Busk Andersen and Philip Fawcett have been a tremendous help in navigating the ins and outs of their respective organizations and I am grateful to them for that.

Last, but not least, I must thank my mother Nuala Kane, for nudging me to nurture and pursue my curiosity and for always going far beyond the call of duty of any mother.

Brian Kane, Copenhagen, January 1st 2010

Content overview

CHAPTER 1 INTRODUCTION 1

CHAPTER 2 APPROACH 6

CHAPTER 3 PERFORMANCE MANAGEMENT SCHOLARSHIP 86

CHAPTER 4 STORIES OF PERFORMANCE MANAGEMENT 99

CHAPTER 5 FINDINGS 260

CHAPTER 6 CONCLUSIONS 305

APPENDIX: NEXT GENERATION PERFORMANCE MANAGEMENT? 326

REFERENCE LIST 346

Detailed content

CHAPTER 1 INTRODUCTION 1

CHAPTER 2 APPROACH 6

2.1 FRAMING DYSFUNCTION 6

2.2 RESEARCH PROBLEM 12

2.2.1 A fundamental ontology of structure and agency 17
2.2.2 Representational forms 31
2.2.3 Organizational reality 48
2.2.4 Propositions of interplay 61
2.2.5 Summary of research problem 65

2.3 METHODOLOGY 67

2.3.1 Confessions of a non-methodologist 68
2.3.2 Influences and allegiances 69
2.3.3 Choice of method 81

2.4 CHRONOLOGY 83

2.5 SUMMARY 85

CHAPTER 3 PERFORMANCE MANAGEMENT SCHOLARSHIP 86

3.1 STRUCTURALLY ORIENTED 90

3.2 AGENCY ORIENTED 94

3.3 CONCLUSIONS ON SCHOLARSHIP 97

CHAPTER 4 STORIES OF PERFORMANCE MANAGEMENT 99

4.1 METHOD 99

4.1.1 Sampling 100
4.1.2 On interviewing 106
4.1.3 Categorization and presentation of data 113

4.2 MICROSOFT ORGANIZATIONS 113

4.3 MICROSOFT DEVELOPMENT CENTER COPENHAGEN 114

4.3.1 Bjarne Schøn, Product Unit Manager, Mobile Applications 118
4.3.2 Michael Svanholm Thomsen, Senior Program Manager Lead, NAV S&T 123
4.3.3 Martin Nielander, Program Manager II, NAV Release 126

4.3.4 Jeremy Britten, Senior Program Manager Lead, NAV Release *129*
4.3.5 Henrik Frovst, Senior Test Manager, NAV Client *133*
4.3.6 Brian Nielsen, Senior Program Manager Lead, NAV App *137*
4.3.7 Andy Blehm, Senior Program Manager Lead, NAV Client *142*
4.3.8 Mike Neuburger, Senior Test Lead, NAV S&T *146*
4.3.9 Torben Siggaard, Principal Group Program Manager, NAV App *150*
4.3.10 Peter Christensen, Principal Development Manager, NAV Client *154*
4.3.11 Claus Busk Andersen, Senior Program Manager, NAV S&T *158*
4.3.12 Sam Skrivan, Principal Development Manager, NAV App *161*
4.3.13 Jens Møller-Pedersen, Development Manager, NAV S&T *166*
4.3.14 Tim Tolbert, Senior Test Lead, NAV App *172*
4.3.15 Kim Ibfelt, Director of Program Management, NAV *175*
4.3.16 Michael Nielsen, Director of Development, NAV *182*

4.4 MICROSOFT RESEARCH REDMOND 188

4.4.1 James Oker, Director of Program Management *189*
4.4.2 Kevin Schofield, General Manager *192*
4.4.3 Bill Buxton, Principal Researcher *196*
4.4.4 Alex Acero, Research Area Manager *202*
4.4.5 Jim Kajiya, Distinguished Engineer *206*
4.4.6 Rick Szeliski, Principal Researcher *211*
4.4.7 Rich Draves, Research Area Manager *216*
4.4.8 Victor Bahl, Principal Researcher *220*
4.4.9 Gavin Jancke, Director of Engineering *224*
4.4.10 John Platt, Research Area Manager *229*
4.4.11 Eric Horvitz, Research Area Manager *233*
4.4.12 Lili Cheng, Director *237*
4.4.13 Surajit Chaudhuri, Research Area Manager *242*
4.4.14 Rick Rashid, Senior Vice President *244*
4.4.15 Rico Malvar, Managing Director *251*

4.5 SUMMARY OF STORIES 258

CHAPTER 5 FINDINGS 260

5.1 PROCEDURE FOR THE ANALYSIS OF PROPOSITIONS 260

5.2 THE FAMILIES OF REPRESENTATION AND REALITY 262

5.2.1 Family 1 – agency-oriented representational forms *263*
5.2.2 Family 2 – structurally-oriented representational forms *263*
5.2.3 Family 3 – structurally-oriented organizational reality *265*
5.2.4 Family 4 – agency-oriented organizational reality *267*

5.3 RELATIONSHIP BETWEEN REPRESENTATION AND REALITY 269

5.4 'DISTINCTIONS' AND FIVE OTHER ASPECTS OF ORGANIZATIONAL REALITY 273

5.5 CREATING REPRESENTATIONS IS AN EPISTEMIC PRACTICE 280

5.6 THE AUTHORITY WHICH DEFINES PERFORMANCE 286

5.6.1 Strategy as authority 293

5.7 CHALLENGES TO ASSUMPTIONS AND PROPOSITIONS 298

5.7.1 Organizations are not one organizational reality 299
5.7.2 Representations are not empirically structurally or agency oriented 300
5.7.3 Reality and representations should not be thought of as continuums 301
5.7.4 Representational soundness is a non-issue 301
5.7.5 Representational lifecycles 302

5.8 SUMMARY OF FINDINGS 303

CHAPTER 6 CONCLUSIONS 305

APPENDIX: NEXT GENERATION PERFORMANCE MANAGEMENT? 326

'TALK' 326

Properties of representational forms within a PM practice 327
Narrative-based PM 330
Talk method design 332
Talk scenario 333
Summary of Talk 344

REFERENCE LIST 346

Table of figures

Figure 1: Article counts 3
Figure 2: Daft's Relationship between Language of Description And Organizational Reality 13
Figure 3: Research problem 15
Figure 4: Research problem, alternative illustration 15
Figure 5: Organizational design is implicit.....16
Figure 6: The dimensions of The Duality of Structure. 26
Figure 7: Structurational Model of Information Technology.....28
Figure 8: Daft's Continuum of Languages for Describing Organizational Reality 32
Figure 9: Conditions Determining the Measurement of Behavior and of Output.....50
Figure 10: Representation and organizational reality gap.....62
Figure 11: Representation and organizational reality interaction 63
Figure 12: Language and organizational reality redefined with agency and structure.66
Figure 13: Recursive epistemology 80
Figure 14: The Insights Discovery Profile.....122
Figure 15: The Long Nose of Innovation.....200
Figure 16: Horizons in subjective PM.....222
Figure 17: Extending with mode of communication.....256
Figure 18: Gap between actual and appropriate 257
Figure 19: Examples of chains of interactions 258
Figure 20: Codes for agency-oriented representational forms 263
Figure 21: Codes for structurally-oriented representational forms 264
Figure 22: Codes for structurally-oriented organizational reality 266
Figure 23: Codes for agency-oriented organizational reality 268
Figure 24: Relationships within and between families 270
Figure 25: Ontology and epistemology.....280
Figure 26: Strategy, normative authority, and PM practice.....294
Figure 27: Five dimensions of organizational reality 304
Figure 28: Rhetoric in the fuzzy area.....327

Chapter 1 Introduction

> "Quantitative measures of performance are tools, and are undoubtedly useful. But research indicates that indiscriminate use and undue confidence and reliance in them result from insufficient knowledge of the full effects and consequences. Judicious use of a tool requires awareness of possible side effects and reactions. Otherwise, indiscriminate use may result in side effects and reactions outweighing the benefits, as was the case when penicillin was first hailed as a wonder drug. The cure is sometimes worse than the disease." (Ridgway 1956, 240)

Managers must aspire to *understand* their organization in a way that allows them to take appropriate actions when necessary and to be able to utilize tools which encourage the organization to *behave* in a desirable way. Gaining knowledge about how the organization is doing is an essential part of management. Most organizations need to *represent organizational 'reality'* to some consumer of this information, either internal or external to the organization. This decoupling of time and space allows one party to act on some part of reality without being present in the relevant physical space or at the time of the events. This is a process of *abstraction*, which is a reduction of the richer complexity of reality. Abstraction is a cornerstone for being able to run an organization in an effective and efficient way. The reason for this is that not all reality is equally relevant for all consumers. An abstraction is, inherently, the product of a process of reduction of complexity. This could be a manager needing to know the progress or status of a staff member, a board needing to get an impression of the firm's financial trajectory, or a production planner needing to know what the sales pipeline looks like. This need for a representation of organizational reality is therefore extremely widespread. The latest label for this process is broadly termed performance management (PM), which draws on its inheritance from business intelligence (BI) and the wider field of management reporting. Here, my interest is the special case of representing organizational performance *and* understanding how these representations alter the behavior of the organization (Hall 2008), which they do

in ways not always predicted (e.g. Argyris 1952; Hopwood 1972). The challenge is to give decision makers and other consumers of representations of organizational reality the best foundation possible for managing organizational performance. Everybody seems to talk about performance as if it were a well-defined concept and performance is something most want to have and achieve. But in this author's experience, while people or organizations often have metrics almost as often these metrics do not effectively capture *true performance*, with the important exception of financial objectives.

The concepts of 'performance' in general and specifically 'performance measurement'/'performance management' (PM) have become ubiquitous in social science scholarship and, as Figure 1 illustrates, the use of these terms has risen dramatically in the last decade. The use of 'performance' has almost doubled and that of PM has almost tripled. The use of PM as an increasingly adopted concept tells us that academia is reflecting a picture of practice most of us would accept: a culture of performance is dominant and the goal of achieving high performance is seldom challenged as being illegitimate. This makes performance an unavoidable imperative in current management thinking and makes it difficult to ignore.

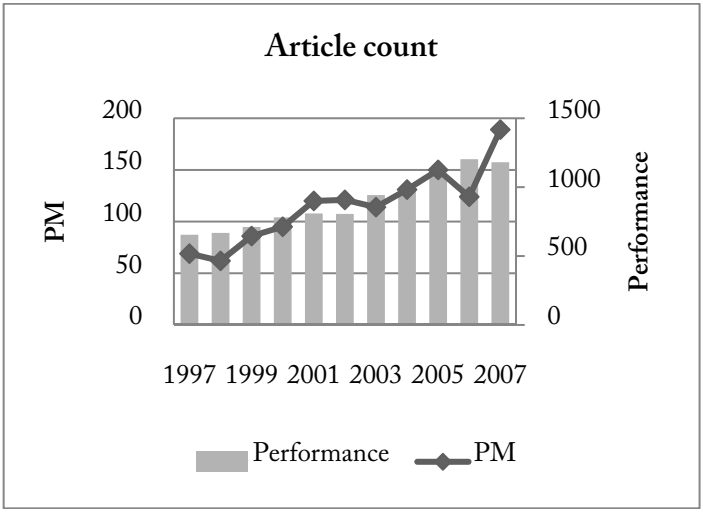


Figure 1: Article counts[1]

Arguably, PM is a reasonable and useful concept with which to understand managerial effectiveness; it seems possible to understand effective management as achieving performance. Naturally, no claims are made as to its exclusivity in understanding managerial effectiveness; merely that it is a significant concept.

So the overall theme, one might say, is managerial effectiveness – are we using appropriate tools to manage? I assume therefore from the outset that an organization's *raison d'être* is to create value, but that value is not confined to economic value. I assume that value can be captured by the concept of 'performance', and the overall inquiry relates to how organizations should choose an approach to managing organizational performance. In other words, I am

[1] Web of Science search string: 1: Topic=("performance measurement") OR Topic=("performance management") Timespan=1997-2007. Databases=SSCI. 2: Topic=(performance) Timespan=1997-2007. Databases=SSCI. Refined by: Subject Areas=(MANAGEMENT) > Document Type=(ARTICLE) & Languages=(ENGLISH)

interested in knowing what factors should be considered when designing a PM approach. In our ongoing investigation into the organization's performance, how should we determine the approach which gives the best basis for effective management? In this thesis, I will try to evolve our understanding of this question and point to possible factors impacting the appropriateness which may guide us in choosing a relevant approach. On the surface, this problem might be seen as merely another critique of Drucker's (1954) philosophy of "If you can't measure it, you can't manage it", and at a superficial level it is. However, the underlying question is a very fundamental one: how should we choose to *represent* organizational *reality*? Is it a philosophical or even religious choice, or can we base our choice on more evolved arguments, analytical evidence, or perhaps even empirical evidence?

As will be demonstrated later, there is an implicit and widespread assumption of the viability of representing an organization by the use of metrics. Metrics are extremely seductive for many reasons. One of the main reasons is that they attempt to parcel our world into manageable chunks. *But do we sufficiently understand the impact of management by metrics?* I remain unconvinced. This view stems originally from personal experience in practice with PM, where organizations almost unanimously seem to represent organizational reality solely by using quantitative measures in the face of obvious *dysfunction*, i.e. with supposedly unintended and undesirable consequences. Managing by metrics has also in scholarly work been shown to lead to unintended consequences – examples of this will be presented shortly. The ultimate implication of this work is that public and private organizations everywhere have been moving towards a form of management that may be increasingly ineffective. Or to put it more precisely: organizations are being managed by means of practices which could be fundamentally outdated and out of sync with modern organizational reality. In this thesis, I will attempt to present the reasoning and evidence for arriving at this conclusion. With

this end, we start our journey with the aim of *finding relevant representations of organizational reality.*

Chapter 2 Approach

> "Routines stultify problem-solving thought and creative innovations which might produce more satisfying adjustments to frustrating circumstances in social life." […] "Dewey's theory of praxis thus places a normative premium on creativity while acknowledging that habits provide human behavior with a necessary economy and coordination." (Cohen 2000, 86)

In this chapter, I will first present an initial view of dysfunctional behavior as this is the pain point which has triggered my curiosity. Following that, we will dive into the research problem and on the way are presented with some assumptions of how the world works, assumptions which from the outset seemed to be meaningful in the context of the research interest. I will present some propositions which will gently guide us through the empirical fieldwork. Lastly, I will reflect on the methodology which I have chosen to pursue and evolve the propositions.

2.1 Framing dysfunction

Before presenting the precise research objective for this thesis, I will set the scene by exploring the source of interest in the overall question of representational forms of performance, which is dysfunctional behavior of the organization. This will provide an appropriate basis for understanding the research objective and approach. So before presenting the research problem, our *initial* question revolves around the interaction between dysfunctional behavior and measurement. This will be done conceptually with the following guiding question: How could we re-theorize dysfunctional behavior related to management by metrics? The "could" reflects the acknowledgement that the conceptual framing we end up with is not the *only* possible avenue we could take, but one which seems to have possible answers to difficult questions. This re-theorization leads us on to a reframing of PM practices where we have a wider range of fundamental approaches, but also forces us to wonder what should

determine our choice of approach. This will become more evident later. Austin (1996) tells us what happens when performance measures are introduced:

> "At first, the true value of an organization's output may also increase. This happens in part because workers do not understand the measurement system very well early on, so their safest course is to strive to fulfill the spirit of the system architects' intentions. Real improvement may result as well, because early targets are modest and do not drive workers into taking severe shortcuts. Over time, however, as the organization demands ever greater performance measurements, by increasing explicit quotas or inducing competition between coworkers, ways of increasing measures that are not consistent with the spirit of intentions are used. […] Measured performance trends upward; true performance declines sharply." (Austin 1996, 15)

How can it be that we may find ourselves in a situation where measured performance shows one 'reality' while 'true reality' is very different? Dysfunctional behavior as a result of measuring is not a new phenomenon. As Austin also remarks, Blau (1955) wrote about the consequences of measuring employees at an employment agency solely on the number of interviews they did and not on the number of placements they made. This obviously led to many interviews and few placements. But why is this obvious? The employees probably knew that placements were an important part of the business and not just interviews. They measured the wrong thing, one might think. But would the problem have gone away if they had measured differently or more? As stated above, my initial curiosity stems simply from anecdotes and personal experiences such as this, and I am sure the reader will have similar experiences since these dynamics seem to thrive in most organizations. These anecdotes describe certain behavior by organizational actors which obviously does not conform to our concept of true performance. Most would accept the tenet that organizational actors relate strongly to the measurement of their performance. Measuring performance therefore acts as both an informational tool which allows us to know how well we are doing and as a motivational beacon towards which we may orient ourselves. So the assumption is twofold:

firstly, that establishing the proxy for performance, i.e. the measurement, will induce actors to behave according to the proxy, and secondly and more importantly, that the proxy is a *sound representation of performance*. In other words, using a map with a target will induce actors to pursue this target, but the viability of this strategy implicitly accepts that the map represents 'reality'. Weick famously used the story of a group of soldiers finding their way with an incorrect map (Weick 1987) to illustrate that the relation between the map and reality is less significant than *having* a map at all. *Pace* Weick, but in general a good map should assist you more than a poor map. This is at the heart of our problem. In the context of performance management, this extends curiosity into the realm of what we might call representational 'soundness', i.e. how do we know that we have *good maps* and what unintentional consequences might result from having *poor maps?* Or in other words: what merits can be identified in understanding dysfunction as related to a quantification (and the assumption of the relationship between the quantity and 'reality')? I fear that our maps are leading us in wrong directions, but, because we refer only to the map, we will not know the attainment of true performance. PM practices may be conducive to the amnesia Chua describes here: "through the process of quantification, visualization, and normalization a certain amnesia sets in when accounting information is used in organizations. Reports and tables, although titled as 'subject to errors and omissions' come to be seen as windows (albeit small) on a hidden reality" (Chua 1989, 140).

The very fundamental assumptions mentioned above seem to be cornerstones of PM practices (firstly, that accounting representations, metrics, indicators, etc., *reflect the phenomenon in a true way* and, secondly, that *the spirit of performance can be captured by these representations)* but they do not match the described amnesia. PM practices may be accelerating a discourse of 'managerialism' which endorses and embraces management by numbers and which has swept across large segments of both private and public sector organiza-

tions. Argyris describes how theories of control such as management accounting are espoused, "usually idealized visions that are rarely achieved […] sold and defended as being objective and rigorous" (Argyris 1990, 503). Catasús, Ersson et al. critique the use of indicators as (merely) a practical tool for replicating management discourse: "An indicator is a number that management is interested in because of its efforts to manage the organization: whether the customer satisfaction index is a true and fair representation of the ephemeral idea of customer satisfaction is an ontological issue that is not at the core of the pragmatism characterizing management" (Catasús et al. 2007, 508). However, I am interested in the ontological issue! This ontological question is interesting for the fundamental reason that if (a part of) organizational reality is not such that it can be well represented by quantification this might conceivably be *the source* of unintended consequences of attempts to represent it as such.

In the following, I attempt to unfold some explanations of the nature of dysfunctional behavior as a consequence of performance management practices, which at this stage is simply taken to mean quantification of the performance of a particular organizational phenomenon. It is important to realize that the legitimacy of management by numbers is not disputed; neither is the potential appropriateness of this approach assumed. To be clear, my only benchmark for the appropriateness of measurement is its ability to aid an organization in achieving its ultimate objectives. I simply wonder whether there may be *factors impacting the appropriateness* of a certain PM approach, such as metrics-based approaches. In other words, I do not assume that performance *management* must mean performance *measurement*, which is why the reader throughout should interpret the abbreviation 'PM' as performance management.

But *why* do PM practices lead to dysfunctional behavior as in the case with Ridgway (1956)? Our current explanations seem to say merely that me-

trics cannot capture true performance. But we should go further and understand *why* metrics cannot capture true performance. Only when we understand this, will we be able to prescribe superior practices.

While dysfunctional consequences of PM practices are not necessarily *unanticipated,* they often are. In writings on unanticipated consequences in general, it has been argued that no *blanket generalizations* can be made as to the viability of avoiding them by essentially looking into the future (which is what we would have to do to avoid unanticipated consequences). For this we need to "examine and classify the *types* of social action and organization […] and then refer our generalizations to these essentially different types" (Merton 1936, 904). This means, perhaps, that it is more difficult to predict some types of *organizational realities* than others. To understand the viability of anticipating the consequences of measuring, and then measuring performance accordingly, we must respond to Merton's challenge made more than 70 years ago: we need a way of conceptualizing organizational reality.

Several theories may seem likely candidates for casting light on this problem. Principal/agent theory (Eisenhardt 1989, 1985; Alchian and Demsetz 1972) is a central one. Principal/agent theory is concerned with understanding the dynamics of actors with different interests in an organization, which might, though, be difficult to *observe* (Alchian and Demsetz 1972; Eisenhardt 1989; Ross 1973). Agency thinking assumes certain behavioral characteristics of the actors, namely a preference for earning the greatest reward with the lowest possible effort. This focuses the analysis on the diverging interests of the actors and on how to address that issue, and also provides a framework for explaining dysfunction. Observability reflects the ease and cost of 'observing', which in this context means representing; in real settings, observability, in the literal sense, is often not practical, even if it were possible. Representations are used as a proxy for observation, so they become the vehicle of observation. Different organizational realities will impact the de-

gree to which a principal can observe the agent in the value creation process. Under full observability, the agent would be induced to adhere to true performance assuming he wants to collect the compensation. Under no observabilty, the principal has no way of knowing what effort the agent is expending. Different dimensions of the work will have different observability, i.e. different costs of observing. Dysfunction can arise when the complexity of the performance of the phenomenon is high and varied. If the performance of a phenomenon has x quality dimensions but we are measuring x-1 dimensions, the last one will constitute a *blind spot*, i.e. neglecting the last dimension has no impact on reward. The argument continues that, since some dimensions are more difficult to observe than others, this will encourage measurement of the ones that are easy/less expensive. But how do we determine which dimensions of performance are relevant to measure? How do we know if we have identified them all if that is what we are aiming for? One reason for being convinced that *recognized* performance dimensions give sufficient or total coverage of *true* performance dimensions of the phenomenon is the observable fact that the measurable dimensions of performance occur when true performance occurs. The reasoning seems to be something along the lines of: under true performance, a set of measurable facts occur, therefore when these measurable facts occur we must have true performance. Put differently, we have observed that the road is wet when it has been raining, therefore when we observe the wet road we conclude that it must have been raining. The fundamental problem is a purely logical fallacy: *We do not know how big a 'proportion' of an ideal, fully observable, scenario we find ourselves in. If a principal considers the organizational reality to be more observable, i.e. measurable, than it is, then the principal will enforce the achievement of these measures.* If true performance is not measurable to the degree assumed, effort will drift from the unobservable blind spots to the observable, which results in dysfunction. We could assert that the situation is only dysfunctional when the extra value in-

duced by the motivational effect of measuring is not outweighed by lesser value resulting from the neglected dimensions (Austin 1996) but the mechanism is the same. *If* we accept the assumption of human behavior that people are lazy and need to be whipped into doing anything, it still leaves us with the questions:

- How do we determine if an organizational reality is observable, i.e. measurable?
- Also, little detail on the format of the observing or measuring is provided, which seems a black box; the question of *representations* remains.

I am attracted to exploring these last two questions in particular, because they are core to the near-ubiquitous PM practices, where there seems to be an unjustified belief in the value of metrics. When using the term 'organizational reality', I also imply an interest in the overall organizational level, which is not stressed in principal/agent thinking (Scherer 2003). In the following presentation of the research problem, I evolve some propositions of dysfunction more closely related to representational forms.

2.2 Research problem

Daft and his colleagues have several interesting propositions on the relevance of different representational forms in various forms of organizational reality based on media richness theory (e.g. Daft, Lengel, and Trevino 1987; Daft and Lengel 1986; Daft and Wiginton 1979), and the systems theory (e.g. Ashby 1958). A core tenet in their thinking is that "insight into organizational behavior arises from the appropriate fit between the language of description and organizational reality" (Daft and Wiginton 1979, 182). This thinking has been a major influence in the initial framing of the problem. Daft here proposes that "insight" follows only when the *nature* of the language, i.e. representation, *fits* the organizational reality. This proposition is

founded on at least two other theoretical suggestions. One is on Zadeh's (1973) suggestion that the *complexity* of systems results in an inability to make precise statements regarding their behavior. So as complexity increases, our ability to represent historic explanations or predictions of the future in condensed form diminishes. The other related theoretical foundation is the 'law of requisite variety' (Ashby 1956, 1958) which, briefly, states that control systems must have the same *variety* of states as the phenomenon or organizational reality the system seeks to represent. So the number of possible representations must match the organizational reality it seeks to represent. In the context of Ashby and Zadeh, the focus is mainly on control and decision making situations, but I suggest that this is equally valid in the context of PM, as PM methodology has a very clear control dimension. But what happens if we use the 'wrong' language, i.e. a language that does not fit the reality? Figure 2 (Daft and Wiginton 1979) below shows Daft's view.

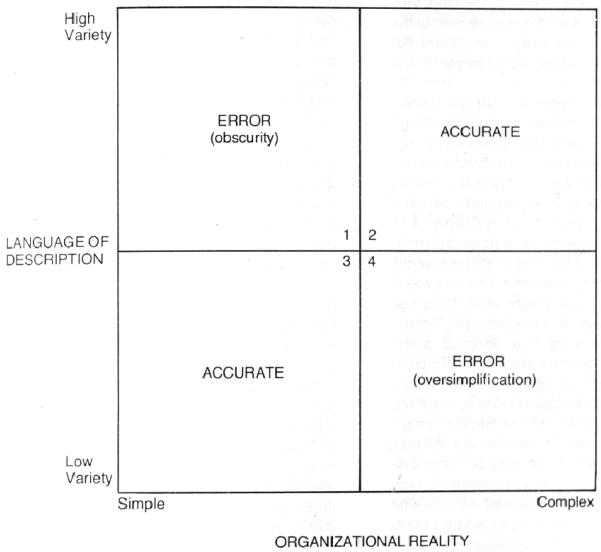


Figure 2: Daft's Relationship between Language of Description And Organizational Reality

As we see, the two types of misfits in this simplified presentation are obscurity and oversimplification. Obscurity occurs if the variety of the language is 'overkill' in relation to the organizational reality it seeks to represent. Obscurity is probably easy to sense. Oversimplification arises when language variety is low but reality is very complex. Oversimplification is probably much more difficult to sense than obscurity, because the effects are much less evident. The supporting concept, equivocality (Daft and Lengel 1986; Daft and Macintosh 1981; Weick 1979), describes the ambiguity of the situation where we are unsure what questions to ask, meaning that we do not know what factors are important and what is noise. In cell 2, I would have suggested the word 'appropriate' rather than 'accurate', since 'accurate' does not capture the variety and ambiguity of the language. These thoughts are perhaps another way of understanding the dysfunction we know, and expand the concept of observability by means of language or representational forms. *On the basis of this model, I suggest that the oversimplification when low variety languages are used in a complex organizational reality could be the source of dysfunctional behavior implicated with PM practices.* The idea inherent in this suggestion is intriguing; yet our understanding seems superficial. For example, the interaction aspect is unclear in the model, that is: what *interplay* is there between organizational reality and representational forms? This is critical to understanding a social management practice such as PM and the related dysfunctional behavior. For the remainder of this thesis the research question is therefore:

How should we understand the *relationship* between *organizational reality* and *representational forms* within performance management theory and practice?

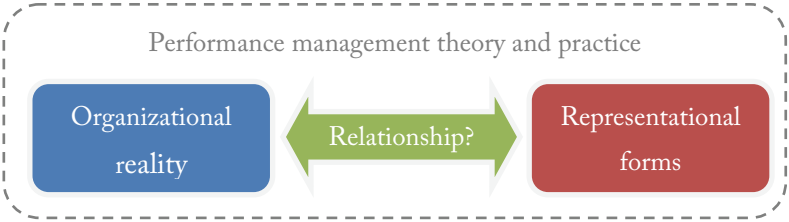


Figure 3: Research problem

Here is an alternative way of illustrating this problem, closer to the model proposed by Daft and Wiginton (1979).

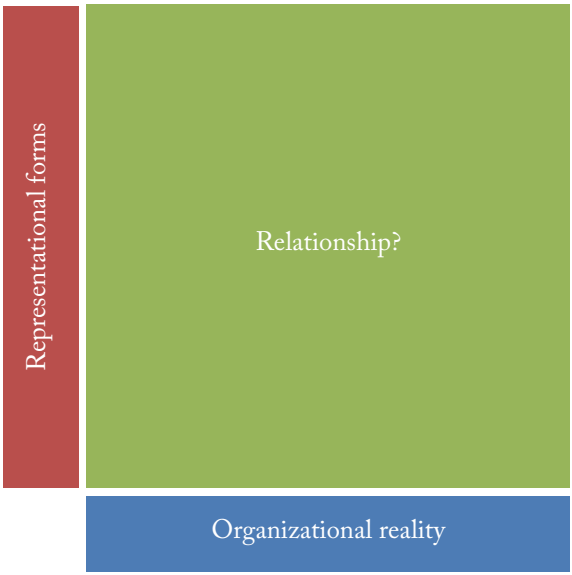


Figure 4: Research problem, alternative illustration

This model implies that organizational reality and representational forms will be described in terms of some distinctions, which form two continuums. Combining different forms of organizational reality with different forms of representations will result in a particular relationship. In other words, this is a basic contingency model. This model will serve as the slate which we will fill

out as our understanding continues to evolve. We will build our understanding of this relationship gradually. *Initially, we will examine some existing suggestions for how to understand representational forms, organizational reality, and the relationship between the two. Later, we will expand our understanding of all three empirically.*

The 'should' in the research problem initially relates to reduction of dysfunction, so, in other words, we are concerned with the design problem of building a PM methodology which contributes to least possible dysfunction. But reduction of dysfunction implicitly means achievement of objectives, so the value of achieving objectives is accepted. This relates the research problem to considerations of organizational design. A fuller understanding of the relationship between organizational reality and representational forms will hopefully result in a superior basis for conscious considerations in designing the organization. The design perspective will not often be explicit, but the reader is encouraged to reflect on this.

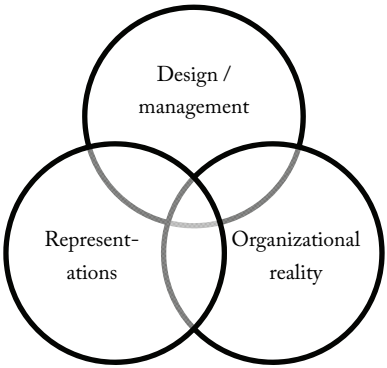


Figure 5: Organizational design is implicit

My interpretation of Daft's concept of relationship is that it is static, as it does not accentuate the influence *between* language (i.e. representational forms) and reality. In PM, we want to represent organizational performance, but we also want to motivate behavior, i.e. induce a shift in behavior, so the

assumption is that this is possible. Our *reality* or ontology should reflect this dynamic view. To do this, it seems appropriate to attempt to sketch out what *characterizes* the reality within which these dynamics occur. Without this, we cannot clarify the fundamental *relationship* of representation to reality. This is what we turn to now.

2.2.1 A fundamental ontology of structure and agency

> "In the end, social conduct seems more like poetry than a unitary, natural phenomenon." (Cohen 2000, 74)

At this stage we will make a significant jump in level of abstraction. In the following, we will examine conditions for how our reality unfolds and attempt to describe some abstract characteristics of empirical artifacts within that reality. The primary objective is to sketch out how we should think of the *relationship* between the organizational reality and representational forms. However, to do that we need a terminology to describe characteristics of *both* organizational reality and representational forms. This terminology will act as a form of meta-language to describe organizational reality, representational forms, and their relationship and interplay. Let us restate our context: In organizations, there is a need to generate representations to allow for 'action at a distance' (Robson 1992). These representations are meant to act as a proxy for a slice of reality, so that an actor, not immediately part of reality, may act or react upon it. Generating these representations is also thought to alter the behavior of organizational actors. Our understanding of the social reality within organizations, where PM practices take place, should include the notion of 'management' as something deliberate, planned, designed, and premeditated, but we should also, simultaneously, come to terms with a certain skepticism regarding the viability of deliberated management. The need to be able to fathom this skepticism follows from our knowledge of the dysfunctional behavior of the organization, which should lead us to conclude that our

reality may 'be' something more than can be understood as causal relationships and represented as quantities. We should be able to understand our world by both accepting the feasibility of thinking of it as highly structured and dismissing it. By doing this, we would have a language we can use to be true to the assumptions we initially ascribe to performance *management,* which is important, because it would not be prudent to critique a world view from the 'outside'; the tactic of ontological mud-throwing is an easy target for the incommensurability argument. But on the other hand, we would like to leave space for maneuvering against these assumptions to accommodate a nagging feeling (and substantial scholarship) which is skeptical of the universal viability of them. So we need the continuum in the organizational reality dimension *to move beyond complexity* to be able to grasp the perspective of organizational reality as something which may not easily be deliberate, planned, designed, etc. This is an altering of Daft's model, which in my view is necessary in order to understand the relative relevance of different representational forms. I stretch our world across the two concepts of structure and agency. This world has been *chosen* to allow for allegiance to, as well as defiance of, the seemingly inherent positioning of performance *management*. To view the world as highly structured, or not to, has deep roots in social scientific debate. But we should now perhaps explore what we mean by 'agency' and 'structure'. (Please note that this has nothing to do with the concept of agency relating to principal/agent thinking.) Fuchs (2001) offers an understanding: "The smaller, and less durable, something is, the more it belongs to agency. Examples are actors, actions, conversations, and small groups. In contrast, size, scale, and time push a social entity toward structure. Examples are organizations, states, stratification, and markets" (Fuchs 2001, 25). Here we learn that agency is *less durable* than structures, which per definition it seems are resilient and robust. This is an essential point. My *initial* claim is that current PM practices are structurally oriented and induce the organiza-

tion to act in a concerted manner, or at least that this is an assumption held within the concept of PM. So structures meant to be durable seem to be in opposition to change. Let us keep this suggestion in mind. A less simple understanding of agency describes it as

> "a temporally embedded process of social engagement, informed by the past (in its "iterational" or habitual aspect) but also oriented toward the future (as a "projective" capacity to imagine alternative possibilities) and towards the present (as a "practical-evaluative" capacity to contextualize past habits and future projects within the contingencies of the moment." (Emirbayer and Mische 1998, 962)

Here we see an emphasis on the actors' cognitive ability to be informed by the past and to imagine the future, which is also reflected here: "With their minds and conscious experiences, human actors are the ultimate source of social and cultural meaning and reality. It is persons who mean something, intend this or that, and then do something about it" (Fuchs 2001, 26). So agency implies the will of the actor to come to the foreground and influence the future. This appetizer might make us wonder what the relationship is between structure and agency. Giddens provides a view.

Giddens' structuration

Giddens' work has revolved around "the establishment of an ontology of human society" (Jones and Karsten 2008, 129). Giddens' work should be seen as a reaction to the naturalistic sociology, which in his view over-emphasized the primacy of structure over agency, and the interpretive sociologies, which over-emphasized agency. As such, the sociology of Giddens (e.g. 1984) is an example of thinking which has sought to dissolve the dichotomy between the subject and object, or perhaps more appropriate to this context, between structure and agency. This is useful for us, because we are interested in understanding the nature of what we seek to represent in our PM practices. The main thesis is that structure and agency are not mutually exclusive forces, but, on the contrary, are mutually *constitutive*. Therefore social phenomena should

be understood as both being *influenced* by structure and simultaneously *producing* structure. Giddens proposes the *structuration* process as the process of (re-)constituting structures (Kaspersen 2000).

Structures do not think or feel or even exist independently, i.e. empirically; they simply appear to manifest themselves and replicate by influencing the actors to pursue certain streams of behavior like luggage collectively owned by humans, but not by any individual. This luggage pre-'exists' any individual human, but is constantly passed between us. We may find ourselves lugging heavy luggage around which effectively *keeps us on a certain path* or we may find ourselves carrying only a light load, which allows us to move more *freely* where we want to go. This does not mean that as individuals we are able to know exactly how heavy this load is, or perhaps even to experience it, but with our acceptance of free will we suggest that there is a possibility of self-determination, including an ability to reflect on what luggage we *might* be carrying and *possibly* try to discard it, if that seems desirable. So what should be stressed is the individual's possibility of an awareness of rules and resources, to some degree. We *may* know what luggage we are hauling around and possibly attempt to throw it in the river (Giddens 1991).

So we carry around luggage which influences our behavior, but also *by* our behavior we 'constitute' the luggage. Giddens' 'duality of structure' (Giddens 1993) essentially proposes that structure both influences actions and is determined by actions, the two continuously produced and reproduced: a duality (and therefore not a dualism). This 'duality of structure' is used to describe how structure is both cause and effect in action. Agency is not completely determined by structures; Giddens allows a great deal of autonomy in his concept of agency. Establishing opportunities for *development, innovation and learning* would mean affording the greatest possibilities for *agency* to influence structural systems. Conversely, established structure is *resilient* to the input or impact of agency and will be more conservative.

Giddens makes repeated reference to the reflexive nature of the agent and the leverage provided to her to act in opposition to constraining structure-inducing practices. Reflexivity also means that: "actors – also routinely and for the most part without fuss – maintain a continuing 'theoretical understanding' of the grounds of their activity" (Giddens 1984, 5). And further that "Every competent social actor […] is *ipso facto* a social theorist on the level of discursive consciousness and 'methodological specialist' on the levels of both discursive and practical consciousness" (Giddens 1984, 18). This perspective will inform the approach to field-work, but more importantly lends some weight to hopes of being able to design agency-oriented practices. Actors must have *motives* for pursuing specific avenues of behavior which are out of the ordinary. To allow agency to come into play, there must be a possibility of asking why we should act differently today than we did yesterday. "Action depends upon the capability of the individual to 'make a difference' to a pre-existing state of affairs or course of events" (Giddens 1984, 14). The transformative capacity of actors must be given space, if development is required.

The need for structural behavior has been attributed to different sources by different theorists. Giddens, Dewey and Mead all have similar conceptualizations of this as 'routines' (Cohen 2000). Dewey (1921) terms it 'habits' and Mead (1934) has a somewhat related concept of 'significant symbols' although more language related. The source for this, Giddens tells us, is 'ontological security', which is our inherent need for intimacy with our own behavior. It is through this ontological security that the reproduction mechanism in the structuration process works. If we did not need to have stable, routinized lives and interactions with each other, we would not be disposed towards replicating the streams of behavior: we would not see any need to carry luggage any further. However, it is in *breakdowns of routines*, what Gid-

dens calls 'fateful moments', that we are most likely to cast away our luggage and go new ways:

> "Fateful moments are threatening for the protective cocoon which defends the individual's ontological security, because the 'business as usual' attitude that is so important to that cocoon is inevitably broken through. They are moments when the individual must launch out into something new, knowing that a decision made, or a specific course of action followed, has an irreversible quality, or at least that it will be difficult thereafter to revert to the old paths." (Giddens 1991, 114)

This is where the cognitive ability to step into potential futures is brought to the foreground and we are able to improvise with less support from structure. Fateful moments are when discontinuities occur. Does this mean that we should fight the ontological security in our design of organizational systems, such as PM systems, thereby creating the disruption needed for innovation, if this is our objective? Is it possible to set the scene set for participants and co-participants to interact and induce more unexpected behavior by presenting actors with the opportunity to recreate significant symbols/routines/habits?

Informed by Giddens' concept of system-integration, which differs (Mouzelis 1997) from Lockwood's original concept (Lockwood 1964), we may have a conceptual stepping stone to a high-level understanding of how structure happens in organizations and an answer to those questions. System integration "refers to the production of relations-at-a-distance, and hence, for the first time, brings a well-defined image of the morphology of large-scale modern organizations into theories of praxis" (Cohen 2000, 95). This leaves us with an apparent choice of stability vs. change in organizations, with management practices as a possible mediator of both stability and change. There may be some anxiety about analytically separating two extremes, i.e. interaction and structure, as a basis for arguing that they are one united concept (Archer 1982; Callinicos 1985). A true integration of these concepts and dissolving of the dichotomies of subject/object, micro/macro, voluntar-

ism/determinism, etc, would perhaps *not* use these concepts as the basis for their subsequent integration. How can we believe that A and B are symbiotic, when they are labeled as two different concepts? A reading of Giddens and his reference to semiotic thinking suggests that he is entirely comfortable in understanding meanings of concepts (or signs) as constructed in relation to other concepts. The argument might point out that concepts have no essentiality but are relational in their conceptualization. There is no black without white, etc.

Is structure real?

Remember that we are searching for a more nuanced understanding of organizational reality than merely complexity. In exchanging Daft's concept of complexity in organizational reality with Giddens' ontology of agency and structure, an important point must be addressed. Essentially, I am substituting 'reality' with 'ontology'. While we know that ontology could very well be defined as (our assumptions of) reality, the change of term implies something much more than simply exchanging two synonyms. Daft thinks of the simple/complex distinction as something empirical, while *Giddens does not consider structure and agency as something immediately empirical*; "Structure thus refers, in social analysis, to the structuring properties allowing the 'binding' of time-space in social systems, the properties which make it possible for discernible similar social practices to exist across varying spans of time and space and which lend them 'systemic' form" (Giddens 1984, 17). So structure is equivalent to the patterns that manifest themselves across time-space divides. Clearly Giddens operates at a high level of abstraction and does not say anything about physical things out there, so structure does not exist *irrespective* of human social practice. Structure cannot be technology, but is embedded in social (human) practices. Technology may be part of a structuration process, but cannot constitute structuration 'by itself'. Technology, therefore, does not

act. Material artifacts do not influence actions directly, but affect the meanings we give to them. This is therefore a subjectivist position, which asserts that structure can only be given substance through the behavior of people. On the other hand, there is apparently nothing within his concepts which is fundamentally incompatible with realism (Layder 1987; New 1994). However, *structure is not empirical in itself*; it is 'only' manifested through human social behavior. When considering organizational reality with Giddens' terms of structure and agency, it is therefore not the same organizational reality as with Daft. With Daft it is the practical *real* reality, whereas, when using Giddens' terms, organizational reality becomes the world as a *consequence* of empirical reality which encourages structure over agency or vice versa in the structuration process. This is critical to note.

Technology impacts structuration

Since PM practices are often embedded in supposedly supporting technology artifacts, it is worth considering briefly what status technology has as implicated in the structuration process. Giddens and Pierson sum it up: "Technology does nothing, except as implicated in the actions of human beings" (Giddens and Pierson 1998, 82). It has not been without controversy to view structure as entirely non-material. One question has been the apparent lack of *mediator* of structure over time (Archer 1995; Stones 2005); if structure is evident only in the moment of manifestation, how then does the structure acquire the conservative traits which define structure? The reply seems to be that structure, apart from being evident through social practice, exists also "as memory traces orienting the conduct of knowledgeable human agents" (Giddens 1984, 17). So the human mind acts as a proxy for mediating structure through time. In a mood of purist taunting, one could argue that this *does* amount to a physical manifestation and is therefore self-contradictory. But I choose to interpret the existence of memory traces at least as supportive of

the existence of the *real* world out there (in which we cannot defy laws of gravity for instance) since these memory traces must be generated in and with the organizational reality. I think Giddens would agree that it is not possible for man to fly unaided due to the very real law of gravity, so the way that action unfolds is not entirely subjective, because the real world sets some boundaries. This in turn means that in the statement "Technology does nothing, except as implicated in the actions of human beings" (Giddens and Pierson 1998, 82) the 'except' becomes crucial. *Technology along with all other material entities influences actions.* It has been suggested that technology can influence all three modalities of the structuration process (Markus and Robey 2004; Orlikowski and Robey 1991). For example, "the design and deployment of information technology, with its implications for information resources and enforcing rules, constitutes a system of domination. […] Information technology reinforces systems of domination by institutionalizing the premises for making decisions in organizations" (Orlikowski and Robey 1991, 155). Here reference is made to the modality of resources and a similar analysis can be made for technology mediating interpretive schemes and norms. Other scholars come to similar conclusions (e.g. Barley 1986; Turner 1987). In Giddens' terms, the world itself cannot be understood as structure or agency, but we may have structurally *oriented* or agency *oriented* empirical practices which modify interpretation schemes in one or the other direction. *The distinction between structure and structurally oriented, and agency and agency oriented is significant and it will extend throughout the thesis.* I will refer to practices and artifacts which encourage structure as manifested in behavior but *are* not structure in and of themselves as structurally *oriented* and likewise for agency.

In the field of IS, some may feel uncomfortable with a theory such as the structuration concept because it has such a loose coupling with the empirical world. How do we observe structure (whether in things or through actions)? Attempts have been made to extend the concepts of Giddens to allow for a

more empirically attuned theory, which is what Adaptive Structuration Theory (AST) is: "AST provides a detailed account of both the structure of advanced technologies as well as the unfolding of social interaction as these technologies are used" (DeSanctis and Poole 1994, 125). Although the debt to Giddens' structuration concept is acknowledged, this is an example of how the concept of structure is possibly confused, but provides a far more practical basis for using the theory in empirical studies. The question of whether structure has or has not materiality is not at issue here. I take the position that very real practices and technology, such as PM practices and information systems, *do* influence the dynamics of behavior. Whether we choose to say that structure *is* technology, routines, bureaucracy, etc. or that structure is merely manifested *through* action is not pivotal. I consider PM methodology and systems to be practices which can be understood as having characteristics which again may induce structural behavior. This does change the interpretation of technology and the three dimensions of structure as shown in the figure below (Jones and Karsten 2008, 130; Giddens 1984):

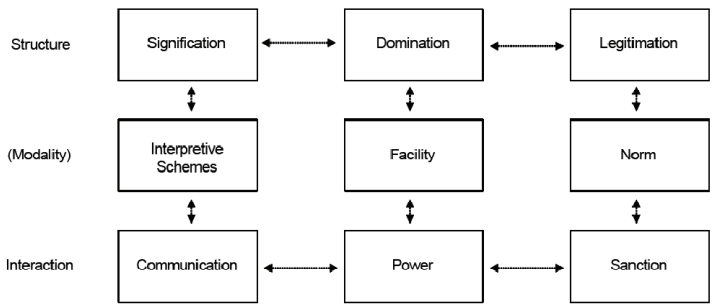


Figure 6: The dimensions of The Duality of Structure.

Orlikowski and Robey give a very concise account of Giddens' core concepts: "Interpretive schemes are standardized, shared stock of knowledge that humans draw on to interpret behavior and events, hence achieving meaning-

ful interaction. Resources are the means through which intentions are realized, goals are accomplished, and power exercised. Norms are the rules governing sanctioned or appropriate conduct, and they define the legitimacy of interaction" (Orlikowski and Robey 1991, 148). DeSanctis and Poole discuss technology within this framework, something Giddens himself refrains from, staying at a very abstract level. They insist that (features of) technology do impact the structuration process: "features bring meaning (what Giddens calls 'signification') and control ('domination') to group interaction […] the spirit of a technology provides what Giddens calls 'legitimation' to the technology by supplying a normative frame with regard to behaviors that are appropriate in the context of the technology" (DeSanctis and Poole 1994, 126). So there is definitely some leeway for the interpretation of the influence of technology in the structuration process and Giddens (1984) has written that structuration engages both *virtual* and *empirical* structures but that social action is shaped only through the virtual structures.

Giddens leads me to think that, although we must understand social phenomena and the development of social phenomena along the dimensions of both structure and action, we may *design* organizational practices to accentuate one aspect. This means that we may allow structure to be easily challenged, or, conversely, build robust barriers against its evolvement. Again, material artifacts *do* impact the structuration process, even if they do not alone amount to structure.

As there is a duality of structure (whereby structure both is determin*ed* and determin*ing*), so is there a duality of technology which is "both an antecedent and a consequence of organizational action" (Orlikowski and Robey 1991, 151). As illustrated in Figure 7 (Orlikowski and Robey 1991), IT influences the interplay of structure and action, by being designed by human action (a), by facilitating and constraining action through modalities (b), by influencing human interaction with IT (c), and by constituting or re-

constituting institutional properties (d) (what Giddens would probably prefer to understand as being manifested as structural behavior).

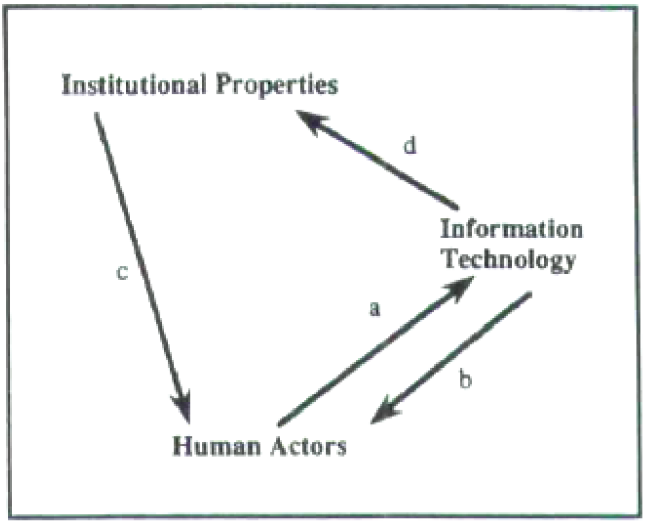


Figure 7: Structurational Model of Information Technology

This supports the reality-to-language-fit in Daft's model (with my modifications). Empirical reality, including management practices and information systems, have characteristics which may emphasize agency or structure in the sense that agency or structure is emphasized in the resulting social behavior. Different types of languages may be more or less suitable for describing these empirical realities, meaning that some languages are more suitable for grasping management practices which are structurally oriented, while other languages lean towards describing practices which are agency oriented. But, as the concept of structuration suggests, the language does not only represent, it also *re-presents*, in other words constitutes the practices. So the recursive relationship between a reality and its representation through a language points both to languages as being more or less relevant *and* reality being influenced by the language describing it. Taking this discussion up a step even

further and relating the languages to our epistemological stance, I have come to take the position that ontology and epistemology are related, i.e. a given phenomenon *does have* characteristics which make qualitative or quantitative approaches more or less relevant. We will never be able to have anything other than *a* perspective in our representations, but one perspective *is able to be* better than another. So this view would suggest that accounting as a representational practice can yield qualitatively different results, i.e. be good or bad accounting, without either ending in true relativism where qualitative judgments become problematic, or ending in the naïve situation where the accounting images are treated as if they shared a 1:1 relationship with the phenomena in question. This "good" or "bad" accounting should be judged in relation to the objectives of accounting, but what they could be is unknown. This suggestion is a result of the thesis process as much as a premise.

Let us explore the trajectory of the agency/structure distinction. In this sense, I am expanding Giddens' concept of structuration, which is non-realist (rather than anti-realist), with the suggestion of possible empirical characteristics which should be taken into consideration when representing them.

Determining voluntarism

We may therefore employ management practices which emphasize either structure or agency and thus position different temporal trajectories. One might wonder if there is a built-in contradiction in suggesting that we can design, following a notion of determinism, information systems which support the dissolving of structural behavior, voluntarism. This suggestion cannot be understood in the theoretical framework developed by Markus and Robey (1988), which suggests that theories either suppose rational predictor power (in an organizational imperative) or determination by the technological structures (in a technological imperative) or emergence, essentially impossibly to predict. But what about the suggestion that we can instill practices which

per design encourage non-prediction or emergence? This notion seems to be unclear in the literature, perhaps because predictor power is heralded as a universal ideal, in practice as well as in science. Theory development seems to be gravitating towards uncovering certain patterns in reality, by striving to establish relationships between dependent and independent variables. But this may not be universally useful. The type of determinism is different when suggesting structurally-oriented determinism vs. agency-oriented determinism; the former envisions a specific future state while the latter 'predicts' an unpredictable future state (per design). The structure vs. agency conceptualization therefore gives us a framework for contrasting different theories of causality. Later Robey, with Orlikowski, expanded his original argument for emergent theory (and reassessed the need for distinct levels of analysis) by using structuration as a stepping-stone (Orlikowski and Robey 1991) explaining that IS research needs to increase its ontological awareness: "nowhere is the failure to explore ontological assumptions more apparent than in conceptions of information technology by information systems research" (Orlikowski and Robey 1991, 145). This is exactly what I aim to achieve. However, the discussion of ontology and Giddens' theoretical stance should be seen in a wider discussion which reaches beyond ontological questions. To understand the implication of current PM practices, scholarship and methodology, we need to inflate the structure/agency distinction. In doing so, I attempt to couple a unified theory of ontology such as the one Giddens provides with a more conciliatory stance on knowledge generation, i.e. epistemological questions, in our PM systems, but this point will be evolved later.

With this, we have a terminology of agency and structure relating to certain behavior and empirical practices and artifacts which may be agency oriented or structure oriented.

2.2.2 Representational forms

Clearly, communication is an essential part of organizing. Without it, what would there be left of organization? "Without communication and communicating, there would be no organizing or organization" (Schall 1983, 560). The act of communication is so tied to organizations that the two concepts almost become synonymous. Many forms of communication flourish in organizations. Orlikowski and Yates (1994) find communicative 'genres' to be a useful term to distinguish the palette of forms of communication in an organization, comparing them to the genres mastered by an orchestra, and by studying the genres we have a way of understanding what organizations are. In the process of organizing, actors make use of these genres and create variations. A genre becomes distinct when there is consensus on its form and function among communicators; we communicate differently if the context is a manager having to lay off staff or if speaking to stock analysts. These two scenarios are distinct in function (the objective of reducing staff, and the objective of portraying the business in a fair but sympathetic light to the market), but also differ in form.

> "Form refers to the readily observable features of the communication, including structural features (e.g., text formatting devices, such as lists and headings, and devices for structuring interactions at meetings, such as agenda and chairpersons), communication medium (e.g., pen and paper, telephone, or face to face), and language or symbol system (e.g., level of formality and the specialized vocabulary of corporate or professional jargon)." (Orlikowski and Yates 1994, 544)

Daft proposes a continuum of languages, or representational forms in my terminology, which vary according to the amount of *variety* they carry. It is also suggested that *ambiguity* increases with variety, presumable leaning on Zadeh's (1973) theory. This continuum is shown in Figure 8 (Daft and Wiginton 1979) below.

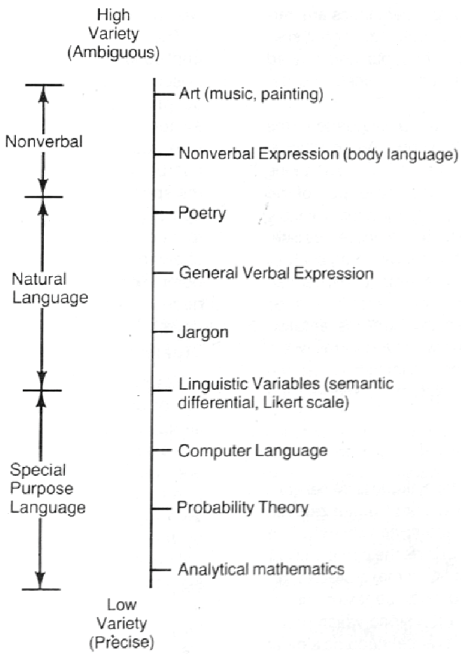


Figure 8: Daft's Continuum of Languages for Describing Organizational Reality

At one end, we see music as a language having extremely high possible variety but not being able to convey a meaning on which consensus can be achieved. It is difficult to imagine an organization in which music was used as the sole form of communication, but the point seems clear: different languages have different characteristics, which can represent reality differently.

In PM, we are concerned with a special case of communication where we generate *representations* of a specific characteristic, the performance, of a phenomenon. This is primarily a question of 'symbol system' as Orlikowski and Yates describe it and or 'language' in the terminology of Daft and his colleagues' work presented earlier (e.g. Daft and Wiginton 1979). While language is what I would like to focus most on, I will also consider the question of mediums in general. First a fundamental premise: "Every representation is

an interpretation. Even in the post-mortem, your description of what was going on is hardly an objective analysis of the kind that could be subjected to proof. […] There is no ultimate way to determine that any one interpretation is really right or wrong" (Winograd and Flores 1986, 35).

I suggest that some representational forms tend toward structure and some tend inherently toward agency and that metrics, and the extreme abstraction inherent in them, are more structural than text or narrative. *I make the basic distinction between quantification as a proponent for structurally-oriented representations and text/narrative as a proponent for the agency-oriented.* Metrics are viewed as a tool for implicit benchmarking, thus often suggesting longitudinal analysis, which has connotations of stability. On the other hand, natural language, i.e. text or narrative, is relatively more agency oriented allowing the individual's free will to become more clear. Obviously, this amounts to a gross simplification of the many types of representations we can imagine in organizational reality. I need present no further argument for considering metrics as a form of representation as metrics seem to be viewed as the obvious atomic component of PM systems and practices. Metrics appear to be omnipresent in organizational life and certainly within scholarship, as we shall soon see. This alone is sufficient rationale for including metrics in my analysis. To consider it an instance, even prototypical of *structurally*-oriented practices may be controversial. One might argue that metrics are a source of *change* rather than a source of stability. This depends on how the metrics are used, perhaps, if used 'interactively' following from Simons' ideas (e.g. Simons 1995). Nevertheless, I would argue that even if a single instance or a series of measurements result in some change, the thinking prior to the measurement reflects a somewhat static view of the phenomenon attempted to be measured.

Text or narrative as a form of representation may require a little more attention. The discussion of narrative quickly becomes entangled with con-

structionist perspectives and whether or how the formulation of utterances constitutes reality (see Strawson 2004, for a critique of this view). Although I am sympathetic to this perspective and will dwell on it later, this is not the focus I wish to take right here. But I do not take the position that words construct the world in an (almost) literal sense. There is a world even if there were no words or people. The interest in this context is rather to examine the function of text and narrative as representational language. The constructionist perspective asserts that discourse generates or constitutes organizational reality, by participating in and generating "organizational flows" (McPhee and Zaug 2008). Other perspectives will narrow in on how narrative is the weapon of political power games of domination (Mumby 1987) or can be the tool of effective leadership (Fairhurst and Sarr 1996). These are examples which see narrative as a vehicle of some *other* objective.

I consider text to be the use of *natural* language, such as what you are reading right now. Not all text is narrative. A table or list may be considered text, but does not qualify as narrative, because there is no *story* or engagement. Narrative is not dependent on formal logic although the larger category text could be. This makes narrative an unlikely candidate to live side-by-side the established, less chatty metric representation. Let me offer an example:

Representation 1, metric:

Head-count, multi-national	
2008	10,000
2009	9,850

An alternative representation of the *same* scenario:

Representation 2, narrative:

Peter started his career in a large multi-national as a junior controller. He had always been bright and quite outgoing, but perhaps held back a little for fear of not fitting in. His work at this multi-national showed him that

organizations have a peculiar logic, or non-logic as he liked to think. He quickly advanced to mid-level management in a business unit, but felt a growing tension with his peers. They felt he stirred things up too much, when he saw things which he felt could be improved. They didn't like the drama. They preferred people to follow protocol and the established routines. 'If it ain't broke, don't fix it' seemed to be the motto, only they never thought anything was ever broke. Peter's department was proposing novel ideas which had demonstrated great rapport with customers, and although revenue was a bit slow for these new products, it was showing a positive trend. He also had opinions on improvements outside his department. His suggestions were met with coolness from his peers. Some time went by and the market went into a period of stagnation. When cut-backs were deemed necessary, his department was the first to go. Privately, most were pleased. 'Now things are back to normal' they thought.

What is the truth-value of each of these two completely fictional representations of the same scenario? The process of representing reality is like squeezing the world through a funnel of a certain shape, which reflects the assumptions one has about reality. When examining the representation on the other side of the funnel, it is impossible to understand what the world looked like prior to being squeezed through. Knowing what the funnel looks like will give some indications of the representation's trustworthiness, but examination of the representation alone does not.

> "Through the process of uncertainty absorption, the recipient of a communication is severely limited in his ability to judge its correctness. Although there may be various tests of apparent validity, internal consistency, and consistency with other communications, the recipient must, by and large, repose his confidence in the editing process that has taken place, and, if he accepts the communication at all, accept it pretty much as it stands. To the extent that he can interpret it, his interpretation must be based primarily on his confidence in the source and his knowledge of the biases to which the source is subject, rather than direct examination of the evidence." (March and Simon 1958, 186-187)

The amount of uncertainty a recipient must absorb is related to the complexity of the phenomenon in question and the 'distance' between sender and recipient, both of which influence the need for summarization (March and Simon 1958). Do you know how much uncertainty you are absorbing when interpreting the two different representational forms just presented? You may

feel that the first is more objective and be comforted by that feeling, but what is the number not telling you? On the other hand, the narrative is certainly not objective. On the contrary, its subjectiveness may give a sense of sought-after understanding, but perhaps the wrong understanding? This is the friction inherent in the different types of representation. But what anchor point can we then look for to tie a preference for one over the other? Sometimes, the label 'scientific' is invoked to give magical credence to the so-called objective approach. And narrative is not invited to the party, as Czarniawska-Joerges concludes: "By the criteria of scientific (paradigmatic) knowledge, the knowledge carried by narratives is not very impressive. Formal logic rarely guides the reasoning, the level of abstraction is low, and the causal links may be established in a wholly arbitrary way"(Czarniawska-Joerges 1998, 3).

Be sure, this quote is not a slur on narrative, but the fact that I (feel the) need to point this out illustrates our ideals for self-professed science. Rather, this is a campaign for narrative. Narrative may be more suited to penetrate our world and grant us knowledge of it. Such is at least the claim of Bruner (1986) who recommends exploring a "narrative mode" of cognition, which allegedly is a superior mode of exploring *potentialities* rather than the relatively closed format of systematic aspects of cognition. Bruner contrasts the two different modes, narrative and paradigmatic:

> "The imaginative application of the narrative mode leads instead to good stories, gripping drama, believable (though not necessarily 'true') historical accounts. It deals in human or human-like intention and action and the vicissitudes and consequences that mark their course. […] The paradigmatic mode, by contrast, seeks to transcend the particular by higher and higher reaching for abstraction, and in the end disclaims in principle any explanatory value at all where the particular is concerned. There is a heartlessness to logic: one goes where one's premises and conclusions take one, give or take some of the blindness that even logicians are prone to." (Bruner 1986, 13)

The argument is based on an appreciation for the non-'scientific' in science and knowledge generation. Let me clarify. To expand the volume of

the *known*, i.e. scientific knowledge based on formulae, logic, etc, we must utilize non-scientific practices or reasoning. The argument continues that we must accept and embrace the fact that narratives are not known to be true in the same way that 'scientific knowledge' can be said to be. If we feel convinced that something is true, we don't need to debate it. Will the sun *really* rise again tomorrow morning? This question does not merit our energy and amounts to 'obscurity', as seen in Figure 2 on page 13. But if we know that we do not know something, or have a feeling that we should be more cautious about jumping to conclusions about something, then narrative may be a source of evolvement of knowledge. If narrative were scientific in a narrow sense its very value would be lost, for then it would add nothing which was not already expressed in formulae. It would be pure obscurity. A similar critique has been put forward by Lyotard, exemplified in this fine quote: "The narrative function is losing it functors, its great hero, its great dangers, its great voyages, its great goal. It is being dispersed in clouds of narrative language elements – narrative, but also denotative, prescriptive, descriptive, and so on. Conveyed within each cloud are pragmatic valencies specific to its kind" (Lyotard 1984, xxiv). Here Lyotard in a poststructuralist critique of science as a meta-narrative, i.e. 'just' another story, says that narrative has become expendable as it does not live within the shallow confines of this meta-narrative. With this dispersion, narrative is in danger of being centrifuged apart with the lesser but more homogeneous groupings of the "denotative, prescriptive, descriptive" stripped of connotations. With no connotations, there would be no provocation, with no provocation, there would be no discussion and, ergo, the world would be a darker, lonelier place. Where would science be without the narrative? What would academic conferences be? But this danger presumes that text can simply *denote* in an objectified manner. So text, we see here, in what is called the paradigmatic mode, is also very capable of representing logical reasoning akin to the assumptions inherent in metrics.

Using text as a representational language over metrics does not therefore guarantee a less static representational form, but rather enhances the *potential* of evolvement, if it affords the writer/speaker a stage for imagined or desired future states to come into play. Polkinghorne elaborates:

> "The connecting concepts used in narrative configuration utilize the conceptual network that distinguishes the domain of action from that of physical movement. Key notions here are goals, motives, and agents. The narrative scheme organizes the individual events it addresses using a framework of human purposes and desires, including the limits and opportunities posed by the physical, cultural, and personal environments." (Polkinghorne 1988, 20)

Narrative allows for meaning to be conveyed and potentialities to be presented. Even though the cut-backs in employees is evident (at a glance) in the first example a little while back, we are left with a slightly empty feeling, wondering what the history is and what this means. Of course, if this were our own organization, this added richness may be completely redundant. The relatively routinizing nature of metrics might also be conducive to the fallacies described by Westrum (1978, 1982) in which a relatively elaborate information system could result in a *blinding* dynamic rather than an enlightening exposé. These fallacies can occur when people who are centrally placed in an organization and its information flow interpret the information as business as usual, thinking (perhaps not consciously) that if there was an issue worth looking into, it would be evident or that someone else would have picked up on it. This paradoxical phenomenon is caused by humans' tendency to look for and expect continuity in their understanding of self and context, what Giddens might call ontological security. In the words of Weick "it is conceivable that heavily networked organizations might find their dense connections an unexpected liability, if this density encourages the fallacy of centrality" (1995, 3). Even in the face of what could be interpreted as proof of an occurrence of some anomaly, the interpretation of it results in an 'ironing-out' of the disruptive creases. Some representational forms, I speculate, might be

more conducive to this dynamic than others; *metrics could be more blinding than narrative if narrative allows for potentialities to be relatively more evident*. If this dynamic has explanatory power, the irony would be almost amusing; metrics associated with objectivism could be conducive to something resembling the opposite, a flattening out of historical events suited to fit our a priori given conceptualizations of how the world is and what has happened within it. This would mean that using narrative as a representational language could encourage critical thinking and personal responsibility in a way that metrics do not, in effect exposing the individual to his/her own agency orientation.

A slightly different framing of narrative in organizations and its impact on space-time patterns has been done by Czarniawska, who has offered arguments for the use of narrative in research into organizations (e.g. Czarniawska 2009). The concept of 'action nets', which describe a set of legitimate actions at a given time and space (although not necessarily consistent seen from the outside), is the basis of Czarniawska's conviction that narrative is crucial in organizations: "Why is the construction of texts important for organizing? Because they stabilize connections in an action net" (Czarniawska 2009, 49). It is argued that narrative is both the process and product which weld an apparent consistency in the world we live in, or, in the words of Weick (1995), this is how we make sense. "A good story holds disparate elements together long enough to energize and guide action, plausibly enough to allow people to make retrospective sense of whatever happens, and engagingly enough that others will contribute their own inputs in the interest of sensemaking" (Weick 1995, 61). Narrative is the means to creating meaning and it feeds our need for generating consistency. It is also a sort of fuel, which propels us ahead. Notice that Weick understands sensemaking as a retrospective process. This, seemingly, is in contrast to the understanding of agency I have presented, which accentuates the reflection on the *future* and the present

in the context of reflection on the past. How does imagination of future states correspond with the concept of sensemaking? I would suggest that agency-orientated dynamics which are part of a structuration process do not at all conflict with sensemaking. On the contrary, sensemaking must be an integral part of how (organizational) actors build desired imaginary future states. The sensemaking process results in a cohesive account of history, which is the foundation for imagining various trajectories, their plausibility, and the mitigative action necessary for them to become reality. However, in the sensemaking concept lies a certain cynicism of the likelihood of being able to determine the future, in that the future will be folded into the sensemaking process as it happens and becomes past. Awareness of whether we actually achieved the future we desired is lost in the unknowable haze of sensemaking which translates between what, on one hand, we thought the future would be or what we wanted it to be, and on the other hand, what it became. I think of this retrospective conceptualization as walking backwards. Based on what we have seen, we may have an idea of where we are going and where we want to go, but this idea will remain abstract. Only when 'seeing', i.e. making sense of where we went, will we be able to know where we were going. Leaning on Husserl, Schütz has this account:

> "Originally, alternatives X and Y were projected. Each of these projective Acts directed a single ray of attention upon its object (the alternative in question). However, once the wavering between alternatives is resolved, once the choice is made, this choice appears to the reflective glance as a unified Act of projection or phantasy. The individual phantasy Acts or projections meanwhile drop out of view. Nevertheless, the total object of the new synthetic Act still has projected status, a mere quasi-being; it is, in Husserl's terminology, 'neutral' rather than 'positional'; it is concerned, not with what *is*, but with what the actor has decided *will be*. On the other hand, once the deed *(Handlung)* is completed, the whole thing can be looked upon 'positionally' as something actually existent. In any case the deed is now grasped in a monothetic intentional Act and is referred backward to the moment of choice, when there were originally only polythetic Acts." (Schütz 1967, 69)

Schutz here gives an account of how potentialities, i.e. projections, are transformed from fantasy to fact and understood as a consistent whole. To attempt to let this translation process undergo scrutiny would imply the possibility of divorcing oneself from it entirely, to somehow step outside oneself and clinically examine it in an objectified manner. At the very least, this suggestion would not be in the spirit of the concept. In conclusion, I would say that an agency-oriented perspective embraces rather than dismisses sensemaking, but the reverse is not as clearly the case: "The dominance of retrospect in sensemaking is a major reason why students of sensemaking find forecasting, contingency planning, strategic planning, and other magical probes into the future wasteful and misleading if they are decoupled from reflective action and history" (Weick 1995, 30). As far as I can see, this wording may be misleading, and may be overstating the impossibility of strategic planning which may be based on PM systems. What the sensemaking concept must suggest is that the value of a forecast can only be determined as time passes the forecasted time and events, and actual events are woven into a consistent whole. The relation between the forecast and what happened is therefore difficult to know. But this does not mean that forecasting or similar activities are not worthwhile; it just means that benchmarking a plan for the future against a realized past is difficult to do. Contrasting the different languages of metrics and natural language in text, I consider the richer language to be capable of portraying a fuller account of history, thus allowing us to understand future trajectories better. The fidelity given in high-variety languages, as Daft (e.g. Daft and Lengel 1986) would term them, crystallizes our rear-view mirror to a degree that metrics do not.

Most people, including scholars of sensemaking I believe, get out of bed in the morning with the expectation of going to work (polythetic act), and if this projected future does not materialize, we would not hesitate to deem our expectations unfulfilled. We may postulate that we do not *really* know

whether we expected to reach the workplace or whether we *really* know if we reached it or not, but at some point the discussion becomes farcical. The process of getting out of bed with the goal of arriving at work is (obviously?) a different process than, for instance, making a decision about whether to focus on stimulus or regulation in propping up the world economy. The complexity and 'volume' of social interaction is greater. Let us save this thought.

It remains, however, that sensemaking is related to the storytelling and therefore narration, regardless of the emphasis on retrospectiveness in the strictest sense. It seems to me that narration becomes a sort of institutional house-keeping, which serves to organize our mental frames into something that resembles a whole. In this view, narration becomes a source of *stability* rather than evolvement, but stability in the meaning of making sense, not stability in a temporal meaning, i.e. non-evolutionary. The sensemaking perspective suggests that as things happen, one weaves them into a whole, just like weaving a carpet. If something out of the ordinary happens, we will attempt to weave it into the existing pattern in order to maintain the whole. This does *not* mean that change does not happen, but merely that the perceived 'level' of change might be lower than actual events might suggest. But this institutional housekeeping must be needed in different ways depending on the type of organizational reality. As I will expand on later, Burns and Stalker (1966) distinguish between organic and mechanistic organizations. Of relevance to representational forms are the communication forms they ascribe to the two different forms of organization. They show that in organizations where innovation is desired, and the organic form is the most relevant mode of organization, not surprisingly perhaps, more dialogue takes place. They frame dialogue in opposition to commands, i.e. one-way instructions. Inspired in part by my reading of Ouchi (1979), I shall elaborate this distinction. If we keep the distinction between metrics and text in mind, it is clear

that text is necessary in the organic organization (for dialogue), but here we see again that text alone is not sufficient for us to label it agency oriented, which I consider the organic organization to be. We have to examine how text is put into play to see if it supports our concept of agency orientation or whether it might as well be a proponent of structurally-oriented practices. This makes the distinction between metrics and text more fuzzy. However, metrics probably do not have the same chameleon-like characteristics, since it is more difficult to imagine metrics being used extensively as the defining, essential form of communication in an organic type organization.

On the theme of control, it has been found that in locally controlled, self-managed teams, questions and answers are more prominent in conversations (Manz and Sims 1987). This implies that if we desire agency-orientation conducive to innovation, dialogue is probably a central component. Conversations or dialogue, it seems again, are most suited to exploring potentialities while coordinating the necessary concern with desired futures. Dialogue moves some of the control from the top and disperses it throughout the organization, namely where it seems most relevant, or, in other words, decisions are to a greater degree made by the people who have the relevant knowledge (Courtright, Fairhurst, and Rogers 1989). This may render the pure form of hierarchical control less valuable (Obradovic 1975) or at least dilute the strength of it. With the lesser emphasis on remote control such as traditional hierarchical structures, the information requirements also shift. Local decisions require less aggregation or abstraction in the management of information, and the relative value of metrics may lessen.

This has been an attempt to explicate my predisposed notions of the appropriateness and value of text in the form of narrative in organizational practice. Now we will briefly turn our attention to media of narrative.

Media

I have described narrative as if it were one phenomenon, but narrative has of course different characteristics if it is spoken during the late hours of the office Christmas party rather than written in a report to shareholders. Even a simple distinction between the spoken language and written language is not new, as the master of rhetoric wrote some time ago: "Each kind of rhetoric has its own appropriate style. The style of written prose is not that of spoken oratory […] The written style is the more finished: the spoken better admits of dramatic delivery – alike the kind of oratory that reflects character and the kind that stirs emotion" (Aristotle 2004, 142). Here we learn that spoken and written text differ in terms of objectives, and the legitimate style is also different for the two. In the spoken word, there seems to be more opportunities for emotional triggers, while written text may be less populist perhaps, and more well-rounded. We are not in ancient Greece, and public speaking in ancient Greece is not the same as the verbal interchange which takes place in organizations today. But there may still be learning points. Written text has been shown to be denser, with more abstract and complex concepts used (DeVito 1965), presumably because the writer has more time to ponder on the formulation. Spoken language, on the other hand, can be perceived as more "interesting" (Gibson et al. 1966, 446) and engaging. But spoken language has many more layers of non-verbal communication; in a sense, the spoken language is much more than spoken. Woolbert told us almost a century ago that the spoken word adds "Voice: articulation, enunciation, pronunciation, quality, force, time, pitch, expression, interpretation, meaning [and] Action: bodily set, posture, manner, mood, emotional tone, movement, gesture" (Woolbert 1922, 272). Taxonomies have been developed to systematize these dimensions of spoken language (Rubin 1978) and have been the dedicated subject of doctoral theses (e.g. Biber 1984). On the other hand,

more recent work focusing on the new types of electronic communication shows that email, for instance, borrows attributes from both traditional oral and written styles (Yates and Orlikowski 1993). Here, I am primarily concerned with how the different media of text weave into organizational dynamics. Metrics are, in principle, also subject to the same variation in media, but because metrics are generally generated at a relatively high level of abstraction, they are more rarely consumed in a local way, as narrative is. For that reason, the following discussion is focused primarily on contrasting spoken and written *text*, but metrics could be discussed in a similar way. Spoken language can be lacking in durable (explicit) time-space patterns. On the other hand, the inscription of the spoken word onto 'paper' gives it an independent artifactual existence; it can be drawn upon in the generation of meaning with a farther reach than the more limited spoken word. The inscription gives it "extra-local" presence (Smith 2001, 159), in effect, bridging the gap between micro and macro. The written word can be interrogated in a way the seemingly more flimsy spoken word cannot, due to the "staying power of texts or their capacity to remain. […] Since texts can endure through memory traces, documents, and signs, they form a way for interactions at the local level to be reproduced apart from their original production" (Putnam and Cooren 2004, 324-325). The spoken is less likely to be documented and not as easily interrogated after the fact, and can even be thought to 'act' independently (Cooren 2004), but this view would probably be more sympathetic to Latour (1999) than to Giddens (1984), whom I acknowledge an allegiance to. Giddens would insist that these inscripted textual representations do not have a life of their own, but he nonetheless might concede that these artifacts do have a part to play in the progression of structuration. In the context of PM methodology, accountability is an important notion, which seems clearer in the written or documented word than in the spoken word. This makes spoken narrative a less attractive candidate for our purposes (to consider

which representations to use in PM practices). This does not mean that the spoken has less impact than the written. The 'back-stage' consequences of spoken narrative will interact in complex ways, which are very difficult to know, but should not be dismissed on that ground alone. But accountability means different things in different organizational realities.

We could consider what status to give a text, either verbal or written. Is it in its written form merely blobs of ink on paper, which conform to the convention we call letters? That view would dissociate the text from further implications in organizational reality; it neither causes anything nor, by implication, is it affected by anything. At the other extreme, it has been suggested that organizational reality *is* defined by the text that floats around within (Westwood and Linstead 2001) who, as such, are critical of any form of realistic ontology of the organization. A half-way house may also be suggested where one can acknowledge the constitutive forces of narrative while not disengaging from some sort of purposeful action and direct "attention to the intertwining of instrumental-productive and influence-power aspects of communication in organizations" (Engeström 1999, 165). In this view, conversations have the dual effect of both consolidating action *towards* something and at the same time producing text which propels the organization with momentum (Taylor and Robichaud 2004). This seems like a more appealing position, and the more popular (Putnam and Cooren 2004), because folding everything material and empirical into 'mere' discourse seems such a foreign suggestion and a slippery slope entirely detached from the real world. One thing must be clear though: I have barely scraped the surface of the question concerning the position of text in organizational reality.

Obviously, translation between representations happens all the time. Images are translated into narrative and possibly into numbers and vice-versa; metrics may be talked about, interpreted, etc, and text, dialogue, etc may be quantified and continue life as a metric independent of its qualitative roots.

Representations (such as text or metrics) may themselves be perceived as a translation of whatever they are supposed to represent, but these are perhaps translations of something more real than just other representations. Translations are an added layer of complexity which must not be ignored.

Conclusion on representational forms

Text is not manifestly agency oriented and there is complexity related to the different dynamics of various mediums. Translation also lowers the clarity of the status of text. These are examples of difficulties in the naïve distinction between metrics and text, and specifically in considering text, written, spoken, etc, a uniform exponent of agency orientation. Spoken and written text could even be considered to be two different languages or dialects (Allen 1966). However, as a language class, I have chosen initially to group all text, well aware that the use of this language can take many forms and that this decidedly also impacts the resulting dynamic, structuration process, etc. By text, I mean text which adheres to the rules of natural language.

We have to conclude that an attempt to distinguish metrics from narrative and to label the former structurally oriented and the latter agency oriented is somewhat artificial. Even a short examination reveals obvious difficulties with this attempt. I will challenge myself to bear this in mind, in the face of institutionalized pressure to succumb to science and research as abstractions! But these will be the two representational figureheads, which I will propose to be archetypical of structural thinking and agency-oriented thinking. In light of the (so-called) dichotomies, for example of qualitative and quantitative methodology, I realize that this suggestion perhaps is actually well-worn. But this requires us to step outside the realm of representations used in PM practices to the wider field of research methodology, a step we are not quite ready to take yet. However, the dogma of the status of metrics and text seems to have become part of my history, and while I did not arrive

at it before this research process as much as through the research process, the reader should be aware that I initially propose metrics to be more structurally oriented, while narrative representations tend towards agency.

2.2.3 Organizational reality

In the following, we will take a brief look at how we could conceptualize organizational reality within the structure/agency distinction. As we have seen, structure per definition is not empirical, but certain empirical factors may induce structural behavior. These factors are what need to be unfolded. As we have seen in the presentation of the research question, this entire project seeks to understand what should impact the use of different representational forms in PM practices. This 'what' will be a theme of the field work, but I do not want to ignore previous thought on this matter, which could have relevance. To try to convey what scholarly thought exists on what the organization *is*, is obviously much too broad. This is not what I seek to do. In the following, I will have the far more modest goal of honing in on a few interesting ways of slicing through the huge literature on what constitutes an organization which is specifically relevant in the context of representational forms.

Dimensions of organizational reality

Some have proposed that we should judge the validity of our representations with *criteria of the subject* (Hoebeke 1990). The validity of the resulting accounting image as a true representation of the phenomenon is, Hoebeke suggests, dependent on certain characteristics of the phenomenon, e.g. *stability* of the phenomenon. Intuitively, perhaps, we would question the relative appropriateness of metrics for measuring or managing an artist creating a sculpture vs. the production of straight pins vs. a research project (Kostoff and Geisler 2007) and it has been argued that some types of value creation do not lend themselves as easily to quantification as others. Lapsley (1999) suggests, for example, that there are aspects of public-sector work which are not mea-

sureable. Burns and Stalker (1966) assert by their distinction between mechanistic and organic organizations that control systems should be applied relative to organizational reality. This is summarized in the following:

> "The central premise of those authors is that as rates of environmental change vary, organizations need different systems of control, information conveyance, and authorization [...]. Mechanistic forms of organization, characterized by hierarchical control, are more suited to stable environments, which purportedly afford a relatively high level of control over tasks. Organic organizational forms, characterized by dispersed control, are more suited to unstable conditions, under which task accomplishment and innovation should shift to the most knowledgeable parties." (Courtright, Fairhurst, and Rogers 1989, 773)

A command and control mindset is unsuited to the needs of innovation it seems. The premise seems to be that the environment should determine the form of organization, which in turn should determine the system of control and so on. The ideal stream of cause and effect seems perfectly linear, from the outside in. While I am not a big fan of this one-way fashion of arguing, the assertions certainly do support the ideas of Ouchi (1979). Here, markets, bureaucracies and clans vary in the degree to which performance can be measured and rewarded as a means of control, and vary in the degree to which performance must be institutionalized through socialization. A market, for example, is a situation where a price can be attached to a service or process and then rewarded accordingly. But when applying the market mechanism to situations where they are not normally applied, problems arise because "many of the tasks are at least in part unique and thus not subject to market comparison [...]. Which form is more efficient depends upon the particulars of the transactions in question" (Ouchi 1979, 836). It seems difficult from reading Ouchi to distinguish the precise *conditions* for applying one over the other, or even loose conditions. Rather, the application of one control mechanism over another is done by examining what seems reasonable in a given context, and described by the level of '*subtleness*' or '*inherent ambiguity*' in the task, or the degree to which the tasks can be described using rules.

Furthermore, the movement from a market-based mechanism to the more costly bureaucratic form of control seems possible mainly on the basis of experience of the failure of the market-based mechanism of control, which would indicate the absence of sound theory on what control mechanism to choose. "The ability to measure either output or behavior which is relevant to the desired performance is critical to the 'rational' application of market and bureaucratic forms of control" (Ouchi 1979, 843). This ability is what Ouchi (1979) sets out to unfold with the contingency framework shown below:

		Knowledge of The Transformation Process	
		Perfect	*Imperfect*
Ability to Measure Outputs	*High*	Behavior or Output Measurement (Apollo Program)	Output Measurement (Women's Boutique)
	Low	Behavior Measurement (Tin Can Plant)	Ritual and Ceremony, "Clan" Control (Research Laboratory)

Figure 9: Conditions Determining the Measurement of Behavior and of Output

The framework presents two dimensions: our ability to explain explicitly the means-end relationships in the transformation process and our ability to measure outputs effectively. In other words, Ouchi proposes that in innovative settings such as in research laboratories, measuring is essentially impossible and other forms of control must be implemented.

> "Under conditions of ambiguity, of loose coupling, and of uncertainty, measurement with reliability and with precision is not possible. A control system based on such measurements is likely to systematically reward a narrow range of maladaptive behavior, leading ultimately to organizational decline. It may be that, under such conditions, the clan form of control, which operates by stressing values and objectives as much as behavior, is preferable. An organization which evaluates people on their values, their motivation, can tolerate wide differences in styles of performance; that is exactly what is desirable under conditions of ambiguity, when means-ends relationships are only poorly understood; it encourages experimentation and variety." (Ouchi 1979, 845)

This is strong language. In some settings, measurement does not represent what it is supposed to represent, resulting in maladaptive, or dysfunctional, behavior, and should in some cases be exchanged with clan forms of 'control'. This parallels what I term agency orientation: a world where the subjective and normative are obvious and which sets the scene for cultural interactions. These thoughts were proposed 30 years ago, but have not been fully appreciated in practice, I think it would be fair to say. To be prescriptive, we may need to develop the theory. In the figure above, there are neat, straight lines between the different boxes, and the borders between them refer to levels of ambiguity and uncertainty. I wonder if it is naïve to attempt to clarify these concepts further: what does this gradient of ambiguity look like? Can we assign it empirical form and more rigor, or must it be based solely on a less stringent evaluation? By implication, Ouchi claims that clan forms of control can be consciously implemented. This is an essential point, even if it is not stressed. Though organizational reality may not allow us to understand the value-creation process, we may be able to design an organizational reality which deals with these circumstances in the most favorable way. On the other hand, we could fear that by their very nature, clans, which build on such intangible foundations of values, are difficult to foster in a rational fashion. There is probably some truth in both perspectives, but the reading of Ouchi leaves a desire to understand more precisely:

1. How to determine the degree of knowledgeability of organizational reality, if at all possible, i.e. how we should more precisely think of ambiguity, subtleness, and uncertainty.
2. What form may clan/agency-inducing artifacts, technologies, processes, etc. have and how they can be designed rather than just evolve.

But notice that Ouchi presents us with two dimensions of organizational reality which are relevant for the measurement of organizational performance, of which I focus on one: the degree of perfectness of our knowledge of the value-creation process. What affects the knowledgeability of the transformation or value-creation process? A basic characteristic of this knowledgeability, I would claim, is that it deals with physical objects. The *physicality* of the phenomenon we wish to represent influences how easily we can delineate it from other objects and examine the interactions it has with other objects. When an industrial steel cutter slices a 3 mm. sheet of steel into smaller sizes, we can compare the finished product to the specification. The translation between initial specification, a desired future reality, and the finished product is relatively easy using objective tools, such as a measuring tape, which is equally physical. This is a rudimentary distinction, which fits with Ouchi's framework in that space flight and tin cans both deal with physical objects. Women's fashion also deals with physical objects, but a large part of the design which distinguishes a potato sack from high fashion is the mental, symbolic manipulation which occurs in the head of the designer. So even though the fashion industry sells a physical object, the mental processes which went into conceptualizing it make up a substantial part of the value they add to the product. But we could also argue that the same holds for the production of a tin can. A tin can also needs research and development work. They differ perhaps in the degree of standardization which is feasible, or the speed of the continuous development which is necessary in order not to lose relative value to competing products. Last year's jeans cut may become obsolete while tin-can design ages better in the market. So physicality is not clear cut; even the simplest production process has some (non-physical) thought process behind it. However, the more thought that needs to go into the continuous development, the more we move towards clans as the relevant control mechanism.

Galbraith (1977) has dwelt in some detail on what I here have termed knowledgeability of the process. This is what Galbraith refers to as task-uncertainty. Task-uncertainty is the delta between what we actually know about the future process and what we need to know in order to be able to coordinate, and is "a function of the output diversity, the division of labor, and the level of performance" (Galbraith 1977, 174). This delta results in the need for information-processing to manage the uncertainty. However, this information-processing has transaction costs, so it does not come for free. If output diversity is high and requires a high division of labor, i.e. the value creation process is dependent on many parties fulfilling their function, and if we also require high performance, then the information-processing requirement will be high. Since the cost of information-processing may be restrictive, we can choose to settle for a lower level of performance or division of labor, essentially lowering the division of labor by reducing the necessary number of interdependencies. What is of most interest in this context of establishing a picture of organizational reality is that information *processing* is perceived as the primary concept in understanding what an organization *is*, or how it has been designed. The central characteristic of this value-creation process (which spawns an information-processing requirement) is the uncertainty. This tells us that uncertainty, in relation to output diversity, is a central feature of how organizational reality should be understood. So again, there seems to be a difference between producing tin cans and the work in a research laboratory. The division of labor characteristic reflects how integrated the process should ideally be and the level of coordination necessary across the whole internal value chain. This corresponds somewhat with the central vs. local characteristic in the structure vs. agency continuum.

Consider whether output diversity should to be understood as innovation. In my interpretation, output diversity is similar to having *known* contingencies, as I have previously discussed, while *unknown* contingencies are a

prerequisite for innovation. This is a convenient conclusion, for otherwise Galbraith's ideas would suggest that innovative work leads to higher information processing needs, leading to higher coordination requirements, i.e. more structurally-oriented practices. On the contrary, there is a big difference between known contingencies (the car manufacturing plant) and unknown contingencies (the research lab). The former will need tight integration and the latter will not.

Moving on from Galbraith, we still seem to lack an adequate understanding of organizational reality. Of the three types of control mechanisms presented by Ouchi, bureaucracies, midway between markets and clans, are the most widespread. At least in name. This is the focus of the work of March and Simon (1958) whose work is very applicable to understanding organizational reality. While presenting the scientific management paradigm, they discuss certain limitations inherent in the assumptions of that perspective (March and Simon 1958, 45). Specifically, scientific management assumes a fixed, well-defined set of activities which need to be executed. This, they say, is over-simplifying in at least two ways: The organization may know of contingent factors which impact the process, for instance when manufacturing a car there are hundreds of thousands of variations, but the number is finite and known. The set of possible activities needed to complete the process is known, but the specifics are not known for the individual process, before the contingencies have been established. The more extreme type of uncertainty is if contingencies have not even been established, which we could exemplify using Ouchi's research laboratory example. The future is less knowable in a research laboratory than the production of cars: this is the whole point of development-oriented processes such as research. We should deduce that the quantification, which is inherent in traditions such as scientific management pays little attention to the reality of many current organizations or parts thereof, where routinization is not desirable if it sacrifices de-

velopment. Conversely, if we have a efficiency orientation "routinization for performance" (by performance I think March and Simon mean efficiency) the quantification is a possible tool to achieve routinization. In terms of understanding organizational reality, this distinction in how knowable the future is fits well with the model proposed by Ouchi. Even if we now have a distinction between two levels of uncertainty (known contingencies or unknown contingencies) and a gradient of the level of physicality in the value-creation, we still seem some way from having crystallized agency-inducing vs. structure-inducing practices. Inspired by Merton (1940), and conceiving of the organization as a machine to be brought under control, March and Simon (1958) conclude that: "The reduction of personalized relationships, the increased internalization of rules, and the decreased search for alternatives combine to make the behavior of members of the organization highly predictable, i.e., they result in an increase in the *rigidity of behavior* […] of participants" (March and Simon 1958, 58). Control, therefore, is a structurally-oriented objective, while learning or development will tend towards agency orientation. If we accept that organizations have a natural tendency to drift towards routinization, why then does change happen at all? March and Simon (1958) proceed to attempt to hypothesize the *causes* of organizational change, or, more specifically, innovation rooted in dissatisfaction with the status quo. Dissatisfaction comes from a gap between the current state and aspirations for the individual or organization. Aspirations can have many sources, but declining market share or profits are given as examples. This reflects a view of organizational reality which seems to be inherently structurally oriented, i.e. tending towards stability. If there is no clear and immediate danger for the organization, it will carry on with business as usual. The implication would be, for example, that a firm enjoying a monopoly would not be induced to change. This postulate seems reasonable, but does the reverse hold true? Is a high level of competition a source of change? Probably, but this

demands that we include efficiency optimizations as innovation, although this tends toward the routinized, repeatable, value creation. If innovation can be understood as improvements in routinization, the argument seems sound, but exposes the agency/structure distinction to its shortcomings. Is a process improvement which moves the value-creation towards routinization agency oriented or structurally oriented? A *movement* towards *stability* has elements of both agency and structure. However, this should be considered mainly structurally oriented as the stable routinization is more persistent than the briefer movement towards it. The consequence for our terminology must be to consider efficiency-oriented innovation as difficult to describe in our framework, but ultimately as tending more towards structure.

Another interesting factor discussed by Simon and March (1958) is the relationship between communication and innovation. They hypothesize that communication can be geared towards satisfying the continuation of current routines, or, on the other hand, geared towards innovation aimed at satisfying future needs. This is a version of Gresham's law, the popular version of which states that "bad money drives out good" (Rolnick and Weber 1986, 185). March and Simon seem (to me) a little unclear about the implication, but I offer my interpretation. In this context, our currency is not silver coins but goals. We might think that clear goals correspond to good money, but the reverse is the case. Clear goals drive out less clear goals by virtue of their ability to be communicated, not by virtue of the goal being relevant or not. Having easily communicable goals may lead to an over-powering of less clear goals, irrespective of how fulfillment of the goals supports the well-being of the organization. Being easily communicable does not necessarily make them bad, but makes them risky propositions when the relative relevance of easily communicable goals and less communicable goals is unclear. This becomes a dynamic of organizational reality which makes it slide towards being structurally oriented. As routinization occurs, the clear, well-known goals become

entrenched in the fabric of the organization, while new, typically less clear or at least less understood goals will have a more difficult time gaining the 'appropriate' level of attention in the organization.

Thinking about what effect management control systems have in organizations is clearly nothing new. I have found particular inspiration in the work of Simons (Simons 1991, 1994, 1995). An interesting distinction is made between *diagnostic* and *interactive* control systems. His research shows how different circumstances cause systems to be *used* in different ways. Diagnostic systems are used periodically to check if the organization is running as expected and to signal the need for mitigative action if this is not the case. The same system is said to be used interactively if the highest level of management is concerned with it, it is given continuous attention, the resulting data is interpreted and debated, and the assumptions inherent in the system and data are subjected to scrutiny (Simons 1991). Management may choose to use a *static* system (in the sense that it is not further developed) for *new* purposes. These purposes depend on, for example, conditions in the broader strategic environment and competitive landscape, and the strategic direction preferred by management.

> "The interactive control system is used to stimulate face-to-face dialog and build information bridges among hierarchical levels, functional departments, and profit centers. [… top managers] decide which formal processes to use interactively and which to use diagnostically, based on their sense of purpose for the organization and their personal assessment of associated strategic uncertainties." (Simons 1991, 61)

Our research problem zooms in on characteristics of the system and its interplay with the organization, and I try to understand what consequences different types of systems, for example the use of quantitative representations, have for this interplay. I stress the *inter*play, as a mutual influence is assumed. Simons focuses on how external factors lead to a particular system being used differently, and seems to frame the problem mainly as a one-way relation.

In later work, Simons introduced an additional two 'levers of control', *belief* systems and *boundary* systems and also made the connection between his diagnostic control system and dysfunctional behavior (Simons 1995), though he did not thoroughly explain this dynamic. This later work reflects a more contemporary perspective on the organization; we cannot manage it as if it were a machine, and we have to live with and thrive on empowered employees. The two new control systems attempt to address the problem which is also a clear theme in my work: How do we manage a modern organization? Simons positions belief systems as the beacons of value that motivate employees to act in adherence to these values, but he leaves good room for interpretation. This contours the ethical path which employees must follow. Simons explains the need for belief systems as resulting from people's greater need for meaning in their lives, what Giddens might refer to as the reflexivity of modern living. Boundary systems, on the other hand, are defined negatively; they tell employees what they must *not* do. Together, these four levers are meant to provide good means for steering the organization and balancing empowerment and control. Again, there is an overlap between the objective of the model proposed by Simons and my own: they both attempt to understand the balance of change and stability. This model is very inspirational, but some issues come to mind. Diagnostic control systems cover the operational level of the organization, taking care of the details and making sure everything runs smoothly. Interactive control systems and belief systems operate at a higher level. Interactive control systems are thought to be only for top management, so these are at a high level in the hierarchical sense. Belief systems are very abstract, and, while organizational culture should be made explicit, it is not as effective in guiding direction at a more operational level. But this is per design based on the argument that it is difficult to empower people while telling them precisely what to do. That would be a contradiction. However, it is unclear to me why only top management is afforded the

opportunity to use systems interactively. Granted, if the objective is to evolve organizational strategy, then this is a task for top management. But there are many tasks which would benefit from an interactive process. This is closely related to the concept of agency in my terminology, and whether we can design systems which are agency oriented. But again, Simons, apparently, does not attribute interactiveness to the system, but to the *use* of the system. I do not make this assumption. My assumption is that artifacts *do* influence the structuration process, albeit indirectly, and therefore we must not ignore their influence.

Simons furthers our understanding of organizational reality in the following way. According to Simons, control systems are leveraged differently depending on our objectives. For example, if we wish to maintain smooth operations, we use a control system diagnostically and manage by exception. On the other hand, interactiveness is surrounded by interpretation and debate (Simons 1991). The point is that certain properties of organizational reality, in this case objectives for the use of the control system, influence the way we should practice management control. In contrast to this author's point of departure, Simons deemphasizes the effect of the control systems *on* the behavior of organizational actors, and perhaps gives actors credit for being able to navigate *freely* and be goal-oriented in their use of control systems. In contrast to Simons, I explore how interactiveness could be ascribed to the design of the system rather than on its *use*. What are the conditions for designing a control system which will induce interactiveness? While I have been inspired by this terminology, I am intrigued by the prospect of interactiveness for the masses, acting as a fertilizer on seeds of change.

Conclusions on organizational reality

Where does this leave us? Now we seem to have a few concepts we can attach to organizational reality: the explicitness of our a priori *knowledge of the value-*

creation process (extended with the type of contingency knowledge we have of the process) and different *objectives* for the representation of this knowledge. The few scholars we have glanced at have understood organizational reality in terms of level of uncertainty, whether this be from a control perspective, the type of contingency present in the value-creation process, or in terms of output diversity. The routinized value creation, where a previously established process is repeated, has an efficiency objective. The unique value-creation processes which constantly evolve may not be efficient, but have different effectiveness objectives, perhaps learning and development objectives. With this distinction of lower or higher uncertainty (which is not necessarily a bad thing) come prescriptions for control structures (Ouchi), distribution of influence, vertical and lateral relations (Galbraith) and so on. We could and will continue to evolve our understanding of organizational reality, but for now at least, in broad outline, it concerns the *level of uncertainty of the future*. In trying to unfold organizational reality, I perhaps have sub-consciously set aside a nagging feeling of being victim to the same mechanism this polemic tries to combat:

> "Classic economic theory, failed to make explicit this subjective and relative character of rationality, and in so doing, failed to examine some of its own crucial premises. The organizational and social environment in which the decision maker finds himself determines what consequences he will anticipate, what ones he will not; what alternatives he will consider, what ones he will ignore." (March and Simon 1958, 160)

Perhaps, understanding organizational reality (singular!) as being in one place on the agency-structure continuum is succumbing to an over-rationalization of the concept of organizational reality. Perhaps this is in itself a question of resisting the force of Gresham's law. It would be convenient to think of organizational reality as capable of being described in a singular concept, but this might be too restrictive, and sacrifice a little too much correspondence with reality. We may have to extend our understanding of organi-

zational reality from understanding an organization's value-creation as *being* at a certain position between agency and structure to understanding it as simply one analytical perspective. To synthesize the whole organization into *one* whole and think of it as being somewhere on a one-dimensional scale is attractive, but probably too simplistic. Understanding organizational reality as structure and agency could at least mean understanding smaller parts of the organization, practices for example, as being more or less structurally oriented. This poses certain difficulties though. If we cannot uphold the understanding of organizational reality as one unified concept, but must face the possibility of organizational reality being made up of many complementary and contradictory practices, what status does the research question have? I have framed this small endeavor as a question of the relationship between organizational reality and representational forms. When we acknowledge that organizational reality is fragmented, this question becomes (more) difficult to answer.

Is it, for example, possible for an organization as a whole to be highly agency oriented *and* highly structurally oriented? This quickly brings us face to face with the question of unit of analysis, because to answer this question it is crucial to delineate the boundaries of what exactly we are talking about. This will be considered shortly.

2.2.4 Propositions of interplay

The concept of structuration as presented earlier suggests an intimate interplay between structure and agency. If we accept the suggestion that the organizational reality and the representations we use to manage the organization can also be described in structure vs. agency terms, we can exemplify the situation in the following way. The model below is an adaptation of Daft's model, presented above in 2.2. It retains the notions of fit between reality and

language, but defines both language and reality, and the gap between them, within the concepts of structure/agency.

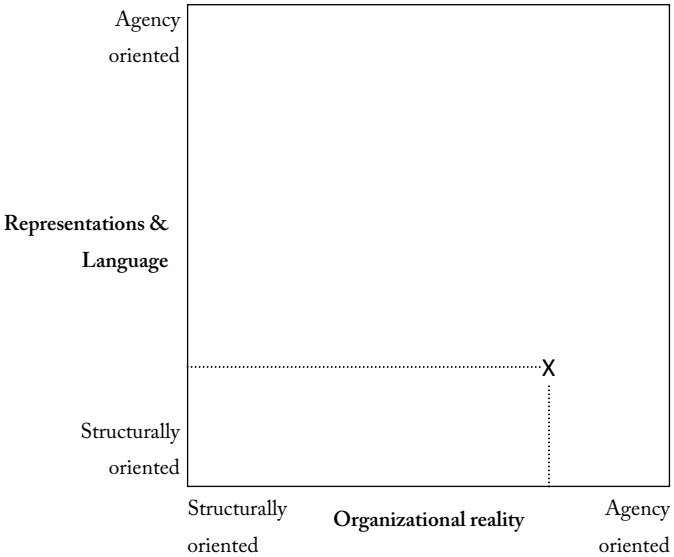


Figure 10: Representation and organizational reality gap

Here we see an *example* of how the representation and organizational reality can be at different 'positions' in the structure/agency continuum. In this example, we are using language which tends towards structure while our reality is more relevantly understood as agency oriented. This results in a misfit. *This misfit is the theorized cause of dysfunction.* I draw on Giddens' theory to achieve a more dynamic model for organizational reality and more broadly on the constitutive nature of representational forms (Putnam and Cooren 2004). Giddens' structuration theory suggests that structure and agency (i.e. the artifacts that 'embody' these concepts) *influence* each other (potentially only via the subjective, as Giddens would suggest). This dynamic is also described in management literature, as in the following reference to reinforcement of bureaucratic operations: "Merton argues that bureaucratic operations, with

their emphasis upon method, prudence, discipline and conformity, may have such an impact upon the bureaucrat that the adherence to rules and regulations, originally conceived as means to wider purposes, become ends in themselves" (Burrell and Morgan 1979, 185). For the example in Figure 10, this would mean that the representations will 're-create' the organizational reality, in effect pulling it towards structure since the language is relatively more structurally oriented than reality, and also mean that organizational reality will pull the types of representations which can make sense, i.e. define which representations are legitimate, towards agency since the reality is relatively more agency oriented.

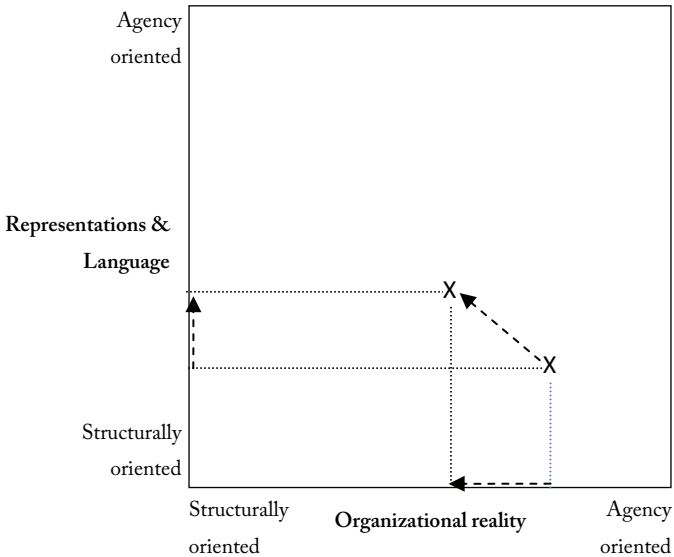


Figure 11: Representation and organizational reality interaction

The figure above shows the proposition: the organizational reality will use more agency-oriented representations if the organizational reality demands it. However, we may also perceive that the organizational reality is recreated by the existing representational practices, following the structura-

tion concepts. The arrows indicate the vector resulting from the interaction: reality being pulled towards structure because the representations used are relatively structurally oriented and the reverse for the representations. Bear in mind that Figure 11 is only an *example* scenario, which illustrates the interplay between the representations and the organizational reality they are supposed to 'reflect'. This illustration shows how we can conceptualize the gap between the representation and the reality and how the two 'pull' each other. *Representation and reality can be anywhere in the structure/agency continuum, but will always gravitate towards each other.* So our high-level model suggests two dynamics:

1. That the representations used will constitute the organizational reality, or, expressed in more practical terms, will constitute management.
2. That the organizational reality will employ representations to suit the needs of the organizational reality, thus implicitly asserting value or relevance of some representational forms over others.

So we find ourselves with two propositions which relate to our overall question of how to choose representational forms. The first is that organizational reality is constituted by PM practices, i.e. representational forms, and the other is that organizational actors will compensate for a misfit between organizational reality and representation. The relevance to our problem of how to choose representational forms is that *if we can understand how the tensions between organizational reality and representations work, we would be in a better position to choose the most appropriate form of representations in our PM methods*. These propositions are far from being sufficiently solid to require a strictly deductive approach to the research, but *act rather as beacons for engaging with the organizational reality in the field*. The reader is encouraged to reflect on whether she sees realism within this model; even though it is sug-

gested that reality and representation are mutually constitutive, does modeling the interactions as it has been done presuppose an actual *position* with the two dimensions in a realistic sense?

2.2.5 Summary of research problem

With this we have a rudimentary vocabulary: agency and structure as extremes in a continuum. The continuum describes our organizational reality and how change occurs within it. This extension of Daft and Wiginton's (1979) original proposition of describing organizational reality in terms of "complexity" to understanding it ontologically in terms of agency and structure serves several purposes:

- It refines the organizational reality dimension, while retaining a high level of abstraction
- It frames dysfunction as a misfit between language, or representation, and reality
- It extends the model from something empirically bounded to include meta-theoretical assumptions
- It can accommodate the concept of interaction between representation and reality, so it becomes dynamic
- It lays the foundation for positioning PM practices within this wider continuum and for a later reframing of PM methodology.

The continuum also describes our representational forms, which in turn accentuates the proposition that representations can be of a certain type which *share properties* with a certain type of reality. This is illustrated in Figure 12.

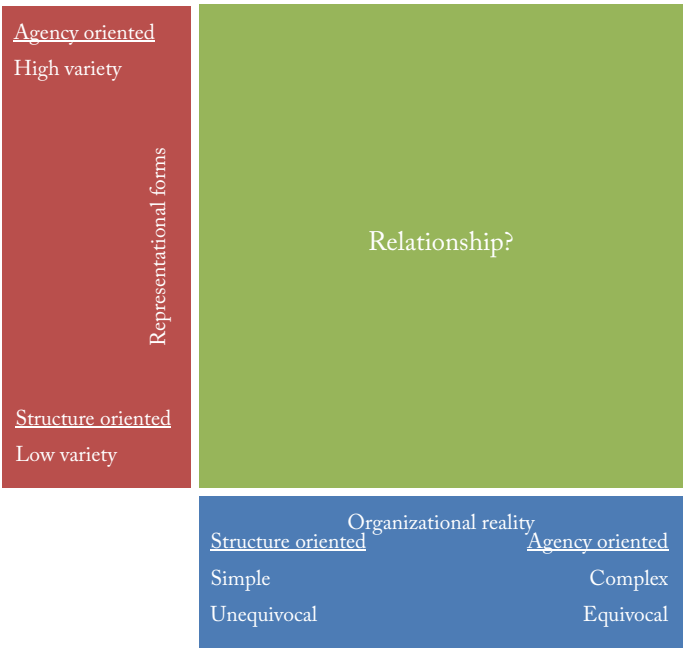


Figure 12: Language and organizational reality redefined with agency and structure.

I earlier presented the proposition that dysfunctional behavior occurs because of a *misfit* between the actual (or desirable) organizational reality and the representational forms or language used to manage it. This proposition, or high-level theoretical framing, will follow us in our analysis.

The initial hypothesis about the appropriateness of one PM approach over another has therefore been posited theoretically in our discussion of agency and structure. This means that an attempt has been made to examine the appropriateness of different PM approaches on the basis of *reasoning* about the *characteristics* of PM practices in terms of their tendency towards certain representational forms and the organizational *reality* the PM practice seeks to represent. The proposition is that a *misfit* between representation and the nature of *true performance* of some phenomenon within the organiza-

tional reality results in dysfunction, because organizational actors orient themselves towards the representations rather than what may be identified as *true performance*.

It is important to realize that I consider our understanding of representational forms and especially of organizational reality to be tentative. The reader should think of the terms agency orientation and structure orientation as two container concepts, which we will continuously evolve throughout the thesis. The concepts have been given some form in both dimensions of representational form and organizational reality, and this will be extended throughout. We know what structure and agency are from Giddens, but seek less abstract instantiations of structure orientation and agency orientation in the very *real* organizational reality. In other words, the research problem questioning the relationship between representation and reality is unfolded to these two aspect:

- What can be said of the proposed 'fit' between representation and reality? Is there such a fit?
- If there is a fit, how is organizational reality described within that fit?

2.3 Methodology

> "We are confronting a universe marked by tremendous fluidity; it won't and can't stand still. It is a universe where fragmentation, splintering, and disappearance are the mirror images of appearance, emergence, and coalescence. This is a universe where nothing is strictly determined. Its phenomena should be partly determinable via naturalistic analysis, including the phenomenon of men [and women] participating in the construction of the structures which shape their lives." (Strauss 1978, 237)

We are in a world between fluidity and solidity, and the type of control structure used determines the tendency to innovate. This is also true in this innovation. In the field of research in general, there seems to be elements of both market pricing, bureaucracy and clan forms of control (Ouchi 1979) but my

particular circumstances afford me the freedom of being mainly accountable to myself. Naïvely, or arrogantly perhaps, I think this also produces better internalization of the research craft. How has this influenced the methodological path taken?

2.3.1 Confessions of a non-methodologist

The concept of methodology somehow suggests a very linear process from research design, choice of methodology, execution of the research project and then writing it up; *clearly* this is not reality. Even in natural sciences, this archetypical, almost romantic view of the scientific process has been shown to be more complex and less stringent, for example by the intriguing writings of Knorr-Cetina (e.g. 1981; 1999). I am convinced that the 'non-scientific' is an integral part of the scientific process, but it lives a shadow existence. In the following, I will try *not* to provide a rationalized, sanitized version of my approach to my work, but rather offer a few of my thoughts on how the process of conducting the research has unfolded, and what insights I have gained. Any interest this may have to the reader does *not* stem from simply knowing the story of this work, but from the fact that I consider it a research result in itself.

I started this work thinking I would contribute from *within* the field of PM, meaning I had not yet gained an appreciation of the future unconvinced stance I would later take with regard to some of the basic premises within the field of PM. Gaining this awareness took considerable time. I reviewed much of the literature on PM frameworks and tried to fight off a nagging feeling of them all being more or less the same. It was typically a question of which dimensions to measure, coupled with various flavors of continuous optimization, as we shall see in the chapter on this. Coming from a background of working with *human* performance, I interpreted my aspirations as an attempt to create an organizational equivalent of the 'Big Five' model of personal

traits (normally attributed to Thurstone 1934). This model classifies people into five dimensions, which numerous empirical investigations have shown to correlate with a multitude of behavioral tendencies. Would it not be wonderful if we could somehow establish a similarly simple model for organizations with the same predictive power? This was a clear example of the mechanism whereby I attempted to fit new thinking into what I already had been exposed to. But other prior experiences in dealing with *organizational* performance told me that, in practice, implementing these models resulted in unintended and unwanted behavior. Again, prior encounters shaped the stance I took on the matter, rather than purely systematic process. This led me to actively search for thought from outside the PM field, which could be *used* to critique the prevalent assumptions. Again, a selection criteria based on perceived value which stemmed from prior experiences. I found that concepts from social theory, science studies and philosophy of science provided a groundwork for critiquing existing PM assumptions. The project has since been given an additional layer: because thinking from philosophy of science is used later in the thesis as a frame of reference for PM, the finding of the study will also be related to this field. This is a clear example of the evolution of the research problem and how the approach I find myself *following* (rather than *taking*) impacts the scope and repercussions of the research. The implication of this is that much of the influence presented in the following came *through* working with the data and not prior to. It has been in the continuous conversation which takes place throughout the research process that this author has found some degree of consensus within himself as to what has unfolded and what the meaning of it is.

2.3.2 Influences and allegiances

Although the methodology in this work is a consequence of reflexive iterations, it is clear that this analysis is based on certain assumptions, a main as-

sumption being the view of the organization as a performance-oriented entity or at least having a management which desires a performing organization, and the existence of a management structure which requires an abstract representation of the organizational reality in the form of reporting. The concept of PM suggests that the performance of organizations is in fact something that can be managed. I accept this as valid too, and thereby subscribe to an assumption of a certain, at least moderate, degree of determinism. Ineffective managerial practices thus contribute to less than optimal performance (although effective management practices, in general, and reporting, in particular, are clearly not sufficient for securing optimal performance).

I presuppose the existence of a physical, actual world irrespective of our ideas of it, which points to a realist position. Simultaneously, I acknowledge that some aspects of what people speak of as 'reality' are mainly fabricated as abstract concepts. An example of this is 'performance' which in my view does not exist in and of itself. The abstract, non-physical 'part' of our reality is pure construction though it may be influenced by physical objects, and we may also give it physical manifestations, such as when the performance of a software developer is manifested and defined by a bug-count figure in an information system. So although I accept that there are physical, objective things out in reality, which exist independently of our consciousness of them, my nominalist side also insists that many things are purely conceptual and are *given* existence in speech. However, the 'real', physical parts of reality can only be sensed (not simply *known*) and our cognitive processes invariably influence our perception of the world. Therefore we cannot all know the world in the same way, even though it does exist in an objective sense. It is probably unknowable whether this position is true, because we cannot step out from behind this veil and benchmark our ideas with the physical objects and extract a delta. A label for this view is perhaps critical realism based on ideas of representational realism (Brown 1992).

The question then becomes how to know the truth value of any experiences we have. Here my pragmatist side takes over (Peirce 1878). By this, I mean to say that the value of theory lies in its practical consequences or implications, but also that practical experience is a legitimate source of insight into how the world works. This pragmatism is not fundamentalist when it comes to forms of reasoning; based on my conviction of both the value and empirical accurateness of abduction as a mode of reasoning (Peirce and Ketner 1992), I am comfortable with a criterion of truth which is fuzzy, neither purely deductive nor inductive. Some pragmatists would say that intuition is not a legitimate source of generating knowledge (Peirce 1877), but I consider the distinction between intuition and practical experience difficult to make. By this I mean that a 'negotiation' of truth occurs in all our interfaces with the world. One might suggest an awkward alliance between a pragmatist stance, which particularly of late appears to lean towards nominalism, and this author's acceptance of critical realism. I am not overly concerned about this, though I am aware that it may be a basis for controversy. An interesting discussion lies in the status of representations in relation to the realism vs. nominalism discussion, but will not be made here. All this is not to say that we cannot or should not strive for stronger and more robust truth criteria, but I merely mean to say that this form of pragmatism is entirely legitimate. Giddens has been called a pragmatist (Bryant and Jary 1997) but "Giddens never bases his thinking on the writings of pragmatists and symbolic interactionists, even though this tradition has given a particularly strong emphasis to reflexivity in action and the problem of temporality in the context of the social sciences, and has done so in a fashion that, in fact, ought to be acceptable to Giddens" (Joas 1993, 180). This is simply to point out that even though Giddens' level of analysis may seem far removed from being practical and experience-based, I see no contradiction between structuration and pragmatism.

So my high-level stance is grounded in pragmatism and the value of experience, but this does not mean that we cannot be informed by theoretical suggestions. Some might argue that the reasoning forms of deduction, abduction and induction amount to a trichotomy, and that one must choose a single one throughout. If one zooms in on the individual atomistic act of reasoning, that might be the case, but I see multiple reasoning steps within a thesis such as this that do not necessarily conform to just one type. Reflecting on the past process and the process which lies ahead for the reader, I would suggest these three steps: 1. Abduction, initial curiosity and feelings on the sources of dysfunction, 2. (weak) Deduction, by proposing a certain fit between representational forms, I have given the study some direction, and 3. Induction, by considering the limits of application to other contexts: generalizability from this sample to a population. My interpretation of the nature of the problem and my limited understanding of it suggest that it should be approached with elements of exploration and interpretation. However, my approach has deductive elements in acknowledgement of the fact that these interpretations are not entirely without direction or history; to some degree they are informed by the past and the flow of experience is constantly folded into this history.

So I do not assume a non-interpretive epistemology, or, put plainly: Some parts of reality may be best understood through interpretation and this is an integral part of management as well as research. I take a pluralist approach, denying incompatibility between epistemologies in an absolute sense. It is perhaps an unusual stance to take, that different epistemologies are not incompatible, for example the dichotomy between interpretivist and functionalist positions: we typically view these distinctions as a *fundamental* difference which cannot be viewed as integrated. This is not the same as saying yes=no, because the whole thesis revolves around finding the relevance of different approaches, i.e. representational forms, and, by implication, the

assumptions that follow with the different approaches. I understand paradigms as different lenses through which we view the world. In a PM context, we could say that an organization might use different lenses to view itself and its performance and would therefore see different things. However, I also assume that some things 'out there' in the world might make one paradigm more suitable than another: to act and think within a specific paradigm *is not given a priori*, but may, to a certain extent, be *chosen* on the basis of *experience* in general and specifically on *examination of some contingency factors*. In the special case of learning the performance of a phenomenon, understanding these contingency factors is the goal of this thesis. If so inclined, the reader could ask what justification is needed to decide if paradigms are incompatible and whether one is superior to another. It would not surprise me if the answer referred to a preference for one ideology or religion over another. This position inherits ideas from Feyerabend (1993), the philosopher of science who revolted against essentialistic views of science. Corresponding to often-heralded maxims of, for example, Kuhn (e.g. 1970) and Popper (e.g. 2002), this scientific anarchism accentuates the critical value of freedom in the research process. Kuhn (1970) described scientific revolutions in terms of paradigms, which, like the influence of surface tension on a glass of water, allow a normal scientific paradigm to live on, even in the face of contradicting evidence. At some point the surface tension gives in and a revolution ensues. But in the world of Kuhn, there seems to be a *unified* concept of where *the* science is. Pressures exist, yes, but when the paradigm bursts, the whole field moves. I wonder whether drawing inspiration from Feyerabend is a philosophical equivalent of committing *harakiri*, but this is not for me to judge. Accepting this multi-paradigmatic view is not to accept commensurability as such, if by commensurability we understand that two theories can be translated without losing fidelity. This can (probably) not be done. A verbatim translation from one language to another is per definition impossible, but

whether the content is the same is unknowable, because it will always be understood from the perspective of one language. But this is not really the core issue; the effects of it are more important. In attempting to understand how people actually make sense of their world, Lorenz, among others, have found that we make use of 'evolutionary epistemology' (Campbell 1987; Lorenz 1977; Weick 1979). When discussing schools of epistemological theory, it is worth making the distinction between descriptive epistemology (the scholars just mentioned take this approach) and a more traditional theory of epistemology. Descriptive scholars base their thinking on observations of how humans behave, that is to say, not on thought alone. More traditional epistemological discourse would dismiss empirical foundations as irrelevant based on their view that most people are incompetent in these learned matters. A descriptive epistemological school would, I presume, consider traditional epistemological theory to approximate a discussion on religion: ultimately it is a question of faith. This author believes in belief. There is nothing wrong with faith per se, but it must not appear out of thin air; it must be argued, and arguments which stem from experience seem more convincing. In the pragmatist's view, values are indistinguishable from truths; the important thing is not whether they *are* true, but whether they *seem* true given experience. So the important question is not to establish a rock-solid wall between science and non-science, or between truth and belief, but to engage critically with all arguments, and certainly those which are experience-based. This is probably as close as this author can go in terms of epistemological absolutes. On the question of choosing one school of thought over another, if indeed it is a choice, I confess an allegiance to the descriptive school. What is central to this discussion is the evolvement of epistemology. Popper's well-known philosophy tells us that humans pursue induction when needed but that a natural selection occurs among theories of how things *are*. This natural selection, obviously a concept based on Darwin's ideas of the natural world, will in time

be refined because bad theories will cease to be able to compete with newer, 'truer' theories. The analogy of natural selection means that we would have to relinquish some people's hopes of scientific discovery converging on one consistent whole, as natural selection rarely creates one winner, but has multiple winners within different environments (Toulmin 1972). Following this line of thought, the whole concept of falsifying theory could be an unfortunate casualty of war, a sacrifice not easily made, but one I would not mind making. Universal falsifiability would not make sense any longer, because it would be possible to pin more and more contingent factors on the theory's applicability, thus screening it from competing theories. The natural selection process would be weaker and we would (again) be left without a clear demarcation, and the criterion that "*it must be possible for an empirical scientific system to be refuted by experience*" (Popper 2002, 18) is again dissolved. The evolvement of epistemology, however, means that we have varying truth criteria based on where we are in an evolutionary process or where we are in our 'taxonomy'. There is no normative difference between these different epistemologies, at a given time the fittest is the winner, but to say that the fittest epistemology in time 1 is inferior to the fittest in time 2 is meaningless. What I conclude from this is that naturally we have different strategies for orientating ourselves in the world we live in, meaning we make use of various epistemologies. This reflects an *observation*, that in interacting in and with the world around us, we make use of shifting truth criteria, depending on which phenomena we meet.

Lakatos and his concept of 'research programmes' (Lakatos and Musgrave 1965) is, in my interpretation, a softening of the stricter Popper's idea of falsificationism. Lakatos accepts the fuzzy nature of the scientific process by proposing that we can only with time, retrospectively, determine the relative value of two competing theories, but is still rather rationalized relative to the methodological anarchism we see in Feyerabend (1993). The scientific

discovery process must embrace competing perspectives on what should be the dominant theory, and we will only later know what is or was the superior theory. There is therefore a definite temporal difference between what we could call 'front stage' science, and the more real 'back stage' science, as it is really done. Front stage, many idealize the rational notion of methodology as something very conscious and design-driven, and claim to be sensitive and open to contradicting evidence. Back-stage we live happily with supporting our established notions and nurturing them for some time. However, reconciliation between front stage and back stage will happen in time, when the poorer theory can no longer withhold the pressure from the new kid on the block. At least this is what we hope. Lakatos was a mathematician, but I would say that his ideas are at least as relevant in the looser world of social science.

Multi-paradigmatic approaches seem to be an integral part of reasoning, and are difficult to avoid even if we desired to choose one meta-narrative as Lyotard (1984) would say, or paradigm in Burrell and Morgan's (1979) terminology. I view my own acceptance of parallel paradigms as an obvious non-event and non-issue when looking at phenomena involving human social behavior in organizations. That said, I am clearly aware that the lower-level theoretical framework in the structure/agency does influence the unfolding of the analysis. This is obvious. I view structuration as a form of instrumentalism; it is a useful construct which nurtures certain meaningful ways of looking at the world. The agency/structure distinction which is used widely in this work as a high-level theoretical backdrop can be understood as the dynamic in the cognitive patterns within our perceptions of the physical and non-physical world, which both shape our actions and are shaped by our actions. This implied dualism between the world as something *structured* or something we have come to know as driven by *agency* is an artificial one. I do not recognize any essential features of reality which compel me to adopt this

distinction in order to understand our world. If we had taken a view of the world as a political battleground for "partisan performance measurement" (Saravanamuthu and Tinker 2003, 37) between individuals, such as Chua focuses on, "It is people who make up accounting numbers in specific ways to try and achieve certain objectives" (Chua 1989, 117), we would have gained different insights. If we had taken a view of the world as more macro power struggles between classes, our thinking in the following would have been dramatically different. This power perspective would bring a fuller understanding of the dynamics of PM practices, but this is not where the emphasis will be. So what the choice of the structure/agency distinction really boils down to is that it *feels beautiful*. There is symmetry in this distinction which can be extended to very fundamental puzzles in social sciences. This alone makes it interesting. But without coming near postulating that the structure/agency distinction is much more than an aesthetic preference, we could *support* the argument that it is the most beautiful perspective. Its beauty may stem from its ability to frame contrasting and confrontational perspectives. Even though the distinction between agency and structure is *a* perspective of the world, it also suggests an opposition to a shake-n-bake world view made only of consistencies, analogous to Latour's ready-made science (Latour 1999). This basic choice of perspective on the organizational reality within which PM practices occur does not allow for anything really resembling a deductive approach. It is not a scientific theory as Popper (2002) would insist on. It should be thought of as the backdrop to the scene rather than something we could use to understand the more detailed workings of organizational actors. Understanding the more detailed workings would require an extension of the structure/agency distinction. The empirical work will hopefully clarify this somewhat. However, it will not allow for a clear falsification and so would undoubtedly be deemed unscientific by some. As such, the propositions give unclear guidance in the encounter with the field. The link

between the theoretical propositions and the field will remain a non-causal one. As a reader, one should therefore not expect in the analysis in the following chapters to find anything much in the line of underpinning or rejection of the theory, but rather a discussion of the value of this slicing of the problem. Another 'problem' which may be unsettling to some is the difficulty of conveying the origin of the suggested propositions. Did they arrive in a dream (or nightmare some would suggest) or by divine inspiration? In reality (!) these ideas have come about from personal experience, extensive readings within the field and outside, and a good deal of consideration. To me, this process makes sense, but I am astutely aware that not all share this flexibility, preferring a more perceivable theory developing process. I categorize preferences like these as aesthetical, again with little essential merit apart from personal satisfaction.

So the theoretical backdrop is motivated by aesthetics. But what of the choices that have been made in the further study? I have chosen the question of the influence of organizational reality on representational forms, but will later extend organizational reality to ontological questions, and representational forms to epistemological questions. The research question can be rephrased at this level to become the influence of ontology on epistemology. What does this rephrasing serve? Hopefully, it will lift and contrast the empirical findings to a methodological level of how science is made. But, primarily, it allows us to view the (potentially) narrow-minded scope of current PM practices within the slightly wider scope of scientific methodology, which can lend us terms such as 'epistemology'. The rephrasing also asserts clearly that an epistemological position should be associated with characteristics of the phenomenon in question, and not only serve the purpose of the research endeavor, which has been suggested by, for example, Rorty (1982). Research endeavors and statements of truth do not exist outside the human consciousness, so I will not suggest that there is a *direct* link between ontolo-

gy and epistemology, but rather that the understanding of organizational reality must follow the phenomenon and precede the language to describe it. This is not a realist statement; I simply mean that we do have some leeway in choosing which representational form would be appropriate.

Where should we find answers to the question of the relationship between ontology and epistemology? We can engage in philosophical musings over it, but I prefer to look for the answers in reality. So we will be exploring the relationship between ontology and epistemology by looking at how organizational actors make sense of the relationship between organizational reality and representational forms. There is a certain beauty to the symmetry of realizing that the findings in relation to the research *problem* are also applicable to the research *itself*, because the phenomenon which is under the microscope in this work could be framed as knowledge creation, albeit exemplified with a certain type of knowledge creation. So as Figure 13 illustrates, epistemological questions both *surround* the thesis analysis and are embedded *into* the thesis analysis. There is a definite interaction between the two levels, and this is seen as a strength and a potential for further development. This is a taste of what discussions will be presented after the analysis.

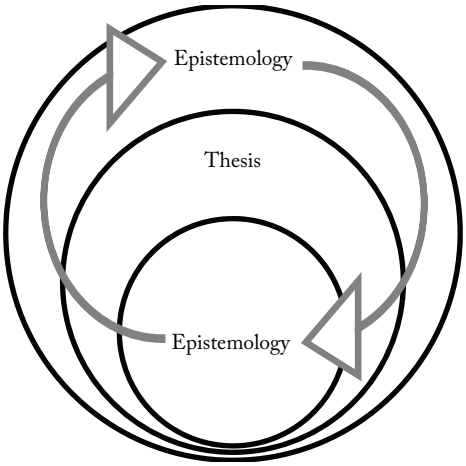


Figure 13: Recursive epistemology

This implicitly designates the organizational actors I will meet the role of researchers into this question. As it happens, half of them have formal schooling in research methods and all of them have 'schooling' in how the world works, i.e. experience. This experience is what I want to piggyback on and, in doing so, continue to refine my decidedly high-level, non-operational understanding presented thus far. This follows a performative (as opposed to ostensive) perspective of organization (Latour 1986) which suggests that knowledge of the organization grows primarily from organizational actors and that this knowledge is superior to the knowledge an outsider (such as myself) can hope to achieve. "Researchers are not the only narrators of organizing; organizers themselves tell stories about what they do – to each other, to journalists and to researchers" (Czarniawska 2009, 33). A skeptic might describe this approach as loose interpretations of amateur scientists' (interviewees') utterances on their espoused view of how reality works. This approach is not without limitations and I also see the value of establishing causality and all the other characteristics of the *hard* side of social science. In my own terms, the ontology I choose to view the problem with is agency oriented

and therefore the epistemology must tend towards the agency oriented. This is my methodological attempt to eat my own dog food. And this is the motivation for choosing to analyze managers' *stories*. The hope and anticipation is that organizational actors within Microsoft will be able to lend us some understanding of the research question.

2.3.3 Choice of method

Having established a research problem, a decision must be made on how to approach it. This is challenging for such an abstract research problem and many possible approaches could be suggested to cast light on the propositions. One thing seemed clear: the approach would need to be explorative and interpretive. The maturity of our theoretical propositions would not allow for a harder approach; the complexity of the question and our superficial understanding of the problem (at this stage in the thesis) led me to conclude that *human reflection* based on *experience* is an effective way of engaging with the problem. My fondness for pragmatism aligns well with the value of learning about people's experiences, which is a major reason for choosing *stories of performance management* as the main empirical source. These stories were gathered in 30 interviews with senior managers at Microsoft Corporation. I am interested in the experiences of the managers, i.e. what interviewees say about an appropriate use of management information and its implications in organizational reality. My assumption in conducting an interview is that I would like to encounter the interviewees' interpretations. This awareness will aid my understanding. In the following, I will briefly discuss this method relative to my stated methodology, leaving the bulk of the more detail-oriented discussion for Chapter 4 prior to presenting the actual stories. It might be appropriate first to consider if an examination of stories is reasonable in this context. I have used the term weak deduction to underscore that I will obviously not be pursuing a quantitative affirmation, and so a qualitative approach

seems an easy choice. However, it would be self-deception to suggest that some kind of generalization is not considered an ideal when analyzing the data from interviews, and this is not a novel goal for qualitative research (Payne and Williams 2005; Williams 2000). It is obvious that the statements made by the interviewees do not represent all possible people within Microsoft, yet alone in other organizations. So the data is clearly not generalizable in a statistical sense. If we consider this work to be a faithful but random sample from a population, one might argue that it says next to nothing about the larger population of managers and organizations. However, analytical generalizability (Yin 2003), which is common in qualitative research, is indeed an ideal here also. This means that the aim is to suggest relationships which may expand or contrast theory in other organizations. So a 'suggestive' generalizability will be sought. Further discussion on this will be presented after the analysis.

I ask myself if the path taken is predetermined from the outset, or if I have had a role in steering the ship in the right direction, or any direction for that matter. Both probably. Or in other words, I sense that the duality of structure is intertwined in mysterious ways to make it difficult to distinguish the actual freedom of this author. But to try to quantify the level of freedom in a research project is really beside the point. Individual freedom does exist along with the tendencies to look for continuity. So my current perspective is that the scientific process is inclined to take predetermined trajectories favoring evidence which supports an already established experience, while naturally being less kind to evidence which contradicts it, a.k.a. confirmation bias (Nickerson 1998), but at the same time is consciously attempting to clarify this bias and question it.

2.4 Chronology

The following is a brief overview of the chapters in this thesis and how they interrelate. In Chapter 1 we framed the initial problem. The initial curiosity stems from knowledge of dysfunctional behavior of organizational actors as a consequence of performance management systems. A step outside domain theory to social theory resulted in new propositions. Giddens (e.g. 1984) combined with Daft (Daft and Wiginton 1979) provide an ontology of human society, which we apply to organizational reality. This gives us the distinction between structure and agency, but also proposes that the two are intrinsically linked in structuration. Inspired by Giddens, I have come to think that representational forms may adhere to the same characteristics we can assign to organizational realities, i.e. have both structural- and agency-oriented aspects, and we might deduce that a PM methodology can act as a *catalyst* towards structural- or agency-oriented tendencies and propose this as a framing of the dysfunction. Therefore, we framed the further research question as trying to understand how to choose representational forms in PM practices, contingent on the organizational reality, and simultaneously sensitive to the recursive nature of the relationship between organizational reality and representational form. This is where we are now. In Chapter 3 below, we look at how scholars have thought of performance management, in terms of being structurally oriented or agency oriented. As we shall see, current practices lie close to the structurally-oriented dimension of structuration, based on ideals of control rather than development. In terms of Giddens' ontology, our current practices are heavily 'in favor of' the structural.

Before pondering further on the theoretical questions, we dive into the analysis of the stories of performance management at Microsoft in Chapter 4, and explore what learning we may have on the question of choosing representational forms. On one level, this results in a much more subtle and detailed understanding of the resulting dynamics of using different representational

forms than the (quite abstracted) theoretical propositions made initially. Agency orientation and structure orientation are more than a propensity for change or stability. Concurrently though, on another level, there seem to be definite streams which can be synthesized. In two organizational settings which differ in type of work, we explore differences in consumption of management information and managers' reflections on this.

In Chapter 5 on Findings, I relate the fieldwork to the research question and, among other things, present a portrait of organizational reality and wonder what the exact ontological status of a representation is and how we should think of it. We find that many of the apparently fundamental assumptions in the use of PM systems and in scholarship are highly problematic, as they do not have a one-way and one-to-one relationship but a far more complex one. Performance becomes a non-empirical phenomenon which takes form mainly as a value judgment with reference to ethics. Accounting practices clearly do impact reality in addition to reflecting it, and we may even say that we can create realities with accounting practices. This apparently new status of the metric necessitates a re-framing of the PM process. We therefore continue with a new understanding of performance management. This is a high-level conceptual framing of performance management as *an organization's inquiry into 'its own' performance*. Framing PM as an inquiry into organizational performance makes us think of, for example, what methodological approach this inquiry might have. This widens the possible approaches we allow ourselves to think of within a PM methodology and we can more clearly see the assumptions inherent in current practices. After presenting the most important conclusions in Chapter 6, in the appendix I attempt to answer the question of what an agency-oriented PM system could look like, if we want to reduce the 'gap' between performance and representation. We build on the findings in proposing an alternative PM practice called "Talk", which has been designed with the 'requirement' of having a good fit to an

agency-oriented organizational reality. Talk is proposed as an example of a method which accentuates the action dimension of Giddens' distinction between structure and agency. Talk shares the basic characteristic of traditional PM practices of being a way of inquiring into an organization's performance, but presents a different way of representing, aggregating and synthesizing this data.

2.5 Summary

In Chapter 2 on the approach in this thesis, I formulated the research question as an investigation into how we should think of the *relationship between representational forms and organizational reality*. Departing from Giddens' concept of duality of structure, I presented two 'container' concepts of structural orientation and agency orientation, which I use to describe both organizational reality and representational forms. Structure orientation and agency orientation have been given some form in short presentations on representational form and organizational reality. For representational forms, metrics is mostly associated with structural orientation, while text or narrative is mostly associated with agency orientation. Our understanding of organizational reality, on the other hand, still seems inadequate and fieldwork will have to expand on this as well as on the relationship between representational forms and organizational reality. Fieldwork at Microsoft Corporation was gently guided by this framing of the research problem.

Chapter 3 Performance Management Scholarship

We will now explore the use of the concepts 'performance management' and 'performance measurement' in scholarly work. The inclusion of 'performance measurement' allows us to review some of the earlier work, where this concept was prevalent, but it is assumed that the concepts have overlapping ultimate objectives: to manage organizational performance. Even if the fields do have overlapping objectives, it is clear from the outset that even their labels point to significant different assumptions: *Measurement* is very different from *management* (Courty and Marschke 2003). However, I do think it is reasonable to group them here because later I will be considering, very fundamentally, the appropriateness of *different* approaches to managing organizational performance. So this division is not considered irrelevant; on the contrary, this is at the core of the problem, but it will not be used to exclude or categorize scholarship. Performance measurement has a longer tradition, and to exclude it would leave a very significant body of literature unexamined.

This is not intended to be an extensive presentation of the existing dominant PM frameworks, such as The Balanced Scorecard (Kaplan and Norton 1992). I refer to Pun and White (2005), for example, for a recent presentation of frameworks. Nor is the purpose of this literature review to document thinking from all relevant fields related if not explicitly dedicated to PM, as this would quickly bring us into the vast literature on management control more generally, accounting, organizational psychology, operations management, semiotics, etc, etc. Rather, the point is simply to get an impression of dominant paradigms within the field and any *significant* voices which challenge the dominant paradigm in terms of impact factor.

The approach applied to explore uses of the concept of 'performance management' and 'performance measurement' is a simple one: review the top

50 most cited articles in the field relating to performance of the organization. This simple approach has been chosen as a straightforward way of delineating relevant articles. The reader should note that I have not filtered the articles to look for specific areas within the study of organizational performance such as supply chain, operations management, accounting, etc., or within certain industries. This, again, was to underscore the width of the field and its multi-disciplinarity. Some could argue for a wider or narrower field and this would reflect an essentially personal choice. O*nly articles which are 'theoretical' have been examined*, discarding applied articles. An article is considered theoretical if it has PM systems or methodology as such as its subject matter. Here we have articles on how to structure a PM system or how to go about the process of implementation. An article has been understood as 'applied' if it has a form of organizational performance as its subject matter. A large number of the applied articles describe some sort of relationship between variables, and address questions such as the significance of an independent variable on financial performance, i.e. correlation and causation studies. Another large group concerned with the choice of 'right' metrics (which could be a symptom of the difficulty or inherent paradox of representing certain phenomena with quantitative measures) has been excluded. This last point underscores the fact that I do *not* suggest that there is a lack of scholarship examining the way the metric should be designed as dependent on the local organizational reality (e.g. Beamon 1999; Gunasekaran, Patel, and Tirtiroglu 2001; Kleijnen and Smits 2003; Martinsons, Davison, and Tse 1999) and one could argue that there has been a lot of thinking on the design of representational type relative to organizational reality. However, as we shall see, the metric is not considered in a larger class of representational forms. A total of 1124 articles have been identified of which 143 have been examined closely to end with the

most cited 50 theoretical articles[2]. The examined articles account for 61% of the total citations of the 1124 articles.

This study of the scholarly use of PM and assertions in literature of what PM should be in practice takes as its point of departure our discussion of agency-oriented vs. structurally-oriented representational forms, i.e. metrics vs. text. In other words, this is an investigation of the assumptions concerning the appropriateness of certain representational forms in PM. *Even weak agency-oriented notions have been categorized as such*. Since I had an assumption of overrepresentation of structurally-oriented thinking, I would also like to highlight some of the thinking which questions this.

On the surface this is a very deductive process, since we look for notions related to an already established concept, representational form, but the focus on metrics vs. text does not come from a vacuum; the distinction was made after reading all the (relevant) articles without coding. So in reality the first reading was explorative, which gave a holistic understanding of the tensions. This understanding in turn was part of the basis for the distinction in the

[2] The following procedure has been used: Searched ISI Web of Science February 6th 2008 for terms 'performance management' or 'performance measurement' in article topic using the SSCI database, and including years 1900 – 2007 (1368 hits). Filtered away non-English and articles only in subject areas with less than 20 articles and selected only to include the following subject areas considered relevant: 'Business', 'Business, Finance', 'Computer Science', 'Computer Science, Information Systems', 'Economics', 'Engineering, Manufacturing', 'Health Care Sciences & Services', 'Health Policy & Services', 'Information Science & Library Science', 'Interdisciplinary Applications', 'Management', 'Operations Research & Management Science', 'Planning & Development', 'Public Administration', 'Public, Environmental & Occupational Health', 'Social Science, Interdisciplinary' (1124 hits). Sorted by impact factor while manually filtering articles not relating to organizational performance, such as individuals' performance or various forms of performance relating to physical objects, etc. Interpreted the text in relation to the tentative understanding of structure and agency and coded the text.

concepts presented earlier, from which the explicit coding has been done. However, the concepts could not have emerged completely grounded from the texts, because the separation of representational forms comes as much from analytical reasoning as directly from the texts. It is difficult to map out the process of reasoning how one arrives at a theoretical understanding; however the process seems to have been this one: Reading without coding → Reflection → Meta-theoretical distinctions formulated → Reading with coding. The 'reflection' step is where the abductive tendencies come into play and attempt to suggest groupings in the experience of the world, in this case readings of literature. The articles were reviewed and divided into two categories: Agency-oriented (Abernethy and Lillis 1995; Feller 2002; Goddard, Mannion, and Smith. 2000; Goddard, Mannion, and Smith 1999; Ittner, Larcker, and Meyer 2003; Kelly and Swindell 2002; Pauley and Ormerod 1998; Perrin 1998; Stewart and Walsh 1992; Townley 2002) and structurally-oriented (Athanassopoulos and Giokas 2000; Atkinson, Waterhouse, and Wells 1997; Banker, Potter, and Srinivasan 2000; Behn 2003; Bititci, Turner, and Begemann 2000; Bourne et al. 2000; Chiesa, Coughlan, and Voss 1996; Connor and Korajczyk 1986; Curtright, Stolp-Smith, and Edell 2000; De Toni and Tonchia 2001; Eccles 1991; Eddy 1998; Ghalayini and Noble 1996; Gunasekaran, Patel, and McGaughey 2004; Heinrich 2002; Huang, Lee, and Kao 2006; Indjejikian and Nanda 1999; Ittner and Larcker 2003; Jacobs, Goddard, and Smith 2005; Kanji and Sá 2002; Kennerley and Neely 2002, 2003; Kravchuk and Schack 1996; Langfield-Smith 1997; Lohman, Fortuin, and Wouters 2004; Medori and Steeple 2000; Murphy, Trailer, and Hill 1996; Neely 1999, 2005; Neely, Gregory, and Platts 1995; Neely et al. 2000; Poister and Streib 1999; Post and Spronk 1999; Rangone 1996; Rogers and Wright 1998; Sanderson 2001; Scanlon et al. 2001; Solberg, Mosser, and McDonald 1997; Suwignjo, Bititci, and Carrie 2000; Waggoner, Neely, and Kennerley 1999). Of course the reader should be aware that the categoriza-

tion has been done in acceptance of the interpretive nature of this task. Obviously, by placing an article in a category I merely make an assertion, which might not be acknowledged by the authors. In the following I have selected some structurally-oriented and agency-oriented work to highlight. The work within the structurally-oriented tradition quotes some of the most well-known scholars, while the work within the agency-oriented group is chosen as much for being interesting. This review will have a specific focus, which is important to grasp for the further train of thought: The agency/structure distinction should not be confused with scholars' research into performance management methodology or theory. Considering the distinction in Table 1, we will be examining assumptions in the *literature* of how PM should be done in *practice*, i.e. level 1.

Level 1	**Level 2**
Representational forms inherent in the methodology of the *organization's* representation of its own performance.	Paradigms of inquiry inherent in *scholars'* research into performance management and resulting theory.

Table 1: Levels of PM inquiry

So it should be stressed that our concern is not with scholars' paradigms in their own research, but rather the assumptions of the suggested PM practices. This is *not* a reflection on appropriateness, merely on what kinds of assertions are being made in scholarship on what performance management practices *ought* to be.

3.1 Structurally oriented

This is the largest group and also where most of the dominant and popular thinking in PM methodology lies. For at least 25 years, Kaplan and col-

leagues, in particular Norton, have worked with the challenge of representing organizational performance and methodology surrounding the process of generating knowledge on this topic (Kaplan 1983, 1984; Johnson and Kaplan 1991; Kaplan and Norton 1992, 1996; Kaplan and Cooper 1997; Kaplan 1998; Kaplan and Norton 2001). Kaplan and Norton (1992) have of course presented their 'Balanced Scorecard', which has become the classic PM text and has been discussed and critiqued in numerous articles in the past 15 years (e.g. Banker, Chang, and Pizzini 2004; Davis and Albright 2004; Kasurinen 2002; Lipe and Salterio 2000; Malina and Selto 2001; Norreklit 2003; Schneiderman 1999). Based on experience with 12 leading companies in performance measurement and in reaction to having exclusively financial measures for performance, they develop four perspectives of the organization while also using indicators, targets, and objectives. They write:

> "Ideally, companies should specify how improvements in quality, cycle time, quoted lead times, delivery, and new product introduction will lead to higher market share, operation margins, and asset turnover or to reduced operating expenses. The challenge is to learn how to make such explicit linkage between operations and finance." (Kaplan and Norton 1992, 79)

This testifies to a clear view of the organization as something which can be understood and managed on the basis of assumptions of causal relationships represented quantitatively. Naturally, some measures are by definition related to one another, so in this sense the thinking makes clear logical sense, but the supposed causal linking of quite high-level events such as product introductions with market share does align well with structural orientation. The notion that measures may have limitations is not strongly represented in the argumentation. Kaplan and Norton (1992) do say that a PM system must try to minimize information overload, and this is of course a practical reality which supports the 'case' for using indicators universally. They also stress that companies should carefully select the *relevant* measures, and this is a topic of

great scholarly and practical interest (e.g. Globerson 1985; Maskell 1989). Neely is another core scholar in the performance measurement field with a special focus on the *process* of developing the system and developing the appropriate metrics (Neely, Gregory, and Platts 1995; Neely et al. 1997; Neely 1998, 1999; Bourne et al. 2000; Neely and Bourne 2000; Neely et al. 2000; Neely, Adams, and Crowe 2001; Kennerley and Neely 2002; Neely, Adams, and Kennerley 2002; Neely 2002; Neely, Bourne, and Mills 2002; Kennerley and Neely 2003). For example, in commenting on the Balanced Scorecard, they note that "while it provides a useful framework there is little underlying it, in terms of the process of performance measurement system design" (Neely, Gregory, and Platts 1995, 97). So here we see less of an emphasis on the PM system, but more of a highlighting of the importance of the customization of the system, which may extend to or beyond concepts such as the perspectives from the Balanced Scorecard. From the quest for "the 'definitive' principles of performance measurement system design" (Neely, Gregory, and Platts 1995, 108) emerges a clear picture of a certain organizational reality which metrics can effectively represent. This naturally impacts the way the system is thought of, with metrics again at the core of the quantitative methodology. It is also proposed that flexibility in the system itself should be measured, which reaffirms our conclusion that Neely's work is firmly within the structurally-oriented paradigm. Another facet of flexibility is highlighted by Bititci (for example Bititci, Carrie, and McDevitt 1997; Bititci, Carrie, and Turner 1998; Bititci et al. 1998; Bititci, Turner, and Begemann 2000; Suwignjo, Bititci, and Carrie 2000) who stress the importance of a dynamic system, which continuously *evolves* with the organization and the environment. Static systems cannot continuously be relevant as the business situation changes. There is heavy emphasis on a number of systems founded on notions of quantifiability and, interestingly enough, they argue, among many other things, for the exploration of how neural network technology and artifi-

cial intelligence could aid in seeing patterns in the data from the underlying information systems and support decision making and management. In Suwignjo, Bititci et al. (2000) the authors explicitly attack the PM problem from a quantitative approach in the development of the "Quantitative Models for Performance Measurement Systems" which draws on several complementary methods. This obviously falls squarely within what we here label a structurally-oriented tradition. Flapper, Fortuin et al. (1996) argue that there should be a consistency and a holistic view of performance indicators, arguing that they too often are fragmented, and they urge that explicit attention be paid to the relation between performance indicators.

This illustration could be continued. All of the scholars presented are at the top of the impact factor list across all scholars within the PM field. We might have continued to present others, for example Lynch and Cross (1991, 1995) or Dixon (e.g. Dixon, Nanni, and Vollmann 1990) with similar results. Some scholars have questioned the appropriateness of PM, which could be considered agency oriented, but because of their allegiance to metrics have still been considered structurally oriented. Kravchuk and Schack (1996) and Rangone (1996) are examples. Kravchuk and Schack (1996) examine the decision-making process in the context of PM systems, making the argument that the abstraction that is inherent in using metrics changes the decision-making mode of the users from a rational-actor understanding towards a cybernetic mode of decision making. This means that the *result* of the PM system is in itself a mode of decision making that has notions of interpretiveness as it underscores the role of heuristics. As such, it does not question objective assumptions in using metrics in the first place, but acknowledges that it has limitations in the decision-making processes based on the output from the PM system. Rangone (1996) questions the ability of non-financial measures to assess the effectiveness of manufacturing departments and presents the analytical hierarchy process (AHP) as an alternative method for the assess-

ment of effectiveness. So while contending that the use of specifically non-financial measures does not provide effective performance measurement, as it does not represent effectiveness, the author points to another method which also takes a rational approach to the decision-making process. Indjejikian and Nanda (1999) make an argument for the use of consolidated measures as it could help in mitigating the ratchet effect from principal-agent theory, thus implicitly arguing against the virtues of indicators, but solving this by using higher-level ones. Vogt et al. (2004) report that an index of quality of care for preventive medical services can "summarize care in a single comprehensive index that can be readily updated" (Vogt et al. 2004, 511). Although this strategy might be chosen in acknowledgement of problems with very elaborate metrics-based systems, they might represent an extreme in structurally-oriented thinking on representational forms in arguing that it is meaningful to represent a large complex phenomenon such as 'quality of care' in a single unifying figure.

3.2 Agency oriented

In the following we consider all the articles which exhibit notions of agency orientation. The article by Stewart and Walsh (1992) has the highest impact factor of the articles categorized as agency oriented. It critiques trends in public sector management, in which the public sector adopts what is deemed private sector practices, such as PM. In other words, maximizing public sector value is not most effectively achieved by current PM practices, due to the nature of the public sector. This seems an important identification of a problem, which potentially has extremely wide implications, perhaps for public sector management in general. But why has the dichotomy between private and public sector practices come about, and why is PM considered a private sector practice? It seems reasonable to consider whether some contingent aspects of a public sector organization should impact the kind of PM

adopted. We could conclude from Stewart and Walsh (1992) that not all organizations work with the same 'logic' and that this should impact the way they are managed. Feller (2002) extends this reasoning with a critique of the use metrics within higher education as a tool for resource allocation, and Kelly and Swindell (2002) examine combining metrics with survey-based representations in municipalities. Another identification of problems related to PM has been carried out by Goddard, Mannion et al. (2000) who conducted an interesting study into the dysfunctional behavior that is the consequence of introducing performance indicators into the management of the UK National Health Service. They use a qualitative approach to understanding the dynamics within a principal-agent framework. Although this work is mainly problem identifying using a subjective approach, it raises the critical question of the relationship between performance, which is the phenomenon organizations are trying to control, and metrics as a tool to represent performance. This author's framing of the work would be that it critiques the usefulness of a structurally-oriented approach to knowledge because this does not reflect the agency-oriened nature of the phenomena under investigation. This extends to another study contrasting 'hard' and 'soft' information in assessing performance (Goddard, Mannion, and Smith 1999). Perrin (1998) also suggests that performance measurement systems may very well result in dysfunctional behavior and less attention to outcome, but proposes that the output of a PM system should be seen more as an input for further enquiry, rather than being directly actionable. Perrin therefore implicitly asserts that PM, in the current form, is not capable of providing the nuances necessary for decision making. This points to the limitation of quantitative representations in some situations.

Nuances do exist in the objectives for PM. Solberg, Mosser, and McDonald (1997) present three objectives for performance measurement: improvement, accountability, and research. These three different objectives should

impact the design of the measurement system. While not directly pointing to subjective approaches or non-quantitative representations, this work does raise the question of what should influence the design, or rather points out that consideration ought to be given to the objective of management. This means that performance is not a self-contained, well-defined concept, but something we can assign different meanings based on other assumptions, in this case what objectives we have for PM. This leads us to question what other factors ought to impact PM system design. Sanderson (2001) argues that a great deal of PM practice is aimed at control and accountability, while less strongly addressing issues of understanding and learning, of and in the organization. I would say that understanding and learning have ties to agency-oriented thinking. Sanderson's work could be understood in the context of Solberg, Mosser, and McDonald (1997) and enhance the discussion of objectives: understanding and learning might relate to the research objective. What remains an unanswered question is what implications it has to choose learning and understanding over control, or choose an objective of research over control. Examples of articles which explicitly claim a place for interpretive methods are few. Chiesa, Coughlan et al. (1996) contend that an in-depth process audit should complement a performance audit to understand relevant action, which calls to mind the distinction above between PM for control and PM for learning or understanding. Abernethy and Lillis (1995) find that the use of integrative liaison devices such as teams, meetings, and spontaneous contact was positively correlated with firm financial performance, while, more interestingly, they found negative correlation between the use of efficiency-based metrics in firms pursuing flexibility in manufacturing and firm performance. In other words, some aspects of the organization impact the relevance or effectiveness of the use of performance measures. It seems perhaps that a complex capability such as manufacturing flexibility does not fit well with efficiency-based metrics. If we suggest a trade-off be-

tween efficiency and flexibility, this might not be a problem with measuring per se, but certainly points to the need for careful consideration of when metrics are best used and when they are not. Pauley and Ormerod (1998), interestingly, report success in combining hard operations research tools (e.g. programming, critical-path analysis) with soft operations research tools (e.g. cognitive mapping (Eden 1988, 1992) or strategic choice analysis (Friend and Hickling 2005). This combination of paradigms in representing performance, at least in the reported case, proved effective.

3.3 Conclusions on scholarship

At this point we have concluded that much of the work on PM falls within what we could call a structural orientation. The theoretical pluralism of the organization asserted by Morgan (Morgan 1980, x) seems not to have reached the field of PM. The agency-oriented thinking has been grossly overrepresented here relative to the weight of the impact factor. A quantitative representation shows us that 80% falls within the structurally-oriented category, while the remainder has *elements* of agency-oriented thinking. But this should not be interpreted as there being a 4:1 relationship between structurally-oriented and agency-oriented paradigms within PM scholarly work, for the 40 articles have made much larger waves pr. article than the 10. The top 15 structurally-oriented articles alone account for *more than 50%* of the total citations of the 50 articles reviewed.

In the comparatively little significant work with agency-oriented notions which exist, there seem to be a few themes. We have the critique of PM practices in *different organizational settings* which thus insist that PM practices should somehow 'fit' the organization and the prevailing logics that exist. Also, we have a theme that distinguishes between different *objectives* for PM, namely between control and learning. However, the field as a whole seems uninclined to attempt to represent performance without aiming for objective-

ness, even in the face of having identified several significant problems, e.g. relating to dysfunctional behavior. So work in the PM field subscribes to many of the same notions as the label 'PM' itself does, or we might even say that scholarly PM work falls within the paradigm suggested by the label. Is this surprising? Obviously not. The sheer use of the concepts examined presumes the possibility of 'managing performance'. The notion of 'management' indicates some assumption of the possibility of determining the future and notions of cause-and-effect, while 'performance' indicates a reality in which an entity, the organization, has attributes, in this case that of performance. Use of metrics presumes a reality which firstly can be observed and secondly can be represented meaningfully by quantitative measures. Metrics replicate notions of managerial control and bureaucracy. An examination of dominant paradigms in the PM field might therefore seem insignificant since we would not be surprised if work relating to organizational performance were to take some of the same assumptions as the concepts of performance itself does. This may not be surprising, but the question remains as to whether this is the most effective way of managing our organizations' performance. What some of the critique from the review of the material of an agency-oriented paradigm leads us to think is that we should challenge ourselves to show that our PM practices fit well with the organizations using them, which vary tremendously, and that we should consider what objective we are managing for, i.e. what do we actually mean by performance. This is considered a primary challenge.

Chapter 4 Stories of Performance Management

> "Lay actors are social theorists, whose theories help to constitute the activities and institutions that are the object of study of specialized social observers or social scientists. There is no clear dividing line between informed sociological reflection carried on by lay actors and similar endeavours on the part of specialists. I do not want to deny that there *are* dividing lines, but they are inevitably fuzzy, and social scientists have no absolute monopoly either upon innovative theories or upon empirical investigations of what they study." (Giddens 1984, xxxiii)

Giddens conveys the spirit of what I aspire to do in this chapter: funnel to you some of the theorization managers do on a daily basis about how organizational reality: culture, people, processes, etc. interact with performance management practices.

Before diving into the stories, I explain briefly some more technical aspects of my method and the subsequent selection and analysis of the data. Then, I present the different organizations within Microsoft, which the managers I have spoken to come from. This is just to give some context to their work. Last, but not least, I present the bulk of the analysis which summarizes certain findings made during the process.

4.1 Method

The evolution of the more concrete approach taken in the fieldwork is determined in part by practicalities. When doors open, you walk through them and exploit those opportunities; when they are closed, you find a different way. Again, a far cry from desk-based research design followed by execution. However, serious thought has obviously been put into the move from research problem to conclusions. This thought is presented in two sections: first, a section dealing with sampling strategy in a broad sense and a second section dealing with considerations of interviewing which leads to stories of performance management.

4.1.1 Sampling

In a qualitative study, it could be argued that sampling questions make no sense, since any findings cannot be deemed significant relative to the whole population. I agree, to a certain extent, but the explorative process can involve looking for some contrast, and this is reflected in the choice of 'data-points'. When the goal is not to capture quantitative data the choice of these data-points becomes very critical. Overall, sampling must reflect concerns for the balance between homogeneity and heterogeneity. The objective is both to deal with units of analysis which have some resemblance to each other, to facilitate the comparison, but at the same time to have enough different units to 'expose' the proposed dynamics. We might hypothesize that there is a zero sum relationship between the unit of analysis *size* we choose and the *consistency* within that unit with regard to the level of tendency towards agency vs. structure. If we choose to say something general about the Ford Motor Company, there is a greater chance that it will be simplistic compared to a general statement we make about how a specific employee conducts a specific task. Whether we can describe the unit of analysis as having a single tendency towards agency or structure is therefore probably in part related to how close we zoom in, in our analysis. I am therefore not looking for extreme or maximal variation in my proposed dynamics, but a more moderate variation, which may impact how representational forms and organizational reality interact. Maximal variation would allow for, or demand, greater interpretation, and while interpretation is certainly very present in this approach, choosing one organization which has a somewhat shared language also gives some possibility of contrasting utterances with added ease.

One organization: Microsoft

Microsoft has been chosen as a large, international organization which works very deliberately with management information and reporting, as well as hav-

ing very different types of activities. This was seen as a venue for having a multitude of transformation practices, but at the same time a common terminology to describe contrasts.

Two organizational units: MDCC (Copenhagen) & MSR (Redmond)

Within Microsoft, field work has been done while spending extended periods of time at two sites, which will be presented in detail shortly. This is in line with a loose goal of variance in the interviewees (Rubin and Rubin 2005) *within* the same R&D organization. The choice of these two organizational units is based on my preconception of one as *relatively* structurally oriented and the other as *relatively* agency oriented. I have chosen two different organizational units which are thought to vary in the organizational reality dimension, with the aim of exploring how organizational actors think differently of representational forms and their use in the different contexts. The goal has not been to establish *correlation* per se between innovative vs. non-innovative organizational reality and management information use, but rather to pursue this relation while exploring the greatest breadth in the interviewee's perspective. As we shall learn, this model simply guides the work, but when faced with the complexity of reality, its level of abstraction and simplifications sometimes seems unreasonable.

Mostly managers

Managers typically both produce and consume management information, so they are experienced with the frictions and considerations which lie within the use of management information. Managers are experts in the problems of performance management, and practically all have stories of how PM systems have not worked, but also have their theories on what to do about it. This is why the bulk of interactions have been done with managers, at various levels. On the one hand, I want to know the process and the considerations people make when designing the management information, because they must have

conceptualized what is an appropriate representation of the phenomenon in question. On the other hand, I would like to understand how people interpret the usefulness and appropriateness of management information given to them, so these are people who very routinely make decisions based on different types of representations of reality. These are the perceived dimensions of variation between the people I have mostly interacted with and some counterforce which might suggest commonalities.

- Geographical site, which could possible give some cultural differences, but organizational culture is also a strong force and might be a counterweight to some of the differences attributable to national culture.
- Functional disciplines split the managers at site 1 into three groups, each of which has a different professional profile and might be perceived to have a different craft. On the other hand, these three groups work in a very tightly integrated fashion, since the process of software development requires this. So their disciplines are a difference, while their common goal is a commonality.
- Within site 2, the variety of the people in terms of area of expertise is much greater than within site 1. So the two sites differ in this respect. However, even though the managers work within different fields, they share the same *type* of work.

It is *not* necessarily the goal of the study to explore differences in perception of the fit between organizational reality and representational forms based on these dimensions, but they are presented merely to inform the reader.

Why interviews?

During my time onsite I had countless interactions with staff at all levels and from many departments. I had come with certain preconceptions of what

Microsoft is as an organization, and this interpretation was constantly remolded as time passed. The types of interactions ranged dramatically from chit-chat with the receptionist, discussions with people over lunch, observation of staff while working and interacting, to the more formal interactions such as interviews and participation in management meetings. All these interactions obviously shaped my conceptualizations:

- Interviews. The perception of use and usefulness of available management information, which consists of different forms of representations, was explored through interviewing key managers in the organizational units. These were private talks, where managers could speak in relative confidence about their thoughts on practices. Focus was on how different representational forms are used in the organizational reality and their reflections on those practices. I tried to engage with constitutive forces of PM practices and images of performance were discussed with managers. The interviews were conducted during full-time on-site stays at the two sites, which provided a more immersive experience of organizational reality.
- Observation of management meetings. This is a scene where socialized practices are more evident and one can search for potential contrasts between what is said during interviews and what is done in practice. I participated in weekly management meetings as an observer. The experiences from these meetings will not be included in this analysis, mainly because of the difficulty of analyzing the patterns of dialogue, as there were typically about 10 people discussing matters only semi-formally. Also, the terminology used at these meetings is heavily loaded with internal terms, which makes it difficult to extract snippets which are truly illustrative of dynamics. These meetings fulfilled an essential function in terms of fieldwork:

I always had a good idea of what was going on, what problems were being discussed and how decisions were approached. I also found that being present at these meetings sent a clear signal that senior management had endorsed my observations and that I was viewed and treated as an insider.

- Status reports. Prior to weekly management meetings, each team submits a status report. These reports have several representational forms, such as metrics and narrative. I have explored differences in the use of narrative in the different settings, and focus on ambiguity and how it is dealt with.

As this thesis is about how to *represent* the performance of a certain phenomenon, it might be fitting to reflect slightly on how and why I have chosen the approach I have. Although I collected various forms of artifacts from these interactions, such as diagrams, plans, scorecards, status reports, meeting recordings, etc, the 30 one-to-one interviews conducted form the main body of the input for the *organized* analysis. This is really a shame, because there is so much richness to be found outside these staged encounters. By this *emphasis* on interviews I mean that the interviews are subject to a more transparent analysis. Transparent analysis means that the links between the data gained from the interaction and my conclusions are made in a more orderly fashion than, for example, the conclusions I consciously or unconsciously draw from all the other interactions, such as overhearing a conversation in the cafeteria at lunchtime. This attempted transparency may be viewed as a quality criteria in qualitative research (Seale 1999). Transparent does *not* mean that interpretation is not involved; it is merely an attempt to make the interpretations explicit and to try to critically review them (Silverman 2001). This also means that there is so much interaction which I do not 'use' and which does not become part of the formal analysis. These interactions and my interpretations

of them linger in the background of the analysis, and surely act from a distance on the way that I conduct and interpret the interviews. This is not avoidable but on the contrary quite desirable.

Interviews are the most direct input to the resulting *stories of performance management practices*. I study the narrative of people who have long experience of managing different types of work. The choice of examining the narrative of managers has been made to bring the propositions into play, rather than to find *evidence* for them. So the design of this study reflects the assumptions within it; I will use an agency-oriented language to describe the phenomenon of the relation of organizational realities to language! These stories share the theme of how different representations are used in different situations, for different purposes, etc. It is not a case study, but rather a study of people who manage their small part of the organization and their stories. Also, a valuable part of the experience I seek to harvest comes from managers' experiences from other settings contrasted with their experiences in Microsoft. The study will therefore draw indirectly on managers' previous experience. So the unit of analysis is stories, but they are stories of organizations. These stories share organizational reality to some extent, but also exist in different realities, due to their different roles, geographical differences, experiences, and because they simply come from different people. The stories will differ clearly in their perspective of what organizations are and how representational forms should interdepend on characteristics of the organization. However, across our unit of analysis, stories, a unified picture of how organizations work will hopefully emerge. But there will likely be contradictions both within each story and between stories. *Within* each story, there is likely be some coherence as to what boundaries exist for deciding what characteristics should determine the use of representational forms. Whether there is coherence across stories is yet to be seen, so to answer the question of, for example, whether we can have organizations which are both high agency-

and high structurally-oriented, we shall have to wait and see what the field work tells us.

My strategy has been to speak to all managers above a certain level in each of the organizational units. Theoretical saturation was reached quite a bit before the interviews were concluded. Before beginning fieldwork, I aimed to taper off interactions when few new findings surface, eliciting a sense of saturation, but I found myself going slightly further than saturation point to feel more comfort in the sense of saturation and the findings.

4.1.2 On interviewing

Status of the interview

Mostly, I consider the accounts that were given to me to be truthful (but I certainly remain just an interpreter of them). On numerous occasions, I have experienced that an interviewee's position or thoughts shift during the interview, clearly displaying the constructive dimension of the process. The unfolding of the story comes as much from *my* asking, and in particular listening, as it does from the interviewee alone (Holstein and Gubrium 1995). *My* position, interests, and so on, also shift during the interview and while I do not want to speak about the weather or *anything* the interviewee is interested in, I am equally reluctant to narrow it too much to my preconceptions of what is important (Mishler 1991). But it is not the objective of the investigation to analyze these stories as constructed, even though they may be. The focus is to try to understand the managers' experiences. This is a matter of choice and not an assertion that the interchanges which take place during the interview are a transparent pipe which taps into a *real* reality, where everything only has one form. So an interview is much like a dance. In this dance, I try to steer things just enough to move in (what I think is) the right direction, without stepping on toes and letting my dancing partner lead whenever s/he feels like it. Obviously, the richness in the data is quite substantial. The

analysis which follows later in this chapter is not just the voice of the data, but a collage of clippings I have made from a substantial dataset. The purpose of the collage is to get a manageable and communicable impression of the ideas of this group of managers. While I feel I have been true to the data, a different theme could just as well have been chosen from the same material, so obviously the data is speaking, but, just as obviously, I am moderating. However, it is important to know that each story has been presented to the interviewee for validation and commenting and this extra iteration has undoubtedly resulted in a more appropriate story which interviewees recognize.

Power and dynamics

Most interviews begin with an informal talk with the informants where I learn about their work and tell them about my interests. Interviews are only requested when a certain rapport has been established, and I feel reasonably sure that the interviewees are not concerned about sharing their thoughts with me. In most cases, I would spend some time validating a sense of equality between us at the beginning of the interview. The goal was to instill an atmosphere of mutual respect. For very senior managers, this could take slightly more effort, but I feel confident that it was achieved on the whole. A strategy to frequently use internal lingo and occasionally to challenge and question their statements seemed to be effective. Also, it seemed valuable to share perspectives from time to time and shift to a free interchange, which appeared to stabilize the discussion. For some interviewees, there was a need to speak more, to 'give' a little, before interviewees responded well to questions, in line with Oakley's (1981) suggestion of the relationship between intimacy and reciprocity. When this mutual respect was established, experience indicated that it was beneficial to move towards a slightly more empathetic stance, while maintaining neutrality. The more general behavior depended on cultural background and seniority. Speaking to Danish people (in

Danish) seems to have prompted rather relaxed small talk now and then, while British or Americans seemed to favor a slightly more formal style. In general, I aimed for a casual but professional atmosphere.

On a few occasions, interviewees stated towards the end 'I hope this was helpful to you' which made me consider whether I had given enough context and background for the research, but I refrained from giving more, fearing the effect of lessening the openness of the discussions. It could just as well be interpreted as friendliness. They all seemed very comfortable asserting their opinions and did not shy away from disagreeing. Being managers who are accustomed to negotiating positions and playing the inevitable political game in the organization, I was quite confident that interviewees would not be inclined to let themselves be led in the discussions, with the exception of one instance where I sensed a hint of insecurity in the interviewee, which might have had an effect on the responses, although this is difficult to say. This openness allowed for a higher degree of directness, particularly during the end phase of the interview, than I might have felt comfortable with in less strong interviewees. This feeling may be also formulated as a feeling of less of a border between 'front stage' and 'back stage' in the relationship between interviewer and interviewee as one might sometimes fear (Goffman 1959). Overall, I am very surprised at the level of candidness I experienced. I have no feeling whatsoever that interviewees held back or attempted to present a glossy version of their reality. Interviewees frequently spoke with critical reflection on internal practices.

Process and analysis

In conducting the interviews I framed the discussion around reporting practices to get an idea of the types of languages which are used in different situations. These are practical descriptions of conventions in the management of the particular product or project the individual is involved in. Moreover, each

interviewee will have personal preferences as to how to communicate the utilization of different representational languages, and these are pursued. Apart from noticing when people speak of the relevance, irrelevance, adequacy, inadequacy, etc. of speaking, writing, and measuring, I also became more sensitive to approaches of having vs. not having formalized processes, of using the corporate standard vs. insisting on local solutions, and so on. These are additional examples of cues which relate to the structure/agency distinction and convey how the business has been designed *and* how it simply unfolds.

In speaking with interviewees, some will not naturally identify textual representations as an approach which could have alternatives. It is such a natural part of everyday managing that it is not categorized as a tool among other tools. In these cases some additional framing was necessary. The use of metrics, on the other hand, is universally recognized as a management tool. When communicating during the interviews, there is the pitfall of speaking of textual representations in the negative, i.e. as non-metrics. I felt myself moving dangerously close to this way of speaking, simply because it is easy to understand, but tried to encourage independent discussions of agency orientation and textual representation, not only in relation to the characteristics of metrics.

I myself think of this work as performance management practices. In presenting my work to interviewees, I initially presented it as 'use of management information' in an attempt to avoid misunderstandings. The term performance is used in so many contexts (which is symptomatic of its enigmatic status) that using it might have confused interviewees. I would start by giving them the broad strokes of my project, and would briefly mention the practice of anonymity and authorization of quotes and that I had signed an NDA. Then I asked the informants to tell me what their work consists of. In preparation for the interview, I prepared a very rough topical interview guide customized to the individual, taking into account their specific roles and our

prior discussions as well as findings from previous interviewees which needed exploration. The basic format was an opening, with 'easy' questions to get warmed up, followed by questions relating to the 'production and use of management information and reporting' and an ending to wrap up. The interview guide was no longer than one page, to minimize the disturbance of referring to it.

I frequently attempted to validate understandings (in a non quantitative sense) by echoing interviewees and soliciting responses to interpretations. During this dialogue, I noticed interaction points, where management information is produced or consumed. These points were then explored further. For each of the encounters that I had, I was interested in understanding how an interviewee understood and explained what characterizes the organization, in order to get an impression of organizational reality (although those words were not used). Then I tried to edge into topics which might reveal what people thought of the relevance of different representational languages, for example in terms of *certainty* or *uncertainty* about the person's interpretation of the representation of the phenomenon. For example, if we choose to represent the performance of the phenomenon of technology leadership by a measurement of time-to-market, I would be interested in understanding how the informants interpret the relationship between the representation (e.g. time-to-market metric) and the phenomenon. I have not recorded or systematically gathered data on anything other than the verbal interaction, so the non-verbal has been lost.

Qualitative data analysis software

The interview itself is only part of the analysis. After the interview the data was analyzed using the qualitative data analysis (QDA) software, Atlas.ti. The process of analysis was carried out as follows and followed quite strictly. First a listening through of the interview while taking notes, then transcrib-

ing relevant sections while making further notes and noticing possible interesting core quotes. After that the text is imported into Atlas and the text is re-read with particular attention to significant assertions, these are indicated as 'open quotes'. Text is linked to audio using a type of hyperlink based on timestamps, which makes it possible to quickly listen to the audio of the transcription in a form of 'karaoke-mode'. After this first sweep, quotes are coded using mostly open coding initially, and code-by-list as codes saturate the themes in the interview. Codes are then further analyzed and represented in a 'network view' to digest and synthesize the interviewees' assertions. This becomes a more condensed and visual representation. The chain of processing is therefore from spoken word to text, which is condensed to further textual and visual representation, and on that basis I make my interpretation resulting in the *story*. This has the benefit that the link between any resulting propositions and the data material is very clear and can be readily demonstrated, which increases confidence in propositions but also makes it easier to question the propositions and reflect critically upon them, which I clearly view as an ideal.

As the reader will see, the real world presents considerable more diversity than the stylistic propositions made earlier. This is off course to be expected. I will attempt to interpret the data *within* the context of the research problem. I will present different levels of abstraction of the data. Often I will simply provide quotes, sometimes lengthy. However, for each story I will consistently present data as a network view from the QDA software. These maps give a high-level presentation of how different concepts are thought to relate, and are an efficient way of presenting many dense 'theories'. I *strongly* suggest that these network views are *studied carefully and reflected on carefully*. The network views summarize a conversation of one hour each, so their density is high. My commentary on them will invariably be very selective.

The network views show concepts which the interviewee has spoken about, and their proposed relations with other concepts, in my interpretation. I have tried to be as true to the original conversation as possible, while abstracting it. The networks use a certain notation to describe the concepts' relationships: '=>' means 'cause' and the arrow shows which way the relationship should be read. For example, Maturity ← => — Metrics indicates that metrics is the cause of maturity. The notation '<>' denotes a contradictory relationship, for example Empowerment ← <> → Process illustrates that a process orientation is in contradiction with empowerment. Likewise '==' denotes a general relationship (without subsumption). It is important to realize that these maps have been kept as true to source as possible. This means that they have not been forced to be consistent. It is not uncommon for interviewees' understandings of their own position to evolve through the course of a dialogue and a position may shift slightly, leading perhaps to what appear to be contradictory statements. The network view does not capture this evolvement and the temporal dimension is lost in the abstraction. Loss of this dimension of richness can be one cause of an apparent inconsistency or even contradiction.

The network views and my commentary are two levels of abstraction, but both use textual representations aimed at conveying richness. They differ in the distance from the source and the level of my interpretation which is present in the representation given. Network views allow for essential conclusions to be seen quickly, but presume the reasonableness of my interpretation. The QDA software will allow for a textual drill-down in the original source and is therefore an efficient way of confirming whether the interpretation is valid.

4.1.3 Categorization and presentation of data

I have chosen to first present the story of the individual followed by further analysis relating more closely to the research question in Chapter 5. The stories are presented chronologically as I interacted with the individuals. It should be stressed that all comments made by interviewees only reflect personal views and do not in any way reflect official Microsoft Corporation views or policies.

The stories provide the background which is necessary to assess reasonableness of the subsequent further abstraction. While I have presented the unit of analysis as 'stories', the theorization process takes precedence over any individual's full and consistent story being presented. In other words, I am ultimately more interested in painting a picture of organizational reality than the individual's view of a range of topics. This may seem like a disconnect between the chosen unit of analysis and the actual analysis, since it could be argued that I am not concluding much *about* stories per se, but about the topics they cover. The reader should keep in mind that the main focus is the relationship between representational languages and organizational reality, and that the unit of analysis, stories, is merely a way of exposing myself to how people in practice understand this relationship. So stories are merely a means to an end.

4.2 Microsoft organizations

Field work has been conducted at two Microsoft sites, Microsoft Development Center Copenhagen (MDCC) outside Copenhagen and Microsoft Research (MSR) outside Seattle. Microsoft is globally divided into a sales organization and an R&D organization. R&D has both typical software development oriented units and a more traditional, pure research oriented unit. MDCC is obviously within development while MSR is obviously the re-

search oriented unit. In the following, I will briefly present these organizations.

4.3 Microsoft Development Center Copenhagen

Over the course of two years I have spent roughly four months full-time on site at Microsoft Development Center Copenhagen (MDCC). MDCC works mainly within the Business Division and within that division, the Business Solutions Segment, which develops the Microsoft Dynamics range of business software. At MDCC, Dynamics NAV and Dynamics AX are focus areas. The field work was done chiefly within the NAV organization at MDCC, and to a lesser extent within the Mobile group. More extensive work was planned within the Mobile group, but unfortunately became impossible due to lay-offs. The timing of the full-time period spent onsite was chosen to coincide with a new project which the whole 'NAV' team are involved with. This is service pack 1 project for Dynamics NAV 2009, a business software product aimed at SMEs. A year leading up to this, time was spent at the site in a less structured manner to get to know the people and environment. The site is the biggest development site in Europe and, until recently, was the biggest outside the US. In the initial phase of the work, I spoke to MDCC Finance Manager Maja Jensen and the then HR Country Lead Thomas Ahrenkiel for an overview of how the site works from their two perspectives.

NAV unit

First, some terminology. The main dimension of the organization of all of Microsoft's development arm is *'disciplines'*, of which there are three. The three disciplines are Program Management (PRM[3]), Development (Dev),

[3] NB. In MS, program management is referred to as PM, but to avoid confusion with performance management (PM), I will abbreviate it as PRM.

and Test. NAV as a whole is headed by a GM, whom the head of each discipline refers to, currently Dan Brown. The other dimension is *'team'*. There are a number of teams, who work with different functional areas of the product: Client team, Server and Tools team (S&T), and Applications team (apps). Each team has people from each discipline assigned and manned roughly in a 1:4:2 relationship between PRM, Dev, and Test. Apart from these teams, each discipline has staff/support teams, which are applicable for the relevant discipline: a Release team for PRM (which owns 'projects'), Build team for Dev, and Stress test team for the Test team are examples, along with teams dedicated to usability, translation, localization. While these support teams are critical, I have chosen to focus on the three main disciplines with the exception of Release team which I have included since the overall control of progress is monitored by them and they *define overall management information,* which naturally makes this unit particularly interesting. Each intersection of team and discipline has a lead. App, however, has a deeper organization. The Release Core team consists of senior leads from each team, but may be aided by specialists when relevant.

Discipline / Team	*Development (dev)* Michael Nielsen	*Test* Rusty Miller	*Program Management (PRM)* Kim Ibfelt (Release) Jeremy Britten
Client	Peter Christensen (Bugsy)	Henrik Frovst	Andy Blehm
S&T	Jens Møller	Mike Newburger	Michael Svanholm Thomsen
App	Sam Skrivan	Tim Tolbert	Torben Siggard

Table 2: Dynamics NAV leadership as of February 2009

Each team provides weekly status reports to the Release team which are considered by the Release Core Team. Each discipline, team, and project feature may decide to generate additional management info, for specific needs. Dev has specific metrics which are used within that discipline as Test has too. These are produced by various means, but in the context of metrics on code, several 'tools' provide this data. With the exception of Rusty Miller, I have spoken to all of these people as well as a handful of less senior, but very experienced staff members. Projects are larger pieces of work, as for instance a service pack. Projects are divided into features. Each feature is owned by a PRM within a team (very seldom two) and each PRM may have multiple features and decide to split or combine them as needed. People from each discipline work on features, mostly one at a time.

November 14th 2008 marked the end of NAV 6 with a sign-off celebration. After this, the service pack 1 project was started, which was originally

time-boxed to four months. I chose to try to be onsite for a whole project lifecycle with the preconception that, within the lifespan of a project, the beginning might be marked by a fluffy period which is relatively explorative and represented with a lot of narrative, followed by a less fluffy period when implementation begins and more well known metrics can be used. The main gatekeeper was a Director who sanctioned my interactions. This opened doors but made me want to ensure that interviewees did not view me as in informant for him.

Mobile - RIP

Within MDCC, the Mobile unit has the reputation of being highly innovative and governed in a different style than the rest of the development center, mostly due to the manager, Schøn. This was the main reason for approaching Schøn and asking if he would be willing and interested in letting me take some of his time and his leads'. We had several very fruitful discussions and he struck me as definitely being a very energetic and passionate leader. His unit was comparatively small with about 35 people. The richness in our comparatively few discussions was high and Schøn is a particularly reflective individual. Microsoft announced layoffs of staff worldwide during my onsite stay at MDCC. While this was a painful time for many, as a researcher it provided valuable insight into many aspects of the organizational culture, and people seemed more willing than ever to speak to me about this. Much of this insight is irrelevant as well as confidential, but affords a deeper understanding of the nuances of the Microsoft organization and is valuable in that light. At MDCC cuts needed to be made across the board and few areas were exempted. The Mobile team was hit particularly hard, as it was shut down entirely. This was obviously very unfortunate for the employees there, and I was also sad to see it happen for my own, selfish reasons. I have almost no

information about the process leading to what must have been a difficult decision, so I really have no basis on which to analyze this event.

In any case, I did not have an opportunity to conduct a study of the Mobile team's work, but I will draw on my discussions with Schøn before proceeding to the NAV unit.

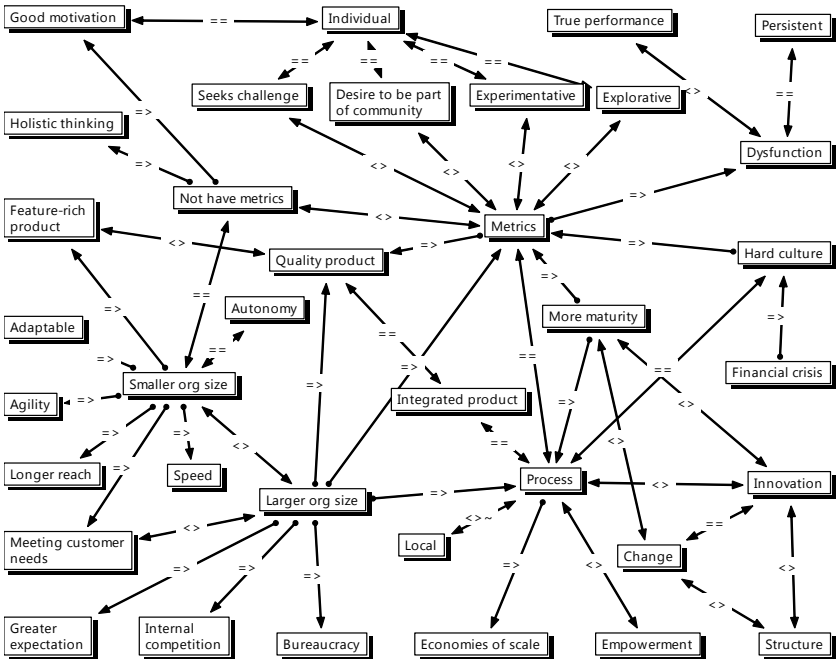
4.3.1 Bjarne Schøn, Product Unit Manager, Mobile Applications

> "It's human nature to experiment… to explore… to examine… to be part of a group. Metrics don't suit these characteristics because they make you far *too* focused. And if you are also punished for not reaching those goals [which the metrics represent] then you will begin to neglect some of the other important things." (Schøn 2008)

Our first story is from a passionate man who within MDCC has a strong profile and reputation for innovation.

Network view

Schøn's enthusiastic and dynamic personality forms the basis for a dense network view, ripe with opposing notions.



Story

There are several clear themes in this story. 'Metrics' are associated with a host of cause-relations and antagonisms, so let me begin from there. Metrics are associated with process, meaning *standardized* processes, both of which are caused by a certain level of maturity in the organization. This means that *time* is a cause of stabilization which supports routinization and implementation of standardized processes and metrics to measure these processes. Larger organizations are thought to be the cause of more widespread metrics use, as well as standardized processes, bureaucracy, and internal competition, which is considered a negative dynamic. Collectively, large organization, process, metrics, and maturity form a core of organizational concepts which are also labeled 'blue' (not in network) following the Insights model (Insights 2008). Being a blue organization has a number of consequences. It is thought to be the foundation for product *quality*, meaning reliability, security, and consis-

tency. Also, standardized processes support economies of scale in the value-creation, presumably by pursuing efficiencies. For some reason, Schøn contends, larger, more established organizations are faced with higher expectations for quality than their smaller counterparts. This forces larger organizations to have quality as a relatively higher priority, which would have been impossible without standard metrics and processes ensuring consistency across the large volume of work. Also, the *integrated* nature of an ERP package requires an *equally integrated organization* held together by standardized processes, so there is a connect between product and control structure. ERP software is often labeled 'integrated', because it historically replaced stove-pipe legacy systems, but it is still not entirely clear to me what characteristics integrated products share. Is an airplane or software or a ballpoint pen more or less integrated?

As an interesting side note, the current financial situation, which has resulted in reductions of staff, is thought perhaps to induce a shift towards a 'hard' culture with stronger emphasis on management by metrics; this seems to reflect the idea that a certain hard ball organizational culture is a natural *defense* mechanism, but whether this is specific to Microsoft is not clear.

So there are definite benefits to having a mature, process-oriented, metrics-based organization, but these benefits come at a cost. There are clear frictions, Schøn asserts. The process focus is in opposition to innovation. Unlike large organizations and the process focus which invariably follows, smaller organizations are better at meeting customer needs. Being more adaptable and agile, a smaller organization is able to react faster to the requirements of the market. But this is also due to a different mindset in smaller organizations, which are not managed by metrics to the same degree. Empowerment of people, local diversity and holistic thinking are nurtured in organizations where management by metrics is not emphasized. The *inherently* human qualities, for example being explorative and seeking challenges,

are dampened by metrics, which seem to tranquilize the individual's natural tendency to experiment. So metrics have a stabilizing, but stagnating effect, which is not desirable if the organization also has to innovate. As the quote above suggests, Schøn proposes that metrics result in an exaggerated weight being assigned to the goals which the metrics are thought to reflect. The "intentions" (denoted 'true performance' in the network) of the metrics are disregarded in favor of what the metrics actually dictate. Although Schøn does not say anything explicitly about this, I interpret it as a clear indication that some phenomena are immeasurable. Schøn recognizes something irrational in the way organizations seem to perpetuate a disregard for true performance. This is seen by the punishing rather than rewarding of partial disregard for metrics-based representations of performance when favoring true performance. In Schøn's experience this punishing dynamic can be explained by a tit-for-tat logic whereby this seemingly irrational practice is carried forward between people in the organization. This gives this dynamic a peculiar persistent quality, which Schøn illustrates in this little make-believe dialogue with himself:

> "It's a bit like the story of children in orphanages, who are sat down on the hot stove and burn their behind… doesn't it hurt?... yes, it hurts like ****… well, why do you do it then?... because everybody else does it… they've always done it. But don't you see that it's wrong? Yes, but it was done to me and now I'll do it to him, because he's new here." (Schøn 2008)

So, some products dictate the need for a level of rigidity in the organization and its control structures but they remain fundamentally in opposition to change.

> "It's so damn difficult to be an entrepreneur in such a large firm. It's so unreeeeasonably difficult compared to having your own company, even though that's also difficult. […] The core problem in all larger organizations is that they take innovations and try to squeeze them into the large machine and say 'it has to fit!'… well, maybe it'll never fit." (Schøn 2008)

How should we solve this challenge? Schøn suggests a differentiated approach.

> "You have to split up your firm into a main business and an incubation business. Those two businesses must be run in *entirely* different ways, controlled in *entirely* different ways, reported on in *entirely* different ways." (Schøn 2008)

Schøn seems to have experience which suggests a very drastic divide between the two organizational units aimed at alleviating the inherent resistance and friction which is always present in relation to a main business. A tool he used several times to illustrate his own personality is the Insights profiling tool (Insights 2008). He describes himself as 'yellow' in opposition to the prevailing 'blue'.

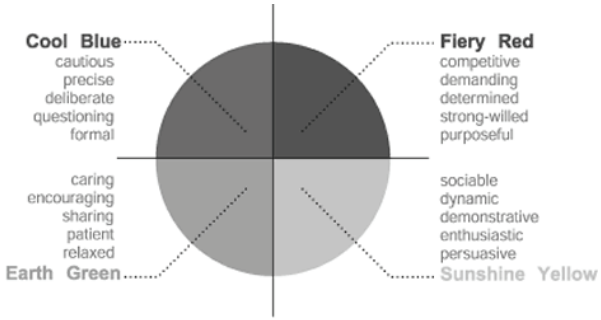


Figure 14: The Insights Discovery Profile

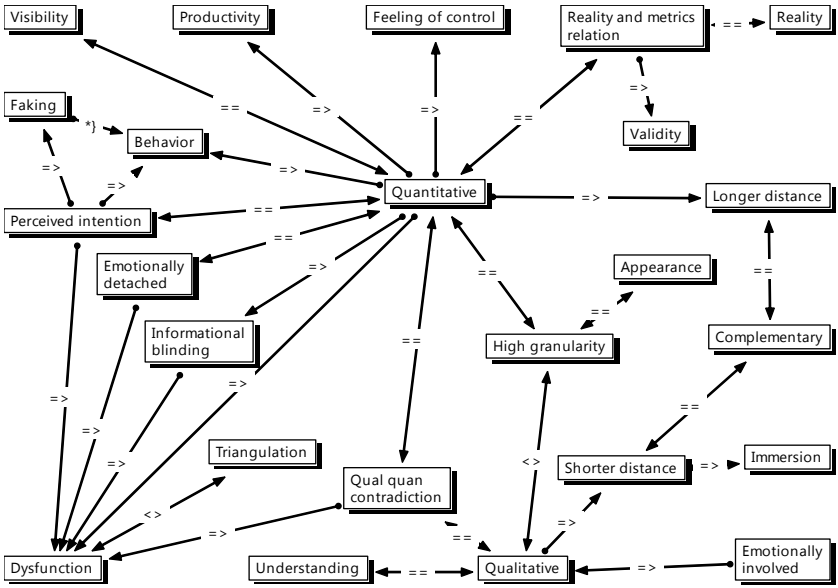
However, Schøn also assigns these characteristics to organizations and, by implication, products. If the organization and product is blue/red, then yellow/green people and products will not thrive. This is an example of the concept of *fit*, in this case between the organization and the individuals, between macro and micro and by implication between the structurally oriented and agency oriented. Sadly, as previously explained, the Mobile Applications Team has been shut down.

4.3.2 Michael Svanholm Thomsen, Senior Program Manager Lead, NAV S&T

> "If you only operate on the basis of numbers and the numbers don't reflect reality, then it's almost the same as not having any… it's actually worse… there is nothing worse… just like IT Factory [a recent Danish scandal where the CEO defrauded the company of 1.2 billion DKK] because then there are some questions you don't ask because you see those numbers." (Svanholm Thomsen 2008)

Having a PhD, Michael Svanholm Thomsen's terminology has an academic flavor, which the network view also reflects.

Network view



Story

Svanholm Thomsen displays significant hands-on experience combined with an academic theorizing style of proposing relationships. Our discussion focused on various effects of management by metrics. The dynamics surrounding quantitative representations are, for example, influenced by the *intention* people in the organization attribute to the collection and use of the metrics.

Svanholm Thomsen stresses the need to communicate the *purpose* of measuring, as this can easily be misunderstood. This communication should ensure that people understand what the metrics will be used for and, just as importantly, what the metrics will not be used for. If people are emotionally detached from the production and consumption of a metric, they are more likely to display dysfunctional behavior. Svanholm Thomsen exemplifies this:

> "A concrete example from a few years back [… when] we didn't only gather data on how much time we had left on a piece of work, but also how much time we had spent on it. […] After we had passed a few milestones, I decided to pull the data and did the calculations for every person on the team… we had an expectation that people delivered five hours daily… and every person on the team had actually delivered between 24.5 and 25.5 hours per week. Every single one, week after week. So we can either conclude that we are perfect in our predictions or that people deliver the number they are expected to deliver." (Svanholm Thomsen 2008)

But it is possible to mitigate this dynamic by speaking about the *purpose* and by instilling a sense of understanding so that people can *relate* to the metric. The dynamic of being emotionally detached is one possible reason for *faking*. If the consumers of the metric do not realize this, a *blinding* can occur whereby, for example, managers do not take the appropriate, timely action because they think all is as it should be; they are blinded by the all-is-well indication from the metric and refrain from digging deeper. In this way, dysfunctional behavior in the origin of the data can *propagate* to consumers of the data. On the other hand, being in the local environment can also cause *immersion*, which means that we lose sight of the facts which metrics can hone in on.

> "Sometimes we fool ourselves by being too attached to our work… we get carried away… everything is going well and is under control and this will be a great feature we think… and perhaps we don't pay the appropriate attention to the numbers and conclude that 'now we are actually two weeks behind' because we just get carried away." (Svanholm Thomsen 2008)

However, this misfit between reality and data can be softened by qualitative dialogue, as in the example above by ensuring that people relate to the metric, but also by consumers of the data, reaching out with dialogue to someone closer to the source. This is basically a means of ensuring *validity*. Svanholm Thomsen suggests this *combination* of qualitative and quantitative data which essentially is the process of *triangulation* (my label). The triangulation process, as in science generally, is used to constantly calibrate the interpretation of the metrics. This underscores the *complementary* nature of metrics and other forms of representation, such as forms based on natural language. Another facet of the complementary nature of metrics is the use of quantifications relatively far away from the phenomenon, while qualitative language is more relevant and closer to the phenomenon.

High granularity quantification which is consumed far from the source also has the dynamic of shifting the feeling of *responsibility*. Svanholm Thomsen suggests that it is healthy for managers to be able to deal with issues locally before they are exposed to higher levels of management. Metrics can circumvent this by generating too high a level of transparency. *Keeping up appearances* is a native mode of operation in organizations whereby local ownership is maintained.

Svanholm Thomsen also stresses that metrics give a feeling of control and cause a level of productivity which would not be possible to achieve without measuring. Implicitly, this means that the costs in dysfunctional behavior of the use of metrics may be worth incurring if they are outweighed by the benefits for productivity. However, Svanholm Thomsen says that triangulation in the form of more dialogue can shift the cost/benefit equation in favor of more measurement by increasing the quality of the data and by making the following use of data more relevant, thereby lessening the costs.

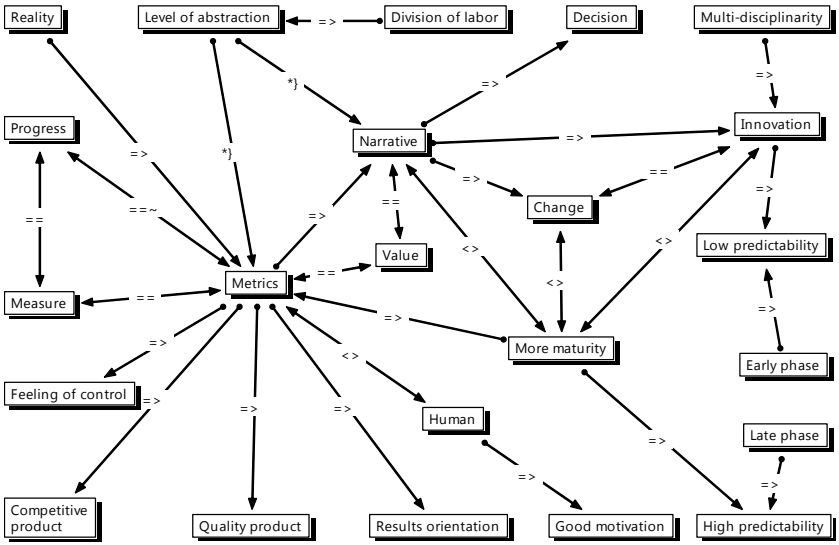
4.3.3 Martin Nielander, Program Manager II, NAV Release

> "I think metrics help to make us perfect or guide us to the completely pure project, the pure ambition. But you don't get that human dimension with metrics.[…]If we were just human scorecards walking around on two legs, a lot of the fun would disappear, a lot of the human aspect. The fun part about coming to work would fade away." (Nielander 2008)

Nielander is on the Release Team, which has a more traditional project management role within the NAV organization. Nielander was responsible for the detailed control of the NAV 2009 SP1 project I followed while at MDCC.

Network view

Working from a project management discipline, Nielander has a special emphasis on control and predictability, which shines through in the network based on our conversation.



Story

My conversation with Nielander showed, as expected, strong faith in the value of metrics with some noteworthy nuances.

Metrics and reality are assumed to have an intimate relationship. Metrics are caused by reality. However, there seems to be, in Nielander's view, a symbiotic relationship between metrics, progress and a feeling of control. Not only do metrics reflect reality, but they become the way we define reality and control reality:

> "In my view, metrics give us the opportunity to be flexible because we can turn the level of ambition for work or time up or down. So they give us some knobs we can adjust as we go along." (Martin Nielander)

So metrics not only reflect progress, etc, they become the tools whereby we can fixate reality, they *become* progress. Metrics also have the effect of acting as a beacon for results, which means that the natural human tendency against a hurried pace is constrained in favor of a certain level of urgency. Nielander also points out that metrics are at the cornerstone of ensuring product quality, as this would be more difficult to achieve without the *consistency-generating effects* of metrics. However, the value of metrics is closely related to human action:

> "I think we as people need some sort of action to go with a metric… that some people talk… that some process is started where some people are forced to talk together about making a decision and developing a plan of action." (Nielander 2008)

A metric alone has little value. Only with dialogue will change result from metrics. Nielander also supports the opposition between innovation and maturity, but moderates this by emphasizing that metrics can generate a conversation which is not entirely aimed at representing reality per se, but which can possibly lead to change or innovations. So even though metrics in their pure form can be seen as opposing change, via dialogue they can induce change. Nielander makes two further distinctions which moderate the use of

metrics vs. text: different needs based on the division of labor and different needs based on the particular phase a project is in. Divisions of labor mean different roles, which vary in the level of detail they operate at. Higher-level management focus will have to operate with more metrics and less (initial) talk, while others must concern themselves with the details. This leads to different representations for the same phenomenon, i.e. metrics and talk in different places in the organization. These two different representations, Nielander suggests, are not in conflict, but are on the contrary *suited to the different objectives of the different roles*. Also, different project phases will dictate the volume of metrics used. At the beginning of a project when innovation is emphasized, few metrics will be used. This initial phase is characterized by multi-disciplinarity and low *predictability* and so more discussion is relevant. As the project progresses and it shows signs of maturity, predictability increases and the level of metrics can be increased (and vice-versa!). But 100% 'maturity' is not reached before the project is finished:

> "Software development has some very indefinable goals to start with, criteria change continuously, and nothing is set in stone from the beginning. It is not until you freeze the software, almost, that you freeze the criteria. They are not identified from the beginning." (Nielander 2008)

Nielander suggests that in software development *we ultimately do not know exactly where we are going before we are there*. A development process is just not completely predictable. The development process will never reach complete predictability and be capable of being managed with a well-defined set of metrics because they are shooting at a moving target.

> "I think times change, the requirements change and therefore I also think the management criteria will slowly bend towards these new developments and whatever trajectories there may be." (Nielander 2008)

This implies that the stability of the environment has an impact on the internal management practices. In a world where the old cliché of change as

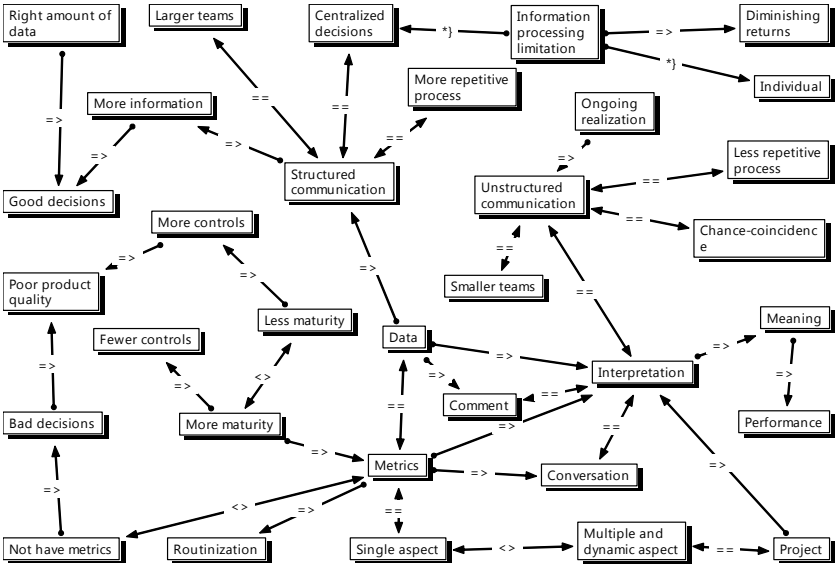
the only constant seems more and more true, Nielander insists on the value of metrics only in combination with dialogue.

In conclusion, Nielander opposes a dichotomy between different languages of representation by insisting that different representational forms are a *natural* thing as maturity levels increase, but also at any given level of maturity and predictability based on divisions of labor. The different representations are needed for different *complementary* objectives of overview and depth.

4.3.4 Jeremy Britten, Senior Program Manager Lead, NAV Release

"Software engineering is an art, not a science... mostly art" (Britten 2008)

Network view



Story

While there is some overlap between Britten and other interviewees, for example concerning maturity, he presents several unique insights.

Finding out "where we really stand" requires someone to conduct an interpretation and assign meaning, Britten asserts. This interpretation is the

result of unstructured communication, as well as conversations which can be initiated on the basis of data, i.e. metrics. But why do we need this interpretation? According to Britten, metrics only represent a limited number of facets. This is partly due to the fact that in software development people *realize* things which are naturally unexpected. These ongoing realizations make unstructured communication, i.e. reporting, necessary. The reason for having these realizations is that this work is not repetitive: "With software, nobody has ever built *that* product before... there is no blueprint. [...] Metrics stand alone to a lesser degree because of that" (Britten 2008). Unstructured communication can better grasp what is going on in a way that the predetermined metrics cannot. "Every project is managing a whole lot of different moving parts and understanding how those things relate to each other, and we don't have metrics on all the moving parts" (Britten 2008). Metrics only show a limited number of facets and unstructured communication should fill the gaps. Therefore, a combination of structured and unstructured representations is needed. We may wonder why, if unstructured communication has these positive traits of being able to compensate for the shortcoming of metrics, we do not utilize unstructured communication more. Britten offers a few possible reasons. Unstructured communication, in this context meaning conversations, tends to be more *chance*-driven, and does not provide the attractive trait of consistency. Consistency seems to be particularly desirable, while the idea of organizational life being prone to coincidental encounters seems insufficient for the management process, especially for the purpose of decision making. The quality of decision making is determined by the amount of information available to the decision makers. More information is in principle better, but people have limitations which restrict the amount of information which can be incorporated into a decision making process. This changes the game and makes finding the *right balance* the relevant task, Britten says. Structured data is somehow understood as *more information taking*

up less space. This has the consequence that the further you are removed from whatever the decision concerns, the more abstraction is needed. Centralized decision making will have a greater tendency to simplify, since the processing capacity would be roughly the same, while the 'volume' of decision making material is greater.

This seems to pose something of a dilemma, I suggest. We realize that metrics capture only part of the relevant reality and we therefore need unstructured communication, reporting, etc. to fill the gaps. We also realize a human limit to the ability to process information which Britten suggests follows the law of diminishing returns. This leads us towards a greater fondness for metrics in decision making. Presumably, the gaps become wider the more you remove yourself from the phenomenon you are making decisions about, so the need for unstructured communication becomes equally greater. Not so, says Britten. The concern for efficiency drives decision makers to leverage metrics rather than unstructured communication as teams get larger and managers become further removed from the phenomenon they are making decisions about. In smaller teams, unstructured reporting is considered more feasible than in larger. This is due to larger teams' need for an integrated mode of work, which is relatively more difficult to achieve in larger teams, but also due to the tendency to be unwilling to spend proportionately more time on unstructured reporting, owing also to the above-mentioned human limitations. I think this could possibly be one of the most serious causes of dysfunctional behavior: as centralization increases, an increased level of abstraction must necessarily follow, and the gaps remain; while organizational actors realize this, they do not concern themselves with the gaps.

Britten's organizational reality is non-repetitive, which strengthens the need for unstructured communication. The less repetitive a process is, the more need we have for the unstructured part. As processes *mature*, you do not have the same need to talk about them. However, Britten suggests that we

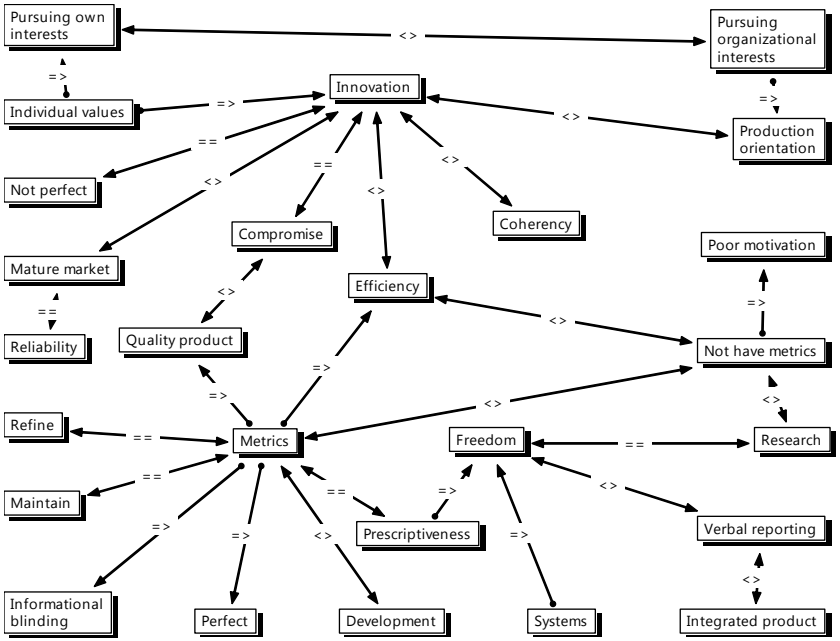
may also have less of a need to *measure* a mature process, which he puts very clearly: "More controls when there is less maturity, fewer controls when there is more maturity" (Britten 2008). So when we achieve maturity, we really need very little representation, either in the form of structured or unstructured reporting. Britten's conclusions, we should remember, come from a development organization which is constantly developing new products. In this non-repetitive organization, metrics take another role, Britten claims.

> "I think finding the right balance is an ongoing process. The next project is always going to use different metrics because for an area you previously put a lot of metrics around, everybody now knows how to do right, so now you don't need many metrics for that; it has become second nature, it's just ingrained and everybody just knows that it's just part of the process. Metrics become overkill." (Britten 2008)

In dynamic organizations, the concept of maturity is a bit different, because it is more like riding a wave, in that you constantly try to keep up with developments, internally and externally. Individual strands of maturity are constantly woven into the fabric of organizational dynamics, but an 'absolute' maturity is not realized. This is why both structured and unstructured communication will continue to have relevance in non-repetitive settings.

4.3.5 Henrik Frovst, Senior Test Manager, NAV Client

Network view



Story

The discussion between Frovst and I gravitated more towards management practice in general than focusing narrowly on representational forms, but this provided some intriguing nuances on what I had learnt so far. A theme in the stories of several interviewees is the balance between innovation and efficiency. Frovst agrees on this basic trade-off, which we can see in the opposed concepts of metrics and development, for instance. We also notice that metrics are associated with incremental *refinement* and *maintenance*, which are change-related concepts, but are very *slow* moving. Frovst associates the use of metrics with the mindset of an organization in pursuit of the perfect product with a high level of quality. Conversely, when innovating, you are typically making *compromises*, because your innovation has not fully matured (or it

would cease to be an innovation). Also, it is difficult to achieve coherency in the product, because developments tend to move in different, perhaps opposite, directions. Innovation is in the interest of the individual, Frovst says, while not necessarily in the interest of the organization. The individual will have a personal motive to build something and expand his or her own competencies by using the latest technology. This may be in the interest of the organization also, but may also compromise the organization's ability to reach its goals. This last point has an important premise: the maturity of the *market*. Market maturity should influence control structure, Frovst suggests. In new markets, or where there is fast movement, innovation is the name of the game and it is therefore worth the sacrifice of some quality and coherency. In the ERP space, the competitive landscape is not the same as it was ten to fifteen years ago. To be competitive in this, now more mature, market, you have to aim for efficiencies, or you will not be able sell your product. My interpretation of Frovst's remarks make me conclude that in commoditized markets, where reliability is more critical than having the coolest, newest feature set, internal control structures should be oriented towards coherency and quality. But there is also some level of *choice* of how you want to compete in any given market. Even the market for toothpicks has some level of innovation. My conclusion is that *strategy* as well as market maturity must influence internal control structures. If your strategy aims at changing the game, innovation is relatively more appropriate, while if your strategy aims at playing the game, efficiencies are more appropriate. Not really very surprising.

With this basic distinction in mind, Frovst argues strongly for an important nuance. While metrics are the cause of refinement rather than development, metrics make space and *freedom* to innovate. For that reason Frovst asserts that metrics have a double effect, both pushing and pulling innovation. The premise for innovation is efficiency and some level of prescriptiveness in management style. In Frovst's experience, when you give clear goals to

employees, backed up by explicit performance targets, you create a sense of comfort and calmness in your workers, which allows them to innovate more effectively. Without giving workers a clear sense of direction, they will not have the spare capacity to think of the innovative directions the product might take. In Frovst's specific setting (he is a test manager), his staff try to find ingenious ways of breaking the product in order to discover how reliable it is. Not having well-defined metrics and their effect as communicative beacons will lower motivation and freedom (in the sense of freedom to be more proactive). Also, the nature of the product, an ERP package which is inherently integrated, should make consistency more important than in products which are less integrated. Frovst also illustrates this by explaining how the organization structure has shifted since Microsoft acquired Navision. On acquisition, the primary organizational division followed the functional areas of the application, for instance finance or supply chain, while the organizational structure is now more aligned to the disciplines, with features drawing people in from all disciplines[4]. This is another example of how the integrated nature of the product and the maturity of the market should influence the internal control mechanisms. When being relatively prescriptive you are taking some responsibility from employees. As an isolated mechanism, it is not good to take away responsibility and ownership from employees, as they typically know the details a lot better than management, and would therefore be able to provide a more accurate and relevant picture of performance, but the concern for efficiency and allowing space for the employee to be innovative may outweigh the shortcomings of lightening responsibility. So by pursuing this approach of taking ownership from your employees, you may be at great-

[4] Please note that Michael Nielsen later uses the term 'functional' to describe the primary alignment to disciplines rather than the different functions of the NAV application.

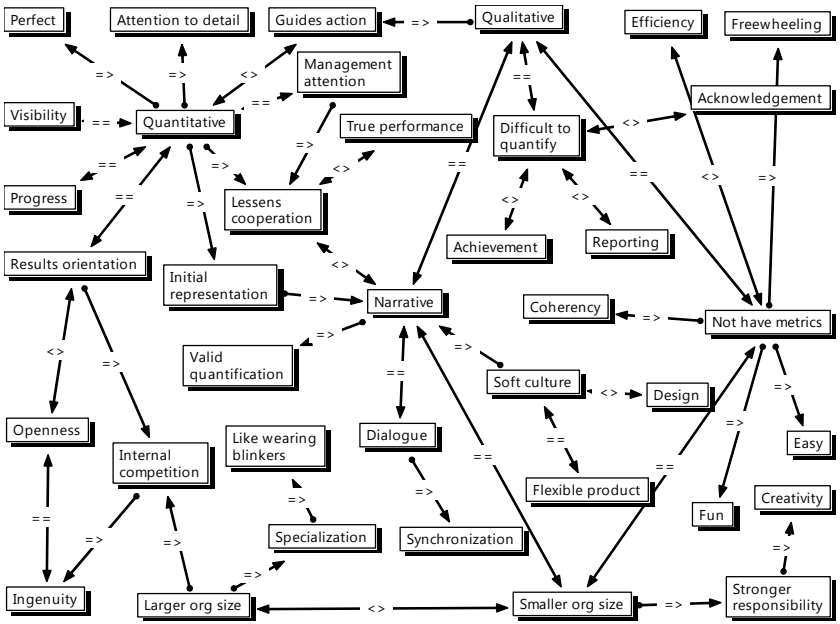
er risk of making some bad judgments; however, for that price, you buy efficiency and with it the capacity to innovate.

While I am not convinced that this approach is universally valid, it does bring up the discussion of how management styles and representational forms interact. This brings us into territory of motivational theory for *individuals*, which is at the fringes of *organizational* reality, but there is naturally some relationship. Following Frovst's ideas a bit further, the type of representational forms would vary across different motivational dynamics. A dimension of organizational reality which is part of the constitutive mix could be thought to be the *type* of individuals, for lack of a better term. One question perhaps worth considering is to what degree we can differentiate in our representational forms at the level of individuals' personality traits; some might be motivated by a lot of detailed commands, while others perform best with a lot of freedom. Ideally, we are able to optimize our communication and motivational instruments to the individual's specific predispositions. However, mass-customization of communication and PM strategy aimed at the individual would probably be unaffordable in most cases. Still, this could be viewed as another dimension of agency orientation, where the local, specific and rich is favored over the global, general and abstract.

4.3.6 Brian Nielsen, Senior Program Manager Lead, NAV App

Talking together in organizations ensures that "I know that they know what I know" (Brian Nielsen).

Network view



Story

Metrics can guide action, but must always be combined with discussions and dialogue, Nielsen states, and if you generate a discussion prior to quantification, the quality and representational value of the quantification will be more usable.

In other words, discussions both before and after quantification may be needed to fully reap the benefits of quantification. So the technique of alternating between qualitative and quantitative representations seems to be viewed by Nielsen as an effective way of balancing concerns for relevance in the quantification with a quick and dirty impression of the state of specific

things. Difficult-to-measure processes are left with little or no reporting because the metric provides an anchor for the other surrounding representations, i.e. discussion, so while there is an appropriate consideration for the measurability of the phenomenon, the organization seems to somewhat ignore what is thought of as difficult to measure, leaving a gap in the reporting flow. While a large amount of important work is not being reported, the feeling of progress is associated with quantification. If you are not doing measurable work, you are not contributing to the work. This is a clear example of how representational forms constitute organizational reality. People feel anxious if they cannot demonstrate, i.e. quantify, progress. This can only be caused by an organization's preference for quantification as the legitimate mode for communicating performance.

Nielsen spends considerable amounts of time building knowledge and capabilities in areas which he has not even discussed with his manager. While he feels that this is satisfying work, even without the glory in the short term, many people feel uncomfortable in this situation, where the links between effort and measurable pay-off are difficult to establish:

> "Many people do not care to be in a limbo, where they are working on something which lays the foundation for some work which will happen in 1½ years. It doesn't give a sense of achievement, success or accomplishment. […] You want to be sure that your contribution is acknowledged. […] Many people fear that the capability or resource you build up will not result in anything down the line… the fear of the work being wasted seems to be a concern. That may be why people are hesitant to take on these types of tasks and resist them and prefer to spend time on less relevant but more tangible tasks." (Nielsen 2009)

Notice that Nielsen uses the term limbo to describe the perceived midpoint between making a contribution and not. If it is not measurable, it is unsafe ground. This apparent short-termism makes me think of his description is terms of an NPV calculation; it seems that organizational actors have a strong preference for showing results in the short term, they operate with a high discount factor in their valuation of future 'cash-flow'. When SMART

goals are used extensively in the commitments set by individual employees, this is naturally what people focus on.

Nielsen says that he does get some credit for work which falls outside the SMART goals and has a longer-term payback, but it is not formalized. People with different preferences would perhaps tend to be guided more strongly by the measurable, safe and visible metrics, than by what they know to be the more relevant work for the true performance of the organization.

Not having the same emphasis on SMART objectives would cause people to have more fun, because the muddiness of not having clear objectives would allow people to pursue their own objectives rather than pursuing the organization's interests, Nielsen asserts. The organization would be at risk of ending up with a product with small nice bits that do not fit neatly together.

In smaller organizations, people tend to have more responsibility and this has the effect that people will think more broadly about problems and think more creatively about them. Being in a larger organization typically leads to more narrow roles. This can be compared to the blinkers worn by horses. The more narrow roles in larger organizations have a pacifying effect, which kills some of the creativity and innovation. These blinkers lead to being results orientated, with less of a tendency to succumb to distractions. Being focused on results makes people less *open* when brainstorming for new ideas, Nielsen suggests. At the same time, though, the awareness of achieving results encourages competition among people. The competitiveness is a motivating factor for coming up with the next innovation which is accepted by the group and given its due acknowledgement. So results orientation can create an atmosphere where ingenuity is stimulated by people's desire to succeed. This naturally works best when the organizational reality has the mechanisms in place to determine in a clear fashion what success means, so this is best suited in organizations which are governed by metrics or other means of

making objectives clear. So here we see *opposing* forces whereby large organization with utilization of quantification both encourages and discourages innovation.

Metrics orientation combined with strong management attention can be a dangerous cocktail, Nielsen says. Management has a practical limitation on the number of aspects of work they can engage in. If they have an easy way of monitoring some part of the work, the result may be a variation of what I term *behavioral crowding*; the aspect of work which is quantified takes precedence over less visible aspects of work. This crowding is magnified by the level of attention given to this metric over other metrics or representations. This leads to less cooperation across organizational unit, since the competitive aspect is emphasized. This suboptimization is an unintended consequence of quantification, Nielsen says. However, a noteworthy distinction should be made between suboptimization and the afore-mentioned behavioral crowding. Suboptimization is the most well-known problem in which local optimums collectively do not result in system-wide optimum. Suboptimization is characterized by the absence of cooperation, which Nielsen confirms from his experience. People begin to exhibit behavior which could be described as the prisoners in the Prisoners' Dilemma attempting to frame the other party. The *trigger* for this suboptimization seems to be 'crowding', where the control structure enhances the tendency to think locally. So while suboptimization is described in the local-global dimension, I conceptualize crowding in terms of representational forms. Ironically, using quantification is associated with farther reach, and would perhaps lead one to think of this as supporting global thinking, but according to Nielsen, the opposite occurs. Because true performance is represented by only a few measures, crowding around these metrics happens and you need to "look good" in the metrics, even if this happens at the expense of another organizational unit. An associated indication of this lack of cooperation would be visible in the reduced

amount of natural verbal interaction between people and a negligence of true performance. Nielsen does stress that this is *not* the case in Microsoft today, where a good balance has been struck.

Nielsen says that it is not feasible to design a culture per se where qualitative interactions and reporting are used more extensively, but a good place to start is to be careful not to over-quantify and also simply encourage people to talk more. He is quite clear on the dangers of instilling a culture where quantities take precedence over textual representations. In the following he uses the metaphor of filing bugs in software as an example of a quantitatively-oriented practice: "If we get used to talking to each other about errors in documentation, then we will get used to talking about everything. But if we have behavior where we submit a bug against the documentation, then we will probably get used to filing bugs against everything and then we will forget to talk about what could move us in the right direction" (Nielsen 2009). This is an example of the constitutive force of representations on organizational reality. If we have a practice of measuring many things, this will bleed into other areas and influence the de facto standard for communicating performance. On the product side, more metrics will result in more attention to detail, Nielsen suggests, and encourage aspiring for the *perfect* product. This is due to some necessary balance between the culture, in terms of the level of attention to detail and the product; a very rigid, highly-structured product will most easily be achieved in an organizational culture which shares the same characteristics. This also effects some strategic considerations the organization could have, as Nielsen explains, still using the metaphor of filing bugs as an example of rigid, metrics-oriented behavior:

> "To talk to each other versus filing bugs gives the team different capabilities. […] The organization which is used to streamlining processes is probably capable of scaling efficiently, whereas another organization where talk is more prominently practiced might not be able to scale. […] We would argue that in our [organization] where we deal with innovation and that sort of thing, the more metrics we have, the less we can

deal with this fluffy innovation in the future, so it depends on the organization." (Nielsen 2009)

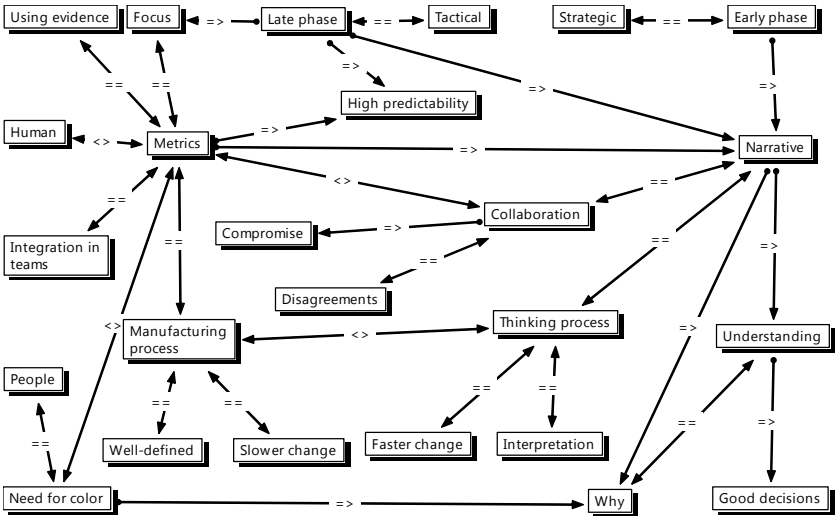
Nielsen used a call-center support organization as an example of an organization which has less innovation and where routinization is therefore relatively more important. Here we see experience which indicates that actual or desired organizational reality does relate to representational forms and that some fit is to be preferred.

Another perspective on the value of dialogue is that it gives some assurance that a common understanding has been established. The mere fact of knowing that you share an interpretation of a situation allows for a different type of internal synchronization than is possible with quantitative representations alone.

4.3.7 Andy Blehm, Senior Program Manager Lead, NAV Client

"Building software is hard enough when everybody is pulling the rope in the same direction… it's a difficult problem. When you have people pulling the rope in several different directions, then it becomes an almost impossible problem. So I think you need a team that can work well together, collaborate well, be able to have disagreements but still be able to reach compromises and solutions as opposed to ones that are much more dysfunctional where they aren't able to have those kinds of discussions or disagreements." (Blehm 2009)

Network view



Story

Blehm is very clear about the distinct cause of high performance of software development teams. Collaboration is key. To achieve collaboration you need to have an organizational reality where discussion and possibly even disagreement is natural. Through discussion, balanced compromises can be reached. These discussions result in an *understanding* of the problem, which makes for better responses or decisions:

> "Metrics is just a metric. It's just data. You need people to actually add color to the data. Let's take a case of a feature. I can see on the schedule that, let's say, something is running a week behind. OK. That really only tells me one thing: I'm off track. Now I have to go figure out: why? What happened? Is there something that we didn't think of, can we add additional resources, you know, how can we solve this problem? And it's only through talking to people that you can get an understanding of those problems, you can't just look at the metric and be able to respond. You certainly could, but you are not going to be able to respond as effectively without getting a full understanding of the problem." (Blehm 2009)

Here the metric alone raises a diagnostic flag, which prompts some further action. But the richness of the metric alone is too low to indicate the relevant action. Both Simons (e.g. 1994) and Daft and colleagues (e.g. Daft and Lengel 1986) spring clearly to mind when reading this. The metric has been used as a way of monitoring health and raises the red flag when something is amiss, but the language used does not have the necessary variety to reflect the reality; it is over-simplifying. In practice, Blehm will compensate by combining the language of the metric with a higher-variety language. But the premise of this strategy is that the low-variety language can convey the required scope of problems.

Contrary to some of the other people I spoke to, Blehm does not suggest that there is more talk at the beginning of the project and more reliance on metrics as a means of substitution during the end phase. Dialogue is prevalent throughout, but the content of the dialogue changes. To start, discussions are more creative, open ended and strategic. They are about finding which path to take, Blehm says, while towards the end they are more about resolving very concrete issues which prevent the project from flowing as planned; these are tactical issues. This seems quite logical and perhaps not surprising. However, I find the point about the volume of use of different representational forms worth noting. In my propositions, I have framed the representational forms in a continuum, which implicitly argues that it is a zero-sum phenomenon. My preconception was that organizational actors would use different representational forms as substitutes for each other. Blehm asserts that this is not the case by saying that at least the verbal form is used equally throughout different phases of a project. If we take this a step further and contrast, as Blehm did, the manufacturing of bottle caps with software development, a few very interesting points emerge.

> [on producing bottle caps] "I think that's much more of a mechanical process. Once it's defined, you follow the same process and it doesn't really change over time, there's not so much of a human aspect or a

> thinking aspect. [...] Once you have a machine in place, you pull the lever and out comes the thing. There aren't really different interpretations of what a bottle cap is at that point, right... you stamp the thing out. Software is a less well-defined thing. And everybody has a slightly different opinion in their head when you describe something on a piece of paper." (Blehm 2009)

Here we see clear differentiators between different forms of organizational reality, which parallel the structure/agency distinction. Specifically, the concept of change, or rather speed of change, and local understandings or *interpretations*. These distinctions are related to the different types of processes, where *thinking* processes, Blehm explains, such as software development are more dependent on talking to untangle the complexity of intangible products, whereas manufacturing processes, which deal with real, physical things, need less discussion because the object of discussion is clear to *see*. Nevertheless, talk will be needed in both scenarios.

If we relate different project phases and different types of value-creation processes to variations of organizational reality, then representation use (understood as a simple mix of metrics and talk) *does not* change as organizational reality changes. This is the most extreme interpretation of Blehm. To be clear, it contradicts the propositions made or at least calls for them to be refined. While there is much support for metrics *vs*. talk in other people's experiences, one refinement could be not only to think of representational use as a trade-off, but rather *how* it is used across different organizational realities. My feeling is that both have merit: in dealing with "thinking processes" we do need more talk than when we deal with more mechanical processes. However, volume aside, the content of the representations changes too. So even if this does not prompt me to leave the notion of trade-off between representational types, I think the conclusion should be that sensitivity is called for in perceiving the relationship between organizational reality and representational forms as linear. Blehm mentions that in software development traditional vs. *agile* methodologies reflect the same distinctions as our discussion was

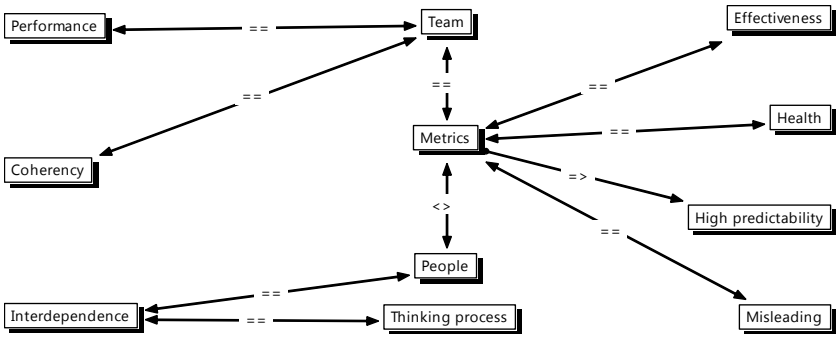
making. According to Blehm, "agile" emphasizes human interactions and trust as opposed to more stringent process thinking. But collaboration cannot be measured in a meaningful way and attempting to do so could possibly result in misleading information. "You have to make sure you understand the essence behind the metric, otherwise the metric doesn't really do you much good" (Blehm 2009).

Verbal interactions are also ruthless in the sense that they expose incompetence in a way that metrics may not. So being able to have good discussion requires a level of competency in both parties. In Blehm's experience from a previous workplace, a lack of competency can lead to an over-reliance on metrics and insufficient engagement. This can lead to reduced sensing, when metrics do not give the full picture, thus giving a false sense of security. Understanding and verbal interactions therefore have an intimate relationship.

4.3.8 Mike Neuburger, Senior Test Lead, NAV S&T

> "I think it's hard to use metrics in general and especially in software development because they can be extremely misleading." (Mike Neuburger)

Network view



Story

My discussion with Neuburger was slightly atypical. We touched on relatively few topics, and instead discussed these at more length. In fact, while the

themes are few, my interview of Neuburger was one of the longest I conducted. The following will reflect this by honing in on only a couple of themes, which are afforded more lengthy consideration.

As the initial quote illustrates, Neuburger is somewhat skeptical of applying metrics at the level of the individual. This is because software development is a tightly integrated process. He insists that individual pieces of work cannot be separated out and analyzed in isolation on the basis of on quantification. Comparing the work of two testers is difficult because the level of consistency between pieces of work can be so different. The implicit benchmarking in doing so simply does not make sense. "It would be nice if we could apply the same yardstick to everyone's work", Neuburger says, and adds that in reality this is not possible. Due to the *interdependent* nature of the work, performance is more a property of the team. "[With] people it [performance] depends on what work you have given them. And some of the work is not directly comparable. And some of the outcomes of the work is a function of how the team functions rather than how the individual functions" (Neuburger 2009). These dependencies effectively make the borders fuzzy between where one individual's work ends and another's begins. This fuzziness is in contradiction to the clear demarcation implied in a quantification. Interdependency could be understood as reciprocal relationships in the value-creation process. The concept of interdependency or reciprocal relationships adds to our concept of organizational reality at the agency-oriented end of the continuum.

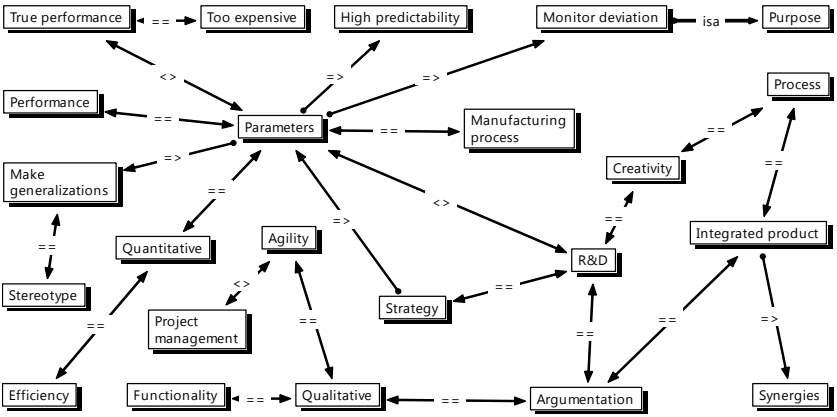
At the level of the team or project, the picture is different. Here, metrics provide an essential function: predictability. When the finished product has external dependencies, predictability becomes an even more crucial objective. But what exactly is predictability? We might think of it as our ability to predetermine the future, know the future. But why should measuring something make it more predictable?

In the way Neuburger tells his story about management, I sense that there may be at least two aspects to this predictability, which we spoke quite a bit about. The software development is inherently unpredictable, for why otherwise would you need continuous meetings to coordinate responses to unexpected occurrences? A metaphor which is commonly used in reference to progress is the 'glide path', the final path followed by an aircraft as it approaches the runway. The term describes, for example, how the number of bugs approaches zero towards a milestone or release; the graph for this is similar to a glide path. At a more abstract level, a project is managed somewhat like the airplane in flight. Some things are within control in the sense that they can be adjusted: scope, price and time to take classic examples. Like flying an airplane, you need to constantly react to circumstances. In the airplane scenario, these unknowns come mainly from the external environment. In the case of work such as software development, the nature of the work with a lot of interdependency, as Neuburger says, creates the inherent unpredictability. Adding metrics to the mix seems a bit like trying to turn water into wine. Again, why should measuring something change it in any way? We know that all measurement can influence the phenomenon under scrutiny, but to fundamentally alter a characteristic of predictability seems drastic. The premise leading to the conclusion that metrics induce predictability is that the metrics reflect the project. "So if you don't have those measurements, you don't have those types of things, you can't gage the health of the project, the health of the team […] you'll never know when to ship" (Neuburger 2009). This quote seems to indicate that by measuring we are extracting some information which is not evident without the measurement. I offer the following analysis, which is independent of Neuburger's input. We are not creating predictability by means of the measurement; we are simply uncovering the inherent patterns in the work which will lead us to realize what trajectory the work will take and to see when we are "ready to ship", for exam-

ple. If we challenge the premise of the metric as a reflection of reality in a static way, the picture changes drastically. We might instead claim that the measurement *becomes* the project. Rather than reflecting the project in a 1:1 relationship, the metric might re-constitute the project. As such, the project as much reflects the metric as the other way around. Taking this view has some advantages. It becomes less nonsensical because the suggestion that you are creating predictability out of thin air does not need to be made. Instead, you are assigning properties *to* the project which are not native to it. You are recreating an 'ontology of the project' in which it is reduced to some fewer dimensions. The project then becomes these fewer dimensions. In becoming these fewer dimensions, it also becomes measurable. Imagine measuring a swarm of butterflies in terms of how many times the butterflies flap their wings. If the butterfly dynamics are reduced to this, then this is what they become. The mutual reconstitutive nature of the dynamic explains why measuring is perceived as inducing predictability. It seems like predictability is caused by the measuring because the two occur in proximity to each other, but it may be that you are remaking something which is difficult to predict into something which can be predicted by the mere act of measuring it. How does it happen that the airplane lands on the runway? Well, I will ignore the fact that it often does not, and focus on the more intriguing phenomenon that it sometimes does. Following this line of thinking, the answer is that it lands because that is what airplanes do in our definition of them. This may be somewhat perplexing, but is rooted in the thinking that things become the attributes we assign to them, so we do not only assign attributes which they contain a priori, i.e. independent of our experience of them. While this may seem like semantic judo to solve a paradox, the discussion is at the core of the dynamics of representations.

4.3.9 Torben Siggaard, Principal Group Program Manager, NAV App

Network view



Story

Within five minutes into my interview with Siggaard, including my introduction, Siggard had laid out a basic structure for me to understand what constitutes good performance for the NAV work. There are qualitative and quantitative parameters. The qualitative parameters relate to the product fulfilling some customer requirements or, in other words, a question of functionality. The quantitative parameters are associated with speed of delivery, a question of efficiency. Critically, Siggard says, these parameters depend ultimately on the strategy you choose for your product. No essential performance parameters for a product exist without reference to a strategy, so the product strategy is the highest reference of performance.

In their management, they do have a number of metrics which are considered to represent performance. Questioned about the relationship between this finite set of metrics and true performance, Siggard offers this concise view:

> "There are far, far too many parameters. We can't get our arms around everything. So we have to generalize and construct some stereo-

> types. We can only cope with so many pieces of information at a time, so if we can identify twenty criteria which in some stereotypical way describe what it means to be finished, then we believe that we are trending in the right direction." (Siggaard 2009)

This clear statement says a lot about the premise of working with quantifications. There is the practical problem of managing the many facets of reality. To solve this practical problem, stereotypical representations are created as a form of proxy. This generalized or abstracted representation is *believed* to hold enough resemblance with the complexities of organizational reality for positive movement in the metrics to reflect positive movement in the reality. The limitations in coping with more parameters has to do in part with limitations in humans' ability to process many factors at once, but perhaps more importantly has to do with cost: "We try to build our criteria following an 80/20 rule. We can forget about trying to pursue the last 20%. It would take far too much time, it would be far too expensive. Somehow, we need to try to hit that group of criteria or parameters which actually represent performance" (Siggaard 2009). The task becomes to choose wisely the metrics which optimize the cost/benefit and to determine the metrics that give the best representation of true performance for the least amount of money. However, Siggaard points out that gathering metrics around the process is really about registering *deviations* from the plan and flagging the potential need for action. So Siggaard makes a distinction between the objective of knowing the performance of a process simply for *knowing* and, conversely, the objective of knowing if something is wrong for the purpose of *doing* something about it, i.e. applying corrective action. In other words, we may not need perfect representations for the *purpose* of correcting the trajectory of the project from a gating perspective. By implication, other purposes may require more or less true representation of the true performance of the phenomenon in question. Deviations from the plan are associated with predictability, so this is a core focus.

Moving away from the hardcore project management aspect of the job to the more *development-oriented*, the picture changes markedly. Here measurement is more difficult: "What would you measure? Where would you apply your thermometer? It's a vision. If it were a question of just building the next bridge, then all right, then we know where we are and where we are going. But this is R&D" (Siggaard 2009). So different aspects of the PRM role call for different representational strategies. The R&D aspect is a funnel process, progressing from being very open to being more and more well-defined. At the beginning the thermometer approach does not work, but what do we do instead? Siggaard explains.

> "It's more about whether the argumentation seems reasonable. It's like when you present an argument for a future strategy for a firm. It's not something you can measure whether it is right or wrong. You can sense if the model has been made sensibly. You can gage whether the arguments make sense. You can look at the numbers which project the investment and revenue streams [...] but even that is very difficult. [...] Your gizmo may just be an enabler, which allows partners to do other things [...] so it's difficult to just apply the thermometer." (Siggaard 2009)

A few things spring to mind when reflecting on this statement. Most notably, Siggaard clearly states that verbal representation is most effective in the initial phase. This language contains sufficient variety for utterances to be convincing (or unconvincing, obviously). Siggaard seems to suggest that because the future is not yet laid out in the beginning phase, no measurement would be meaningful, because there would not be anything to compare a measurement to. It would be a free-standing number, with little significance.

The other noteworthy assertion is the characterization of the product. Siggaard says that, because of the integrated nature of the product, it is difficult to delineate the boundaries of the contribution of individual products.. Presenting the business case for such investments therefore becomes more difficult. This is comparable to testimonies to the difficulty of clarifying individual people's contribution to a team or project. Again, the complexity of the

interactions makes it difficult to clearly distinguish contributions to performance. Naturally, this does not prevent people like Siggaard from predicting what the market will want in three to four years time.

The necessary balance between innovation and an efficiency orientation is stressed. You have to have the right measure of each: "The product has a window of opportunity where it is relevant in the market. If you miss this window then you just don't have a relevant product, even if it would have been the world's best product had it been released two years previously" (Siggaard 2009). I interpret Siggaard's suggestions to mean that if you have too much creativity you will miss your window, and if you have too much process you will not have a relevant product at all (but the picture is not that simple because, as Siggaard points out to me, we also know of creativity enhancing processes). Finding an effective way of striking this balance seems to be like finding the Holy Grail, but the nature of products which are continuously being evolved means that a balance will never be struck.

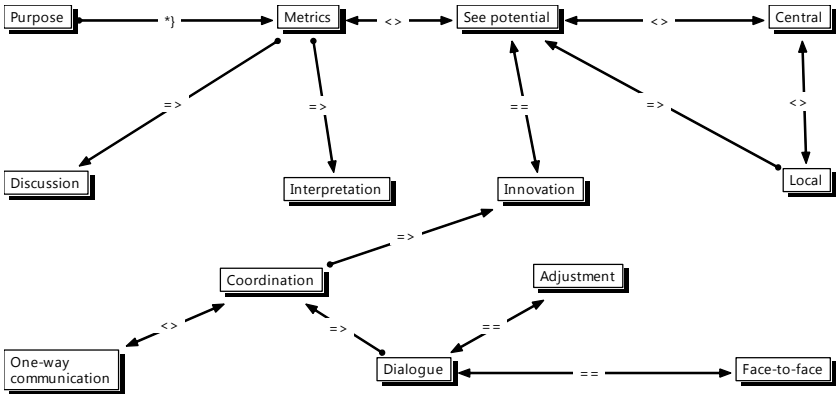
The higher-level suggestion is that performance management is not about securing the perfect product in no time and at no cost. It is about fulfilling or exceeding customers' expectations in a sliding time window. Allow me to illustrate. In any market where differentiation plays a significant part of the strategic game, there will be a trade-off between making new features which will enhance the lead over competition, and getting the product to market. This trade-off must combine very different types of processes and corresponding control systems to effectively get new products out fast. What I take from my conversation with Siggaard is that organizational reality is not a single construct, but must be thought of as something *diverse* yet *integrated*. The diversity means that organizational reality must at times be agency oriented with matching representational forms, and at other times must be more focused on becoming the organizational equivalent of a metronome, forcing everybody to dance to the same beat. Without this combination,

whether split across project phases, organizational units, different roles, etc, the organization will fail. The research question on the relationship between organizational realities and representational forms assumes additional nuances. While it is still clearly important to understand the match between *a* simplistic organizational reality and *a* representational form, the question also becomes how to decide on the correct mix of *different* reality/representation combinations and distribute them in the value-creation process. The choice between structurally-oriented and agency-oriented organizational realities, structurally-oriented and agency-oriented representational forms, quantitative and qualitative, metrics and talk, etc, becomes something of a non-issue. Not because the distinctions do not exist (they do) and not because they do not have levels of compatibility (they do) but because 'real' realities are such that they must *coexist* to find synergies among organizational realities and representational forms.

4.3.10 Peter Christensen, Principal Development Manager, NAV Client

> "It's a creative environment. I have always viewed software development as a form of art. You create something. You create software. It's exactly like creating a painting. Your own innovation controls what the painting will look like. But since your painting is part of a larger whole, it's important to have coordination of how the individual pieces fit together." (Christensen 2009)

Network view



Story

Microsoft is a grassroots organization. This is the firm view of Christensen. And this is why it is such fun to work for Microsoft. But it is not a grassroots organization *for* the people, but for the organization. Only people close to the actual work will know enough about it to see future directions, Christensen says. More senior people deal with the large strategic issues, but most of the change comes in small pieces from the foot soldiers who constantly see potentialities and pursue them. As the quote above demonstrates, it is crucial that you have some coordination of the innovation. But this coordination cannot be made with any representational language, as Christensen explains that:

> "[PC] Both writing and other means of communication [i.e. metrics] are not precise enough. The investment needed is too great compared to the benefits.
>
> [BK] Why is it more precise, this dialogue, than if you implemented some metric and just measured it?
>
> [PC] It isn't precise in that way, but you adjust quicker because you have the very close dialogue." (Christensen 2009)

The need for constant adjustment is part of managing creative work it seems, and the foundation for making these corrections can most easily be

done through dialogue, which, the reader should note, is distinguished from writing. Christensen is also quite explicit about the medium necessary for this dialogue and says that "I would never have the same impression [if I used metrics] as if I actually look the person in the eye and ask 'have you remembered to do a unit test', 'what scenarios does your unit test cover', and so on" (Christensen 2009). Metrics are not good enough and people can easily be tempted to be 'flexible' with them, one-way textual communication such as status reports in email is good to stimulate reflection, but not as a way of reporting because it lacks the *dialogue*. The richness in natural language complemented with all the *extra* communication and *dialogue* inherent in face-to-face communication seems important to be able to understand effectively how the person, team or project is steering off course. Without it, Christensen fears that reaction time would suffer and adjustments would be made unnecessarily late. Christensen echoes what several others have said about metrics being too over-simplistic to genuinely represent performance dimensions such as quality, but that they can be used to stimulate discussion, which this slightly lengthy part of our discussion illustrates:

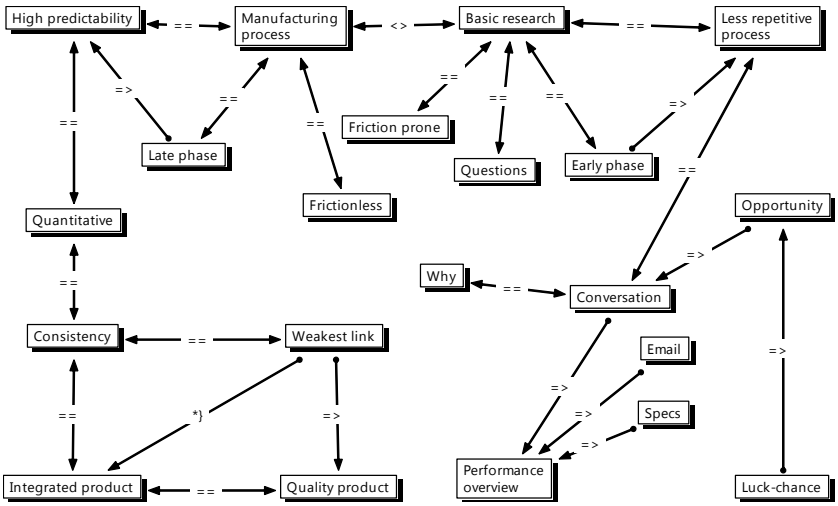
> "In the old days you were measured on what was called KLOC, kilo lines of code, this was your measure. The more KLOCs you had, the more compensation you received. […] People produced a lot of code, but it didn't have much to do with quality or productivity. Then we started measuring the number of bugs pr. KLOC, so we started putting metrics around the need for *quality* code at least. […] The problem with that is you start measuring something which depends on how much test you do. Why should it impact the individual developer if someone takes the time to test it or not? You just end up not having very good measures. […] No, you can't use them without interpretation. […] Personally, I would like to have more metrics to stimulate more discussion. But I would not use them without analyzing them and having a discussion about them." (Christensen 2009)

This is actually a remarkable notion. Stated more clearly, this means that the value of a representational form is not only based on its relationship, i.e. fit or gap, to organizational reality, but moderated by its intended *purpose*.

What could be an unreasonable representational use for the purpose of learning the performance of a team could be a reasonable representation to simply stimulate discussion, for instance. For this to be practical there must be some consensus regarding reasonable purposes of different combinations of organizational reality and representations. This suggestion adds an extra layer of complexity to the research model. If this notion of purpose should be integrated more closely into my model, the question is, of course: how? It is a contingency factor which changes the viability of reality-to-representation fit. But what members exist within this dimension, i.e. what purposes can we think of, how are they related and, most importantly, how do they moderate the relationship between organizational reality and use of representational forms? These are all unknown, and difficult to conclude much about at this stage. On the basis of Christensen's statements, I can only conclude that you need pay less notice to representational soundness when all you want to do is to spark the use of a higher variety language. I will keep this factor in mind going forward.

4.3.11 Claus Busk Andersen, Senior Program Manager, NAV S&T

Network view



Story

Busk Andersen was very interesting to speak to because his area of expertise is reporting and analytics. This means that he is acutely aware of some of the discussions inherent in different approaches to reporting, and this insight made him an excellent interview subject. I spoke to him on several occasions, so he knew my areas of interests, which facilitated the syncing of our thoughts.

He presents clear examples of what I would term organizational reality, but which we spoke of as types of work. Busk Andersen illustrates this by contrasting two clear extremes: "*factory work*" (recorded as manufacturing processes in the network view) and *basic research*. Repetitiveness and the ability to predict work are two factors which distinguish the two extremes. Another is the level of "friction", says Busk Andersen. Friction is what prevents uninterrupted and smooth operation. In factory work, the goal is to avoid friction, while at the other extreme, basic research, the goal is not to

avoid friction, since this is inherent, but rather to continuously *deal* with friction. Basic research has no clear purpose, no clear dependencies. It is driven mostly by inquisitiveness into some distant future value. This makes obstacles less of a risk, because they do not stand between you and anything since *resolving* the obstacle is often the goal rather than working *around* the obstacles. This example is meant to illustrate two *global* extremes, but in Microsoft a microcosm of the same continuum seems to exist. It does not stretch from one end of the extreme to the other, but is definitely much larger than just at one point along this continuum. Although we just seemed to happen on this terminology, it effectively framed the further discussion. At MDCC, there are elements of the factory mode and elements of the basic research mode. One distinguishing feature of the pure basic research is that is has few dependencies. Software development, although *development* oriented, has dependencies. Most notably towards the different actors in the market, but those long-range dependencies trickle down to the internal mode of work and dictate a certain degree of factory-type work aimed at avoiding friction and delivering on time. On not to use metrics he says: "I think it would be unthinkable […] we will probably always be concerned with dates to some degree and when we are dealing with dates, we are dealing with man-hours. […] As long as we are not at the top of the food chain, I think it will continue to be the case" (Busk Andersen 2008). Since Microsoft is indeed very focused on delivering a product to a market in the short (and long) term, the customers are at the top of the food chain, and metrics have their eternal place in the management of processes. Without the metrics, we would not know when the work would be done, says Busk Andersen, voicing views similar to those of other managers. The most widely-used metrics are those associated with project management and the ubiquitous bug-count, which is used as a proxy for quality. But bug counts are not without their problems, as they rely on the quality of the testing process, which is also difficult to en-

force a metrics-based approach on. "It is very difficult to quantify targets which say that a unit test should be done in such and such a way, because it's 100% dependent on what you just developed" (Busk Andersen 2008). This seems to be the crux of the problem: measurement appears to imply prior knowledge of the phenomenon in question. And with the research-oriented elements of the work, you do not have prior knowledge. The horizon is so close that it is difficult to see very far, either in terms of time or in terms of distance between people in a local/central continuum. Every step you take depends on the one just taken, and you cannot predict very many steps ahead.

Regardless of this, measures and classifications schemes are implemented. So while managers are aware, often acutely aware, of the shortcomings of this emphasis on metrics, the practice is nonetheless widespread. By way of explanation, Busk Andersen points out that *consistency* is critical for an integrated product such as an ERP package. Quality tends to be determined by the weakest link, because none of the parts stand alone. With integrated products, you are constantly trying to improve the weakest link, but you need to have some idea what this may be. So you attempt to classify and quantify in order to establish a benchmark. The benchmark might show which feature has the most bugs so that you can allocate resources to fixing the features which need most work. This tug of war between conflicting interests is natural, it seems. In this example, the objective of distributing quality across functional areas is desirable due to the nature of the product. This counteracts the skepticism some might feel about how justifiable it really is to compare quality measures at all.

So, one learning point from this conversation is that strategic purposes ultimately dictate the need for metrics. But my impression from Busk Andersen is that metrics cannot stand alone. Conversation answers questions. And in development, you have questions. Without sufficient conversation, dis-

orientation will prevail, because the metrics have indicated to some degree what step you just took, but not what step you must now take.

Metrics are an important conversation starter, but are mostly utilized at higher levels of management, where the need for abstraction is greater. At lower levels of management, verbal reporting is critical, but you are still challenged to determine when and how to engage in conversation. *Opportunity* plays a big part in understanding the state of affairs, says Busk Andersen. To get an effective overview of what is happening, you have to put yourself in a situation where you can pick up on unstructured exchanges. "Chit-chat" is a surprisingly dominant form of 'reporting' in practice, especially at the more operational levels of management. The combination of low repetitiveness coupled with a sustained need to represent performance, makes the tactic of *grazing* common. Not entirely random but not at all ordered either, these conversations come about by actors consciously sowing seeds and nudging the occasion to present itself. I interpret this as effectively weaving the organizational fabric more densely, so more connections occur.

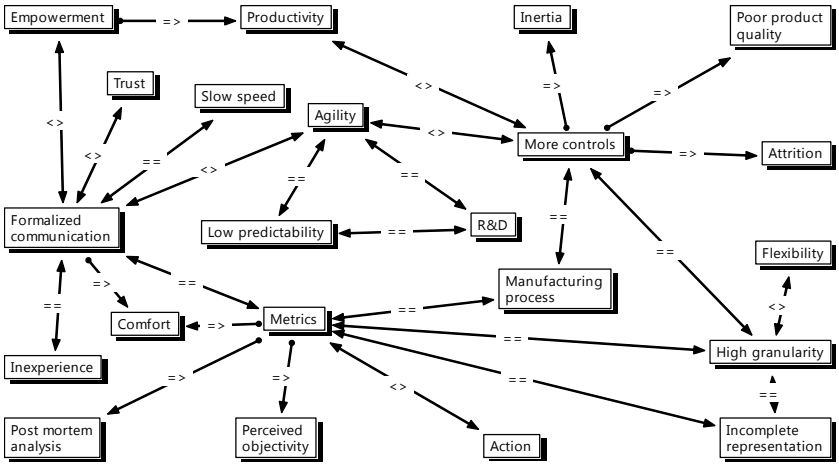
Busk Andersen has discovered an entirely new representational language, which in his experience is well-suited to reflecting organizational reality and its density: table football, a.k.a. foosball. The amount of play which occurs may clearly indicate work stress levels, since busy periods would mean less of a tendency to play. Partly in jest, but only partly, we discussed how foosball may also reflect a management control mood. Measuring in general and measuring people who feel discomforted by this in particular may impact the foosball-indicator negatively. For believers, this is a clear example of how organizational reality is in part constituted by representational forms.

4.3.12 Sam Skrivan, Principal Development Manager, NAV App

> "While we like to pretend that these are objective metrics, they aren't, they are very subjective and it's all subjective in my opinion. [...] The metrics just hide far too much of the reality of what's happening. For instance, everyone is in agreement that you can't just look at the

number of bugs people fix, because those don't really match, but the reaction to that is just to get a bunch more metrics, and the average should fit, but I still don't think it's useful. I think those are good data points to base a discussion on." (Skrivan 2008)

Network view



Story

Skrivan's choice of representational forms to use seems typical in the sense that there is some use of metrics but backed up with substantial need for speaking to people. For example, on the value of bug counts, Skrivan says that "there are metrics that I could use. I find them useful, but not the whole picture, […] it's not a full enough picture to actually act on" (Skrivan 2008), so the metrics alone do not guide action, but, naturally, impact the direction future action will take by influencing what will be talked about.

Skrivan has observed that experienced managers tend to rely *less* on formal communication and are able to feel comfortable with more informal ways of reporting; for some, especially for inexperienced managers, formal communication may be associated with comfort. It is unclear what the reason for the comfort is, but it could possibly be related to an uncertainty when you are new to the work and still gaining a complete understanding of the work, i.e.

the performance of your area. When faced with this uncertainty, it could be natural to seek out the rational, systematic ways of dealing with that uncertainty. This could well involve using the relatively explicit, formal ways, which feel like they give clear representations. But this is mostly speculation. Formal reporting moves control away from the individual to the 'system', which Skrivan says in his experience leads to a reduction in productivity. The productivity loss resulting from formalized reporting, be it metrics based or text based, is associated with disempowerment; "a productive workforce is a workforce that's empowered" (Skrivan 2008). I think we can safely assume that the perceived need for empowerment has little to do with benevolence towards the workforce, but rather the explicit goal of productivity. However, the trust which accompanies empowerment is sometimes difficult to afford. Skrivan gives the concrete example of building an airplane. In this situation the tolerance for error is so little that control mechanisms must take precedence over productivity, so there is a trade-off between the two. What amounts to (over) formalized reporting is partly dependent on the level in the organization you focus on. At the level of the individual, a simple weekly status email may be perceived to be overly formal and adversely affect performance. At higher levels in the organization, high granularity metrics may be seen as under controlling in some cases. This is possibly an important modification of my prior hypothesis. I have laid out representational forms in a continuum and suggested compatibility with certain organizational realities. What I am hearing from Skrivan is that the position of a representational form on the structure/agency continuum does not reflect properties of the representational form alone, but also which context in the organization it is utilized. The more locally a representational form is used, the more it will take on structural properties. Conversely, what may seem a structurally-oriented representational form if used locally, may seem decidedly agency-oriented if used centrally/globally.

So control does not come for free. In some organizations, the control mechanisms may lead to inertia, attrition and possibly, as a consequence, even poorer product quality, Skrivan says. My interpretation of this is that representational forms clearly alter the behavior of people, but also that representational forms more fundamentally influence the fabric of the organization. Skrivan associates strict, high-granularity with a manufacturing organization, so, in other words, applying high granularity metrics makes the organization factory-like; whether it 'is' or not (in a physical way) becomes less important.

What may be equally important, though, Skrivan says, is that higher granularity may not be a fair representation of the reality. In reality, flexibility is the name of the game and is a tool which is used to react fluently to unforeseen events. High granularity metrics somehow do not convey this flexibility, Skrivan claims. They seem to suggest a certain static quality or at least cannot reflect reality with the same proactiveness as the high-density, hands-on approach. In fact, since metrics may be seen to slow down reaction time, they should perhaps mainly be used retrospectively, as suggested in the following: "The quantitative data has a place in some analysis, but mostly post-mortem. It doesn't have to be at the end of the project, I think that it can be useful to see whether the assumptions we have made are correct, for example about how fast we think we are fixing bugs, but even that is just an input to the people running their teams" (Skrivan 2008). This assertion is linked with predictability, a theme which came up quite a lot, but not quite as clearly as Skrivan proposes here: "To say our requirements are fixed is just not right. I think that we need to be more agile in the way we run our projects than other industries. [...] While we are seen as an engineering discipline I think we are different than if we were building a bridge" (Skrivan 2008). So building a bridge is less of a learning process than building software. The learning aspect

of software development should be reflected in the agility of the management control approach, Skrivan insists.

The lack of formalized communication on performance such as metrics could impact the organization in two ways, Skrivan says. It could cause trust to become more prominent in interpersonal relations, or, the opposite: cause anxiety and loss of empowerment. The comfort-factor associated with formalized communication leaves people empowered to do their jobs without undue interference from management feeling the need to be in control. My extrapolation of this is that structurally-oriented representational forms may serve as a way of living out perceived legitimate courses of action. Foucault's concept of dressage (e.g. McKinlay and Starkey 1998) springs to mind, and although this is not the place for referencing external sources, I will make one exception. Very briefly, dressage refers to the movements, i.e. behavior, of the organization, which have been decoupled from their utilitarian value. Instead, behavior is valued for its *controlled* manner. The control becomes primary over any further objective. My interpretation of what Skrivan asserts is that highly-structured representational forms support this dressage, with one modification: the control is not real. Parts of the organization conduct this dressage and is quietly accepted, while a parallel, less formal control system is covert but at least as forceful (see also Berente, Gal, and Yoo 2006). A skeptic's interpretation of the formalized dimension would be to assign it little value and suggest that it exists merely so that centralized decision makers can legitimately keep an (appropriate) arm's length relationship to the value creators and let them go about their business. To be clear, Skrivan does not take such a critical stance, and says that the NAV organization for the most part has an appropriately tempered emphasis, for example on metrics. However, metrics are associated with perceived objectivity and with it fairness, which is seen to be an ideal. Especially when rating *people* this becomes problematic,

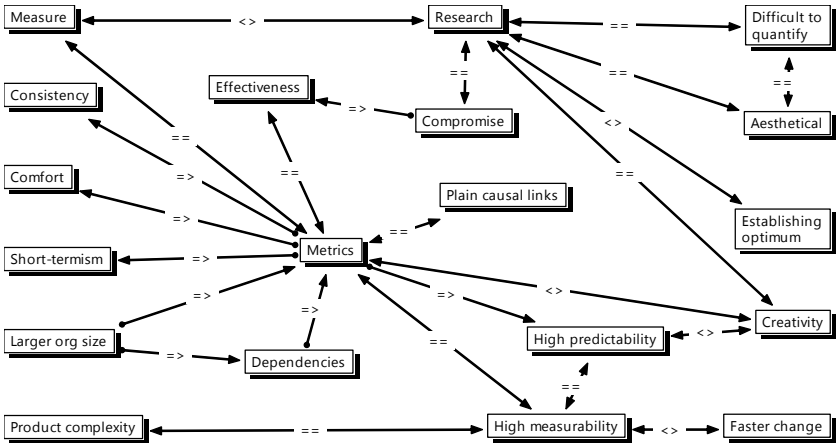
says Skrivan. The ideal of fairness drives a need for numbers irrespective of actual fairness, which Skrivan says is elusive.

In conclusion, the trade-off between the local relevance of control systems and the centralized requirement of consistency and efficiency becomes the key balance to strike. A patchwork of different approaches to control will not work if that means that the consumer, i.e. a manager, must sieve through piles of data which is difficult to compare. Even if the reality is that the different contexts *are* difficult to compare, to some extent they must be *made* comparable. Most objects or social phenomena share some dimension of characteristics. When *consistency* becomes the primary concern of organizations, these shared characteristics move to the foreground of the analysis. Both a flower and a space station and the concept of hate could be said to share a dimension of color. Even if this might not be the most relevant way to compare the three, if they share little else this characteristic may become primary. This is obviously an unusual example, but the basic mechanism may be similar in organizational reality.

4.3.13 Jens Møller-Pedersen, Development Manager, NAV S&T

> "If your objective and your metric are consistent then you have a really good control system. In those cases where your measures are not consistent with, and only derived from, your objective, it is much more difficult, because in that situation it is not certain that optimizing your measures actually gets you closer to your objective." (Møller-Pedersen 2009)

Network view



Story

Møller-Pedersen seems to draw on his experience of abstraction of problems and questions from development work. This resulted in a rather theoretical discussion. A central part of high performance, in Møller-Pedersen's view, is the ability to work towards compromises and to favor the results of the group over the individual. This would hardly have been pointed out had it been absolutely normal practice to do so. In this respect, Microsoft is probably like most organizations, but I feel that this is more critical in an integrated product such as an ERP system than if the context had been the manufacturing of running shoes. "Sometimes the right design is what we can agree on. That's not to say that it is a political kindergarten [i.e. unfocused talk] but you can't measure that one [design] has quality level 8 and another has quality level 7. In other cases one design is clearly superior to another" (Møller-Pedersen 2009). When manufacturing running shoes, what constitutes good or bad quality is probably clearer, at least in the production. The implication of this is that in innovative, development-oriented organizational realities, finding an optimum is not the relevant goal, but coming to agreement is key. The

continuous process of reaching agreement embodies prioritizations which are made in real-time, on-the-fly. Instead of one optimum, the organization settles for something resembling an equilibrium, which Møller-Pedersen notes is often thought of in terms of time vs. quality vs. resources. This equilibrium reflects the organizational actors coming to terms with their various perspectives and (ideally) settling in agreement. The suggestion of a *unified* agreement may be a bit caricatured, but it remains quite a different approach than pre-defining courses of action and pursuing the plan rigorously. The reason for this different approach, Møller-Pedersen suggests, has to do with the nature of the output. Comparing the work at MDCC with that of a salesperson, Møller-Pedersen discusses the differences:

> "The result of a salesperson's work is quantitative by nature. You can simply put a figure to it. I can't put a figure to software quality. […] The end product is more difficult to measure for a software developer. […] This is not unique to software development. [For instance] a cutlery designer… is it good design? Ask four different people and some will consider it good and some will consider it bad." (Møller-Pedersen 2009)

Møller-Pedersen's example here suggests to me that innovative work, like industrial design and art in general, is valued for its *aesthetical* impact. We may like one software design over another in the same way we favor Woody Allen films over Lars von Trier films or prefer the toilet paper to be dispensed over the roll to under the roll. Not quite, says Møller-Pedersen. There are things we agree on, for example that faster is better when it comes to the execution of software, so *anything* does not go. On the other hand, we may even be willing to sacrifice the factors we agree are important for greater aesthetical value. Beauty is a characteristic of software code. Hume famously wrote that "beauty of things exists in the mind which contemplates them" (Hume 1742). The beauty of software lies within the subject which contemplates it. Møller-Pedersen is asserting that design is completely subjective. However, in practice, some consensus does exist, which defines quality in a

certain trajectory. Hume writes in The Skeptic: "Though colours were allowed to lie only in the eye, would dyers or painters ever be less regarded or esteemed?" (quoted from Danto 2003, 27). Even when we do acknowledge subjectivity, this does not mean that beauty loses its value. But the consensus stems from within ourselves, not from some qualities of the design. The same point could be made using Giddens' concept of structuration: structure reflects the similarities in behavior (or aesthetic preference) across individuals but coexists with agency which holds the tension of different people's opinions.

Even though both the salesperson and the NAV organization must sell their product and this is ultimately the measure of performance, the software development process is not easy to link causally with sales. A travelling salesperson knows his performance the second either the door slams shut or he has a signed contract. And while a salesperson may have many different approaches, i.e. processes, to success and failure, the feedback is so timely that focus is on the result rather than the process. As Møller-Pedersen says, their software meets requirements which perhaps do not even exist yet. The disconnect between the value-creation process and ultimate performance criterion, to sell software, shifts emphasis to the process. This seems to be one reason for the aesthetical dimension to be relatively pronounced. Let us imagine a highly innovative process which was simultaneously very fast and could meet the market quickly. For example, in some places, starving artists on the street try to make a little money by sketching a caricature as you walk by, spending no more than 30 seconds before offering it for sale. In their mind, do you think such an artist would consider her performance in terms of the aesthetical value of her work or whether she successfully made a sale? A starving artist is concerned about eating, naturally, but I wonder if proximity with the ultimate performance criterion does not in general shift focus from the process towards the product and vice versa: In the NAV development

work where there is low proximity with the ultimate goal, focus flows towards the process and because of the nature of the process, as Møller-Pedersen says, is not quantitative, beauty becomes more important.

The quantitative aspects of the management are mostly used to achieve predictability. The level of metrics use, Møller-Pedersen very clearly says, is affected by the question: "How much do you value predictability? What is predictability worth to you?" (Møller-Pedersen 2009). With larger organizations, you are bound to have more dependencies, where things need to fit together to some extent. These dependencies drive the need for predictability and metrics are the tool to deliver the predictability, Møller-Pedersen says. The organization incurs costs in ensuring predictability, but this can also impair creativity: "Just because you get a wild idea does not mean that you can throw it into the product tomorrow. Other parties need to know that it is coming, and so on and so forth, so it can dampen creativity. So clearly, you can't react as fast [as without the need for predictability]" (Møller-Pedersen 2009). Møller-Pedersen stresses that this is *not* necessarily a bad thing. There should be a consideration of the trade-offs instead of a focus on *either* predictability or creativity. However, the trade-offs in control systems, e.g. between predictability and creativity are themselves very difficult to put into formulae and must rely on substantial subjectivity and constant adjustment, much like the innovative work itself. I interpret this as a possible hint that there ought to be some interdependence between control systems using representational forms and the organizational reality they are used within. The conditions of the changing organizational reality means that constant adjustments are necessary, but Møller-Pedersen also says that Microsoft's vast experience does point the way to what is effective and what is less so.

Contrasting different types of products, Møller-Pedersen makes the distinction between complexity of product, for example a ball-point pen vs. a passenger jet, and the distinction between different speeds of change in the

environment which the organization operates in. Software development is much more complex than the manufacturing of a ball-point pen, hence software development is more difficult to measure. The dimensions of a ball-point pen are few and its functionality can quickly be described. This makes that product more measurable. But manufacturing a passenger jet is also highly complex. In relation to a highly complex manufacturing process, the speed of change of the environment is what sets apart software development. With the relatively slow development of requirements for a passenger jet, "the length of the runway does not change overnight" (Jens Møller-Pedersen), you can more easily break down the process and that in turn facilitates measuring. In summary, Møller-Pedersen identified three factors impacting measurability: complexity of the product, the causal visibility of the ultimate objective (e.g. revenue), and speed of change of the environment.

These factors impact the balance and trade-offs:

> "You can make a software product for a market which won't exist in three years. That's one of the things which make it difficult. […] Some people think it is a creative process, where you just sit and play around. That is one dimension, but the other is a craft, structure, and so on, and you must find a balance between the two. If it ends up being only craft, then you will have felled lots of trees, but perhaps in the wrong forest."(Møller-Pedersen 2009)

So the balance is key.

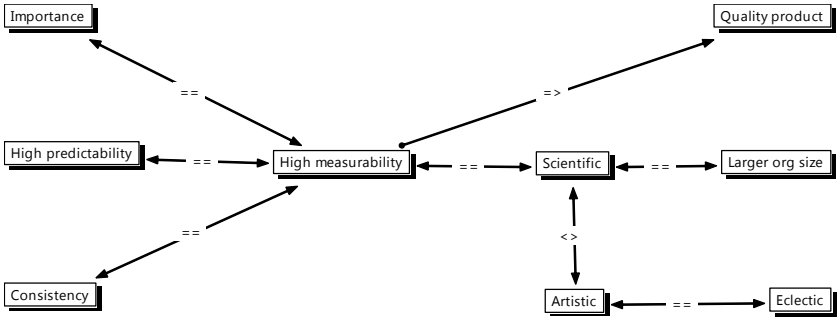
In favor of the structured craft dimension, in Møller-Pedersen's terms are also the anxiety-reducing and stress-reducing capabilities of measuring. Even if metrics are not completely consistent with true performance, they promote a sense of comfort. Overall, it may be better to fell some of the wrong trees if the people are at least relatively more comfortable while doing it. In favor of the creative dimension is the short-termism which seems to accompany metrics. The creative and long-term aspects of work are comparatively difficult to measure, so focus naturally flows towards the measurable, short-term goals. Møller-Pedersen gives the example of personal professional

development by reading books. He cannot see immediate results and certainly cannot measure the effects of reading books. But that emphasis must be there also. He clearly formulates the trade-off as being between "productivity and potential productivity".

4.3.14 Tim Tolbert, Senior Test Lead, NAV App

"Testing is almost seen as a black art." (Tolbert 2009)

Network view



Story

> "There is a science to testing, just as there is a science to any other aspect of software development. The science of testing would be applying well-documented, well-researched principles. [...] And then if you talk about the more artistic or eclectic version of testing which not all testers have, it's basically the ability to look at something and deconstruct it mentally, to see the flaws without necessarily doing the full scientific breakdown. [...] One of the things we look at when we hire a new SDET is do they have that test aptitude, kind off inherently or natively. Were they born with it, do they have that ability, that art, that artistic ability to understand things and break them?" (Tolbert 2009)

As the initial quote shows, a good software tester uses more than a cold methodological approach (although that is also important to be able to do). Tolbert uses the term "eclectic" to describe the other, "non-scientific" mode of work, which makes a master tester stand out. The philosophical tradition of eclecticism is attributed to Cousin (1826), I believe. Although I am no Cousin scholar, the essence of his approach, at least superficially, is that drawing

on multiple fields of science with multiple corresponding assumptions, i.e. paradigms, is natural. I am not sure that Tolbert was referring to Cousin, but the concept of multiplicity of approaches seems evident. A good tester has an intuitive, artistic ability to use various non-methodogical approaches to find problems in software, Tolbert asserts. Why is this interesting? From a PM perspective it gives us a picture of what our PM should be able to represent. How do we represent the organizational reality of master testers applying eclectic approaches? Since part of the work is artistic, it follows no predefined patterns and the PM system therefore presumably becomes difficult to pre-design. Tolbert says that although the indicators they use to measure will not distinguish a good tester from a bad one per se, good testers consistently score well on the metrics. "The intuitive part is difficult to measure directly, it's hard to have a metric for how great a tester is, but I think if you take all of these metrics and many others I didn't mention, you can see that the testers who are also intuitively good testers tend to excel in these metrics over their peers who aren't intuitively good testers" (Tolbert 2009). Scoring well on the metrics seems to be a necessary but not sufficient requirement for being a good tester. However, the metrics seem to be good indicators. From an informational perspective, the indicators Tolbert utilizes seem to be effective in that they distinguish the great from the less great, but absent from our discussion is the motivational impact of metrics. In his eclectic view, both a scientifically rigorous approach as well as an improvement of the intuitive dimension would improve test quality. However, the former is most easily altered, and while experience can sharpen the latter, it is essentially either inherently present or not present in an individual.

An interesting facet of this discussion is whether predictability is an assumption of reality *before* we apply a measuring system or if predictability is *created* by the act of measuring. It is no secret that software projects are notorious for going over deadline, so full predictability is not there, so much is

clear, also from numerous interviewees. In Tolbert's experience, predictability or lack of such is *not* influenced by the act of measuring, but rather acts as a gage for determining whether the project is moving towards some predefined goals. The difference may be unclear but important, I think. This is a question of how organizational reality and representational systems interact. Structuration theory would suggest that there is a reciprocal relationship between reality and the representational language used. With regard to the characteristic of predictability of organizational reality, Tolbert is saying that this two-way interaction does not exist: the world is no more predictable, in its essence, if we measure it, but we simply gain access to some knowledge about the world which may make it seem more predictable. The train of thought is obscured slightly by the valid objection that predictability is a determination made by an observer of organizational reality rather than organizational reality 'itself'. A project would be neither predictable nor unpredictable if no one was around to make that judgment, you might say. This is true, but on the other hand, we (I) would not deny that the world exists when we close our eyes and do not see it. So since I take the position that the world does exist independently of our experience of it, I conclude from Tolbert that representational forms can have a one-way relationship with organizational reality which, if taken to heart, at face value is in opposition to my propositions made earlier.

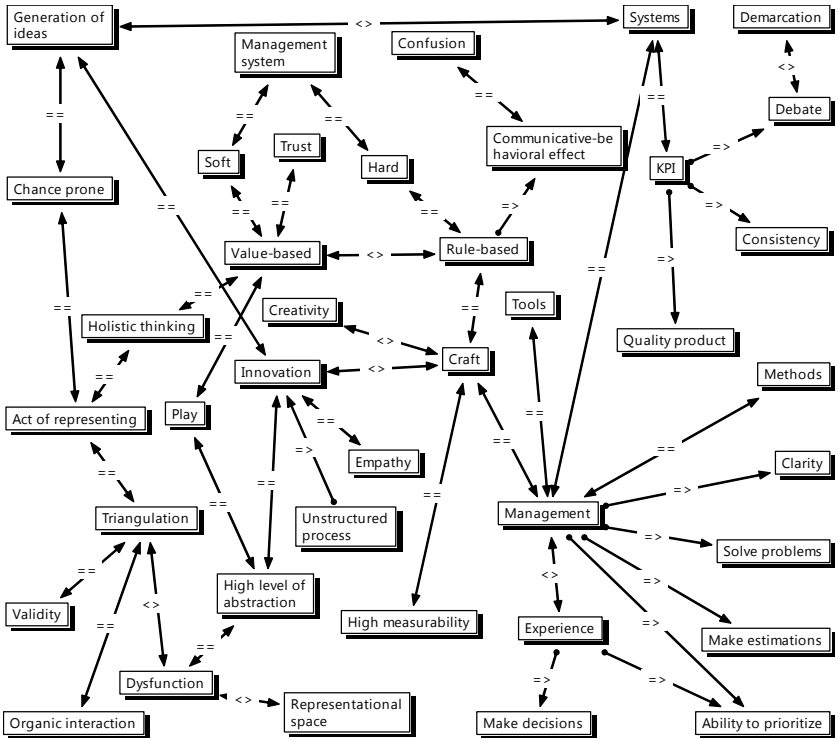
I have chosen to take with me two notions from my talk with Tolbert. One is the eclecticism which apparently characterizes at least this specific discipline within software development. The other is the relationship between predictability and representations. Eclecticism accepts the need for multiple approaches in solving problems, a sort of melting pot of non-methodology which seems to miraculously result in ingenious solutions. It is miraculous in the sense that it is difficult to trace back the steps which the tester took to arrive at his success in breaking the software (which of course is

the goal of a tester). I would not be surprised if an eclectic approach was considered relevant in the wider organization, across disciplines within Microsoft R&D, but wonder where the relevance would stop. There is no question that the eclectic, artistic dimension is difficult to measure, as Tolbert also says. Nevertheless, everyone knows who the best people are. Metrics play a part in this ranking but so does informal communication. Word of mouth seems to reinforce and assimilate many types of evidence of performance which results in a form of off-the-record respect level. However, Tolbert points out that the formal measurements correlate well with the informal perception of high performers although insisting that metrics alone cannot grasp the complexity of the art of testing work.

4.3.15 Kim Ibfelt, Director of Program Management, NAV

> "If you think the world, for the most part, is anything but random, then you lack experience. That is the reality." (Ibfelt 2009)

Network view



Story

The analysis of this discussion will perhaps reflect the fact that it was not the first conversation I had had with Ibfelt. As one of the primary gate-keepers to the site, I had previously presented my research problem and intended approach. This meant we got off to a flying start and quickly arrived at the crux of the problems.

Ibfelt is Director of one of the three main disciplines of the NAV development: Program Management. The PRM role at Microsoft is important because it connects different contexts, mainly the 'real' world with the development process. Generally the PRM is the reigning expert in the field, be it finance, supply chain, HR or whatever the case may be, but some PRMs are

more technical. In these cases, there is more debate about the right course of action because more people feel competent to hold an opinion. The PRM role is an integrative role in nature. I notice that Ibfelt says that in areas which are not clearly demarcated into fields of expertise, more discussion takes place. In other words, demarcations apparently dampen the level of discussion. Ibfelt contrasted different, but complementary, dimensions of both the PRM role and a more traditional project management role. One dimension is made up of tools, which give the ability to *manage*, which here means the controlling aspects of value creation, i.e. creating the *clarity* which allows the team, for example, to prioritize and make estimations. This is a craft which is relatively easy to learn. Another dimension is the experience gained from having previously seen many similar situations, which gives the individual the ability to unravel complex *situations* and make decisions. A certain amount of creativity, innovative ability and empathy with the customer is required to become an effective link between the market and the development process, which is part of the PRM role. This stands in contrast to the more routinized craft aspect of the work, and the challenge is that you need both these dimensions to be a high performing individual or organization. The combination is key, Ibfelt asserts, but given a choice between the two, the innovative aspect is more important. This dimension of the PRM role is also the least structured. Ibfelt says that the most important part of this work is not surrounded by process, but left to its own devices to some extent in the sense that it is not reported on in as structured a manner as some other processes. "The whole thing starts with some innovation which is the product of a completely unstructured process, which is very difficult to control. […] What is by far the most critical part of the process is the generation of new ideas. And the generation of ideas is actually not very systematic" (Ibfelt 2009). Furthermore, the way that the performance of this unsystematic process is represented is similarly unsystematic: "Is the way I measure the

PM's [program manager's] ability to be creative prone to chance? Yes, it probably is, but I would still claim that no matter how random it is, if you line them up in front of me I can tell you very precisely who is creative and who is not. […] But the sources of that knowledge will be very different" (Ibfelt 2009). Ibfelt seems to be saying several things here. First of all, the nature of the phenomenon which we seek to represent, i.e. PRM work, is partly unsystematic. That in part causes the format of the representations to be unsystematic, the work cannot be collected using structurally-oriented representations, but is rather represented by conversations and other largely informal interactions. I interpret this as a *fit* between organizational reality and the representational forms used. Contrary to what a dogmatic view might reflect, a chance-prone world and a chance-prone way of representing that world does *not* impact the validity of the knowledge generated, Ibfelt insists. Although at some remove from the organizational reality of Microsoft R&D, I am reminded of *seemingly* random behavior in the animal kingdom. At an atomic level much insect behavior seems random, but patterns emerge collectively which reflect more than the sum of the randomness in each atomic behavior. Ants for instance, I believe, move in somewhat random fashion initially, but reinforce certain patterns using scent trails. My interpretation of Ibfelt's suggestions is that this may be a good analogy for representational practices in organizational reality: even if *each* interaction resulting in some representation of performance does not follow a strict pattern, many such interactions will gradually form a picture which *is* valid. This is like an ongoing sampling and simultaneous triangulation, because sources and methods will be varying. Some 'scent trails' may need further exploration to compound the reliability of an established belief. The macro perspective will result in validity even in if the microscopic level does not have that quality. In the end you will have sound knowledge of the performance because an insightful pattern emerges out of the somewhat fragmented individual representations.

Effective leaders have an organic interaction with the organization, says Ibfelt, but ultimately representations used are partly an individual preference. The organic interaction Ibfelt himself practices means that KPIs are of little value in the representation of people. Not because their representational value is flawed, but he already knows what they would show. However, even if they represent an already known picture of a person or situation, they can form a good basis for discussion, by somehow having something impersonal as point of departure. In relation to the two dimensions from above, the craft dimension lends itself most readily to measurement, says Ibfelt, because it is relatively tangible.

Naturally, Ibfelt is acutely aware of the behavioral pitfalls of measuring performance and asserts that one way of mitigating the dysfunctional behavior associated with measuring something which does not reflect true performance is: "By making sure that I have enough elbow room to make my [own] judgment and to give feedback to people in a more holistic way" (Ibfelt 2009). As a manager, you have to avoid becoming trapped by quantifications which do not reflect true performance. This is not done by not having them, but instead making sure that they do not become overpowering and by making sure that it remains legitimate to raise concerns and give praise on the basis of unstructured representational forms. I will term this notion 'representational space'. Ibfelt is asserting that a certain representational space is needed to be able to ensure validity. Again, the holistic work is understood in holistic terms and feedback also follows a holistic format. Ensuring large representational space is associated with a value-based approach to management as an alternative to a more rule-based approach. "The more rule-based you make your organization, the more you make your leaders into managers. The more value-based you make your organization, the more you make your managers into leaders" (Ibfelt 2009). For Microsoft, a certain consistency and support of inexperienced managers is important, and this is the logic to hav-

ing a quite well-developed framework describing competencies and approaches in management, Ibfelt explains. The practice of supporting inexperienced managers by propping them with a certain level of support or structure has a tendency to support a more administrative aspect of managing. Rules and structure have a communicative property, what I would term the behavioral aspect. To effectively exploit the communicative property of metrics, for example, they must be used sparingly to avoid confusion. So I see at least two balances. One balance is between different control mechanisms, rule-based and value-based in Ibfelt's terminology, and the other balance is between having too many and too few rules. Both extremes would lead to undesirable behavior. Regarding control mechanisms, the question is not only deciding on a *distribution* of your mechanisms on the different types, but one also needs to make sure there is harmony between the different controls and related representational forms. In other words, your metrics have to reinforce your verbal signals and vice versa, says Ibfelt.

What constitutes a balance is related to what the organization produces, Ibfelt insists.

> "[KI] I'm certain that an advertising agency needs a completely different control mechanism than an organization producing long-range ballistic missiles.
>
> [BK] How so?
>
> [KI] Because I think success is very well-defined when you produce ballistic missiles. Either they work or they don't. Either they're safe or they're not safe. I don't think success is very objective if you are making an advertising campaign. When is a graphical layout good? When is it as good as it can be, when is it good enough? [When making an advertising campaign] there are some other important things in the creation process which you must give sufficient space and it is not as important if you specifically end up *here* or *there*. On the other hand, if you have a very well-defined task, then it is critical that you end up exactly *here* because you cannot live with a deviation from you target. There are thousands of ways you could have made that advertising campaign and they might all have been fine, so you are better off letting people play their way to the result they think is the right one, instead of trying to control their way there using detailed quality control." (Ibfelt 2009)

With some products, the objective is not a specific object. The objectives are different. In the ad agency, you want an *effective* ad, but what it looks like is not determined and will be unfolded in the process. You do have a specific goal, but it is related to characteristics of the product rather than being a well-defined instance of those characteristics. In the missile scenario you *both* have well-defined characteristics and decided what instantiation of those characteristics you prefer. The difference, in my interpretation, is the level of abstraction in the objectives. But we may be comparing apples with oranges in the sense that we are comparing the *production* (i.e. not the R&D) process of a missile production with the R&D (i.e. not production) process of the ad agency. Is this perhaps why advertising seems more 'subjective'?

Ballistic missile organization:

```
R&D         Production
            ↓
---------   ====================
```

Advertising organization:

```
R&D                          Production
↓
--------------------------   =======
```

The arrows indicate what part of the value chain we seem to compare organizations from. I propose that Ibfelt is really contrasting two different stages in the value-chain when he speaks of two different organizational types. The reason why this is a natural tendency is probably because the R&D part takes up a much larger part of an advertising organization's culture, for lack of a more precise concept. Naturally, there are more significant differences. As several people have pointed out, the level of repetition and predictability is low in development-oriented organizations, but this may also relate mainly to

contrasting different steps in the value chain. In both types of organizations the move from R&D to production will be marked by a lower level of abstraction in terms of how well defined the final objective is. The two different phases or dimensions of work should have differentiated control systems, where freedom and play are more effective in the earlier phase, as Ibfelt asserts here:

> "For the most part you can compare developing software on the scale we do with what happens in manufacturing, not in R&D, but manufacturing. [… However,] I don't think you can measure 100% when a developer is good, when he is bad. What is good software design? Some creativity goes into being a good software developer, being good at using the functions which are part of the language or framework in the most effective and relevant way. […] Some of it is absolute, some of it is less absolute and there is some tension between the two. Your management system should be able to support both a very hard and very soft approach and be able to apply the right measure of each appropriate to the task at hand." (Ibfelt 2009)

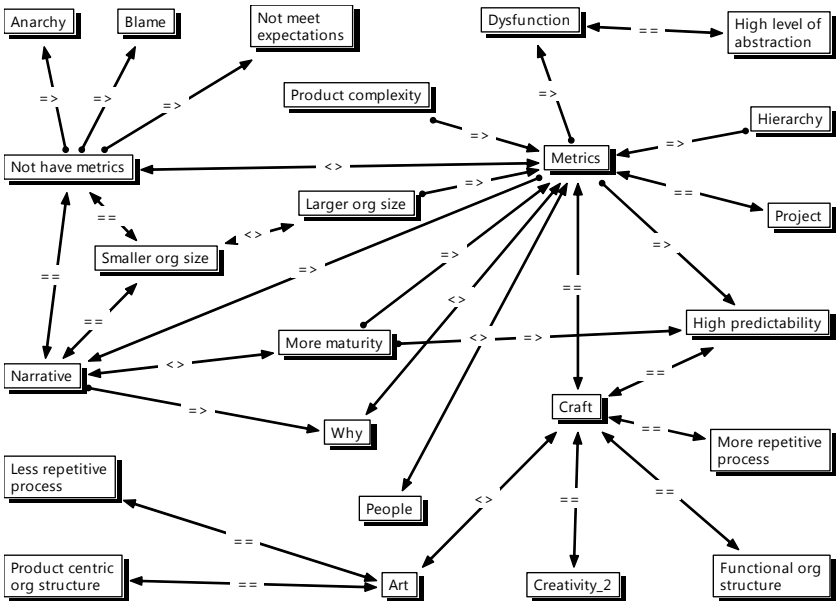
The criteria for knowing if your management system is actually at an (imaginary) optimum is itself a question of *feeling*, says Ibfelt.

4.3.16 Michael Nielsen, Director of Development, NAV

On the nature of software development:

> "It's a craft. Some people say it's an art form, but it isn't." (Nielsen 2009)

Network view



Story

Nielsen is a believer in the virtues of engineering excellence. In his thinking and our conversation, he gives an air of confidence in the rightfulness of an increasingly structured approach to organization and this includes approaches to reporting. He is skeptical of the artistic dimension of software development, as he explains here:

> "You can reproduce craftsmanship. You cannot reproduce art. In craftsmanship you know what quality you want and you are able to tell how long it will take to make it. […] Sometimes there is too much art in the code. When young talented developers discover a new fancy feature in the programming language which they feel they must use, we sometimes have to point out that the next person looking at the code will not understand it. That makes it bad code. As art it is great, but it's bad craftsmanship." (Nielsen 2009)

The artistic dimension is considered an irrelevant goal in itself by Nielsen. The creativity which could go into the artistic expression should instead

go into improving processes. Relative to other people, Nielsen seems to enlarge the concept of what is thought to be beautiful from the elegance and beauty in a piece of code to the beauty in processes which effectively, some would say ruthlessly, meet objectives. Interestingly, and contrary to what I have detected in other interviewees, Nielsen makes the distinction between art and creativity. Creativity is the innovative component which can result in more effective processes and therefore it is valuable. Art alone has no value. I interpret a focus on meeting known objectives to be a characteristic of a structurally-oriented organizational reality.

The trade-off between art and craft, or between less and more process, is moderated by several interrelated factors, Nielsen explains, including:

- Product complexity and integration
- Project phase
- Maturity of the organization and technology used
- Level in the organizational hierarchy
- Organization size
- Organization structure

Product complexity takes on a few flavors. The simplest is the type which comes from interdependencies in the product. If you change something in one place it will have reverberating effects in other areas. This complexity must be managed rigorously if it is not to overpower the project and prolong it. To tame this effect, you need a stringent approach to management and strict controls leaning on metrics rather than more agency-oriented representations. The other dimension of complexity comes with the firmness of requirements. When requirements are set in stone, you have less complexity and can manage more using metrics, because your concept of your goal is firm.

Both of these dimensions relate to the project phase in the NAV organization. In the early phases of a project, Nielsen explains, it is desirable to be more open ended and less detail oriented than in the later phases, because the goals have not yet been defined. So within each project there is movement along a structure/agency dimension towards becoming more and more defined. Nielsen describes this as a "funnel process". One of the ways this changing mode is evident is in the basic form of communicating which takes place. In early phases you are in "tell-mode", people simply say what they intend to do. In later phases you move to "ask-mode". In the early phases, decisions can be made decentrally to a large extent because the consequences are clear. As the project moves forward, the interdependencies become more and more strong and important.

> "We have a bug triage bar which is illustrated in these long tables. It shows that, as we get closer to release, we will not be able to change strings, local functionality, or this, that and the other, because the consequences would be more bugs or that we keep pushing back the release deadline. So there are incredibly many metrics towards the end, several hundreds. Gradually, fewer and fewer things are possible because they will have [other unwanted] consequences, so it becomes more and more controlled." (Nielsen 2009)

Organizational reality moves to becoming more structurally oriented as the project moves towards completion. "People can't be so creative near the end of the process, [because] creativity close to the end has a price that is so high that hardly anybody is willing to pay it" (Nielsen 2009). It is not that creativity is not possible in the later phases; it just comes at a higher price. Irrespective of the project phase, the whole process will move towards structure as the technologies used and product mature. Nielsen explains that using known technology will allow you to be more metrics driven, while if you move in uncharted territory you will need more interactive forms of communication.

The level of seniority also has consequences for the type of reporting you will consume. Senior managers will need the higher level abstraction inherent in metrics, but will use this as a basis for asking the critical question: why? Here Nielsen echoes a view often heard that metrics will not provide you with the understanding or relevance of a problem, but point you to something which needs further explanation. Naturally this is a delicate matter, for the senior managers risk only asking questions relative to the metrics, so they must simultaneously trust their lower level staff to inform them of *anything* relevant, either reflected in metrics or otherwise. A deeper organization is more likely in larger organizations, so organization size is a factor in indirectly making higher abstraction representational forms more prominent.

At a more macro level in Microsoft there seems to be a shift towards more structure evident in a shift from product units to a functional organization:

> "Microsoft is moving from an organization form based on product units, which are small, autonomous units which are given a specific task for a sub-system and typically consist of 50 to 100 people. […] Now, we are moving towards a functional organization where you have a GM on top and a Test Director, a Development Director and a PM Director. […] Your processes have to be absolutely clear, because if there is any discussion you ultimately need to raise it to GM level to get a ruling. So you need processes which are crystal clear for people to lean on. [...] The functional organization structure is very suited to deliver the next release in a long row. […] It is like building a highway overpass. But if you need something more radical, then you need smaller units." (Nielsen 2009)

The functions do not relate to areas of the application as they did in Navision before acquisition by MS but to the disciplines within MS. Here we see that the organization structure is changing to both reflect and constitute a shifting organizational reality. If you have a relatively mature product which is undergoing *evolutionary* development, your organization should reflect this. If you are producing 'just' the next version you can be more highly structurally oriented, as Nielsen exemplifies by comparing his software development

process to building a standard highway overpass (in jest, obviously). When just building the next bridge like all the previous ones, you have an exact picture of what the end result should look like and possible pitfalls along the way. This makes the agility and flexibility of a smaller organization and richer reporting forms inefficient. So Nielsen is suggesting that organization form reflects a maturity of the product, technology and presumably also the market. These were the main factors of organizational reality impacting the appropriate representational forms.

Nielsen also notes that metrics must be considered in context with each other to avoid dysfunctional behavior. If you focus too much on few metrics, either behaviorally or in the resulting decision making, you will have a skewed picture. My interpretation and abstraction of this reflection support my initial propositions: the more richness you provide the less prone to dysfunction you are, i.e. higher abstraction puts you at risk of more dysfunction. Richness can be provided by having more metrics or by using inherently richer representational forms such as text. On the other hand, more metrics at some point create confusion. When that happens, text is an alternative, because it has the necessary richness, but the flexibility inherent in text will cushion the tendency to impact behavior drastically. The concern for efficiency will pull the other way, dampening the possibility for using rich representational forms; the executive does not have time to carry out management-by-walking-around as the only basis for gathering knowledge on the state of affairs of her organization.

I have presented the distinction between the structured approach of a craft and the less structurally oriented artistic aspect as an either-or question, but interestingly, Nielsen notes that in one respect at least, the two perspectives complement each other. "If you think about your personal life… I think most people find satisfaction in having a life where there is some amount of order, so everything isn't just in turmoil, because that will allow you do crea-

tive things. If you are constantly behind with everything, you don't have that extra energy you need" (Nielsen 2009). This does not sanction the creative as such, but confirms that a certain structure and efficiency is needed to have the option to be future oriented, which Nielsen obviously knows the importance of, even if that responsibility lies within the PRM function rather than the development organization. Nielsen also notes that their annual polling of employees on work satisfaction etc. shows that employee satisfaction is correlated to having clear boundaries and orientation towards completing work according to plan. Whether people who are attracted to Microsoft are disposed to having clear structures for their work or whether people learn to appreciate this at Microsoft or whether it is a universal trait I am uncertain, but it definitely argues for a continuation of clear and tangible accomplishments.

4.4 Microsoft Research Redmond

We now move across the Atlantic to Redmond in Washington State to explore the PM practices at arguably the most innovative organizational unit: Microsoft Research.

> "Microsoft Research is dedicated to conducting both basic and applied research in computer science and software engineering. Its goals are to enhance the user experience on computing devices, reduce the cost of writing and maintaining software, and invent novel computing technologies. Microsoft Research also collaborates openly with colleges and universities worldwide to advance the field of computer science." (Microsoft 2009)

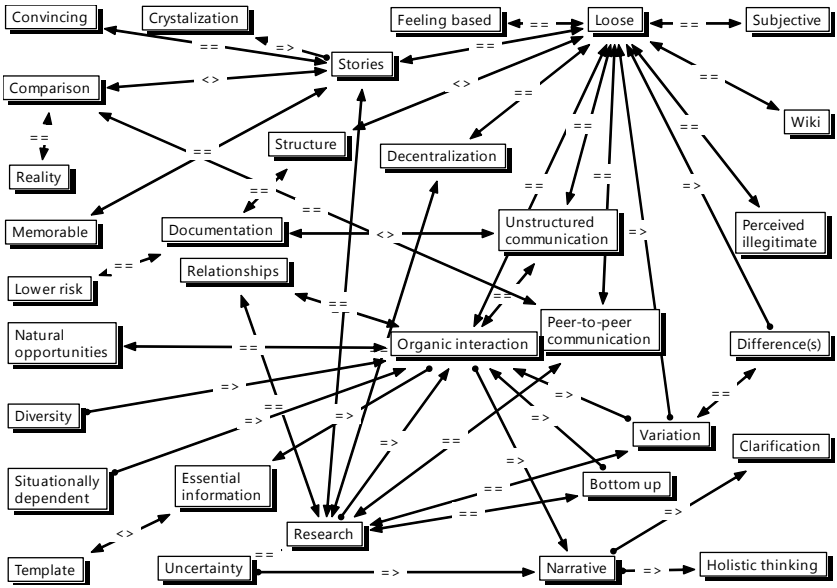
Headed globally by Senior VP Rick Rashid, Microsoft Research has six research labs as well as centers and institutes around the world. For six months, I was based in Seattle and during that period spent time at the largest MSR lab at Redmond (MSRR) headed by Director Rico Malvar. MSRR has a relatively simple organization. It is divided into a number of research areas and subdivided into groups. Group leads refer to area managers who

refer to the lab director who refers to Rashid. The titles 'principal researcher' and 'distinguished engineer' are given to extremely experienced researchers reporting directly to Malvar, but with little or no current people management responsibility. I spoke to all managers reporting to Malvar with only a few exceptions as well as to Malvar himself and to Rashid.

4.4.1 James Oker, Director of Program Management

> "The best way I can encapsulate this is it's the telling of stories. [...] People were asking 'how will I be measured?' and what I'll tell them is 'I'm looking for impact on products and impact on research and the way I'll measure that is through a mix of peer feedback that tells me how the relationships are going and the stories that you and the peers who have been involved tell about what happened that wouldn't have happened if you weren't there. And that really is the package of measurement.'" (Oker 2009)

Network view



Story

Oker (with his team) is responsible for linking the research work at MSR with the product groups in MS at large. This makes him very aware of the friction between the highly innovative organizational reality and the pull for productization of their research. Compared to prior positions, this one is distinct Oker says: "Managing this job is the most subjectively-based management role that I've ever had" (Oker 2009). My conversation with Oker explores what he means by this and how he has determined that this is the most effective approach. One of the most important aspects of the organizational reality at MSR is that it is characterized by *variation*.

> "The nature of MSR is a very bottom-up-driven research lab. [...] We hire the smartest people we can and turn them loose. And we really do do that, and as a result you'll find that different researchers have different approaches to how they structure their work, some have a plan and it's a two year thing and they're really working it, other people have a much looser way of working." (Oker 2009)

But the various ways that the researchers work is just one aspect of variation. Obviously the research itself also varies a lot, e.g. some research is very applied, other more theoretical. This calls for different ways of integrating research into products. "I'm painting a picture where there are different problem types and a lot of combinatorics just creating lots, and lots, and lots of variation" (Oker 2009). This variation as well as a decentralized, bottom-up approach and the need to be situationally dependent are the main drivers of a few core concepts in my interpretation of Oker's management style. One is the heavy emphasis on social interaction. Interaction is inherently necessary for the task of transferring knowledge between organizational units, but the variation amplifies this need, it seems. Because variation exists in so many forms, the power of human mediation is needed to a larger extent than a standardized organizational reality would have.

> "There is no one or two or three processes for getting tech-transfer done and so it's an interesting question: what would you report [in a

> standardized format]? […] Once you have a template for how you are going to explain what you're up to, one of the risks is leaving out essential information. When you are sitting and talking to someone, especially if it's interactive conversation vs. standing in front of the room and presenting, you've got a much better shot of getting that essential information out." (Oker 2009)

In a high-variety organizational reality, standardization will miss relatively more of what is important. This observation aligns very well with our notion of fit between organizational reality and representational forms. Instead of having standardized templates for reporting, Oker tells me very precisely what the medium is: "One of the key pieces of currency in this job is the stories about what people have accomplished" (Oker 2009). These stories float around in the organization, snowball between people, gathering and losing momentum, but definitely have the potential to go far in the organization, Oker insists. With an understated pride, Oker says that it has been suggested to him that the tech-transfer work is going quite well, but that statement is a result of stories, rather than 'proof'.

> I could give stories, examples, essentially an anecdote of something X accomplished or something Y accomplished that would support why people make that statement. [...] But could I compare it to a baseline and prove to you using a graph or chart or whatever that it really does represent improvement of the productivity of the PM team? No, I couldn't do that. (Oker 2009)

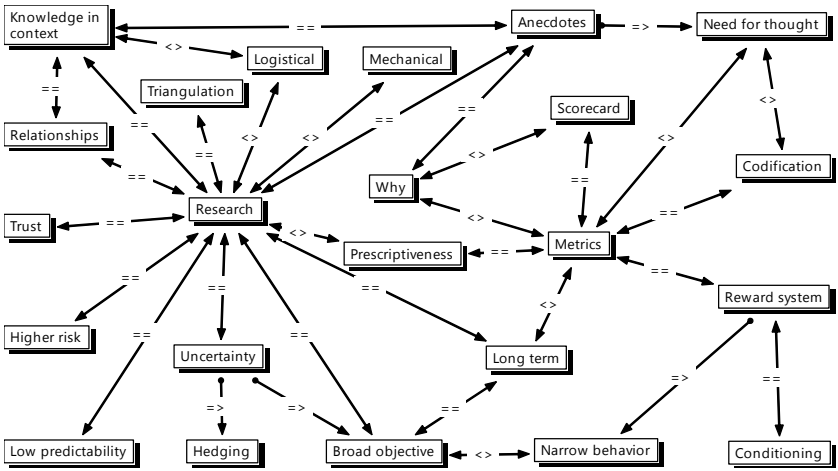
It is worth noting a certain *anxiety* which seems to accompany reliance on a subjective management style, a heavy reliance on social interaction and the use of stories as a representational language for exchanging performance. On the one hand, Oker seems confident that this is the best approach he knows of, but still questions what relationship this approach has with *reality*. Only a chart can show real improvement, it seems. One might ask why Oker does not wonder if he is *too* structured? There is a definite undercurrent of wanting to explore more structured approaches to achieve higher perceived legitimacy and surely also to give himself assurance of performance. But still,

Oker is very aware of the reasons for having chosen this "loose" approach and the potential costs of moving towards more structured representations. Interestingly, Oker does not associate a loose, interaction-heavy approach with invalidity. On the contrary, the use of interaction-heavy representational language is associated with getting 'essential information'. One of the important ways to do this is by soliciting peer feedback. This means tapping into a network of interpretations, thereby instituting a triangulation mechanism. A holistic understanding of the performance of an individual or group is constantly challenged through further interactions: "I try to find natural opportunities to see is what I think is happening really happening. So I do some core sampling with one-on-one conversation" (Oker 2009). So the continuous seeking out of confirmation or refutation of some subjective story of performance is a test of what we, in a more positivistic tradition, call validity. The stories are a *crystallization* of performance, says Oker, and have the ability to convince and be recalled which makes them effective in continuing the organizational discourse of high performance.

4.4.2 Kevin Schofield, General Manager

> "Companies are classic Skinner, classical conditioning... they really are." (Schofield 2009)

Network view



Story

Schofield tells me to think of him as the COO of MSR, overseeing the operations of all the labs around the world, including HR, Finance, Marketing, etc. and also, importantly, the transfer of knowledge from MSR to product groups. One of his most important tasks is to protect researchers from bureaucracy and allow them to do their job. Another is to act as an intermediary between two parties for the insight which he is privileged to.

Metrics are relatively scarce in MSR compared to other organizational units and anecdotal evidence is widespread. Unlike other organizational units, no scorecard exists for MSR, says Schofield. In his experience, this fact comes as a surprise to even very experienced incoming managers, but it seems he is convinced that this is the relevant practice. Some "education" is needed from time to time, Schofield says. This is especially the case when managers come from quite different organizational realities, with experience which is initially simply transplanted into the new environment. In the context of a research organization at least, Schofield feels that the abstraction associated

with quantification strips the consumer of the metrics of their tendency to *think* about what is being conveyed.

> "This is the ultimate irony of the whole metrics thing. [...] Some of the time we use metrics as a crutch so people don't have to think. [...] I don't need to create a whole set of metrics to codify this so that Rick [Rashid, Senior VP for Research] doesn't have to think about it. We hired him because he's really smart, we should let him think. [...] I don't need to completely codify it and bury it in numbers to the point where he wouldn't have to think about it, that in fact becomes less valuable. [...] It's more anecdotal." (Schofield 2009)

Schofield is being quite radical when he says metrics inhibit *thinking*, so he would definitely agree, it seems, with my interpretation of Westrum (1978, 1982) that higher levels of abstraction and routinization can cause a *blinding effect* which induces us to see only the metrics. Partly because they are busy, having abstracted representations tempts people to take short-cuts and not ask the important questions hidden behind the numbers. The assumption is that when you measure something you have established a target, explicitly or implicitly, and that the blinding will cause a consumer to mainly consider the metrics *relative* to this benchmark. He elaborates on the effects of this blinding and says that "What becomes important is the scorecard, not asking what's behind it, was it easy, was it hard, why did we miss it, what can learn from having missed it, why did we manage to overachieve in this area by that much?" (Schofield 2009). Attempting to quantify the performance of, for example, transferring knowledge from MSR to the product groups would be "ethereal", Schofield insists. But what unique characteristics of the organizational reality of MSR make it inappropriate for metrics representation and appropriate for anecdotal representation? Schofield explains that "tech transfer isn't a logistical, mechanical process. It's not that you can define the

process, turn the crank and it happens. Tech transfer is a social process, it's about relationships and communication and trust"[5] (Schofield 2009).

Schofield maintains that the reality at MSR is the opposite of the notion of a mechanical organization. This is the reason for the reliance on anecdotes and not metrics. Apart from the social aspect, another difference between MSR and product groups is highlighted: "The project management part of the product development groups is about managing out as much risk as possible. What does Microsoft Research look like? Risk. We're those crazy guys who work on future technologies that may or may not work. […] How do you manage that? Relationships and trust" (Schofield 2009). Having a background in the product groups, Schofield is aware of the differences in approach that exist across the different types of organizations within MS. Here he echoes findings from MDCC, and that surprised me, initially. My preconception was that a development organization would be highly innovative, but, within MS at least, there seems to be consensus that product groups are relatively mechanistic. Risk aversion leads to mechanistic organization, which in turn influences what type of 'product' you can create, and research does not fit the bill. So MSR is not managed by metrics. Stepping up a notch, Schofield clearly says that there is a fit between the strategic objective of the organization and the fact that metrics are not prominent. "That's in the nature of the mission we have been given, to advance the state of the art, that's how research works, and all the way up to Steve Ballmer we have buy-in that that's what this organization is supposed to be doing and driving it to a strict scorecard won't work for that" (Schofield 2009). Using metrics would drive behavior too *narrowly*, something that is not useful under low predictability, says Schofield. In a market, with fierce competition, broad research activities

[5] Note that I have grouped Schofield's opinions on tech-transfer with the broader label 'research', as they are closely related and to avoid MS specific terminology in the network view.

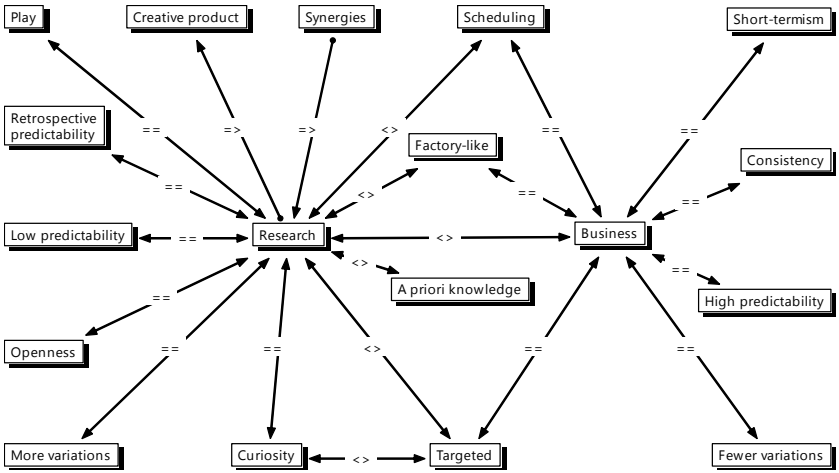
can *hedge* the investment. Ironically, being willing to take a risk in the short run can minimize risk in the long run.

While metrics on the whole are used sparingly, some *implicit* metrics do occur. For example, if a researcher were to get a best-paper award at a top-notch conference and subsequently received a poor review, there would be considerable surprise. Not having metrics is therefore *not* meant to convey the non-existence of consensus on important achievements, but instead that metrics would condition behavior too narrowly.

Soliciting *multiple* perspectives on the state of things at MSR is apparently also a normal occurrence. Again, this is a form of triangulation carried on by organizational actors in lieu of the harder validity.

4.4.3 Bill Buxton, Principal Researcher

Network view



Story

Buxton himself is a scholar of innovation, so has naturally insightful perspectives on how to manage for it. We touched on several themes relating to contrasts in management practices between innovation-based organizations and

"business". Initially, some effort was given to understanding the truly innovative organization which conducts Research. Buxton, vibrantly but poised, makes the distinction between R&D and Research:

> "R&D is a meaningless term. When I say research, I mean basic, peer-reviewed, curiosity-driven research. Not targeted, not strategic, not short-term, not trying to do things that are industry-relevant, it's just here. I'm going to work in this direction, let me go. Give me what I need and I'll tell you what I've found out when I've found it out. And that's curiosity-driven basic research. And that is the only thing worthy of the name 'Research' with a capital R. […] Nearly all of what the software industry calls R&D is just the factory. It's a software factory. And you manage the factory differently than you manage your Research." (Buxton 2009)

Innovation comes only from Research without limits or boundaries, it seems. Freedom, essentially non-management, is a key ingredient in the generation of the truly novel. "The only thing that anybody expects of me is to be unpredictable and to do something wonderful. […]The only criterion is excellence" (Buxton 2009).

One characteristic of excellence in true research is that it is impossible to predict, or it would not be research, Buxton insists, yet it is immediately recognizable when it appears. Late in our conversation, Buxton says of the organizational design at MSR: "That's all managed, none of that is accident. That is all conscious decision in terms of the trade-offs, in terms of how the management and organizational structure of MSR was set up" (Buxton 2009). This seems contradictory but is really not so, and is what I feel Buxton is trying to convey. Researchers have to be predictably unpredictable. The refinement of a human mind achieved over years of experience makes it possible to immediately identify this excellence, but we cannot predict it beyond a very near horizon; if this were possible research would cease to be research, and be 'ordinary' development. Still, there is an aspect of an experienced researcher's ability to see *potentialities*, however abstract, which resembles justified belief. The potentialities a researcher sees in streams of research are not

completely unjustified. "It's not a random walk. […] Unexpected and unpredictable is not the same thing as random. Within a certain context, the surprise results are generally predictable in retrospect" (Buxton 2009). A clear association can be drawn between the context for research described here and the sense-making perspective presented earlier. It seems that Buxton believes that *retrospective predictability* amounts to more than just our mind's tendency to avoid dissonance. It has a substance in itself and that substance explains how a chain of events form a consistent whole rather than being merely random. But there is some tension here, for Buxton also sees a clear, conscious design aspect to the organization. The absence of predictability might cause us to question the existence of design as they are both future oriented, but the rejection of randomness should make us wonder what the design of unpredictability looks like, and what the management looks like, for it is *not* entirely non-management. He asks, rhetorically:

> "First of all, how do you create an ecosystem that is conducive to the kind of science you want to do? […]The principle role of the management is to manage the ecosystem that allows the [relevant] types of cultural things to happen. […] The most important management tool is to recognize the things that bias human behavior. I want to channel behavior. […] the path of least resistance is one of the most effective biases." (Buxton 2009)

This means that however unobtrusive, non-prescriptive, perhaps even to some extent hidden it is, the design is very present in what Buxton here terms *bias in behavior*. It seems to me that the design of the organization, reward mechanisms, forms of representation, etc. are all about supporting *opportunities* to come into play. Creating the *occasions* for the desired objectives to be fulfilled is vital. The assumption is that the result of a creative process will *vary* with the tools available within organizational reality.

In high variety organizational realities, the management task becomes to make available the tools that make it easier to pursue the specific type of creativity which aligns with your objectives. In this way, you can maintain a level

of voluntarism, or at the very least the perception of voluntarism. Creativity is perhaps in part shaped by the emotional attitude towards the creative effort and the emotional attitude is conceivably shaped by the perception of ownership or level of voluntarism. It is not part of the Research ethos to be bossed around and told what to be creative about.

So the determination of the future, or predictability, is *not* absent, just very abstract, and Buxton insists that the MSR organization meets its objectives well. The design of the organization *is* the product of a very conscious, deliberate process, and therefore not random. What is the difference between a creative product and art? A pure form of art should not even be guided by an ecosystem which stimulates the achievement of certain desired results. The level of abstraction in pure art is therefore even higher as art is valued solely on its ability to please the individual.

Part of an effective ecosystem in research, Buxton explains, is the reciprocal exchange of assets. High quality research is built on extreme divisions of labor, where highly specialized people work together to build something which has value apart from its novelty. But the extreme divisions of labor require *cooperation*, because most of the creative *product,* which after all has some applied aspect, cannot be built with one-dimensional research. Research requires exchange of these knowledge assets, or as Buxton puts it: "The world of research works by mutual exploitation by consenting adults" (Buxton 2009). Without this quid pro quo, we would have islands of irrelevant knowledge, it seems. This exchange takes place as a natural economy without financial exchanges.

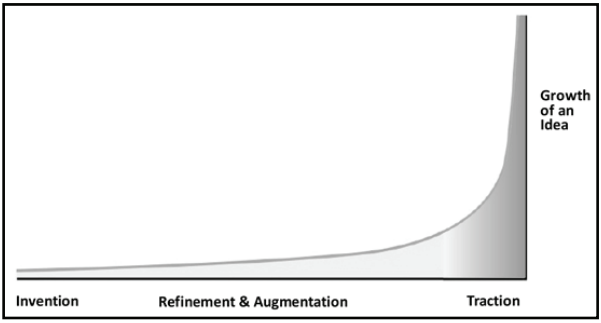


Figure 15: The Long Nose of Innovation

Buxton's own model is an aid to understanding the premise for this natural economy. When still approaching the tip of the nose, as seen in Figure 15 (Buxton 2008), people do not tend to think in terms of financial gain; at the tip of the nose the situation is win-win but gradually becomes zero-sum. Because cooperation is required for refinement toward traction and adaptation, it is necessary to take part in this natural economy. Supporting the effective creation and acceleration of these synergies must therefore be a central objective for management practices.

Referring to the historian of technology, Kranzberg (e.g. 1995), Buxton points out that any introduction of technology into an organization becomes part of the organizational design; it cannot be neutral.

> "You introduce any technology, a social technology in terms of organizational structure or a physical technology into any organization or any culture, you are by definition changing that culture. You are designing that culture. You are doing everything Orwell talked about. But generally, historically, you've been making those design decisions and those Orwellian decisions completely uninformed, completely at random, and without any control, because you are not aware that you are even making that kind of decision." (Buxton 2009)

In general, this view resonates well with the interaction effects evident in the concept of structuration. In this context it is related more specifically to at least two points. Firstly, the acknowledgement of this fact should lead *naturally* to multidisciplinary research, to understand these effects of technology.

Secondly, it demonstrates that a management practice such as PM systems and methodologies (obviously) impact the design of the organization and its culture, a view which I feel has been underemphasized within the PM literature.

Buxton continues this train of thought and suggests that in an organizational reality which produces research, you cannot meaningfully, or intelligently, introduce high levels of abstraction and apply these across the board. Your knowledge creation should be tailored to the individual situation. In an innovative organization, this makes metrics a challenge to use: "The metrics have to be dependent on the product and adapt to that. The only notion of a uniform metric or process would be to say, 'uniformly, we will have a different metric for every different thing'" (Buxton 2009). Buxton is asserting that for the representation to have any resemblance of reality, it must match the level of granularity of differences within that reality. When the organizational reality has a high level of granularity of differences, so must the representation. Naturally, if we adopted a use of metrics in which representations were uniformly different, they might match the granularity of differences, but in effect lose much of their value as a benchmarking tool. *The crux of the problem becomes to determine when something is different and when something is alike.* This can probably not be expressed in formulae, but I am getting many indications that research is associated with differences and contrasts.

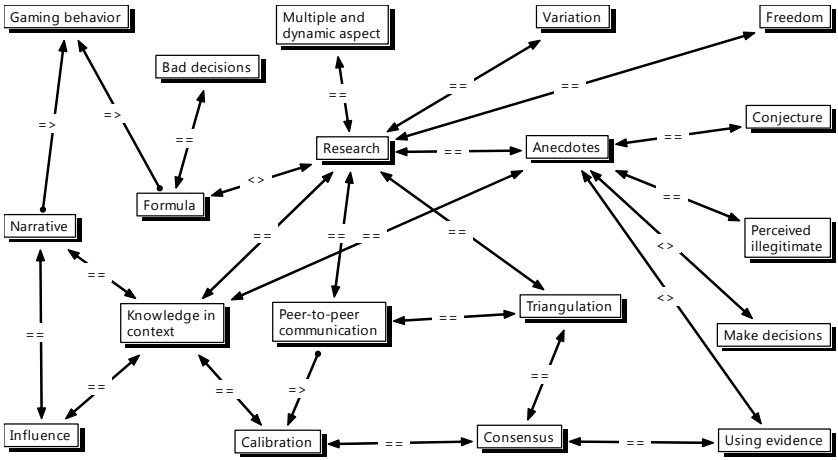
In conclusion, a high granularity, low abstraction organizational reality made up of many distinctions must be matched in a PM approach with similar traits. The same goes for the opposite end of the scale, for low granularity, high abstraction organizational reality with few distinctions. On a more general level, the concept of *distinction* is another way of qualifying organizational reality.

The concepts of distinction and adaptation may support my framing of my research problem as the interaction between organizational reality and representational form. But I am also learning that in some situations, the *absence* of representational forms is the most active ingredient in determining the organizational reality. While Daft and Wiginton (1979) in their continuum of representational languages have art at the extreme I have termed agency oriented, it may be the case that something even more agency oriented than an artistic language is the absence of language. It is of course difficult to describe the 'variety' of the absent language and it therefore fits poorly in the proposed continuum. However, in terms of the freedom given to the receiver of the communication, or consumer of representational form, the absence of language could arguably permit greater freedom than an artistic language would. I am freer to think if I am not influenced by any language, even the high variety and ambiguous artistic languages, the argument might be. I will carry this objection to my propositions forward.

4.4.4 Alex Acero, Research Area Manager

> "The most important thing that we do is give people the freedom to innovate"
> (Acero 2009)

Network view



Story

As many others have stated, *freedom* is perceived as the core ingredient in generating good research. To me, Acero seems to be a champion of the Less is More approach to managing research. He also feels that it is a primary concern for him to take care of the administrative aspect of the management and shield the researchers from this, so that the researchers have the fewest possible obstacles. I find myself wondering if these extremely successful and senior researchers who manage much of the work at MSR really are mere janitors for lone riders who follow their own whims of creativity, or whether there is more to it. Obviously, there is more to it, but the reflex response does seem to be that the researchers are "free", which is why it is worth pausing and trying to understand what it means. In the same breath Acero says: "The researchers are free to do whatever they want. That doesn't mean we have no influence on what they work on" (Acero 2009). Acero left me with a clearer picture of the different objectives which exist at a highly-innovative industrial lab, i.e. high quality research and productization, and the relationships between the objectives. Free seems to mean that the *formal* decision power lies

with the individual, not that the firm does not, to *some* extent, try to determine what is worked on. Determine is a strong term, and not a term any of the managers would use, but, as far as I can see, this is one goal of management practice. But why is freedom understood as a positive? "Researchers treasure their freedom, that's when they are happy, and when they are happy, that's when they produce the best results" (Acero 2009). It is not entirely clear to me whether it is freedom itself which is the cause of good results or the perception of being free which resonates with most researchers' identity. Even if the two are difficult to distinguish empirically, it might be worth reflecting on going forward.

Acero frames a manager's influence on researchers as giving *context* to the researchers, which they might not be aware of without the manager's help. The context tells the researcher what is important to the product groups, which will help the researcher determine which avenues of research are likely to generate the largest impact. On the one hand, MSR would like to expose the researcher to insight into the *current* trajectory of the business and to support that. On the other hand, the researcher may want to *alter* the trajectory. It is the difference between following and leading. The formal right to decide what to work on lies with the researcher, but the organization imposes some rewards that encourage certain avenues. The level of real freedom is debatable, but the formal freedom is clearly present. Speaking of the challenge for researchers of dealing with contextual information he asks "How do you do that? Well, it's not easy but hopefully you get an idea that researchers are smart people that can get all these variables and figure out, oh, this is where it fits for me" (Acero 2009). At the end of the day, the researcher must weigh different objectives of productization vs. how interesting it is from a purely academic point of view. This reflects the way researchers are rewarded for both academic impact and impact on products. And what representational language is used in providing context for researchers? Exclusively

natural language, it seems, either verbal or written. As a manager, you are more heavily exposed to interactions with other managers and with the product groups, so you have better information. The manager selects, subjectively, what is most important in this information and conveys it to the researcher. In my terminology, this practice corresponds to the widespread use of *anecdotes* as representational language. While I have reached an understanding of this term as the bits of narrative which form the currency of discourse, Acero's framing of *anecdotes* differs from most others'. "I don't think we should make any decision based on anecdotal evidence. All we could do is use it as a probe, as a signal, maybe there is something here, maybe, let's consider it as a hypothesis and let's get more evidence. […] A lot of us are data-driven people so we would probably frown upon doing something like that..." (Acero 2009). Acero, it would seem, uses 'anecdotes' to refer to the signals, rather like hearsay, which can form the basis for a more systematic examination, if need be. In this respect, he is skeptical of their value. However, this skepticism does not extend to the more common verbal interchanges which seem to be ubiquitous in the management practice at MSR. On the contrary, my interpretation of several of Acero's examples is that 'measuring' performance is done by exposing the consumer of the performance data to *multiple* sources of *rich* material, and it is up to the consumer to do a lot of the analysis and to determine what the meaning is. For example, during the annual performance review process, managers try to reach agreement on promotions, bonuses, etc., which he describes: "It's not a scientific process, but it's not random either, so there's some noise. […] We try to get a consensus... not just from one person but all of MSR management... and that tends to reduce the variance of the error, it doesn't eliminate it, it reduces it" (Acero 2009). Having multiple people's perspectives as a way of reducing the noise is another example of a triangulation approach to ensuring valid or relevant representation. More generally, research is difficult to measure quantitatively because of the

multi-dimensionality nature of the work, says Acero. He draws extensively on his *experience* to assess the importance or potential of a proposed research project and this is not something which can easily be put into formula. If we were to attempt it nonetheless, this would be the consequence:

> "If we try to derive that formula, I'm not sure it would necessarily be good because it would probably not be perfect and people would be trying to game the system. Just like the tax-code. IRS changes the tax-code and people will try to game the system, to pay less taxes... oh, you made a loop-hole there. In the end is it really worth trying to go that far? Probably not." (Acero 2009)

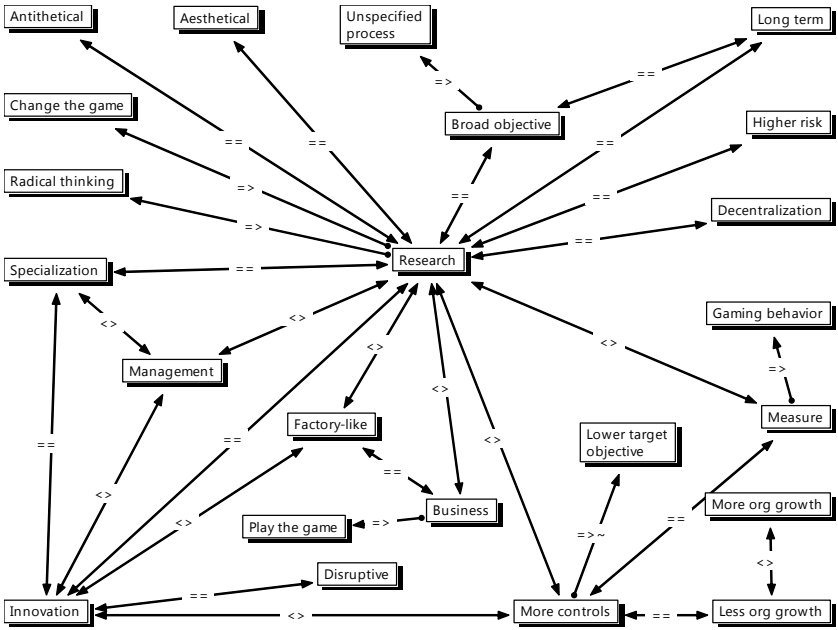
Acero says that while dysfunctional behavior such as gaming may be bad, the dysfunctional behavior of erroneous decision making resulting from a skewed metrics system would be worse. The risk of gaming could be contained by not sharing the metrics with the researchers, but poor decisions would reverberate throughout the organization and potentially cause much damage.

In terms of use of representational languages, the common denominator seems to be narrative exchanges perceived as only *somewhat* subjective. The triangulation practices at several levels, i.e. among researchers' decisions on research direction, management's reporting upwards, and during performance review, are about creating opportunities for finding and refining conjectures. This process of continuously refining conjectures fends off noise and randomness.

4.4.5 Jim Kajiya, Distinguished Engineer

> On putting research to formula: "It's easy to do… if you could predict the future." (Kajiya 2009)

Network view



Story

Kajiya has been around for a while at MSR and has been with the organization most of the time since its founding in 1991. During that time, he has been an important part of its expansion from a few dozen people to the 1000+ today. This obviously gives him a vantage point from where to reflect on different phases of an innovative organization's development.

> "I've been involved in two things. One is building a research organization; the other is managing it at a steady state. And those are really quite different activities." (Kajiya 2009)

This perspective made me hopeful to explore yet another dimension of what I think of as agency orientation, namely an organization in growth. Kajiya tells me of two people he has learnt a lot from, Ivan Sutherland and David Evans:

> "They really said some interesting things. One of the things was: you don't really manage research; you hire great people and get out of their way. And the very best research management has followed that philosophy. People like Bob Taylor at Xerox PARC for example, which is where I think that quote originally came from." (Jim Kajiya)

Very experienced research managers seem to agree that 'management' and 'research' appear to be antagonistic concepts. Because of the relative scarcity of other very *tangible* levers, the hiring process becomes critical, as it can be one of the most effective quality control mechanisms. So while the proof of the pudding is in the tasting, we do not put random ingredients into the pudding and hope for the best. Once you have proved yourself worthy and suitable to be let into the playground, much softer, but perhaps not less effective, tools are used. When you are not in a growth phase, hiring becomes relatively less important, as Kajiya says: "Most of the job isn't about hiring anymore. It's really about figuring out what will be important, what will not be important, encouraging people to take risks and to think long term" (Kajiya 2009). It is noteworthy that there seems to be forces at play which make it unnatural for organizational actors to take risks and to think long term. Presumably there is an implicit pressure to deliver results, which induces researchers to be prone to working on projects that are relatively predictable. Something either in the researchers' academic upbringing, their structural baggage, or within the organizational culture at MSR must make it attractive to pursue a lower-risk (and probably lower-return) approach. It is necessary to fend off this tendency, Kajiya says, in favor of truly innovative work, which is longer term. So what can the management do, apart from hiring the right people, to balance the objective of long-term, high-risk work with the research agenda of the organization?

> "You can set broad goals about what it is the organization is about, and what it is you would like to happen, but trying to manage them at a micro scale is completely unproductive. [...] Because they know more than you do. They are the experts on their subject material and they have gotten that way by thinking more deeply and understanding what the

fundamental problems are at a very deep level. And as a manager, you cannot possibly have that level of expertise." (Kajiya 2009)

It seems that *specialization* or depth of expertise is a contributing factor of agency orientation, which shortens the scope of consistency. Since experts inherently have knowledge within different fields, the *overlap* of knowledge between a manager and staff is smaller than in other organizational realities where the level of specialization is less dramatic. I infer from Kajiya's responses that the practice of management assumes a consistency of understanding between managing and managed parties. The lack of knowledge congruence means that the abstraction of objectives must be higher. This is my interpretation of the reason for having "broad goals". It is interesting to note that higher abstraction of *objectives* seems to be associated with *agency* orientation, while higher abstraction in their *representations* is normally something I have associated with *structural* orientation. Having broad, i.e. highly abstracted, goals leaves more elbow room for the individual to interpret them locally and decide on how to pursue them. On the other hand, highly abstracted representations, e.g. metrics, assume *standardization* among the represented phenomena. This may be due to my ill-defined use of 'abstract'. Metrics are abstracted in the sense that they represent a narrow (although potentially critical) slice of reality. This differs from other languages proposed by Daft and Wiginton (1979). A work of art is abstract in the sense that, while it could be said to represent a fuller picture of reality, the resemblance is not as evident. This distinction should be borne in mind. These broad goals are unlike what you have in a business-like organizational reality. When innovating, you demand different behavior of your people: "One of the things you have to ask them to do is to undertake a course of action that they don't know will succeed or not. If they know it will succeed, then they are really not doing research. [...] In research you invest in things that you do not know will work" (Kajiya 2009). Even if the formal responsibility for the suc-

cess of the organization lies with the management, most of the de facto responsibility for success lies with the people in the trenches. This seems in practice to be a form of decentralized decision making. Implicit in the search for people who are willing to take risks, is the fact that *they* will be assessing the trade-offs when balancing risk and return. Having broad goals and local interpretation of those goals implies that there are *many ways* of meeting your objectives, or at least that you do not positively know that there are few, for if you knew that, you would most likely know them, and then we would per definition not be doing research. Identifying likely paths to success and choosing among them stems from having superior research *taste*. Kajiya describes this as a process based on an aesthetic ability to 'see' the elegance and potential of a certain approach. The somewhat intangible aesthetical way of navigating through research challenges is contrasted by the remarkably clearly identifiable *results* of good research: "So is it aesthetic? Well, yes it is. Is it squishy? Yes it is. But in the end, the concrete results that come out of that set the stage and set the tone for how people work on this problem and establish a culture for how you do things" (Kajiya 2009). So despite having very broad goals, very little prescriptiveness, and many ways of achieving the goals, success is unmistakable. Some pattern must be recognizable to an experienced researcher when she pinpoints good research and distinguishes it from poorer work, even if this ability does not translate into an ability to define it beforehand. You do not know what you are looking for, but you know it when you see it appear.

If a research organization moves away from these broad goals and attempts to prescribe rules for the individual, you will end up with less innovation Kajiya says:

> "If you have this very tight performance review loop, you don't want to put anything on there that you can't accomplish and so you lower your sights until you do something that you can do and then you fulfill those, and that's a very nice little cycle and as long you don't need to

> push the envelope, get beyond things, but just be productive, that's fine as a performance management tool. But if you are really asking people to push back the unknown, you have to ask them to take a lot of risk… *a lot* of risk. So having rigid performance controls, and you're going to do this now, and blah blah blah… if you focus in on the short term and on measurable things, you are going to end up with not an innovative organization." (Kajiya 2009)

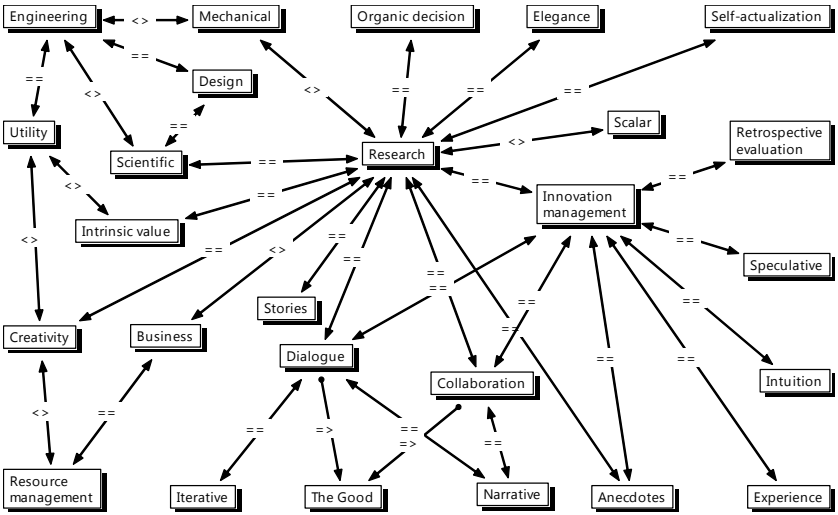
Measuring the performance of organizations and individuals is commonly done to motivate people to stretch themselves more than they would have without the beacon of firm commitments. Kajiya is telling me that the reverse is the case when dealing with innovation. Having to explicate commitments (for the future) obviously presupposes knowledge of the future. This goes against the whole point of innovation. This contradiction could be curbed by making the commitments more abstract or "broad" as seen earlier, but then the objective of accountability suffers instead.

During our conversation I realize that, perhaps for illustrative purposes, we are speaking in strong binary terms, for instance between research and business, so I wonder if this really is an either-or choice. "No, no, no, it's a continuum." Kajiya says and goes on to explain how different shades of grey are mixed in MSR. This continuum is the dimension I have stretched out across the concept of organizational reality and now has more nuances.

4.4.6 Rick Szeliski, Principal Researcher

> "I could make up words, but it would be sort of like asking artists where they get their inspiration from. It's those realms of psychology that are hard to quantify." (Szeliski 2009)

Network view



Story

Szeliski very quickly arrives at a more specific label for what I think other people have termed the 'freedom' in the management practices at MSR. *Self-*actualization is a fundamental motivational mechanism in managing research, says Szeliski. A term popularized by Maslow (1954), it covers an individual's tendency to obey some *inner* driving force toward his or her own potentiality. It is not a deterministic view, but instead what I think of as an unfolding of a potentiality. Within this organizational reality dominated by people's individual motivational forces and where the work depends on creativity, management decisions and sense-making appear to be equally concentrated on the individual. Szeliski says that intuition is an important mechanism in his guidance of his reports. Intuition is hardly a sense-making tool reserved for certain types of organizations, but appears to be exceptionally legitimate at MSR. But what is the management practice aimed at, when self-actualization is so fundamental? Szeliski gives me the impression that doing research, par-

ticularly in the context of an industrial lab, is a bit like walking a tight-rope. He contrasts the scientific and engineering dimensions of the work they do:

> In engineering disciplines like ours, it's not *just* useful to think of something that no one's done, because if it doesn't work or isn't doable in a cost-effective manner, it won't help, because ultimately we're creating things which will turn into software artifacts that people will fall in love with. […] In research a lot of it is ... you get valued for having thought of something or looked at a problem that no one else has. Because just applying someone else's method in a mechanical way is fine but that's not what research is about. (Szeliski 2009)

Szeliski says here that one should not be rewarded just for doing new things, but later points out that pure novelty is valued in some situations within MSR. In general, there must be some extra quality dimension: it has to be *good*. Just new is necessary but not sufficient to qualify as good it appears. But The Good seems to remain a mysterious character that nobody has ever really seen clearly in front of them, but with experience can easily identify in the rear-view mirror, where it manifests itself clearly. My interpretation of Szeliski's responses makes me think that one cannot hunt innovation using efficient sniper shots, but instead it must be sought out like wolves following a very real scent trail. It will also be necessary to use intricate pattern recognition, which feels almost like divine guidance, to distinguish between the real deal and decoys of lesser Good. Thinking in *mechanical* terms and of *utility* is only of limited relevance, says Szeliski. I think of Szeliski and his colleagues as this pack of (very amicable) wolves and wonder what the scent trail is made of. What types of representations are deemed significant enough to constitute a scent? Szeliski tells me that even if he feels like he has judged the situation soundly, he consciously chooses to explore more:

> But I don't want to make that judgment too quickly. Usually the way I do it is I just don't make the judgment, I just do a dialogue, that's what these guys are doing [referring to a small group of people discussing energetically]. They are sitting there, basically, tossing ideas around and when the idea gets tossed around in a circle long enough, people start to see aspects or come up with variants or better ideas. (Szeliski 2009)

Imagine the wolves calling a meeting before deciding what direction to pursue the prey in. And notice that manager *and* staff researchers have wolf roles. The main difference appears to be that the manager has a more finely-tuned nose, and possibly guides the rest of the pack rather than hunting per se.

The *dialogue* which is carried on, both one-to-one and in *collaboration* with several people is apparently critical to figuring out what the right path to take is. But this dialogue does not result in certainty, nor should it. If you know the path from where you stand to your goal, then it is too close, you are not exploring enough, it seems. So there is a very explicit willingness to, in a sense, fail, a lot of the time:

> "When you do research, you may have an idea that isn't a good idea and either doesn't work because you hoped it would do something and it doesn't or it does something but it turns out to be something no one is interested in. So that's two separate questions, whether it actually works and whether it's useful. We try ahead of time to choose problems and approaches that we think will satisfy both and we do some self criticism, but not too much, and a little bit of it is speculative. [...] It's OK if 50% of the things are dead ends for either of those two reasons." (Szeliski 2009)

Ultimately, a manager will only know retrospectively if success has been achieved because of the lack of predictability. The manager will judge the performance from an understanding of the results, rather than an execution of the research process. Szeliski makes the distinctions between art, design and business. Notice that design is associated with both art and business, but art mostly contradicts business. This apparent continuum is made of a different mix of *intrinsic vs. extrinsic* standards of Good; art has an intrinsic value while business orientation is valued relative to an external standard. In a research lab, it is a juggling act, I feel. The effective performance of this juggling act is made possible by lots of *dialogue and collaboration*. The peer-review model is most naturally suited for discussing projects and ideas rather

than people, since the collaborative environment is a delicate balance and evaluating each other might result in animosity.

There does not appear to be much formal reporting, on the contrary; "There is a fair amount of skepticism about management as a whole, I think, in research" (Szeliski 2009). At a practical level, reporting seems to be pushed bottom-up, mostly when something noteworthy has happened. This may seem banal, but it implies that the important events are unknown before they happen and that they flow most effectively in a very open-ended format. The amount of process seems very low but, at the same time, the communication is kept relevant, it seems. Quarterly status reports are even viewed with a tiny amount of animosity by some researchers, Szeliski says, as they are seen as a distraction. Very few metrics are allowed to enter discussions, yet alone be the sole basis for decision making. "it tends to be somewhat non-quantitative, it tends to be very verbal and descriptive. […] In the culture of research, a lot of it is about verbal argument and just convincing other people of your ideas" (Szeliski 2009). Why? The form of value creation of research is made possible by "a whole cluster of talents and capabilities" (Szeliski 2009) and it is therefore not inherently *scalar*. The interdependent nature of the ingredients of research talent appears to resist being portrayed as a one-dimensional phenomenon.

> "The only formal system we have is the performance review document. A lot of that document is very anecdotal, you tell stories about what people did during the year and what you did and what impact it had. […] I'm not saying that quantitative methods aren't useful, in very repeatable, rigorous things, they are, but in research, I guess I'm a strong skeptic." (Szeliski 2009)

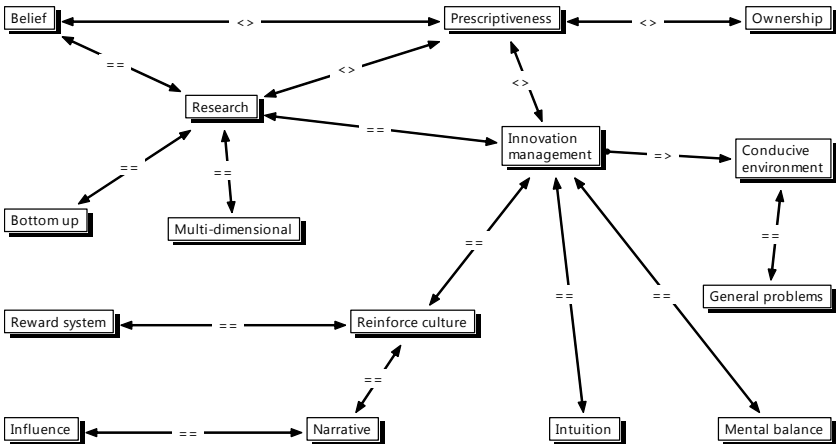
But even within this non-quantitative organizational reality, the mechanism of abstraction as a way of dealing with the complexity of reality is still evident. Szeliski tells me that attempts are made to distill larger amounts of descriptive texts into smaller ones to better manage the individual bits and

benchmark them against each other. MSR is not without its considerations of efficiency and the practicality of making comparisons, it seems.

4.4.7 Rich Draves, Research Area Manager

> "I think it's very much [about] putting the general parameters in place and setting them very general […] but then going away and letting them [researchers] think about that, letting them come up with the idea. […] People are really excited when it's their idea that they are pursuing. So you need to make sure that people have that feeling, that it's their idea." (Draves 2009)

Network view



Story

Many managers I have spoken to say that you cannot be prescriptive within research and Draves echoes that. It must follow that freedom is a necessary condition for good research and that a lack of freedom results in a lack of good research. For Draves research management is about "hiring great people, creating an environment that lets them do their work and sort of trying to stay out of the way of them doing their work. So I view myself as a very much hands-off manager. I'm not in there being prescriptive saying 'you should pursue this idea, you should not pursue that idea'" (Draves 2009). Conversely, even research has a purpose and, at an industrial lab, there is

probably more pressure to clarify this purpose and to reach it. The declared purpose is two-fold: academic work and 'tech transfer' to product groups. While Draves insists he is a hands-off manager, he also clearly states that on his part "there is a constant messaging that reinforces that culture" (Draves 2009). In his daily interactions with his researchers, he will continuously build and rebuild on a culture of a balance between the two aspects, but also *slightly* more prescriptively indicate what general areas are strategic to Microsoft. Draves is both hands-off and decidedly active in setting a general direction.

This contrast makes me want to make a distinction which might allow for both these statements to make good sense and enjoy coexistence. Generally, I would insist that high abstraction in *objectives* (i.e. not representational forms) is an agency-oriented characteristic, since it allows for local interpretation and so on. Simultaneously, constant messaging must have a different effect than less-than-constant messaging, even if the message is highly abstract, in this case a strategic research area. So while high abstraction in the formulation of objectives may be *less prescriptive* than having very detailed orders, high abstraction may be *more effective* in controlling behavior, if made with appropriate force, than detailed prescriptions. Here I assume that being prescriptive would never allow for anything resembling effective execution. It is impossible to instruct people to have creative ideas. Tightening your grip on this type of process simply means that it slips through your fingers.

The inference we could make from this is that the level of control is *not* automatically caused by the level of prescriptiveness. In organizational realities where value creation is driven by processes based, for example, on ownership, creativity and decentral (formal) decision rights, management control is maximised by 'constant messaging' rather than by issuing very specific commands. Prescriptiveness should be understood in the sense of *detailed* actions rather than an adherence to rules, which may just as well be high-level, gen-

eral rules. From this train of thought I conclude that you can be forceful in control without being specific and without having formal decision rights. Draves would most likely not use the term 'control' but instead 'guidance' or 'influence'.

The control mechanism is also embedded in organizational culture, which relates to how objectives are spoken about. Although no strict mechanisms are in place to *force* impact of the innovations, generating consensus seems a non-issue. "By applauding accomplishments, I think there is enough culture built up around people being excited and valuing having that impact. I don't worry about that" (Draves 2009).

So the organizational culture becomes another vehicle of influence. When these systems break down or for some reason are not sufficiently effective, and a researcher is not achieving the desired performance in terms of tech transfer or academic work, Draves finds himself taking a more hands-on approach. So even though a lack of prescription is seen as a prerequisite for good work, when the absence of good work is observed, we do not become less prescriptive, but more. This presumably means that the best work will be done when researchers are capable of managing the operational aspects of their work themselves. If this is not the case, having a more hands-on approach will result in better work than remaining hands off. The low level of involvement is a high-risk approach which demands a lot of maturity from the researchers. For people to be able to navigate successfully in such an environment, they need to be high achievers in multiple dimensions, and, as Draves says, people who are uni-dimensional are slightly frowned upon.

But a lack of prescriptive guidance can be taken too far. Without the guidance of messaging about desirable directions for the work, the strategy of a "ferment of individual ideas" could go too far Draves says.

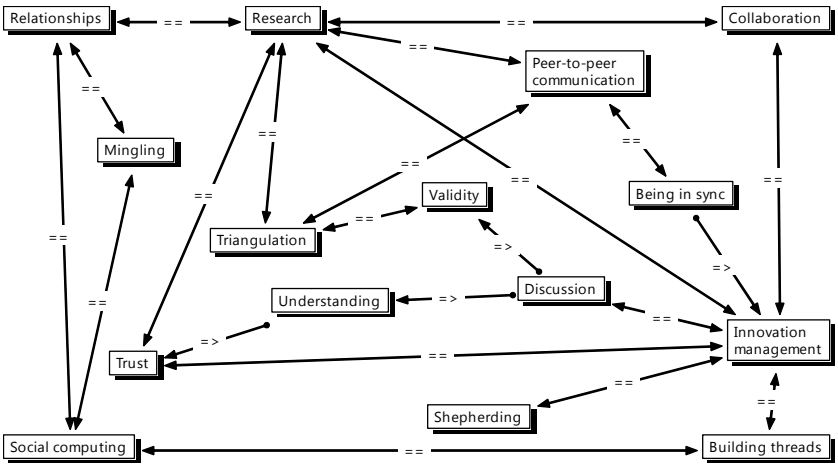
> "I think if you are giving too much guidance people will feel demotivated at 'I'm working on your idea, I'm not working on my idea'. And if you're not giving enough guidance then I think you see too many

> small projects, and not enough stuff happening in areas that are strategic or important. So I think that's the balance. You want to be gently guiding people to be working in areas that are both interesting research and also strategic to Microsoft. You want to be gently guiding people to be collaborating more together in bigger projects that will have more impact." (Draves 2009)

Navigating this balance is mostly a matter of *intuition* and experience, Draves asserts. Rich interactions abound and end up being crunched in a *mental balance* which ultimately makes a subjective evaluation of an individual, for example. Management practices at MSR seem to be completely void of quantities, except for the standard numbers of publications, citations and patents, but even they are not used for benchmarking without in-depth discussion. I ask Draves what he feels about that approach, and as an experiment I subtly suggest that quantities might have some potential. He pushes back: "The problem about being too quantitative is that what if you develop a formula and the formula doesn't match my intuition. The formula may say well this person did better than that person, but really you think it should be the other way around. You want to have some wiggle room I think... […] I don't feel any motivation to try to get more quantitative" (Draves 2009). The need for 'wiggle room' suggests, as Draves points out, that there is a fear and risk that the level of abstraction does not match the multi-dimensionality of the organizational reality and therefore would result in dysfunctional decision making.

4.4.8 Victor Bahl, Principal Researcher

Network view



Story

Bahl recalls a cartoon an acquaintance gave him recently which illustrates the task of managing researchers: "He gave me a cartoon of a guy and these butterflies which were flying and he had strings tied to the butterflies and he was trying to flock them together... and they are very, very precious and you have to be very careful in handling them, because otherwise their wings will just pop off and they will die" (Bahl 2009). Bahl speaks, somewhat in jest, of the research management role as shepherding a flock of delicate butterflies. A critical element of this shepherding is to be able to understand the work of his researchers. So the approach to PM of individuals assumes that managers have a good *understanding* of their direct report's field. This will give them the ability to be a credible counterpart in a dialogue about the objectives the individual should strive for. "They know that I know, and I know that they know that they can't fool me and I can't say some obnoxious thing either, so all this works if individuals trust their manager, that he or she is smart and will do the right thing" (Bahl 2009). For this trust to be able to be fostered,

the two communicating parties cannot be too far removed from each other. If this is the case, the common frame of reference is less likely to be present and this will mean that a manager is less able to give the *relevant* subjective evaluation and the other party will have more room to shift perceptions of performance. From this I learn that an essential element in using non-objective approaches to managing performance is to minimize the frame-of-reference 'distance' between communicating parties to maintain sound evaluations. Bahl is clear in saying that although this management system is not based on objective or quantitative data, the amount of constant calibration results in a high comfort level and confidence that the perceptions which are made are sound.

The illustration below attempts to show Bahl's assertion. Each cloud signifies an individual. The proximity of individuals signifies the overlap in frame of reference, i.e. individual's ability to understand each other effectively and consequently establish trust, as Bahl says. The gradient from the center, becoming more and more transparent, signifies the potential for effective communication; if you are further apart, the density of the overlap will be smaller and the communication less likely to be effective. Effectiveness here means that a manager for example can *judge reasonably well* how a member of staff is performing. The configuration of individuals in this particular figure illustrates the communication between researcher, group manager, area manager, and discussion between area managers, but this is purely illustrative.

Figure 16: Horizons in subjective PM

For this mode of PM to be effective, a minimum requirement is that the following two criteria be met:

1. The *ability* for one party to share frame of reference, e.g. as Bahl does when his experience and knowledge allow him to effectively understand if his researchers' work is under or over par or whether their goals are a "stretch".
2. The actual *utilization* of relevant language, i.e. representational forms, which allows the potential to understand to be actualized, e.g. when Bahl actively promotes situations where narrative can come into play,

Conversely, in organizational realities where judgment is not needed, this configuration would be inefficient. In that situation, we would not have gradients, but solid colors; in other words, the distance between individuals does not impact the ability to communicate effectively. If we were producing plastic screw-tops for bottled water and decide to measure the performance of

a production run in terms of the number of produced tops within certain quality margins, this could probably be represented effectively using a simple number which could easily be communicated between parties with less need for overlap in the frame of reference.

But in the context of MSR, quantities are rarely used and discussions take their place. Within these discussions, perceived integrity plays a role. When the process involves discussions, there is a desire to be perceived to be fair and to have solid arguments for positions. An individual does not wish to be perceived as having weak arguments or overly-biased opinions. My understanding of Bahl is that when the perception of having high integrity is valued, it will naturally cause the negotiations or discussion to be more reasonable.

But in general, this rich communication is a challenge: "Communication becomes a huge challenge, one of the big complaints in groups like that is that people don't know what the other person is doing" (Bahl 2009). This challenge is met in a number of ways, all of which focus on making connections between people, for example between the researchers and the product groups: "I try to create opportunities where there is mingling of the product groups that we care about and us. […] I try to create situations where there is a lot of meeting going on" (Bahl 2009). Another way Bahl tries to tackle this problem is by creating clusters of people who are working on related things. This concentrates the necessary communication, so it becomes dense within the "bucket" as Bahl terms it, and creates overlapping frames of reference. In general, the flocking of butterflies seems to be related to a lot on communication. Bahl describes himself as a "conduit" aiming to keep people "in sync".

As a hub in this constant exchange of representations, Bahl feels confident that he has a reasonable feeling of how individuals and projects are performing, based on both the hard data and softer kind:

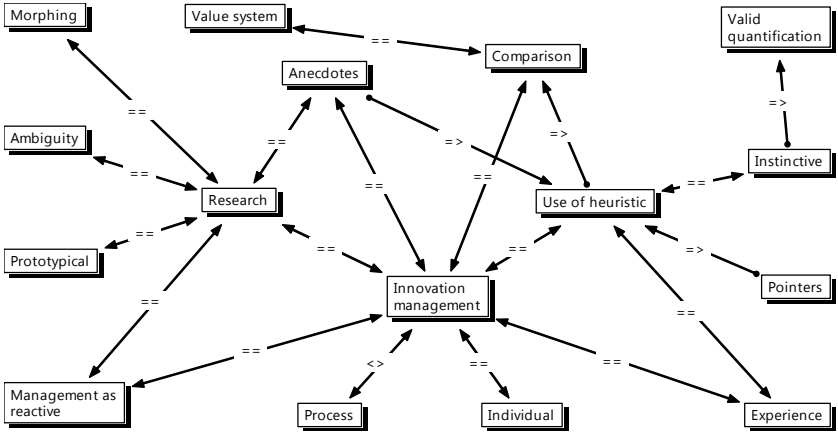
> "I think just talking to the research community, seeing the hard data that is going on in terms of papers they are publishing, the professional service they are doing, getting their emails and kudos from them, picking up the phone, talking to individuals outside that they have worked with. And then just my own general sense, just by observing how people are behaving and what they are contributing." (Bahl 2009)

So even though the process of determining a person's or project's performance is somewhat unstructured, the natural interactions within the organizational and with the external environment give Bahl a good sense of what is going on. "There are plenty of sensors around if you are looking, if you are looking for that. There are plenty of sensors to give you a pretty good idea of who is doing what" (Bahl 2009). This approach is also evident in the yearly performance review process of individuals. While the 'hard' data, i.e. publications and patents, *is* taken into consideration, benchmarking people in the review process involves actually *discussing* the *content* of the publications to better understand its relative merits. "We get down to that level where it's not just a numbers game anymore. It is actually going beyond the surface and saying 'what did they achieve?'" (Bahl 2009). Bahl leaves me with the impression of management at MSR as a lot about securing dense and relevant communication between people for sensing what is going on both for decision making purposes and for exchanging ideas for innovation.

4.4.9 Gavin Jancke, Director of Engineering

> "Despite the lack of measurable yardsticks that I can use, it's still a very high performing, productive and quality team." (Jancke 2009)

Network view



Story

Jancke heads an engineering group at MSR Redmond which aids the researchers in developing complete software artefacts around some more narrow technology coming out of the research groups, which he nicely puts: "We are this continuously morphing entity. Whatever the business needs, we can fit to meet the demands that it has of us" (Jancke 2009). Asked about what management practices he applies to his group, Jancke replies that "the tool is the individual. [...] It's all about having the right people. I don't really put any monitoring in place. [...] So again, it's hard to put in any process to do that when it's a constant soup of differentiation between these things in terms of size and scope and complexity and customer" (Jancke 2009). Performance measurement seems to be based a lot on people "hearing about" the quality of a project, for instance. This does *not* mean that Jancke does not know what is going on in his organization. In part, information flows to him naturally as feedback on their work. Jancke explains to me that the rate of change and variety in MSR is so great that management continuously must try to "keep up" with the pace of change in the organization. Although mentioned in passing, it is clearly in opposition to a more traditional role of management as

something premeditated and steering. What role does management have if the nature of the organization is not conducive to setting directions? This is a strong emphasizing of Jancke's remark, but nevertheless worth bringing forward as the notion of a *reactive* mode of management. He is receptive to *pointers* which inform him of the characteristics of a person or a project. With *time*, these pointers consolidate into a pattern of *heuristics* which constitutes a valid representation of the performance of the project or individual. Although these pointers are not the result of a stringent *process,* Jancke feels confident enough of being able to assign *quantitative* values to people, if he needed to.

> "With all of that, I can assign a kind of value number to a person, even though it's not tangible in any sense. If I had to, I could put people on a scale of 1 to 10 in all these different little buckets, but again, it's something that comes more instinctively than something that can actually be measured. And I think for me, I really couldn't measure it just because it's so fluid with so many different ingredients and cooking times that there is just no way I could do it unless it's an instinctual mechanism to measure these things." (Jancke 2009)

Here measurement means the lack of instinctive interpretation, so the quantification becomes more like natural language than the actual counting of some physical phenomenon within reality. What I am learning is that, even within an agency-oriented organizational reality, quantities can exist in a meaningful way. They can be produced within a more holistic, instinct-based process. In the example Jancke mentions in the quote, the assigned numbers are not immediately comparable with someone else's scale, in the sense that one person's five could translate into another person's three. The scope for benchmarking therefore needs *careful* consideration, but with further interactive steps, one might be able to reach a comfort level in these interpretive quantifications. But what *behavioral* implications might there be if this practice was implemented? Jancke is asserting that for some given dimensions, he could meaningfully assign a quantity to that person or assign an "overall" number for a person. Implementing this practice would certainly have some

effects on people and this is not part of Jancke's assertion. To some extent this practice is in place as part of the yearly performance review process, but there is little transparency about the actual decision-making process, nor is any systematic correlation set in stone between actions and review score. These factors possibly dampen any tendency towards behavioral dysfunction, which could be more pronounced in a clearer and stricter process.

A critical part of the success of this system is the continuity of the same people, i.e. having a low attrition rate. "I give my reports a great deal of rope and I give them enough rope to hang themselves with" (Jancke 2009). This freedom is one ingredient in instilling ownership and nurturing a wish to stay at MSR. Work becomes high performance by having experienced people who have been exposed to good and bad practices, rather than something which can be applied in accordance with an explicit set of rules. Likewise, management sensemaking is based on heuristics, which need time to "cook", as Jancke says. Without the continuity of having the same people around to build good practices and ingrain them in the fabric of the organization, this system is more difficult.

> "I think it would be hard if the team with the ambiguous measurement had new employees coming in all the time and old ones going out, because then there is no touchy-feely heuristic formed in the mind of the manager. But because my attrition rate is so low, and the experience of these folks is so high, I may not experience the issues a more high-turnover, less experienced team would, where it would be much harder to measure performance." (Jancke 2009)

Interestingly, my presumption would be that low attrition is most closely related to a structurally-oriented organizational reality. I am learning that what I think of as agency orientation, with fast-paced change, high diversity and ambiguity *needs* a medium to carry some *consistency*. What Jancke describes resembles some elements of structuration: it is human-mediated and solidifies patterns of behavior and sensing. If it were possible to represent performance meaningfully using a language such as metrics, the human me-

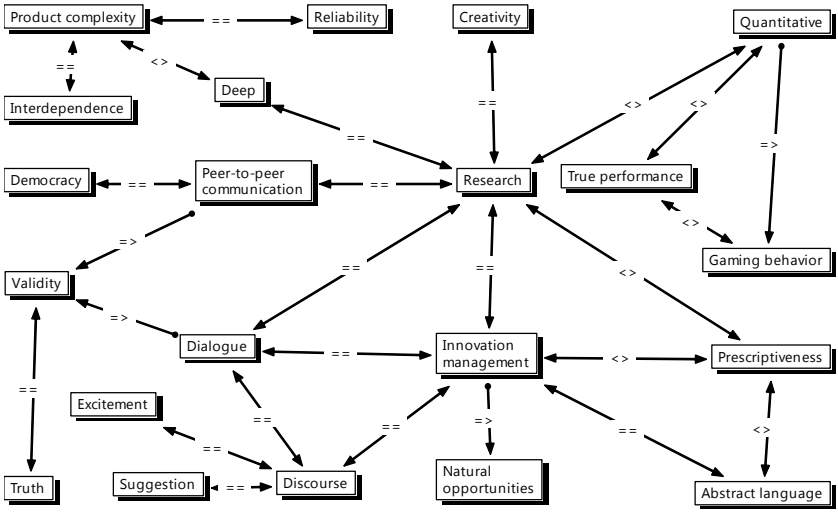
dium would not be as critical. The conclusion to this point is that I must subtract *absence of consistency* from my concept of agency orientation, i.e. even in agency-oriented organizational realities, the practice of management assumes some consistencies. However, the consistencies are made of and mediated by *social* interactions rather than codified into high-abstraction representations such as metrics. Of course social interactions do not take place without the use of language, especially not in an organizational environment where the processes deal with intangibles. By social, I mean that the instinctive nature of the evaluations that are made is considered natural.

In accepting this, the challenge becomes how to accelerate the generation of a heuristic pattern for management sensing. If acceleration could be established, it would mean that managers could more quickly acquire this heuristic pattern of understanding, allowing for a more efficient interaction with the organization. Jancke is skeptical of this proposition. One of the special skills individuals require to work in an innovative environment is be able to continuously meet new demands. When the concept of performance of the individual or project is determined by its ability to absorb change, you will need some *time* for this process to unfold. This does not mean that there are no ways of increasing the density of "pointers" which contribute to the generation of an instinct-based heuristic, but it becomes more difficult when we are not just seeking a representation of a state, but instead of a delta over time. "Just by nature of the breadth, the scope and the differentiation of the work that even my team does is so broad that it just takes time" (Jancke 2009). Certain technologies have become extremely popular in the last few years. Sometimes known as web 2.0, they are bottom-up driven, embrace user-generated content but also *intensify the relations between nodes in a network* in a very efficient way. I wonder if some of these methods which are so widespread in social networking could be applied to the field of PM, or more

specifically management sensing, as a way of establishing more dense *pointers*, as Jancke terms them. Let us keep this notion in mind.

4.4.10 John Platt, Research Area Manager

Network view



Story

Platt seems to have a clear impression of the role of a research manager:

> "One of my favorite analogies is from theater: a producer or impresario. The reason why I like this analogy is because it is also for a very creative profession. Theater producers typically don't act, nor are they directors, they don't tell people 'more emotion, less emotion', although maybe that's a tiny bit of the job [as a research manager]. But what they do is to try to set up the situation where there can be a successful production and then they handle all the stuff in the background to make sure that all of the situations that are necessary to have a good play are in order." (Platt 2009)

Management of an innovative, creative type of work involves setting up the *situations* so that *natural opportunities* for success are created. This is not steering but merely creating ideal conditions. Platt qualifies this slightly by saying that his role is not quite an impresario's because there is some interac-

tion between himself and his researchers. This interaction turned out to be the main theme of our conversation. So while Platt insists that he is not prescriptive in his management style, he also says that there are some levers which allow him to influence the way work is played out. One of these levers is to convey to researchers what their 'canvas' looks like: "I will describe the *shape* of success. It's like if there is an artist, I might give them the shape of the canvas but they'll have to do the painting. I'll be very careful to describe the *shape* of success" (Platt 2009). The shape of the canvas is an abstract depiction which is somewhere between complete boundaryless work and the dictation of strict work processes. The painting will be evaluated within certain frames of reference even though the control element has been decentralized. This Platt calls the *syntactic meta-language* drawing on the terminology of computer science. Using a meta-language to describe the canvas reflects the abstract nature of the guidance given, leaving the specifics to the individual.

> "I am very careful not to use language which is prescriptive. [...] I will describe the parameters of success and then I will let the people who are experts in their field and the people who do the work fill in the blanks. […] We will sort of phrase it in these terms and then I'll engage in a dialogue with the people who talk to me about it, but I wouldn't specify. It's more like the Socratic Method." (Platt 2009)

Platt points out that by the Socratic Method he means the epistemological aspect rather than the rhetorical. In this sense the dialogue will result in *truth* he says, which I have denoted *validity* in the network view. For example when discussing the potential for a good paper, Platt says: "I don't know the answers to why we think this will be a good paper and maybe neither does the person, but in the dialogue process we can discover what the truth is" (Platt 2009). The dialogue is carried on at several different levels. It is carried on within the academic community as a PM practice when publications are assessed. This social, peer review process is not perfect but it is: "a little bit

more unbiased. Admittedly, it's not perfect. It's sort of like democracy; it's the best that we know how to do" (Platt 2009). So the discussion that is carried on within a peer community leads to higher levels of validity than would be the case if the discussion had been more limited. The same argument is made in reference to the annual performance review process, where people's work is benchmarked against other people's. In the review process it becomes crystal clear that even with a good concept of what the canvas looks like, the resulting paintings are not immediately comparable across many different people and fields. Benchmarking needs further dialogue. This ties in closely with Platt's conviction of the dubious value of metrics in MSR:

> "I'm profoundly skeptical of management by quantitative objectives in a research org because it's like the tragedy of central planning. MBQO is exactly what caused the central command economies to break in the Soviet Union. 'Oh you want to make nails, ok if we count the number of nails then you're going to make little tiny nails and a million of them but if we count the mass of them then you'll make gigantic unusably large ones. And that's part of the reason that we have to spend days, and days, and days, and days discussing it. If we did it purely by quantitative metric then it would be just trivial to game the system and we wouldn't actually get the results that we want." (Platt 2009)

I continued to wonder how Platt perceived what I term the organizational reality, i.e. what characteristics of the organization make management by dialogue relatively more effective than management by metrics. Platt reflects:

> "As the complexity grows, the level of organizational rigor has to grow. Otherwise you would get a giant disaster. If everyone in Windows runs around and does whatever they want, it would never finish, it would just never finish. But that's why we need a separate group. It's a very delicate thing, because that takes a lot of commitment and strategizing and organizing people and that is an amazing thing for the product group. [...] They are just different styles of work and so you really need different organizations and different styles of management to manage the different styles of work. […] There is nothing unique to research, it's just that it is small scale, it's high risk and it has a lot of creativity." (Platt 2009)

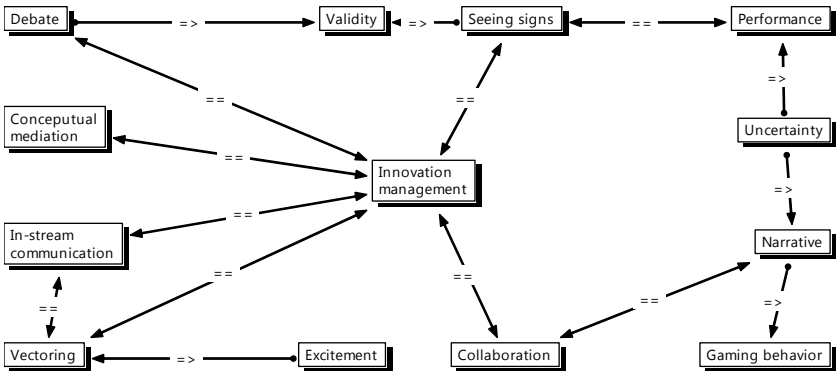
By small scale I understand that the individual research endeavors typically involve only a handful of people, and the level of synchronization required is therefore relatively low. This is in contrast to organizations where the complexity is higher. "There is a lot of stuff in modern corporations that's incredibly complex, not deep, but just complex. For example, look at Windows with, whatever 100,000,000 lines of code, or look at a Boing or Airbus plane with 50,000,000 parts, there is a lot of interacting pieces and a very high level of reliability and finish that you have to have" (Platt 2009). But MSR does not have fifty million parts that need to fit *neatly* together. Or perhaps more precisely, the 'parts' which go into research do not have clear, strict edges like pieces in a jigsaw puzzle, which means that the potential scope for successful paintings is far greater. Within this type of organization, the form of control seems to be more pull oriented than push, as Platt says, "Generally you influence by excitement or maybe suggestion" (Platt 2009). So influence, another term for control, *is* present de facto if not de jure. An extremely important point to bear in mind is that MSR and MDCC are a particular type of organization; they are both more oriented to development than many other organizations. Platt points this out: "What we would consider micro managing for research would probably be considered to be non-management by other people. You have to set the knob" (Platt 2009). This is important to remember when thinking of the language used by interviewees and its relevance in other domains. So what is considered to be simply non-prescriptive in the organizational reality of MSR, would possibly be perceived as sheer anarchy in some other organizations. In this light, some of the practices from MSR may be difficult to accept in other organizational realities. To this Platt says: "The complexity of doing this for a large organization is a very stressful, difficult thing without metrics so I can see why people want to use metrics. Just to make the wear and tear on their brains a bit less, but it's just not as good" (Platt 2009).

Qualitative means quality in this case, it appears.

4.4.11 Eric Horvitz, Research Area Manager

"I find myself playing the role of a conceptual switching post" (Horvitz 2009)

Network view



Story

Horvitz finds that in his experience a positive, enthusiastic style of management yields the best results. Excitement is a good motivator and a good medium for *vectoring* people's behavior. This Horvitz does by verbal interaction with his group managers and his own researchers. Quantifications are absent as a significant management tool. *In stream* communication means keeping in touch and continuously interacting on a day-to-day basis. This is perhaps the organizational equivalent of the accelerated close from financial systems: the more often you engage in seeking to learn the status of the organization, the better basis you have to make adjustments. There seems to be a preference for informal ways of interfacing with the organization. Horvitz exhibits some skepticism about having mandatory reporting mechanisms such as status reports, because they encourage the following reasoning: "As you do things during the year, you always have the status email in your mind for how it's going to look, sort of like doing things to make your CV look better" (Hor-

vitz 2009). Implicit in this critique is the statement that making your *CV* look better does not make *you* better, otherwise doing things to look good in the status reports would truly constitute good things. I learn from this that gaming behavior, which I would normally associate with quantitative representations, is also present when using other forms of representation. In the case of status reports, the 'measurement' is not given a priori, it is formulated by the individual. But behavior in this case may also be skewed towards doing things which will look good when writing about them and/or presenting the most favorable perspectives on reality without altering behavior. In general, whether or not gaming will occur must depend on the scope for producing a favorable (mis)representation of performance *and* depend on the extent to which this behavior has drifted from true performance. A status email will only become a negative practice if the organizational actor is convinced that management rewards behavior which is most effectively conveyed in that format.

To safeguard against this type of behavior, each accomplishment is put under significant scrutiny.

> "People are surprised with the level of detail we actually review at the committee… on single people, every single person in Research… and we sit and we have a presentation and we *debate*. We compare papers, who they are, what they are up to, what their trajectory is, whether they have potential or not. It's a little like going into a bowling alley and seeing the transparency of the spares and the strikes up on the ceiling projected." (Horvitz 2009)

Debating apparently creates transparency or at least creates some clarity and consensus regarding the relative merits of different people or research endeavors. It seems to act as a synchronization mechanism which levels off different preconceptions of the value of different accomplishments. Obviously, the mere fact that this process is necessary points to some uncertainty about what constitutes performance, especially when comparing across fields of research. In passing, Horvitz mentioned that a colleague had suggested that this uncertainty might be the cause of higher effort on the part of the

researchers. "It's better for performance to keep things unclear, because when things aren't so clear... you really work extra hard under uncertainty" (Horvitz 2009, paraphrasing associate). As a general statement, I would be doubtful, but this was said within the context of a research organization. As such, it echoes to some extent Ouchi's (1979) model for task characteristics and control strategy. Rather than being prescriptive, control in the clan form is secured by the use of rituals in socializing. But *task* characteristics are not designed per se by Ouchi; they are taken as given, e.g. if you are dealing with a research laboratory, task uncertainty is per definition a characteristic. Horvitz is speaking of "what's important", i.e. what is rewarded, not the nature of the work. The implication to me is that having an unclear relationship between effort and reward motivates for better performance. The reason for this could be that reward systems are inherently simplistic and the organization should not want to encourage gaming. Another argument could be made that simply by having an unclear concept of what is important would induce people to constantly *stretch* themselves, because you would not know where you stood in relation to the rest of the population. This last argument assumes a very special, self-motivating, naturally high-performing group of people. This is a reasonable characterization of the researchers at MSR, but obviously not all organizations can boast of this to the same degree.

The system is not perfect, though. Horvitz suggests that the necessary simplifications are not as sensitive to some long-term goals as an ideal system would be. There are open questions on how to balance individual and group efforts and how to balance short-term and long-term encouragement. This makes me wonder how arbitrary a *yearly* review could be argued to be. For an organization like MS with so many tempi, the metronome seems to hold the same pace. This is counter-balanced by the *constant* signs which Horvitz senses in his interaction with the organization. Referring to his reporting practice to Managing Director Rico Malvar, he says: "I think Rico doesn't

necessarily rely on my reports. Just like I don't necessarily rely on reports from my group managers, I see the direct signs of things. He sees presentations, he sees papers, he sees rewards, he sees Craig Mundie getting excited about a demo" (Horvitz 2009). These signs present themselves rather than being gathered in an organized manner, but the vectoring which Horvitz and others do naturally has an role in producing them. What possible forms this vectoring can take and how it utilizes different representational forms of performance seems to be a question which resonates with Horvitz:

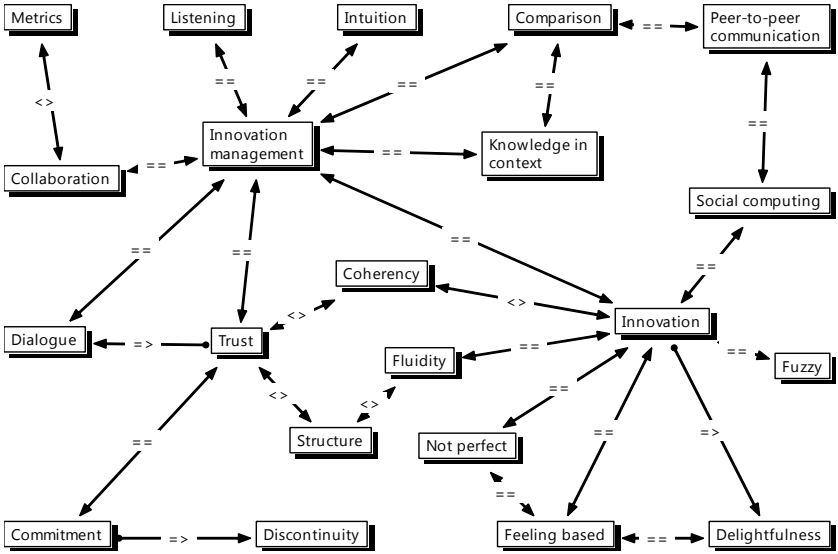
> "I often wonder to myself how slight changes in how we do this would affect the organization, both how people feel, how they work, how efficient they are, how successful they are, how healthy the environment is, how much collaboration goes on. Is there a nice design space that might affect things and what we should do and what we should stop doing in terms of how we manage performance and how we report on it and sense it?" (Horvitz 2009)

In this question Horvitz and I share the same curiosity.

4.4.12 Lili Cheng, Director

"You have to be willing to let it be a little bit fuzzy." (Cheng 2009)

Network View



Story

Cheng has a foot in each world. She works with advanced development, sometimes very applied and sometimes as more traditional research. She has seen the highly innovative world of Research from the outside in a product group and also sees the product from the outside in Research. In my view, this gives Cheng an awareness of *contrasts*. As she says, it can be easier to see your world clearly when you compare it to another. Comparisons are a theme of our conversation. Cheng formulates an important aspect of her role as a manager: "My job is more about ending than about starting in some sense. [...] For most people in research it's really easy to start a new project, that's kind of your job, you get used to that. Sometimes it's harder to know when to stop. Every month, every week that you work on the same thing is time that you are not working on something else" (Cheng 2009). This probably sounds

harsher than it is meant. Cheng also says that *enthusiasm* for the next thing is the best way to move focus forward and away from a less than ideal project. The law of diminishing marginal utility also applies to research work, it seems. But due to the immersive nature of the work, it can be difficult for the individual to see their own work within a broader context: "I think it's important to get outside feedback because I think no matter what you do, you tend to think your little part of the world is the entire world" (Cheng 2009).

This makes it difficult to evaluate when opportunity costs are higher than the marginal utility. Sometimes a project is clearly neither going well nor badly. In this situation, some context is particularly necessary. In her role as a manager, Cheng can provide this context. Another comparison takes place between ongoing projects: "Typically we have a bunch of projects that we work on simultaneously and there is always something that delights people or some way that you talk about it that sparks people. And I think you have to be really open to getting that feedback" (Cheng 2009). Instead of comparing to a predefined set of standards formulated in an abstracted representational language, the comparison takes place between phenomena at the same 'level', i.e. two different projects. Also, the measure of performance is whether it is perceived to be delightful or creates sparks, both personal, emotional characteristics, rather than an objective set of criteria. "You can work on the same idea for ever and you can also make it better. If you are clever, even small things can be really fascinating interesting problems and meaningful and worthwhile to work on. I think the most important thing is to get people outside perspective, so that they can make those decisions themselves" (Cheng 2009). The absence of very rigid criteria for what is worthwhile in combination with people who have the ability to be intrigued by details makes it extra important to validate your impression of the importance of the work with outside parties. Each individual must maintain *fluidity* by being ready to switch to new ideas. I view this as an agency-oriented characteristic.

This fluidity exists in an organizational reality where there is a lot of trust, something Cheng mentions multiple times. I would also view this as an agency-oriented characteristic, but then I find a slight paradox. With trust in an organization comes a high level of commitment, two concepts Cheng relates. But it can be perceived to be non-committal to break patterns and do new things. Cheng relates this dynamic to being in a relationship where going new ways can be perceived as a letdown. "It's just like any relationship [...] I like to work with people who are really committed, it's like you are all in, you're all in to what we are doing and you're just there. And sometimes people almost feel like its breaking that trust to say well, actually I want to work on something else" (Cheng 2009). So commitment can result in a level of *stagnation* or the absence of fluidity. This is not an undesirable thing because she feels it is important for people to see things through to the appropriate degree. However, the presence of trust and commitment seems both to be the cause of slight stagnation and the premise for fluidity, in other words both structurally-oriented and agency-oriented organizational reality. Trust is also a feature of product teams, but less defining than in research. This is perhaps related to the perception that change or fluidity in agency-orientated organizational reality is not disruptive, while in structurally-oriented organizational reality, i.e. product teams, radical change is perceived as disruptive. But Cheng opposes the notion that product teams in general are rigid; in some cases they may be less so than the highly innovative MSR. Within the product groups, small teams or start-ups can be more open, and it is pointed out to me that research work is also done within certain well-defined arrangements. She underscores that it is essential to understand the respective strengths of the different organizational types.

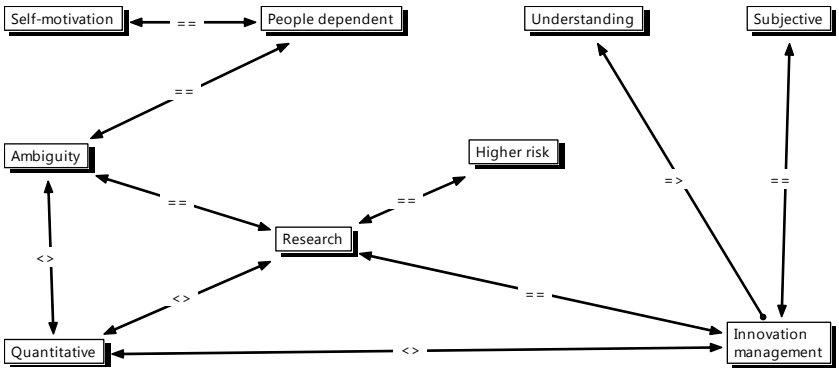
I find myself questioning whether *more or less* structurally-oriented vs. agency-oriented organizational reality is the most useful label to make distinctions with. The continuum in my propositions assumes a cross-fading

scale which itself is a quantitative conceptualization. Cheng's assertions of complementarity, even though *more or less* structured is standard language for her also, makes me wonder if it is worth pursuing the notion that both structure and agency exist in both organizational realities, but that their *form* is different. This would add considerable complexity to the analysis; I would be describing a taxonomy rather than a one-dimensional continuum in organizational reality. Going forward, I will attempt to sensitize myself to a critical understanding of organizational reality as an agency vs. structure continuum. Nevertheless, in this context, the distinction has been kept. Within this fluid organizational reality built on trust and commitment, how does one know if a piece of work is superior to another, I wonder. "Most people at this level know themselves when they have a hit or when it's not working. They have a gut feeling. Everybody has worked on lots and lots of projects before and you know that certain ones where the team kind of jives, the world outside [responds], the problem is ready to be solved" (Cheng 2009). With regard to sensing the performance of people, Cheng tells this story: "When I was in architecture school, we had a studio of about 10-12 people in each group, and they used to post grades up on the wall without names. Basically, I think everybody knew those were the As and those were the Cs. You just knew because you knew how people worked. You just know" (Cheng 2009). In dealing with both projects and people, there seems to be much emphasis on an intuitive, non-explicit process of realizing that a product or project is good and also knowing which people are superior to others. Cheng continues with an example: "How do you know when a design is great? I guess people buy it, or they talk about it in ways that seem more interesting than things that aren't designed. [...] But it's not like you can say that this algorithm worked 20% faster. They are people that you are dealing with. It's always imperfect and you have to be OK with that" (Cheng 2009).

Perfection is associated with being able to put into algorithm, but Cheng is comfortable with imperfection. There is a striking absence of process surrounding both the sensing aspect and control aspect of management, and Cheng is quite firm in repudiating the value of much process in the context of innovation. A specific example of this is seen in one of the few quantifications that exist in MSR as well as in the rest of the MS organization: the practice of stack-ranking people. A numbering practice, such as the benchmarking of people against each other is not conducive to collaboration, Cheng says, because people are in direct competition with each other and presumably because performance and rewards are more closely tied to individuals than project groups. A more fluid approach could be more appropriate, it seems. In terms of reporting, formalized process seems also to have limited value, Cheng suggests. *Listening* is a preferred mode of interacting instead of having predefined reporting formats. The push-approach to communicating possibly fits better with the unpredictable nature of innovative settings. In innovative organizational realities, it seems that managers who consume management information do not know what they will need to know before the fact and therefore cannot ask for it specifically. This is where 'user generated' material may have a value. My impression from speaking to Cheng on the matter is that, while it would be inappropriate to require a certain type of communication, social computing paradigms could be a viable supplement and perhaps even an alternative to traditional forms of reporting in highly fluid organizational realities.

4.4.13 Surajit Chaudhuri, Research Area Manager

Network view



Story

My conversation with Chaudhuri felt too short but he expressed his views clearly and concisely in our brief discussion. Chaudhuri echoes the fundamental view that the quality of the people plays a major role in the resulting performance of innovation, and points out that this might be the case to a larger degree than in other forms of organizations where more process can be established to support the progress towards objectives.

More specifically, the quality of the person is related to a personal trait of how you deal with *ambiguity*. Aversion towards ambiguity will deter high-performance innovative work, Chaudhuri suggests. The prevailing method of measuring performance in academia is in terms of papers presented at (good) conferences and published in journals. Chaudhuri is skeptical of this measure for performance as it does not encompass the true curiosity which is needed to generate innovative ideas and solutions. "If your entire goal in life is to write papers, and that's the be all and end all and you measure yourself on how many papers in good conferences you can get accepted, it's unlikely that you are going to do a big thing. The reason is you are always looking for the least amount of work you can do to get a paper in a good conference"

(Chaudhuri 2009). The quantification which is inherently part of thinking in terms of "how many" is opposed to the ambiguity which Chaudhuri speaks of: "To me the big thing is how you set the culture. Is your culture one where the only thing that is rewarded is the number of papers and where you just force people to madly produce as many papers as possible? I don't think Microsoft set up MSR with the hope of doing that" (Chaudhuri 2009). Of course the example of writing papers and speaking of these as a measure of performance serves to demonstrate the more general issue with over-simplifying the language used in representing the performance of a phenomenon. In organizations where one representational language is used in formal systems and processes, the manager must attempt to convey a *balanced* understanding of what is perceived to be valued, so that the goals most *easily* describable in one language, in this case papers by quantification, do *not* dominate the mind space of the organizational actors. This 'counter-weight' to metrics should be conveyed continuously, so that an understanding of desirable behavior is established and maintained. In his experience, the manager becomes more of a counselor. The manager's role is to provide context for the less experienced innovator. The context will allow the less experienced to better *understand* their own work. The irony is that the lack of experience also seems to be the source of innovative ability. The more experience you have, the less likely you are to create truly innovative ideas, says Chaudhuri. This could be framed within the agency/structure distinction as interaction between the new, local and change-oriented vs. the global perspective with lots of historical relationships. This is the friction which I interpret in Chaudhuri's description of the role of research manager.

This is a high-risk approach with little predictability. With all this risk and the lack of predictability, research in general is prone to lots of mediocre work and very little excellence. Only a tiny fraction of the amount of work done is excellent, while the rest is "by and large noise or a blip in the history

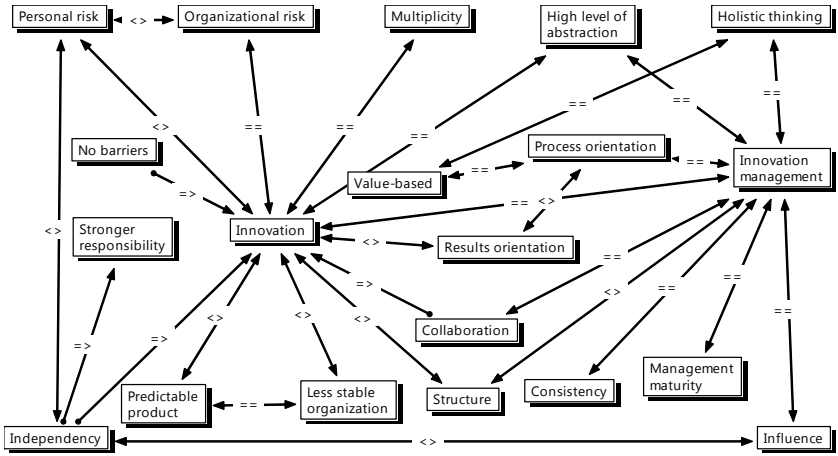
of science and technology. That's the way research works" as Chaudhuri says. Innovation is like gambling. You are placing bets on the future with a large and unknown degree of uncertainty. This causes Chaudhuri to be only "moderately" confident in the performance process used, meaning that the understanding of performance is reached in terms of a *potential* for future performance and that the innovation at MSR is *designed* to be *unpredictable*. In this way, management and reward systems which are meant to be forward looking as well as backwards looking are challenged in an organizational culture which almost takes pride in being unpredictable.

The impression I got from Chaudhuri is that management in such an organization is a balancing act between continuing along the past trajectory or creating new ones (which might go nowhere), between conveying clear pictures of success without being prescriptive, and between thinking of management determinations of performance as being somewhat objective and accepting the subjective qualities.

4.4.14 Rick Rashid, Senior Vice President

> "I'm not very quantitative; I try to look at the global gestalt." (Rashid 2009)

Network view



Story

Rashid has been with MSR since its start in 1991 and has therefore an intimate understanding of the dynamics of the organization. As head of MSR, he obviously has a great deal of experience thinking and speaking about the organization. This shines through in his crisp statements. The approach to management which Rashid has espoused is markedly different from a command and control mentality. A first example of this: "It's important for me to be careful not to try to influence people even when I think they are doing something wrong" (Rashid 2009). Given some thought, this is a striking statement from such a senior manager. To me it reflects the core of a philosophy to management. This philosophy is made up of views on people, objectives and how to meet them, management sensing, the very nature of an organization geared for innovation, and what management practices are relevant within such an organization. My conversation with Rashid left me with the following image of the role of managers in such an organization.

Managers of innovation are in the predicament that they are less able to judge the work in progress of the people they 'manage'. Researchers walk

through a fog in search of interesting things. Their expertise and experience allow them to see a little farther in their area of the fog than others can, but they still navigate by relying heavily on intuition. Lacking depth of knowledge, managers' vision is hindered in most areas of the fog, so they are unable truly to understand where the individual is going or why. To judge the value of the chosen path is difficult because the objectives are not very concrete. The objectives of MSR as conceptualized by Rashid are very different from what you would find in an average organization with less emphasis on innovation and he insists: "We don't have a product. There isn't something specific that we are trying to do" (Rashid 2009). This premise has reverberations throughout the entire organization and its management. This does *not* mean that the organization does not have objectives; the low level of *specificity* of its objectives is important in understanding the scope of this statement. Rashid, I think, means that the product is not specific in the way a certain feature in the next version of SQL Server is specific. However, it is specific at an *abstract* level, for example in that it must move the state of the art.

An a priori yardstick for determining whether an individual or project is moving in a positive direction becomes difficult to conceptualize, since managers are limited in their ability to steer towards the objectives; if there is nothing *specific* you want to achieve, it does not make much sense to expend a lot of effort steering towards it. This underscores the importance of the people for the process. Many managers I have interacted with have spoken about the absolutely critical role of getting the best people into the organization. Rashid reiterates this stronger than anyone: "My belief has always been that if we have really good people, it doesn't matter very much what they do, because they will do good things and we will be able to take advantage of it" (Rashid 2009). Taken at face value, this does not leave much space for management practice to have an influence on the performance of the organization; once the people are hired, managers could sit back and wait for good

things to happen. Not quite. Rashid gives a richer picture of the philosophy that lies behind this strategy. It is based on a fundamental disconnect between *applying* control mechanisms and achieving control in the traditional sense.

> "I think that historically, the biggest mistake that basic research organizations in industry make is that they forget their ideals and their principles and they start confusing output with the way the output gets created. […] The outputs of research are great research results, new ideas, new technologies, impact and so forth. That's not research, that's the output of research. If you try to optimize for the output, you will probably pessimize the output. You'll say, 'I want more of *that*', and by telling people you want more of that, you shape what they wind up doing and you miss opportunities. […]You don't have any control over the results, you don't know where they are going to be, but you will get them. And then you build an organization that's able to take advantage of that." (Rashid 2009)

Attempting to apply *control* over what results are produced will, paradoxically, result in fewer results. By attempting to induce more innovation by *optimization* you risk entering a negative spiral where over-managing lessens rather than increases results, Rashid insists. This dynamic can end up strangling the organization. At MSR, the approach is entirely different. Organizational reality is shaped at a high level by focusing on 'ideals and principles' and levers which support them. Management control to Rashid clearly has little to do with determining the future or adhering to a strict financial regime. It seems to be practiced more by letting a set of values seep through the fabric of the organization. "I think the values of the organization are extremely important, I think the way people think about themselves and the role that they play within the organization, and the way that they think about the decisions that they make are really important things" (Rashid 2009). High-performing individuals are able to adopt the values and become part of the fabric. If you are not able to recognize and adopt this set of values, "bad things" will happen as Rashid says, i.e. your days at MSR will probably be numbered. These values are institutionalized by various means which are

aligned with the ethos of the organization. For example, MSR does not budget at research project level. This is seen to hinder collaboration by creating artificial barriers between groups of people. "It's important for me to create an environment where people believe that they are all working together, that they can share freely, that there is no negative consequence for helping someone else" (Rashid 2009). Instead of clear, objective, quantitative performance targets, other methods *signal* appropriate behavior to organizational actors. Markers *do* exist and they do shape behavior by helping people navigate, although they take a different form than the low-variety language of quantification. Creating a successful organization based on this approach assumes that organizational actors are able to navigate this value space and that the organization has an effective *sensing* capability which allows for a *feedback* loop. The premise is that people within the organization to some degree at least understand this philosophy and recognize it in their dealings with the organization. The absence of budgets is an example of a marker which is intended to help people navigate the organization, and implies that collaboration is valued and silo thinking is not. The approach to *sensing* and *feedback* also reflects this philosophy. The performance management process works with holistic evaluations and no absolutes. "You don't really care so much about the number of papers, you care about the impact of the papers" (Rashid 2009). Routinely, an individual who does well on the most explicit performance dimensions will receive less favorable feedback than another who does less well. Managers are thus expected to depart from conventional wisdom if necessary. An example could be if someone does well on the established indicator of paper publication, but fails to live up to the spirit of collaboration or moving the state of the art. This form of organizational reality requires managers to have the *maturity* to comfortably step outside what may be perceived to be an established imperative for judging performance, for example in favor of *higher-order values*. This maturity does not come in the

form of professionally educated managers from business schools. The people who assume the roles of managers were not recruited for that purpose: "Some of them may be good managers, some of them won't. I honestly don't care. I'm not trying to build a highly structured organization" (Rashid 2009). I interpret this as yet another sign of Rashid's pursuit of an almost anti-structurally-oriented approach as the most effective approach to maximizing output in the form of high quality innovation. This is also reflected in his quest to identify and remove rules of all sorts, which in his experience can almost take on a life of their own: "In a large organization bureaucracy more often than not comes from below, not from above. People invent rules so that they won't have to take responsibility" (Rashid 2009). I think this depends a lot on the organization and that this is likely to seem more apparent in an organizational reality where few rules exist, but the fundamental dynamic is clear: people find comfort in rules and responsibility for actions can be relegated to the rule rather than assumed by the person. If we accept this assertion and we agree that fewer structurally-oriented practices make us reach objectives more effectively, then one task of management must be to actively break down the rules that have been created. Perhaps surprisingly, it is critical to success to continuously do this organizational housekeeping. "If you really want to be successful in the long term you need to run your organization very consistently" (Rashid 2009).

This could also be said of many other types of organizations and surprised me initially because I associated a place of innovation with renewal and change in all ways. But the way consistency looks is different at MSR than, for example, within a product group where a specific software artefact is produced. At MSR there is consistency and stability in leadership with very low attrition in management. This saturates the organization with personal relationships based on trust rather than rules and regulations. Rashid contrasts MSR with a product group: "Ironically what product groups are often trying

to do is to create something that's very stable and very predictable, but often the best way to do that is by having a somewhat less stable and less predictable organization" (Rashid 2009). There seems to be an inverse relationship between 'product' stability and organizational stability. Rashid asserts that in organizations which strive for product innovation, a stable organization is necessary, and, conversely, when looking for predictability in your product, organizational stability seems less widespread.

Perhaps what is stable and conscious is the unique identifier of an *organization*. Having something stable is what distinguishes an organization from chaos and with it random behavior. In the case of MSR, stability is found in values, relationships, empowerment and the absence of rules. This ideal of organizational reality reminds me of the well-known minimalist slogan 'less is more' by Mies van der Rohe. MSR is perhaps the organizational equivalent of his pavilion in Barcelona. Its simplicity and consistency in form leave mental room for the new to happen and act as a *platform* for change as opposed to a finished elaborate *arrangement*. In organizations with less abstract objectives, it is precisely the objectives that are the stable part, while the methods used to achieve these well-defined targets may morph.

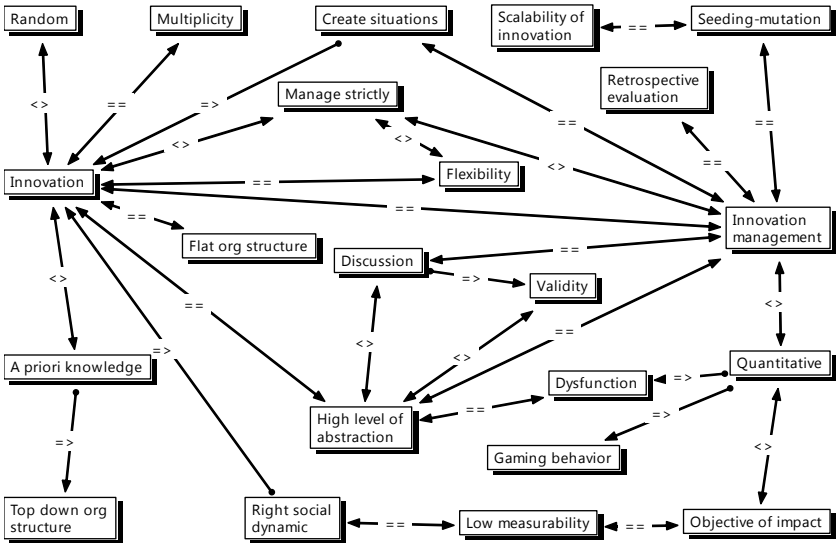
This leads me to moderate my conceptualization of structurally-oriented practices. Reflecting on Rashid's input I now wonder if thinking of structurally-oriented practices in terms of *more or less* is as useful as thinking of them as taking different forms. Even when Rashid and others from MSR clearly state the lack of structure (in a casual sense) as a characteristic of the organization, it seems to me that there must be a *substitutive* force between what I prefer to think of as different forms of shaping structurally-oriented practices. Values replace rules for behavior but it possibly does not make sense to think of them as more or less controlling. It is ironic for me to realize that the language I myself have used to conceptualize the research problem of representational languages may have failed to fully accept the premise in the problem,

namely that one-dimensional descriptions are not universally useful. This will encourage us to rethink the meaning of structurally-oriented and agency-oriented organizational realities. In essence, I have become unconvinced that *more or less* are useful constructs to understand structurally oriented and agency orientation. Alternatively, structurally-oriented organizational realities are simply not the relevant contingency factor for representational forms. For example, if a product group and MSR are equally oriented towards stability, albeit in very different forms, their differences should perhaps be conceptualized in a different way. This modification will be carried forward.

4.4.15 Rico Malvar, Managing Director

> "We are looking for impact, that's the keyword. We are looking for impact… of course that's difficult to measure." (Malvar 2009)

Network view



Story

Malvar has written previously on the balance between control and freedom in a research organization. This is an anecdote from his writing, describing the

hiring process, in which he explains the relationship between control and freedom to potential new hires:

> "I tell them during the interview 'here at MSR you can work on anything you want', which brings a smile to their faces, but then I continue with 'as long as you work on the right things'. That changes the smile to a frown, and they'll ask, 'ok, that means you or my direct manager will tell me what the right things are, right?' Then I smile and say 'of course not!' Then they continue frowning for a few seconds but ultimately realize the simple message: with freedom comes responsibility." (Malvar 2006, 7)

My framing of this as control vs. freedom corresponds to effectiveness in achieving objectives for Malvar, I would say. As the first quote suggests, impact is highly valued. Impactful innovation is one objective of MSR. Because of the nature of the work, characterized by creating discontinuities in the technology, a top-down approach is simply unfeasible. However, absolute freedom with no amount of influencing is also undesirable. Although freedom is often espoused in MSR, Malvar is equally outspoken about the "nudging" mechanisms which do allow for some influence over perceived high potential work. An example of this is when Malvar suggests to his managers that they should sow some seeds in the minds of the researchers, thus nudging them in a particular direction.

> "One thing that I tell my managers is that if you have an idea, and if you want to nudge a researcher to do some work on that area because you have this good belief that this is a good area to research, fine, but never tell the *whole* idea. Tell only a little piece of the idea and let them figure out the rest. In that process they will either figure out what you were already thinking, but now it's their idea, so they have ownership, or they will figure out something different and then you will see if that is better than what you were thinking and more often than not, they will surprise you with a different thing that is actually better than what you were thinking." (Malvar 2009)

Giving limited information to researchers allows the personal creativity to come into play. Without this empty space on the canvas, you would simply be reproducing someone else's idea, essentially filling in the blanks. In a way,

this is a question of *scalability* in innovative work. It seems that the more detail a research manager provides, the less likely the junior researcher is to move in new directions. I think of Malvar's ideas as the choice between optimizing for *mutating* ideas as opposed to *reproducing* ideas. If you are completely certain that a specific solution to a problem is the optimal one, then simply filling in the blanks may be appropriate. This presumes that the most insightful entity is the manager, but when dealing with innovation, the premise is quite different. "What is good and what is bad? That question has a big assumption behind it which is that I know the difference!" (Malvar 2009). This lab director realizes that managers cannot (and should not) know the intricacies of all the work of their direct reports. Instead the goal is to generate mutations of ideas and then let the ideas be exposed to the scrutiny of peers. In a sense, managing innovation seems to be like accelerating a 'Darwinism of ideas'. Though Malvar also says: "Be flexible, but don't be random!" (Malvar 2009). Each generation of mutation is done with some consideration to *prior* experience and knowledge. This is the solidifying, mechanistic aspect with concerns for efficiency and continuity. But there is perhaps also an eye for effectiveness, by acknowledging that the cross-fertilizing which happens in mutual interaction (rather than one-way influencing) improves the quality of the ideas. The point where interaction stops and influencing begins is difficult to establish empirically, but at a conceptual level we could consider if the *influencing* association is relatively structurally oriented as it promotes *sameness* whereas the pure *reflective* interaction encourages *difference*. This general suggestion aligns well with Malvar encouraging his managers to position themselves somewhere between the two extremes of pure communal reflection and pure one-way influencing. So research management is not non-control but, as the job interview story conveys, hardcore control is not deemed effective. Apart from nudging, which is bilateral, some higher-level ways of formulating the goals of the organization obviously exit.

Malvar feels that the high-level objectives of moving the state of the art and harvesting these advances in Microsoft products for the long-term success of the organization are communicated well to the researchers. This is translated into creating *situations* where certain desirable behavior is fostered, says Malvar. Having a flat organization is also indicative of relatively low power distance and this must encourage a perception of the organization as a more democratic entity. Malvar promotes a series of dictums among which are "reward failure", "motivate bottom-up thinking", and "be consistent with your values". These are not specific, so it is difficult to distinguish their very concrete influence on the dynamics of the organization, but by the same token they do shape organizational reality and in that sense are a high-level form of control.

Certain quantifications of objectives for MSR researchers exist such as papers, patents and 'tech transfer' (which is the degree to which MSR thinking or software artefacts are adopted by a product group). These are necessary indicators of performance but do not alone *make up* performance. They are markers that draw attention to themselves and allow managers to hone in and more thoroughly evaluate the performance of an individual, team or piece of work. My interpretation of Malvar is that he looks for these markers in his interactions with the organization and explores them. But Malvar may proactively decide to interact with people in different ways to experiment and learn their patterns of reaction. The sensing process thus involves provoking different social dynamics to play out so as to make judgments on, for example, the level of collaboration. Questioned about the validity of this approach, Malvar says that the implications of the evaluation or decision naturally influence the level of thoroughness. However, discussion is used widely as a tool for continuous calibration and is seen to refine judgments and make them more appropriate.

The following statement triggered an expansion of my understanding of the role of discussion as a sensing mechanism:

> "Even research labs sometimes use the more formal proposal thing where people propose and a committee reviews and they don't talk to each other. That's more opportunities for gaps because everything is mapped to a document and your perceptions are based on what you read from the document without even the opportunity to put forward a few clarification questions." (Malvar 2009)

I notice a few things. In a chain of interactions resulting in a judgment or decision, downstream dynamics are influenced by upstream choices. This is not surprising when given some thought, but has not been given much consideration so far. Reflecting on Malvar's formulation, at least two choices are evident:

1. Synchronous modes of communication seem to be more relevant in this setting. The level of chattiness has previously been neglected by me.
2. Implicitly, having *discussions* points to a need for a relatively rich, high-variety representational language in sensing and control.

Let us dwell on this assertion for a moment. The figure below simply shows examples of different kinds of communication along the two dimensions suggested above.

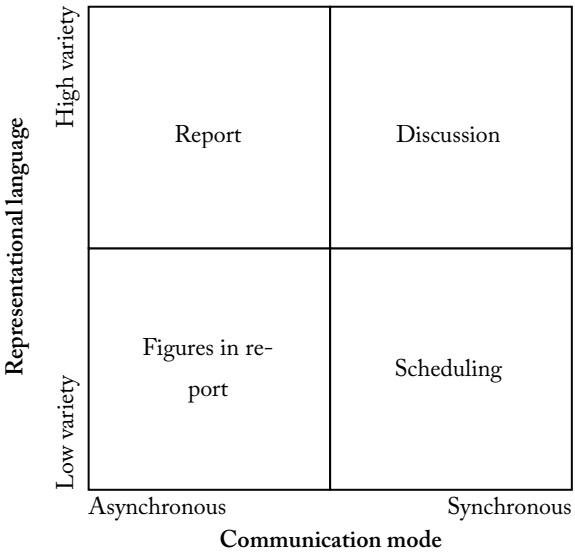


Figure 17: Extending with mode of communication

What we lack in the figure is the concept of downstream implications that Malvar suggests. But before we move to that point, we should agree on the relationship between the phenomenon we seek to represent and the representation, more specifically the level of *abstraction*. Whether a representation constitutes an abstraction must depend on your concept of performance for a specific phenomena. If, for example, Malvar was to consider the phenomenon 'high impact innovation' to be equal to journal publications, then a count of a group's journal publications would *not* constitute a significant simplification. If, on the other hand, 'high impact innovation', for example, should be understood as an organic mix of thought leadership and respect among peers and ability to generate social cohesiveness in the research group, then a simple journal publication count *would* be an abstraction and oversimplification.

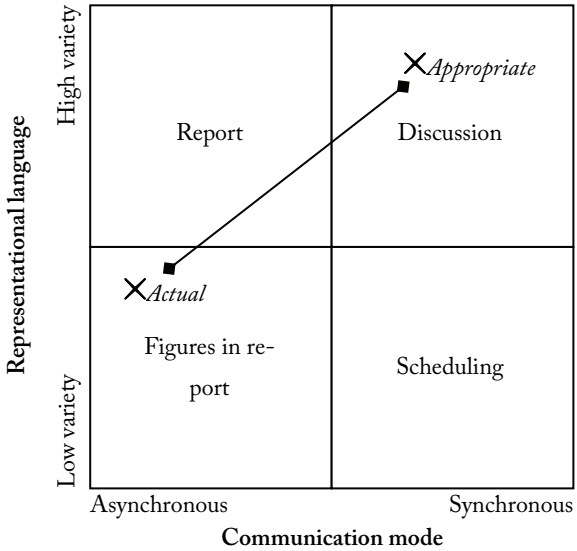


Figure 18: Gap between actual and appropriate

If an evaluation process uses abstracted representations as a surrogate for rich phenomena, the validity, e.g. of the resulting decisions, will be flawed, as indicated by the distance between actual and appropriate representations in the figure above. If we consider a more generalized version of this assertion, it could be that if you use an over-abstracted representational form for practical reasons, e.g. a project proposal document rather than discussion, this might have negative consequences later.

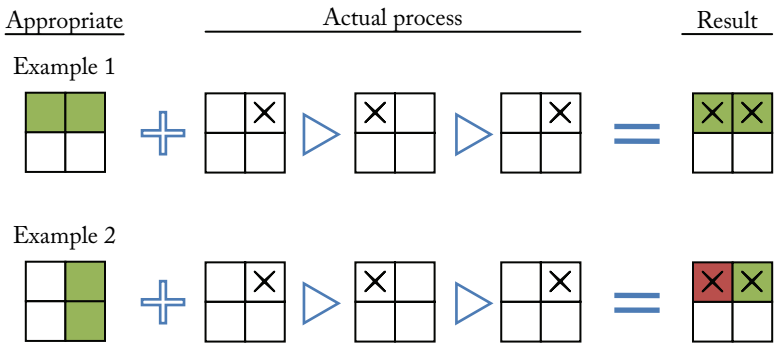


Figure 19: Examples of chains of interactions

Figure 19 shows two examples of interaction processes. First the scope of appropriate representation and mode is illustrated in green referencing Figure 18, followed by a series of actual interactions. In the first example, the representational languages used are considered critical and are adhered to, and the result is therefore green. In the second example, this is not the case. This is obviously simplified for clarity, but nevertheless I am learning that not only does the type of representational language, for example natural language vs. metrics, have an effect on dysfunction, but that the level of interaction among people and sequence of use of different types of representations are critical. This will be integrated into conclusions in our portrait of organizational reality in the following.

4.5 Summary of stories

These stories of performance management have added much richness to our understanding of the relationship between organizational reality and representational forms. My conversation with each manager has been re-presented as a network view which shows and relates core concepts. Complementing the network view, I have provided a brief commentary. We have learned

things both aligning and in opposition to the propositions made earlier. The reader might already sense some patterns in the experiences of these managers. Even if any potential patterns seem indistinct at the point, I have felt it necessary to traverse this lengthy chapter. In the following chapter, I will attempt to provide a rearrangement of the content in the stories to align the data closer to our research question. The intimacy that we now have with the data should make this step more meaningful to the reader.

Chapter 5 Findings

In this important section, the empirical work will be related to the research question of fit and interaction between representation and reality. Before presenting the results, we will look at the technique used for relating empirical data to the propositions. The results will then be presented in a format which is close to the data as well as in a more abstracted version. We will end this section with critical reflections on the limitations which have become clearer through the field work in both the formulation of the research problem and the findings.

5.1 Procedure for the analysis of propositions

The overall goal of this research is to explore how organizational reality and representational forms used in its management interact, and whether this interaction could possibly be the source of dysfunctional behavior in organizations. A relatively clear *pre*conception was described of the different forms of representation, or languages, which vary in the number of varieties and also ambiguity. The description of organizational reality was a little more hazy, although Ouchi (1979) and Galbraith (1977) provided a framework for interpreting the data. This interpretation is what I wish to focus on now. The point of this enquiry is to understand what sense is created by viewing the data through the lens of propositions on fit and interaction while keeping in mind the questions of organizational reality presented earlier. Do the propositions resonate with the data and what modifications of our propositions can be extracted? This is *not* theory testing, but exploration and theory generation in acknowledgement of certain influences.

On the basis of this loose framework, themes were explored in the collection of testimonies from interviewees and presented as stories. The framework most definitely influenced the topics I explored in my conversations in order to achieve some exposure to the propositions. This exposure is what

was presented in the previous chapter as stories of management. In the following we move our perspective from the individual manager's perspective to a holistic perspective covering the *collective* positions of all interviewees. Without the stories, my feeling was that the reader's interpretation of the following would be based on too weak a foundation. In the analysis of each story, the network shows *that* individual's views and concepts and how they relate. Every node and relationship in every individual network has been compounded into a larger network. This larger network holds *all* the nodes and relationships of *all* the interviews presented. Since any combination of two nodes can only have a single relationship, there is a possible risk that contradictory views cannot be shown, but this has been addressed by choosing variations of the code. Organizational reality is not a single unified concept. In people's utterances, the picture of their organizational reality is described mainly in terms of relevant practices and relevant ways of dealing with organizational reality. Bar some limited direct reflections on what an organization *is,* practitioners tend to convey their understanding of organizational reality in terms of how to *deal* with organization. The managers I spoke to are actors in the sense that they are accustomed to taking *action*. For the most part, their conceptualization of organizational reality is embedded as assumptions in their views of good, sound, management practices. They seem to theorize in terms of contingency thinking or, in other words, their thinking would be something like: in situation X do A, in situation Y do B. The linking of X with A and Y with B is a source of insight into the difference in their world between X and Y; this is what changes in the world and what determines relevant action, in our case specifically the use of different representational languages.

5.2 The families of representation and reality

The process described in the following is critical to evaluating the results obtained. The question to bear in mind is how to move from a very large network with roughly 400 codes and twice as many relationships to something more meaningful and with coverage of the propositions presented earlier. *On the basis of our propositions and a constantly evolving conception of agency orientation and structure orientation in representational forms and organizational reality, codes have been further categorized into 'families'.*

All codes have been evaluated. Based on *presumptions*, the codes have been deemed to relate either to 'organizational reality' or 'representational forms' and either to 'agency oriented' or 'structurally oriented'. If applicable, they have been assigned to one of four families which represent the two dimensions (organizational reality and representational forms) and two orientations (structurally oriented or agency oriented).

This is really *little more than a qualified guess* aimed at letting the data define and fill out some concepts. Experience gained from all the interactions with the managers and through working with the data permits me to make this guess. The reader should note that each family relates directly to the theoretical propositions posited in the research problem. This is an attempt to apply some abstraction to the highly complex data in the light of the propositions. I have chosen to illustrate the codes in the format of 'clouds'. These clouds show all the different codes within each family, one cloud for each family, while altering the size of the individual code according to the density of the code. The density shows how many relationships the code has with other codes (irrespective of family), so it is an indicator of theoretical centrality. I urge the reader to examine the clouds closely and feel the complexity but also attempt to see how they could form a semi-consistent whole.

5.2.1 Family 1 – agency-oriented representational forms

In the first family seen in Figure 20, we quickly notice that we have many concepts not as close to concrete representational forms as narrative or natural language, although these clearly do dominate. The language of the interviewees is broader than what I expected initially, and the family reflects that. This family (and the next: structurally-oriented representational forms) show codes for representational forms, characteristics or modes of communication related to *knowledge generation*.

Figure 20: Codes for agency-oriented representational forms

5.2.2 Family 2 – structurally-oriented representational forms

No real surprises in this family. The picture is dominated by flavors of metrics-related representational forms along with some related characteristics, such as a priori and validity.

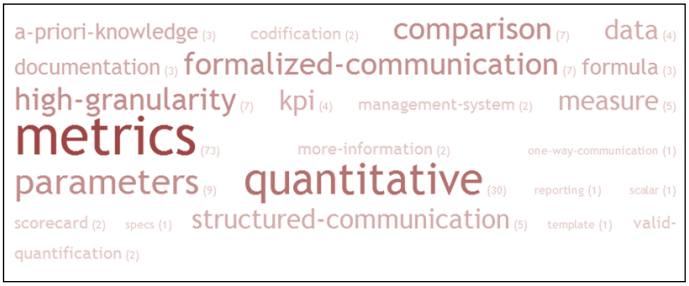


Figure 21: Codes for structurally-oriented representational forms

5.2.3 Family 3 – structurally-oriented organizational reality

Fortunately, the families relating to organizational reality are significantly richer, as this is the dimension we would mostly like to explore. This first cloud shows the codes that I suggested for categorizing structurally oriented.

Figure 22: Codes for structurally-oriented organizational reality

5.2.4 Family 4 – agency-oriented organizational reality

The final code family is the richest, with more than 150 concepts in the cloud.

Figure 23: Codes for agency-oriented organizational reality

5.3 Relationship between representation and reality

At this stage we are left with no clue as to the *relevancy* of the families; I have simply grouped our codes into four families. The more interesting step is to explore what the data shows about *the relationships within and between the families*, i.e. how the codes from one family relate internally and relate to the codes of other families. The relationships between the codes are used to explore the relevance of the guesswork. In effect, a hypothesis of a definition of the four concepts above is made and then 'tested' in the data using the following process:

1. *Within* each family, I show the internal *cohesion* based on types of relationships between the codes. I show how many associated-with, cause and contradictory-with relationships there are between the concepts within each group. Since we have four families, this gives us four sets of relationships.
2. Links *between* the four families are counted. This is the time of reckoning! Here we will see the fit between the four different families resulting in six relationship sets.

Following this procedure, we have a total of ten sets of relationships, four within families and six between families. Each set of relationships shows *association* relationships (==), *cause* (=>, <=), and *contradiction* (><). Each relationship set shows the relative weighting of the types of. The presence of many associated-with and few contradictory-with relationships is a sign of cohesion. Each pie in the following Figure 24 shows the *distribution* of different relationship types of each of the ten relationship sets. Since the actual number is less important than the relative weight of different types, the numbers have been omitted entirely. The reader is urged to appreciate the significance of this procedure, before moving on.

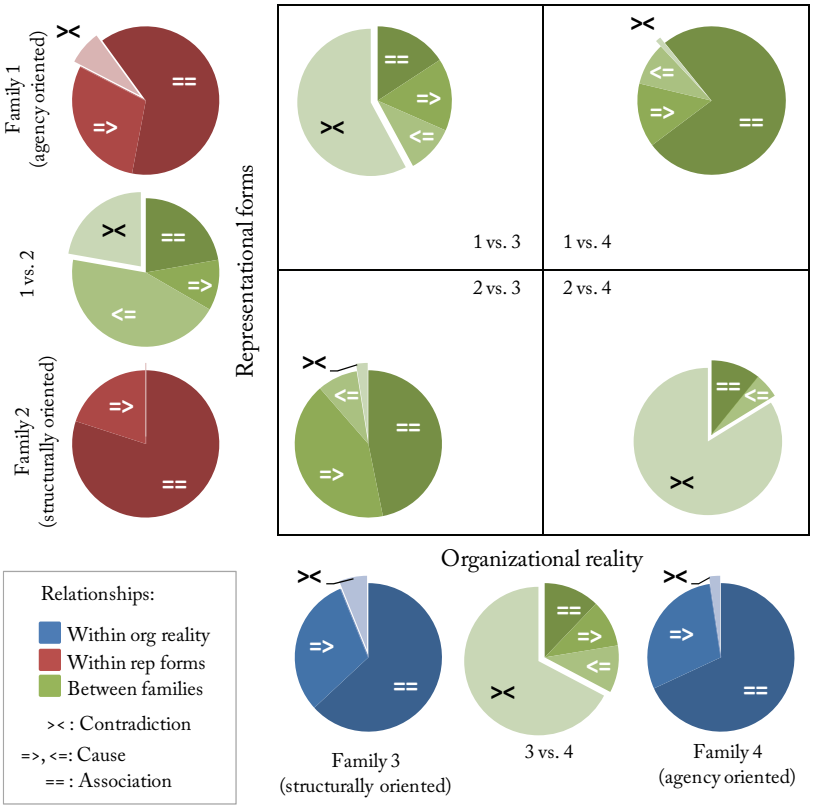


Figure 24: Relationships within and between families

Notice that we here move from a rich representation to an implicitly numerical representation by equating one relationship with another, even if the numbers are not shown. We should be *very cautious* about the conclusions made using this procedure. However, there is *some* significance to the internal consistency and types of relationships that are predominant within and between the four different families. The map provides quite a clear picture of how the data shows fit between the different families of codes. This is done by cause-by links, which clearly show what causes what, and the associated-with links. If the interviewees have suggested any *interaction* between organi-

zational reality and representational forms, it will be evident here. On the basis of the figure above, the following observations can be made:

- Within each of the four families, there is almost complete internal cohesion. In other words, the codes within each family fit well with each other. The data therefore corroborates that the grouping of the families as shown earlier in the code clouds is sensible. Note that nobody was exposed to the labels structurally oriented or agency oriented, so these are labels (with some theoretical connotations) I apply to a bucket of concepts. What we know now is that within each bucket of concepts, i.e. family, they support each other very well and on that basis I conclude that the grouping is fair.
- Our propositions would also suggest a good fit between families 1 and 4 and families 2 and 3. This is also very clear from the data as we see almost no contradicted-by relationships between families 1 and 4 and between 2 and 3. This confirms the relationship between organizational reality and representational forms.
- Our propositions would suggest a misfit between families 1 and 3 and 2 and 4. The data shows a clear misfit between families 2 and 4, i.e. that structurally-oriented representational forms are in contradiction with agency-oriented organizational reality. However, the data is less clear on the contradiction between families 1 and 3. Although more than half of the relationships are contradictory, a significant portion is cause relationships. Very concretely, the data shows that agency-oriented-representational forms are *not* coherently in contradiction with structurally-oriented organizational reality. A closer examination of the underlying data shows that the data both reasons *for* the need for dialogue and argumentation in synchronization and highly-integrated organizational realities and rea-

sons *against* verbal reporting and narrative in mature organizations and products.

- Between families 1 and 2 and between 3 and 4 we would also expect a high level of contradictions. Again we see some surprises. Between the organizational-reality families, the relationship is roughly 2/3 contradictions, but between representational forms the picture is reversed; only 1 in 3 contradictions and 2/3 positive relationships. The underlying data shows a strong suggestion that structurally-oriented representational forms cause agency-oriented representational forms. Put plainly: metrics lead to talk.

Consider this last bullet together with the previous observation of positive links between structurally-oriented organizational reality and agency-oriented representational forms. Considered together, we get a picture saying that structurally-oriented organizational realities use *both* representational forms, and particularly that in structurally-oriented organizational reality, quantifications induce natural language type representational forms.

In summary, we can conclude that, on the whole, the data *shows extremely good resonance* with the grouping of families and supports our propositions regarding their relationships with an important exception. It could be argued that, although the work has been done within a Development site (representing more structurally-oriented organizational reality) and a Research site (representing more agency-oriented organizational reality), the Development site is less structurally oriented than many manufacturing organizations, for example. This could account for the suggestion of combination of representational forms. From the data, this seems likely. The MDCC site is organized around projects and, despite some allusions to the site as 'the factory', the level of repetitiveness etc., is clearly considerably lower than in a real factory. On the other hand, if we were to reflect on the implications of

taking the data at face value, it could mean that agency-oriented organizational realities confine themselves to agency-oriented representational forms, but that structurally-oriented organizational realities make use of the whole spectrum of representational forms. As the reader will have noticed, the data has not been presented split according to site. This has been done, and exactly shows a different emphasis in that MDCC has coverage for a wider range of organizational reality and representational forms, while MSR is more focused on the agency-oriented aspect. However, interestingly, these different perspectives are very compatible: there is congruence between the two sites in terms of the properties differentiating organizational realities. We now take a closer look at abstracting findings on these properties of organizational reality.

5.4 'Distinctions' and five other aspects of organizational reality

After reading and rereading the stories and closely examining the tag clouds showing the concepts within each of the four families, certain *dimensions emerged*. These dimensions are a further abstraction from the data, and where I definitively leave the wording of the data behind. Although these dimensions are not the only thinkable dimensions one could extract from the data, they resonate well with the data. I have maintained the audit trail from these abstract dimensions to the families to the data, so the origin of each dimension can be traced back to all individual quotes from interviewees. In the following, I will concern myself with organizational reality only, as this is the current focus of our inquiry. These emerged dimensions describe the difference between structurally-oriented and agency-oriented organizational reality. They are *dimensions* in the difference between structurally-oriented and agency-oriented organizational reality. As such, the dimensions are related to concepts seen in the cloud for both family 3 and family 4. Before moving to

the dimensions, I will offer the reader the following little story, which is a story of organizational reality. The reader might be interested in this, because it shows how the author arrived at synthesization by means of writing a piece of narrative.

> This is a story of organizational reality. In the beginning, reality consisted only of gas. At this stage, the gas filled the reality. There was no void. Some areas of the gas were slightly denser than others, but on the whole the density was fairly even all over this reality. This inhibited visibility; in general *visibility* was poor. However, even though density was even all over, there was lots of *variation* between areas of the gas, this is certain. The variation looked like overlapping gradients, very gradually changing color and exchanging other characteristics, which faded in and out as an observer moved through reality. Even though this gas may have consisted of particles, the *small size* of these particles and the manner of their interaction did not allow an observer to *distinguish* between them. The lack of ability to distinguish between areas meant that communication was kept in *general terms*. The *connectedness* of these particles meant that the movement of one tiny particle had *repercussions* throughout reality. This dynamic meant that reality was constantly *changing*, but its *trajectory* was difficult to make out because of the low visibility and high *interaction* between the tiny particles. The unfolding of this reality simultaneously seemed *fluid and surprising*. It was both a continuation of previous states and full of *unpredictability*. It seemed to make most sense in *hindsight*. Also, a lot of *friction* existed between all the particles constantly moving within the gas rubbing shoulders with each other. It seemed as if the particles were constantly *negotiating* what to do next, disinclined to *reveal* their *intentions*, but they were probably just following their nature. Time passed. In this reality, *gravitational* force existed. This force gradually pulled areas of the gas closer together to form highly *dense* areas. Some gas still existed between these high-density areas, but most of the reality seemed now to be constituted by these *distinct* areas. Since these high-density areas consumed a lot of the gas previously dispersed, visibility *between* these high-density areas was better now. Observers of this reality could more easily *identify* high-density areas because of their clear *borders* and void between them. Now areas seemed dominated by *homogeneity*, either very dense or almost void, so variations were fewer, but stronger. The high-density areas now prevalent allowed observers to consider them as individually uniform entities distinct from the void surrounding them, a sort of *polarization* in density. This in turn allowed for a different type of *deliberation* about them. The areas had only weak interconnectedness unless directly in contact with each other. It was now possible to *predict* their movement and interaction in relation to outside influences. In a sense, visibility was increased in terms of both current state and future states, so temporal visibility existed natively. Desired *future* states could more easily be described now since the distinctiveness of

> these high-density areas conveniently provided observers with the ability to effectively assign concrete *labels* to them. These labels along with the distinctiveness of the areas provided the necessary conditions for *determining* the future, or at least so it seemed. After some time, observers detected what seemed to be anomalies. Sometimes the gravitational force which was taken for granted in this reality was reversed and high-density areas were dissolved and reverted back into a gas-like state. After much scratching of heads, it was noticed that the way these areas of gas were *described* affected their tendency to densify or to disperse, to become more or less distinct. Describing them as distinct accelerated their distinctiveness, while describing them in broader, more ephemeral terms seemed to disperse the high-density areas into looser gradients of gas. This led to much confusion among the observers and more head-scratching. What was now the nature of reality if simple describing it actually alters it? Did the gravitational force actually exist? What exactly was the status of descriptions? What exactly was the meaning of prediction? A further observation was made. Even though describing reality as made up of distinct parts accelerated the process of gravitation, observably resulting in more distinct areas, some problems arose in the process. Among observers, there was outright confusion when describing reality as made up of distinct parts, when gas still prevailed and no distinct parts were identifiable. Should observes relate to the labels assuming the existence of distinct areas or the much more dispersed reality? Even though the labeling assuming distinctiveness would thrust reality towards a convergence in distinct areas, during the process the relationship between the label and reality was unclear.

This little story should serve as a backdrop to understanding the more systematic presentation of dimensions. The following are the dimensions I see within the codes that collectively define organizational reality and end with an overarching category, a concept which to me has great explanatory power. It is important to realize that each dimension depends on the others. They cannot stand alone. Furthermore, the term 'dimension' possibly implies that they are mutually exclusive and that each code/concept from the families will fall into one dimension. This is not the case. I have related each code to one or more dimensions, with only few exceptions for codes which seem not to be describable within these dimensions. In other words, the criteria I have set for the appropriateness of these dimensions is that each code can be faithfully described using the dimensions.

- *Segregation*. It seems clear that many codes within the organizational reality families differ according to assumptions of the world as made up of separate parts and properties or inherently overlapping and reciprocal. Segregation is about being able to distinguish separate entities in organizational reality. This will manifest itself as evident 'visibility' of separations. To what degree does it make sense to think of organizational reality as made up of separate parts? Obviously physical objects will tend to be able to exhibit strong segregation. All comparisons, explicit or implicit, assume partitioning reality and assigning properties to those partitions. Structural orientation will tend towards high segregation while agency orientation will tend towards less visibility, hence lower segregation. Horizons are shorter in non-segregated organizational realities.
- *Interaction* is about how the parts or features of organizational reality interact. Based on assumptions of clear segregation, interaction will tend to be understood as causal, while less distinct parts, which we could think of as ingredients, will have more fluid interaction, like ink in water. Structural orientation will tend to understand interaction as causal with high predictability. Agency orientation will tend to assume more fluid interaction, less predictability and therefore shorter horizons. Agency orientation will tend towards more frequent calibration of direction while structural orientation will tend towards more remote, long-term control.
- *Momentum* is about the nature of change. While there is no difference in the amount of momentum in various organizational realities, more segregation will mean denser conceptual entities with greater momentum, making it therefore less easy to alter their trajectories. Also, a dense object will require fewer nuances to understand and predict because of its uniformity. To predict a highly-fragmented

phenomenon requires a deeper understanding of its dynamics. Density is associated with structural orientation, while agency orientation is associated with more dispersed conceptual entities.

- *Unfolding* is about the natural tendency of entities to gravitate toward each other or not. Movement towards *increasing* agency orientation will have centrifugal effect while structurally-oriented organizational reality is understood as accelerating the gravitation which serves to reinforce segregation. Note that this is a *dynamic* dimension of organizational reality in that, for example, structural orientation will reinforce structural orientation. This shows as maturity.
- *Objective* is about the goal of the organizational reality. A core property of the objective is the level of *abstraction* used to describe it. Level of abstraction relates to the ability to describe the tangible characteristics of the objective. Agency orientation tends to have highly abstract objectives, while objectives within structurally-oriented organizational reality are relatively less abstract. The highest level of abstraction in an objective is simply to describe it at as The Good, with inherent value.

Collectively, these five dimensions all relate to an ability to make meaningful *distinctions* and the implications thereof. If we should insist on only a single term to understand the breadth of variety in organizational reality, the ability to make meaningful *distinctions* seems most effective.

The concept of distinctions is not new, and even in the data it is mentioned explicitly by Buxton (2009). My frame of reference for this concept stems mainly from my flirtation with Luhmann's autopoeisis (Åkerstrøm Andersen 1999). Borrowing from Luhmann, we could frame the use of a representational language in management practice, such as narrative, as a *system* which isolates itself from the larger complexity. Buxton refers to a

work, the 'Laws of Form' by Spencer-Brown, which clearly inspired Luhmann. An excerpt from the introduction: "The theme of this book is that a universe comes into being when a space is severed or taken apart" (Spencer-Brown 1972, v). Translated, this means that the atomistic cognitive act is made up of drawing *distinctions*, and it is through these contrasts that both (in the case of two) concepts 'come into being'. There would be no day without night, etc. This is the essence of Spencer-Brown as I understand him. Piaget (1950) views the same fundamental concept from a different perspective. As we march through life, the granularity of these distinctions becomes finer and finer. The process of making distinctions in how to react to the world is developed through Piaget's *adaptation* and the twin concepts of *assimilation* and *accommodation*, which collectively result in adaptation. Assimilation consists of relating one concept or thing to another by assuming similarity, while accommodation is the process of making a distinction, and adapting appropriately. While the concept is usually used to describe how our cognitive processes create finer and finer granularity in our understanding of our world, Buxton (2009) uses it more specifically to suggest that control systems must adapt to the organization within which they are introduced. I should like to clarify my interpretation of the commonality and relevance between these theorists. Essentially their works define the outline of an epistemology. Spencer-Brown, Piaget, and Luhmann for that matter, are all concerned with the creation of knowledge. Spencer-Brown may call this 'cognition', Piaget 'learning', and Luhmann 'communication', but all are related to epistemology. They all three use the analytical concept of *distinction* as a cornerstone and evolve it in different ways. What has all this to do with performance management you might wonder. The critical point is that to be able to *meaningfully* create knowledge, you must have the *relevant* level of abstraction in your knowledge-creation process. In the context of management practice and PM specifically, metrics or narrative are two examples of knowledge-creating

practices at different levels of abstraction. The point is that as we find ourselves at various positions in the organizational reality continuum corresponding to our ability to make meaningful distinctions, our knowledge creation practices should adapt accordingly.

I have also found that Latour's distinction between ostensive and performative understanding of social processes in organizational reality (Latour 1986) is an effective abstraction and extension of the findings from the empirical work. Applying Latour's distinction to the more general concepts of 'routines' has also been done (Feldman and Pentland 2003) but an important difference is that we are mainly concerned with the assumptions of the phenomena rather than the PM routine. Social processes such as those we wish to manage the performance of (and indeed the PM practice itself) may have both ostensive and performative aspects. The ostensive understanding in essence asserts that social processes share characteristics with physical objects in that they have essential features which can be uncovered and perceived. This aligns well with the structurally-oriented organizational reality of the phenomena of which we wish to represent the performance. Alternatively, a strictly performative understanding of organizational reality would assert that the phenomena cannot be understood directly by an outside observer, but only exist within the practice. Performative understandings of (the performance of) organizational reality would more readily allow for a plurality in how performance is thought of.

This theoretical detour simply expands on the concept of *distinction* which, this author strongly feels, emerges from the data. This is an overarching concept which could and perhaps should guide us in understanding organizational reality and with it the representational forms used in its management practices.

5.5 Creating representations is an epistemic practice

From the initial propositions and the empirical findings we concluded that the concept of *distinctions* may be useful to understand differences in organizational reality. Likewise, I have considered the codes related to representational forms. The concept clouds in families 1 and 2 relate to some very fundamental distinctions in *science*, which extend from questions of representation to questions of epistemology. This is perhaps not surprising, but, to this author, it is fascinating that the data seems to be building a relationship between ontology and epistemology and suggesting that PM be better understood as a *knowledge generating practice*.

If performance of the organization has become the de facto ontological frame from which we understand organizations and their goals, performance management should encompass the corresponding epistemological aspect in business administration; this is how managerial knowledge is created and mobilized.

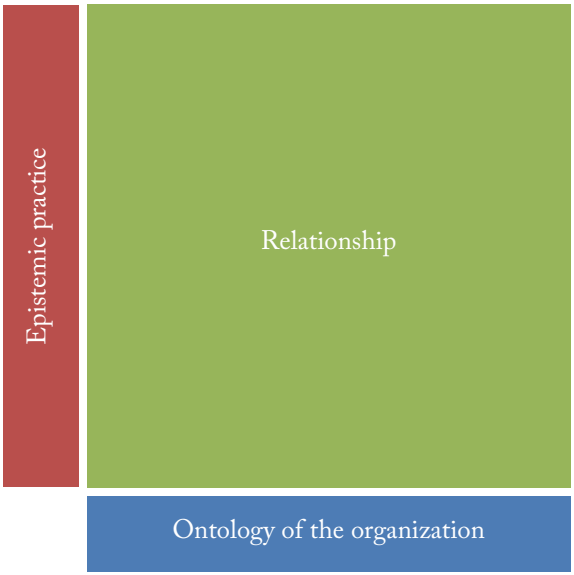


Figure 25: Ontology and epistemology

The justifiability of this is particularly debatable. In plain language, the process has been the following. Managers spoke about contingencies for different ways of representing. These contingencies have formed our concepts of organizational reality. This author then interprets representational forms as related to questions of knowledge generation, and by implication extends the data from management practices to epistemic practices. Very valid objections could be made as to the relevance of the data for concluding on anything as lofty as epistemology; some might insist that the managers have said nothing about epistemology. Other fundamental question could obviously also be raised about the relevance of any empirical data for questions of epistemology. Seeing this relationship is (clearly) both a result of the data and how it is seen, but it would probably not be seen without a certain fondness for pragmatism. Nevertheless, to this author the relationship is evident. Likewise, the extension of the voice of the data from speaking of the relationship between organization and representation to ontology and epistemology is in this author's view valuable and legitimate. The reader is now duly warned of the train of thought, but invited to be critically sympathetic to the further implications presented below.

Once PM has been recognized as a knowledge-creating practice, we can extend our twin concepts of agency orientation and structurally orientation even further, from the empirical foundation back to theoretical thinking. Fuchs (2001) places the agency/structure distinction within a wider set of apparent dichotomies in social sciences, as shown in Table 3. Needless to say, this discussion has massive history, and is not new within IS either (e.g. Fitzgerald and Howcroft 1998), as is evident in Table 4.

Agency	Structure
Reasons	Causes
Action	Behavior
Micro	Macro
Intentions	Mechanisms
Lifeworlds	Systems
Humanities	Sciences
Soft	Hard
Understanding	Explanation
Mind	Body
Subject	Object

Table 3: Great Divide in social science (Fuchs 2001, 25)

Soft	Hard
Ontological level	
Relativist	Realist
Interpretivist	Positivist
Subjectivist	Objectivist
Emic/Insider/Subjective	Etic/Outsider/Objective
Methodological level	
Qualitative	Quantitative
Exploratory	Confirmatory
Induction	Deduction
Field	Laboratory
Ideographic	Nomothetic
Axiological level	
Relevance	Rigor

Table 4: Summary of 'Soft' v. 'Hard' Research Dichotomies (based on Fitzgerald and Howcroft 1998, 319)

These two tables have significant overlap with the empirical finding presented in the concept clouds, suggesting that lay organizational actors have an excellent intuitive understanding of some of the scientific frictions. In addition to the contrasting of concepts seen in the tables, we could approach this discussion framed by the classic thinking of Burrell and Morgan (1979) on paradigms in organizations. They understand paradigms "as being defined by very basic meta-theoretical assumptions which underwrite the frame of reference, mode of theorizing and modus operandi of the social theorists who operate within them" (Burrell and Morgan 1979, 23). Assumptions, often implicit, are key in differentiating between paradigms. These paradigms have divided researchers in what often seem to be religious wars. What may have fueled the perception of these discussions as religious is the difficulty of establishing or at least agreeing on the conditions for leaning towards one of the two extremes. What should determine the relative merits of one school over another (if this is seen as an either/or question)? Some may swear an allegiance to the hard end of the spectrum claiming it to be the only true beneficiary of the title 'Science', while others mock this approach, for example with reference to the lack of voice given to the phenomena. In my (limited) experience, we too rarely see a carefully argued coupling between a gap in our knowledge and the chosen approach to close the gap. Implicit in this line of reasoning is that there should in fact be a coupling between something we need to know and how we should go about achieving this new knowledge. This very quickly becomes a difficult problem, because the knowledgeability of the *factors* which should influence *which approach* we chose in the knowledge-creation process is difficult to ascertain. But this is exactly what the data seems to be showing. In my interpretation, the data supports the assertion that the arguments supporting one approach over another should originate with the phenomenon and not with the approach itself (which to me amounts to philosophical equivalent of pulling oneself up by the waistband of

one's own breeches). The difference between the dichotomies in the above tables and the data is, perhaps, that the dichotomy between agency and structure is dissolved and proposed as two inherently interlinked perspectives, very much as Giddens would insist (Giddens 1993). These perspectives are not akin to 'traditional' concepts of paradigms, which *exclude* each other like perspectives battling for hegemony, but are perhaps like floodlights or security cameras which point at each other and thus inform each other and reveal the blind spots which each perspective has.

Despite the difference between viewing the aspects of agency orientation and structure orientation as complementary as I would claim the data does, or contradictory as the label 'dichotomy' suggests, it may be valuable to draw in terminology from the theory of science to inform our examination of PM practices. So applying concepts borrowed from the theory of science will offer a reference point for discussing PM.

The goal for the inquiry, i.e. PM practices, is to uncover *essential features* and specifically those features which are important and to discard the noise. The goal is to distinguish between the general and the specific, contingent factors. PM practices assuming ostensive characteristics of organizational reality will firstly assume that features can be exposed to the observer and, secondly, that by uncovering the differentiation of the general and the specific, we will be able to manage more effectively. The ostensive view focuses therefore on an a priori understanding of performance, i.e. asserts the relevance of what we can ascribe to a static, structurally-oriented understanding of performance. Representational practices which assume reality to be essentially performative would emphasize the value and inevitability of local understandings, which do not necessarily fit well with each other. Truly gaining access to the phenomenon can only be done by experiencing it and interacting and possibly altering the phenomenon. So while the ostensive is aligned with a structurally-oriented aspect, the performative focuses on the agency-oriented

aspect as concluded previously. These different representational (and epistemic) practices have implications which extend into the form of knowledge created. I use *knowledge-form* as a notion to express differences in the *product* resulting from typically structure orientation (e.g. ostensive assumptions and quantitative methods) on the one hand, and agency orientation (e.g. performative assumptions and qualitative methods) on the other. The distinction between nomothetic and ideographic was originally proposed by the Kantian philosopher Windelband (1904) and I have found these twin concepts to complement our framework well. Nomothetic knowledge, or a nomothetic approach to knowledge, would extend the assumption of generalizability from the ostensive thinking via quantitative methods to actually producing knowledge that tends to aim at deriving *rules*. In the context of PM, the concept of rules may be substituted with patterns or trends. Nomothetic knowledge is the 'product' of representing patterns, because the use of (seemingly) equivalent representations, i.e. numbers, leads us to believe that they can be perceived as a whole. Conversely, the type of knowledge typically resulting from performative assumptions of reality and qualitative methods is an ideographic 'type' of knowledge, which tends to aim for deeper understanding of the phenomena, in this case organizational performance, in rich, perhaps complex, perhaps implicit or non-verbal forms. I propose that nomothetic is most structurally oriented, while ideographic knowledge shares more with an agency orientation.

This finding, briefly presented, may for the dramatically inclined be interpreted as an argument against dogmatic knowledge generation both in science and in practice, and in favor of informed plurality in our approaches to knowledge generation. PM practices as a whole then just become a single sample within the much larger category of knowledge-generating practices. While this author is convinced of the relevance of the data's applicability to knowledge generation in this case, its theoretical generalizability is highly

questionable. Before moving on to challenging various aspects of the research model, we could simply conclude that there is a group of highly experienced practitioning managers who do not see fundamental incompatibilities between different knowledge-generating practices, but, on the contrary, see them as complementary. I wonder if we can better support this finding in our PM practices inherently, or if this multi-epistemology is doomed to live outside information *systems*.

5.6 The authority which defines performance

Until now, we have not examined a very central concept: performance. Performance in countless different uses and in countless different contexts has somehow become both something which is used as a matter of course as a placeholder for all things positive and is simultaneously considered only to be well defined at a highly abstracted level. I have preferred to arrive at an understanding of performance *through* the analysis rather than prior to it. This section is concerned with a characterization of performance within reality. We have seen, especially at the agency-oriented end of organizational reality, that performance becomes related to *taste* and *values* and not to some objective, external yardstick. Conversely, at the structurally-oriented end of the spectrum, there seems to be an assumption of essential characteristics which we grasp effectively when representing it; one might say that *truth* is more immediate than with agency orientation. Since performance is such a central concept, it is worth pausing and reflecting over this. How should we think of performance in an organization which allows performance to be such diverse things as, for example, the pursuit of profit maximization and far more abstractly based on a personal preference? As the section heading hints, I have become convinced that we must always understand performance relative to some external reference point and not think of it as something fundamental. In the following I will expand on the argument leading to that conclusion.

To determine if our PM practices are appropriate, it seems clear that we must explore further what we actually understand by performance, i.e. what we are managing for. We might ask exactly *what* organizational performance is, when attempting to consider the relevant form of representation to effectively manage *for* it. An organization that does not operate with some concept of performance, implicit or explicit, is difficult to imagine. But it must mean something else to MSR than to MDCC. It must mean something else to an airline company than to a brewery and something else to a public cancer treatment unit in a hospital than to a shoe manufacturer. Some organizations are for-profit, some are not. Some organizations are big, some are small. So should we have as many understandings of performance as there are organizations in the world? We have explored possible differentiating factors in organizational reality and implicitly laid the foundation for understanding what performance is in these different realities. This is what I would like discuss now.

As always we should strive to find an appropriate level of abstraction that balances the reductionism in the generalization and still has strong illuminating power. But how can we delineate the concept to avoid it becoming meaningless, as it seems to so often? In most private firms we have various financial objectives which are ultimate goals. In not-for-profit organizations or public organizations we typically have a more loosely-defined concept of value creation. These ultimate goals are not very helpful for knowing what the appropriate form of representing the organization is, even in the special case of abstractly representing for managing performance. In his enlightening doctoral thesis, Corvellec (1997) proposes we think of performance in two categories: "a first one, dealing with internal performance, which says that performance is a behavior, and a second one, dealing with external performance, that considers performance to be an unspecified function of the success attached to whatever metaphorical views of organizations one entertains"

(Corvellec 1997). The view inherent in the first category reflects performance as somehow embedded in the action itself, e.g. the organizational processes. The value of the action becomes self-sustained without reference to an outside entity. This concept of performance has implications that fit well with my experience from practice, namely that current dominant PM practices seem to reflect thinking of truly representing the organization. Since performance is inherent in the actions in a realistic and absolute way, we must (simply) access this reality. This concept also fits very well with ostensive understandings of social processes, since we assume that things, in this case performance, have some essential properties we can access. So this first understanding of performance as a behavior fits nicely with our structurally-oriented understanding from earlier with clear distinctions. The other understanding is more flexible. The second category suggested by Corvellec is one that understands performance of the organization relative to a metaphor of the organization. For example, choosing a metaphor of an organism will have some implications in terms of what an organization is considered to be and what it *should* be, and therefore becomes an external reference for performance. Alternatively, choosing the metaphor of a machine will have quite different associations and conceptions of the ideal. In other words, organizational performance can be understood on the basis of the metaphors we assign to it or use to understand it with. Metaphors for the organization is a widely used and practical way of organizing a set of assumptions we have about reality and the organization; see for example Morgan's recent work (2006). The idea that performance can be thought of as something relative to an outside concept, such as metaphor, is powerful, but I do see a certain limitation in the use of metaphors as the external reference for performance. It has a stringency that does not allow elegantly for many, perhaps conflicting, ways of viewing performance in an organization. The power of a metaphor is communicative; by relating a concept of organization to a metaphor which

has certain characteristics, these characteristics are assigned to the organization. However, I remain unconvinced that this (effective) communicative tool should be viewed as a concept covering the multiplicity of performance. In organizations, the complexity in the dynamics of sense-making between the actors renders over-simplistic the view that we can use a single unified metaphor to describe and understand the organization. Instead, I feel we should sacrifice some simplicity for more relevance, and I therefore introduce the concept of 'normative authority'. Careful consideration on several data points has led to the belief that performance is most clearly understood as referring to the 'good' at all levels and relationships in the organization which I shall label 'normative authority'. This is a concept of *moral* judgment. Normative authority is merely a more useful and descriptive label. This does *not* mean that people necessarily aspire to this; only that it is embedded in the organizational fabric. I understand normative authority as the *external reference for micro and macro behavior in the organization that, implicitly or explicitly, symbolizes what is worth aspiring to and judges actions and results, thus defining performance.* It is not external in the sense that it is absolute, but rather external to the phenomenon in question. There is no absolute authority of performance, but only one relative to other values; a coherentist view (Radzik 2002). Framed differently, this moves the concept of performance from the ability to have a truth value to something based 'only' on values. I use this phrase instead of metaphors, or just simply 'goals', to underscore the *variety* in possible forms and sources of normative authority within the organization: this is never something entirely explicit and exists in all relations that the organization is made up of. However, *a* possible dimension to the normative authority in an organization derives from the assumptions alive in the metaphors we use to think of the organization.

Normative authority must per definition vary tremendously. It could exist as organic organizational folklore. An example could be A.P. Møller -

Mærsk Group's use of the saying "With Constant Care" which does hint at the right way and wrong way of doing things (thus defining the actions that result in performance) but never comes close to being prescriptive in any detail. Normative authority could also exist as something as explicit as forecasted revenue figures. Or it could exist as Wall Street pressure. The point is therefore that performance is not, in this view, inherent in the actions, but is created in the interpreted meeting between actions and the normative authority. Goals are achieved as consequences of actions which in turn are judged by a normative authority. But the concept of the normative authority can be multifaceted and even contradictory, and this, I think, more appropriately describes the reality I am familiar with. Metaphors can be one way of describing the normative authority while sacrificing some richness. For example, if we take a view of the organization as a political entity, not pursuing productive goals, but a container for power games and battles for dominance, this could form the normative authority implicitly embedded in the values of the organization and thus shape what form of performance can exist.

Since, in this view, performance is not an attribute of the organization, but is created in the meeting of the organization with the normative authority, performance as a concept becomes so replete with understandings that it becomes difficult to identify exactly what it does mean, and is simply reduced to the idea of the good or beneficial. This, I feel, is a reflection of practice today, and the theoretical concept of performance, 'normative authority' reflects this. But what use do we have for this concept? It allows us to speak of what is considered performance in an organization as a *multifaceted* idea, not as one thing, but as many things for many people and in many reciprocal relationships. Also it is more descriptive of what is implicitly meant by performance: a value-based preference external to the phenomenon in question. I feel that the notion of normative authority more naturally grasps the complexity in reality. However, it fails perhaps to be instrumental in understand-

ing the *appropriateness* because we have not yet speculated on different *kinds of* normative authority.

Essentially, we have two broad understandings of performance: one assigns some essential attributes of performance to action directly, the other views performance as judged by an outside standard which I have described using the concept of normative authority. The claim is that the first understanding of performance, which assigns essential attributes of performance to actions themselves, fits very well with the structurally-oriented notions, both of organizational reality and representational forms. The second understanding of performance may fit well with structurally-oriented notions or equally well with agency-oriented notions, depending on what notion of normative authority one sees fit. A normative authority made up of notions of control, efficiency, stability, etc., is more aligned with ostensive assumptions of social processes, quantitative method and nomothetic forms of knowledge. Alternatively, a normative authority perceived as being a dynamic, holistic entity is perhaps more in line with performative understandings of reality and aligned with ideographic forms knowledge.

It is probably appropriate to clarify what relationship I see between organizational reality and the normative authority. As we have seen, organizational reality can be conceptualized as being made of, or not made of, distinctions. The normative authority is the frame of reference which assigns value to the unfolding of the organizational reality, but at the same time becomes part of organizational reality. An example may provide more clarity. Imagine a for-profit retirement home for wealthy elderly people. What most shareholders would agree ultimately constitutes performance is the return on their investment. However, throughout the organization individuals and communities will have various perceptions of what constitutes performance defined by an implicit or explicit normative authority. A nurse will have ideas of what good nursing work is and she may or may not adhere to them. This might be

described as her ability to provide comfort, a sense of security, consoling behavior and having a pleasant disposition, while at the same time providing professional nursing care adhering to certain standards. This organizational actor's explicit or enacted concept of the *good* is contained in normative authority. It interacts with the broader organizational reality by defining it and being defined by it, but should be analytically distinguished. A normative authority must also be able to grasp what looks like structurally-oriented organizational realities. Within this perspective, *distinctions*, which a structurally-oriented reality is ripe with, relate to *consensus* on an understanding of organizational reality. So increasing ethical consensus reflects legitimacies in the organization on what constitutes performance. The point is that it seems to make more sense to think of performance *relative* to spheres of (varying degrees of) consensus rather than as something in and of itself. In terms of appropriateness of PM practices, we now see that an approach to PM can be aligned in different degrees to an understanding of normative authority, i.e. performance.

This argument rests on the assumption that there should be consistency between the paradigm of PM and a normative authority. Consistency or alignment is based on shared assumptions. *An understanding of the normative authority will have assumptions which should be extended to our PM approach* and practices *if* we seek to reproduce the current trajectory. My assertion is that it is desirable to have shared assumptions between our performance understanding and performance management understanding and we avoid self-contradiction. With this, we have learnt that performance can be viewed as something essential and something which is more readily understood as value-based. This author must, perhaps not surprisingly, confess an allegiance to the multifaceted conceptualization which the non-essential brings. This does not mean that we may not agree in larger groups on what *is* of value. An example might be NOPAT, which to most shareholders is good – especially if

larger than expected. It just means that we are able to explain more 'realistically' that in practice performance might mean different things to different people, while the organization as a unified entity might have an 'interest' in attempting to streamline this meaning. With the discussion of the status of metrics and this brief deliberation on what a beneficial concept of performance may be, we have moved considerably from what seems to be evident from current dominant scholarship.

In the following I will briefly explore how strategy and the concept of normative authority can interrelate.

5.6.1 Strategy as authority

How then do we choose an appropriate authority? I have argued that a normative authority is an important input to our understanding of organizational performance, but not how this is chosen. It seems that we have simply shifted the problem from finding the right understanding of performance to finding the right normative authority. Consistency in assumptions is seen as a necessary logical ideal. If, for example, we feel that an organization, or part of it, is or ought to be best understood as made of clear distinctive parts, it should be managed as such. If we think of the organization as more fluid, this has implications for how to manage the organization. In other words, the assumptions underlying our understanding of organizational reality must logically extend to assumptions underlying our management practices. This, naturally, might be difficult to do in the face of complexities in organizational life, but should be an ideal.

Until now, I have argued that *PM practices should be 'configured' relative to a specific, local understanding of organizational reality*, which can be understood or defined through the concepts of agency orientation or structure orientation. The ultimate benchmark of performance has been presented with the concept of normative authority. If we think of strategy as the discipline and

practice that should have implications for organizational performance, we should consider strategic thinking an input for influencing normative authority and with it, a concept of performance. Because the organization's strategizing is the process of establishing assumptions and views of reality and the authority within it, strategy is an important facet of this discussion. This means that the factors of strategic thinking in the organization, normative authority, and PM practice have a symbiotic relationship in that they mutually define and augment each other.

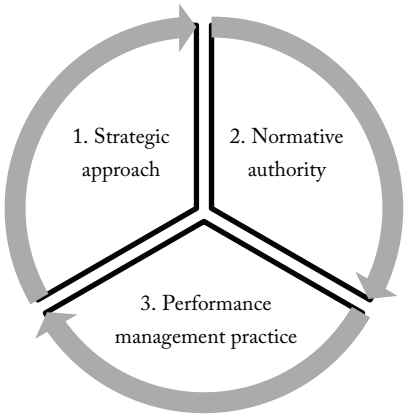


Figure 26: Strategy, normative authority, and PM practice.

We see then that strategy should determine an appropriate authority for understanding the organization's performance and should ultimately 'fit' the performance management practices in the organization. The shared assumptions which bind strategy and authority together should extend to the PM practices. But to improve the clarity of this conclusion, we have to make a brief detour to strategic thinking. We will have to have at least a rudimentary understanding of some tensions in the concept of strategy. The relative merits of different approaches as a means to ultimately obtaining financial success have been discussed at great length, and will not be continued here. In the following, I wish to examine how the knowledge-creation practices mani-

fested in the PM approaches we have looked at fit two schools of strategic thinking, and our agenda is to investigate how these strategic approaches relate to assumptions we may have of organizational reality and specifically how our PM practices can support us appropriately.

Looking back at the last half-century of strategic management from 30,000 ft, some fundamentally different approaches to strategy become clear. Consider Table 5 below and the concepts that have been contrasted there. Trying to depict many decades of scholarship in strategic thinking will obviously result in gross simplification. However, the illustrative value of this is significant for our further discussion. The left column depicts strategy as a rational, logic-based process, in which analysis of the industry landscape supports the organization in positioning itself for an optimal competitive stance and defeating competition, while incrementally improving the organization based on an overall philosophy of planning and deliberation. The right column depicts strategy as a creative, rather uncontrolled process, in which internal competences and capabilities are shaped in partnership with other organizations to innovate towards fulfilling new customer demands based on experimentation and perhaps including discontinuities and drastic changes.

	Structurally oriented		**Agency oriented**
Strategy Process		*Strategic Thinking*	
	Logic	<-------->	Creativity
		Strategy Formation	
	Deliberateness	<-------->	Emergence
		Strategic Change	
	Evolution	<-------->	Revolution
Strategy Content		*Business Level*	
	Markets	*Strategy*	Resources
		<-------->	
		Corporate Level	
	Responsiveness	*Strategy*	Synergy
		<-------->	
		Network Level	
	Competition	*Strategy*	Cooperation
		<-------->	
Strategy Context		*Industry Context*	
	Compliance	<-------->	Choice
		Organizational	
	Control	*Context*	Chaos
		<-------->	

Table 5: Tensions in strategy, (based on De Wit and Meyer 2005, 14 with adaptations)

The reader will notice that the two columns have been labeled within our now familiar concepts of agency orientation and structural orientation. This is based on the shared assumptions between a view of strategy based on deli-

beration and structural orientation and likewise for emergence and agency orientation. One of the clearest divisions is *strategy as something which is and should be something deliberate vs. something being fundamentally emergent,* or in other words a question of exploitation vs. exploration (March 1991) or the distinction between defender and prospector (Miles et al. 1978). We might continue by classifying some of the important strategic schools as being either structurally oriented or agency oriented. Mintzberg (for example Mintzberg, Ahlstrand, and Lampel 1998) proposes a set of schools of strategic management and most of them clearly align more to one side than to the other: The Design School, The Planning School, and the Positioning School are all clearly within structural orientation in the emphasis on logic, control and rational behavior, while The Learning School, for example, is clearly based on agency-orientation thinking in its focus on creativity. Looking at the major trends within strategy, I would consider industrial organization theory (e.g. Bain 1968), industry analysis (Porter 1980) and transaction cost economics theory (Williamson 1980) to be clear examples of structurally-oriented thinking, while the resource-based view (RBV) (Barney 1991) in my opinion leans toward agency orientation. This last assertion might need slightly more explanation and is particularly relevant to the discussion on representational forms. Among other factors, RBV in Barney's flavor suggests that imitability is a source of competitive advantage. This critical factor of *imperfect imitability* (Lippman and Rumelt 1982) has been framed by the presence of *causal ambiguity,* which relates to the inability to distinguish cause and effect in value creation: "The stochastic nature of the accumulation process may stem from our inability to identify some of the relevant variables as well as our inability to control them" (Dierickx and Cool 1989, 1509). Some processes *seem* stochastic and therefore per definition difficult to represent quantitatively. This bears significant resemblance to what I have termed agency orientation and is clear both from the empirical data and from

scholarship (e.g. Ouchi 1979) and, by implication, is prescriptive of the relevance of different representational forms within different concepts of strategy. In accepting the value of a RBV and accepting the reality of causal ambiguity, with current practices based on systems of quantification, we would limit ourselves to managing performance as arriving at *results* (an exogenous understanding of performance) and more difficultly performance as actions (an endogenous understanding of performance). A design studio could count the number of design concepts sold, but could not represent the process leading to these good concepts. We might continue this exercise, and although we would definitely find understandings of strategy which do not fit well into this distinction, it is an effective categorization. As an alternative to thinking of organization-wide strategy, one could differentiate, or "unbundle", different aspects of an organization and assign different PM practices to each, for example agency orientation for product innovation and structure orientation for infrastructure management (Hagel III and Singer 1999). We now have a picture composed of two distinct views of the nature of organizational strategy and, since this is a core element in a normative authority, it also defines what performance is. Despite the gross simplifications, the approach shows important essential differences in what organizational performance can be relative to strategy and which PM practices align to them.

5.7 Challenges to assumptions and propositions

While the data resonates fairly consistently with our propositions, it is very worth highlighting some points which moderate our findings. These do not have a loud voice in the data, but seem relevant nevertheless, and I would like to offer these to the reader as a contrast to the endeavors to show consistency in the sections above.

5.7.1 Organizations are not one organizational reality

An example of this is the position that organizational realities are not in reality(!) *either* agency oriented *or* structurally oriented, but both. There are variations of this line of thought. An obvious objection can be made by pointing out that different organizational units comprise different organizational realities, such as in the case of Microsoft. This seems reasonable. The argument could be extended to suggest that sound strategy builds on combinations of the two, which complement each other and balance efficiency and innovation in the relevant doses suitable for the particular environment. For the organization, the question becomes an issue of the mix and timing of a combination of several forms of organizational reality and representational forms. A slightly more profound variation suggests that it is not only a matter of functional or temporal divisions. A feature of agency orientation could be that it more often *shifts* between its two aspects of agency orientation and structural orientation. Naturally, this is problematic because of the recursive nature of the reasoning. Yet another perspective insists that all organizations have some form of consistency/structural orientation, but that it takes different forms. But while we in previous sections defined certain features of organizational reality, the question remains how they are related to an *empirical* reality. My intuitive feeling is that we should think of organizational reality as either structurally oriented or agency oriented in the 'largest' unit, which makes sense in the actual situation. This is true to the philosophy of understanding our world as made of meaningful distinctions. In some cases a meaningful distinction may be a whole organizational unit, in some cases the distinction may be projects, individuals, products, and so on. But the ability to make these distinctions is itself a feature of a structurally-oriented organizational reality, so there we are.

5.7.2 Representations are not empirically structurally or agency oriented

A comment made in passing by one interviewee is important as it deals with the nature of the *interaction* between organizational reality and representational forms. In my own words, the point was that the way the representational form is used is dependent on the organizational reality, or even stronger: what the representation *is* is dependent on the organizational reality. So the structural- or agency-oriented tendencies of a representational form are also influenced by the organizational reality within which it is used as well as its own essential characteristics. For example, a 'structurally-oriented' representation can be agency oriented if used within an agency-oriented organizational reality. Initially, I suggested that there may be gravitation between organizational reality and representational form, for example that using agency-oriented representational forms in a structurally-oriented organizational reality would pull reality towards agency orientation. This perspective refines that 'pull' factor. It does this by suggesting that the alignment between representation and reality is not empirical, i.e. does not relate to whether you use metric or natural language, but to *how* the representation is used. The alignment should therefore be understood as structurally-oriented organizational reality using representational forms *structurally* (irrespective of their 'objective', empirical form) and likewise for agency-orientated organizational realities. So the impact of a certain organizational reality on representation use can be understood both as an empirical, realistic interaction (a certain organizational reality will determine which representational forms are deemed appropriate) and in a more constitutive sense (a certain organizational reality will dominate in how the representational form is used). For example, in a structurally-oriented organizational reality, all representations could, for instance, represent synchronization and not negotiation. This can be exemplified with the interesting dynamic that in agency-oriented organizational reality, essen-

tial information seems to be associated with richness, and in structurally-oriented organizational reality, essential information is associated with simplicity.

5.7.3 Reality and representations should not be thought of as continuums

An essentially different way of conceptualizing reality and representation would be to suggest that we can have more or less of both simultaneously, for example, an organizational reality can be both highly structurally oriented and highly agency oriented or neither. A variant of this notion is representation 'space', by which I mean that organizational reality can vary in the amount of discretion the manager can exert in choice of representation. Instead of a position along a continuum, we could think of this as organizational realities being related to a *range* of representational forms which can vary in width. Some managers may prefer more elbow room in their choice of representational forms while others prefer a narrow range. This suggestion still considers agency orientation and structure orientation as *more or less*, essentially a quantitative term. An even more radical suggestion would be to abandon the notion of more or less, but instead think of different *kinds* of structure and agency orientation. This would require a totally rethinking of our model, and will not be undertaken here, but it would be able to accommodate the notion that, for example, control is not more or less a property of agency-oriented organizational reality or structurally-oriented organizational reality, but we may rely on different modes of control substituting system with values, for example. This is in line with Simons' thinking (Simons 1994).

5.7.4 Representational soundness is a non-issue

The premise in the framing of the research problem as the relationship between representation and reality is that at least part of this fit or misfit is realistic. This means that we have forms of representation that somehow more

effectively grasp the reality. This in turn assumes that a sound representation is desirable. Some voices have said that some situations do not require full understanding or true representation. For example, the value of a representational form may not be soundness, but stimulation of discussion. This could alter our understanding of the 'fit' between organizational reality and representational form, which does not aim to convey the largest possible amount of organizational reality, but the fit becomes more closely related to the objectives of the representation. One manager says that sometimes the right solution is what you can agree on. In this case, representations of organizational reality should facilitate consensus finding and not 'just' reflect reality.

5.7.5 Representational lifecycles

We have examined the relationship between organizational reality and representational forms simplistically in the sense that we have largely ignored that PM practices exist within broader organizational decision-making practices. The broader picture conveys a representation lifecycle which potentially goes through many translations. In this view, the question does not become choice of representational form, but how to *distribute* different forms of representation. The distribution also means that we must *integrate* different representational forms in the full representation lifecycle. The question becomes what distinctions in organizational reality should determine the differentiating representational forms. Is the differentiating factor 'function', for example? So thinking of single representational forms is unrealistic; we must consider them as chains or networks. This view is built on the assumption that representations are complementary, meaning that their value is defined reciprocally with their neighbors' in networks or chains of representations. This proposition makes it easier to explain the correlation between metrics and talk. The data shows that metrics are surrounded by talk. If the phenomenon is difficult to measure, the anchor will be lost and talk will happen differently. This

proposition is not in conflict with our findings, but poses a design challenge for PM practices and IS to support different representational forms as a totality in an eclectic PM system which incorporates the temporal aspect and translations and focuses attention on the weakest representational link.

5.8 Summary of findings

In this chapter we have categorized the codes from all the network views into four families. These four families richly describe agency-oriented and structurally-oriented representational forms and organizational reality. The organizational reality dimension has been particularly hollow until now, when our container concepts have finally been saturated. The relationships within these four families show a high level of internal consistency; the codes within each family are reasonably categorized together. Also, the relationships between families clearly show alignment between agency-oriented organizational reality and agency-oriented representational forms, and structurally-oriented organizational reality and structurally-oriented representational forms. In short, organizational actors relate certain types of organizational reality to the use of certain types of representations. Abstracting the families further, we saw that the concept of *distinction* appropriately describes the difference between structural orientation being more effectively thought of as made of distinctions and agency orientation less so, being more fluid. Different organizational realities can be distinguished further by the concepts shown in the figure below.

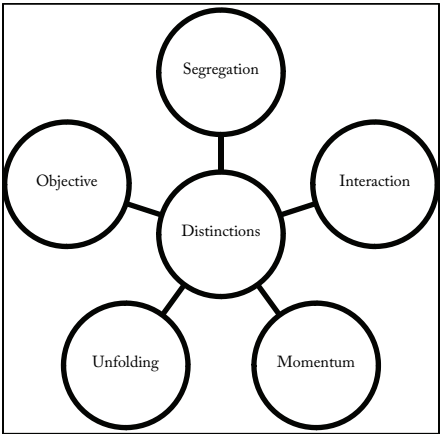


Figure 27: Five dimensions of organizational reality

We further saw that PM practices really should be thought of as a knowledge-generating practice and become entwined with questions of epistemology. In this light, organizational actors seem willing and able to choose among multiple epistemological approaches to suit the situation at hand.

Moreover, we learned that 'performance' is a chameleon concept. Performance does not have essential properties but is defined in relation to certain consistencies in a subjective value system and can therefore more appropriately be thought of as the normative authority which distinguishes the good from the bad.

With this, we are ready to conclude the thesis.

Chapter 6 Conclusions

The topic of this thesis has been how we should understand the *relationship* between organizational reality and representational forms within performance management theory and practice. In essence, the conclusion is that some representational forms within performance management practice are more appropriate than others, depending on the organizational reality. However, current PM ignores this, resulting in dysfunction. We should therefore evolve PM practices to be more subjective and to gain realignment and relevance. The following is an elaboration of this conclusion.

We know that bureaucracies have a need for making representations of organizational reality. The need to produce these representations can stem from a desire to *act* on part of reality, without actually being part of it, for instance when a manager wishes to take decisions based on reports, figures, or other representations, without actually engaging with reality (Robson 1992). Representations may be any type of symbol, e.g. textual or numerical, which are thought to *represent* some phenomenon in the organization. I suggest that this act of representing can generically be described as follows. *Assumptions* of organizational 'reality' exist or are made, explicitly or implicitly. Then traces of this reality are *represented* using a specific *methodology*. This is the process of reducing reality to some representational form which has desirable characteristics. Based on the characteristics of the representation, they may be further *manipulated*, e.g. combined with other representations for aggregate or long-distance consumption. The following *consumption* of the representation takes place. It may be translated into other representational forms or trigger a decision or reaction, but may also be less distinct as a behavioral phenomenon. I suggest that these four steps can be used to describe every single iteration of knowledge creation in relation to the performance of a phenomenon in organizations.

We have used the twin concepts of agency and structure to describe our fundamental ontology. Agency *orientation* and structure *orientation* were initially sketched out theoretically and matured through the analysis of fieldwork. In Table 6 we see an overview of the extremes in the different dimensions of the continuum of structure/agency oriented PM practices.

	Structurally oriented	**Agency oriented**
Assumption of organizational reality	Made of distinctive parts. Ostensive, notions of cause-and-effect	Fluid. Performative, notions of locality of understanding
Representation	Quantitative, numeric	Qualitative, narrative
Manipulation	Nomothetic, more combinable	Ideographic, less combinable
Consumption dynamics	Control, deductive, persistence	Understanding, inductive, developmental

Table 6: Summary of PM orientations

We saw in our review of literature on PM methods that metrics are ubiquitous. We might think of the metric as the atom of current PM practices. It is therefore worth dwelling on the status of this atom and what we could and should think of it. When metrics are ubiquitous, there could be a danger that their use bleeds into domains where they are inappropriate. The literature within PM seems to offer little in the way of critical reflection on the implications of choice of representational *forms* such as metrics and the interaction of representations with organizational reality. Although there is significant literature on how to choose and design the metric based on properties of the organization, the metric is not seen as a member of a larger class of representational forms. In order to be able to explore the potential value of

thinking of representational forms more broadly, we must have a way of describing organizational reality.

We have seen that a meaningful way of thinking about organizational reality is to consider if it is made of distinctions or is better described as fluid. Supporting the concept of distinction is segregation, interaction, momentum, unfolding and objective. With only very few exceptions, all codes found through the fieldwork have been related to these five dimensions of organizational reality, so there is a clear audit trail from data to theorizing. So while the model is built on the suggestion of relationship between organizational reality and representational language proposed by Daft and Wiginton (1979), the concept of organizational reality is altered from being based on complexity and variety, to more appropriately being based on level of *distinction*.

The other element in the relationship, representational form, has also been examined, although we had a clear conception of the types from the outset. Metrics have been associated with structural orientation while narrative has been associated with agency orientation. The following exemplifies some characteristics of the representational forms. The richness of narrative representation is not only greater when representing what the performance of the phenomena *was* or *is*. Narrative is not as constrained as the *ex post* representation when employing structurally-oriented PM: the static assumptions of the phenomena coupled with the quantification step make it naturally backwards looking, because the labels for the quantities are predefined. Using narrative like a metric would be like having longitudinal studies without a predefined structure; it would cease to be longitudinal. Narrative can therefore be far more *development oriented* as the personal experience carries context and is able to 'reason'. This cognitive step is not present when mechanically quantifying. In a PM context, this can potentially be very significant. Another difference is that the narrative and its richness will more effectively carry speech acts and can therefore more easily constitute an arena for opi-

nions to meet, while metrics are often *viewed* as more objective and therefore less prone to these dynamics in the *representation step alone*. The richness can alternatively be described as narrative conveying *difference*, possibly antagonistic relationships between concepts, while numbers are a further standardization and thus more *same*. Table 7 summarizes these and other differences.

PM approach / Quality	**Structurally oriented**	**Agency oriented**
Richness and ambiguity	Less	More
Ex post representation	Well suited	Well suited
Ex ante representation	Not suited	Well suited
Local/micro relevance	Lower	Higher
Global /macro relevance	Higher	Low to high
Benchmarking / longitudinal	More suited	Less suited
Nomothetic (patterns / trends)	More suited	Less suited
Ideographic	Less suited	More suited

Table 7: Structurally- and agency-oriented representations and qualities

By examining the differences between representational forms, it seems apparent that they are implicated in knowledge creation and that we can think of PM as a knowledge generation practice. In that light, our thinking of PM practices is fundamentally shifted from something largely about structures of quantification to a wider set of modes of inquiry. So as a frame of mind, we should think of PM practices as *an organization's ongoing examination into its own performance*. This is not a radical suggestion, for a PM practice is essentially concerned with generating and using knowledge about the

performance of the organization. This extends the distinction between structural orientation and agency orientation to an epistemological distinction. In effect, the organizational actors who have contributed to this investigation have conveyed their intuitive, experience-based epistemology.

Burrell and Morgan (1979) spoke of sets of assumptions as delineating paradigms from each other. However, I do not try to suggest that organizations choose one of the two, or that the two cannot coexist within an organization. It is possible that this contrasting merely illustrates two extremes in a continuum. Organizational actors seem perfectly able and willing to mix and match different approaches as appropriate based on the actual situation. These two extremes do reflect very different assumptions of what the organization is. The structurally-oriented approach suggests that the organization resembles a machine, with mechanical dynamics founded on cause-and-effect thinking. If it were not a world of cause-and-effect, it would make little sense to plan and try to control. On the other hand, agency-oriented thinking suggests an organization full of bubbly, living, rapidly-changing, social interactions, in which control not only becomes impossible, but also irrelevant. This is in line with Giddens (1993), but many other social theorists take this stance; Latour (1986) asserts, for example, that the ostensive and performative are *not* incommensurable concepts that live within completely separate worlds, but are rather two aspects of the same phenomena. As such, they are complementary rather than competing perspectives.

Burchell, Clubb et al. (1980) called for further research into the interplay between accounting practices and (other) organizational dynamics on the basis of the assertion that the relationship between the rationality of accounting and realities of organizational life is weak or at least not as self-evident as dominant thinking at the time suggested. Wagner (1954) studied the introduction of composite performance measurement in airline staff and observed that it resulted in "tension, role and value conflicts, and reduced morale; air

crews suffered from intercrew antagonism, apathy, and reduced morale; organization and power structures underwent changes; communications distortions and blockages occurred; integration decreased; culture patterns changed; and norms were violated" (Ridgway 1956, 246). I offered the suggestion that we should think in terms of representational forms as a new explanation for this type of observation.

Fieldwork has shown that managers seem intuitively to propose such a relationship; it seems clear that the appropriateness of different representational forms is meaningful and, implicitly, that interaction is recognized.

The most significant conclusion is that important insight into our understanding of performance management practices can be gained by examining the relationship between organizational reality and representational forms. Viewing metrics as just one representational form out of other possible candidates yields results that should compel scholars to extend the field to include considerations of other representational forms. Performance management should not only mean performance measurement in a quantitative sense.

PM is currently firmly rooted in a view of the organization which at best is over-simplistic. We should remember, however, that efficiency is an extremely valid objective to have. We should not lose sight of the fact that, for many organizations, an approach based mainly on quantification is appropriate. But equally valid is the fact that many parts of a typical organization do not easily fit into the cookie cutter representational form of quantification. In stable contexts, where consensus on a structurally-oriented normative authority exists, i.e. where most seem to agree what legitimately constitutes performance, the ostensive assumptions have a stronger fit and numeric inscriptions seem relatively more appropriate. In the subsequent dialogue, this would manifest itself as a matter-of-fact attitude towards the representation signaling accept of the representation's ability to effectively represent the phenomena. On the other hand, if the consumers do not assume ostensive characteristics,

e.g. by realizing that they might not have full understanding of the phenomena, the meaning or implication of a numerical representation can be unclear leading to uncertainty and anxiety. In this case, a narrative inscription might give the richness needed for the consumer to feel that she has come sufficiently close to reality. So in cases where performative assumptions exist and this is coupled with ideographic knowledge *uncertainty* is likely to be reduced in comparison with the relatively less sufficient numeric representation. Table 8 illustrates these difference, which are essentially in line with Ashby (1958) with the reformulation of organizational reality.

Type of representation		
Agency oriented: Narrative	Relative certainty, yet inefficient. "Yes, I know, just give me the number!"	Relative certainty "Ah, interesting, I didn't realize this!"
Structurally oriented: Numbers	Relative certainty "OK, this is where we are!"	Relative uncertainty "What does this mean, how should I interpret this?"
	Structurally oriented: Clear distinctions	Agency oriented: Fluid
	Organizational reality	

Table 8: Reality-to-representation-fit

Agency-oriented practices are more conducive to continuous improvement in that the assumptions and representation type allow for a larger body of cognitive activity. This cognitive activity may be directed towards improvement *potential* and the narrative representation of this perceived potential can be the input for a more relevant dialogue on the merits of the im-

provement potential. In cases where performance is bad, structurally-oriented practices will leave the consumer with representations reflecting the poor performance, *but little basis for knowing how to interpret this (this is assumed known) and, more importantly, no basis for how to rectify the situation*. In these cases, a separate inquiry would be done to explore possible avenues of action, but this is typically decoupled from the PM system. Agency-oriented PM practices are therefore better suited as a meta-routine aimed at improving organizational processes. The dialogue based on narrative representation would have a greater foundation for *developing* the organization, but whether this foundation is seen to be valuable will be determined by the consumer's interpretation of the narrative. It is equally possible that consumers will dismiss the input as irrelevant.

The data shows that organizational actors are able to recognize and verbalize the relationship between organizational reality and representational forms. Furthermore, they are very capable of describing the characteristics of organizational reality which should influence the choice of representational form and avoid dysfunctional behavior. This is good news, because it also shows that experienced managers are able, to some degree, to counterbalance the inherent force of quantification. This was especially clear in the Microsoft Research organization, where managers were very explicit about the appropriateness and particularly the inappropriateness of different representational forms. An optimistic person would be encouraged by this, because it could be interpreted that experienced managers are well able to choose the right tools for the job; in essence, quantification is a non-issue because it is used selectively by critical individuals. Although this author would be relieved if that interpretation were fair, it is certainly too rosy. Even within such an agency-oriented organizational reality as MSR, I have experienced a desire to explore objectivity further, and I believe there is little doubt that this is a widespread tendency.

The field work has also shown that it is necessary to think about chains of representations being translated between different forms, rather than simply as a single form of representation. Understanding the history of a representation further benefits the appropriateness of its use.

This conclusion clashes with the forces at play trying to maintain that representations *objectively represent* organizational reality. Our findings from literature show a dominant paradigm of managerialism which seeks to uphold the view of accounting representations which equate them to the organizational reality. In practice too, participants of organizational reality probably realize, for instance, that a *metric* representing an organizational phenomenon *is* not the phenomenon, but they might *act* as if it were. With our PM practices we are creating representations which are thought to be true (or adequate) *representations* of organizational reality. Roberts and Scapens note that:

> "the closer one gets to the production and use of accounting information the more the apparent solidity or reality of the image crumbles. In its place emerges a sense of the tenuous and recursive nature of the relationship between the image or picture produced in the Accounts, and the flow of organisational events and practices that the Accounts purport to record." (Roberts and Scapens 1985, 453-454)

This shows that some have found that *true* representation is an inappropriate understanding of the relationship between representation and organizational reality. What we should bring forward from this is certainly a fundamental skepticism regarding the status of the metric as a naive representation of reality. My curiosity has revolved around what variants of objections to this analogy we know of and what this may mean for our support of PM practices.

We can quickly conclude that PM practices *alter* what participants view as *important* (Burchell et al. 1980) and determine what is done - rather than perhaps what we might all know needs to be done (Kerr 1975) and it is well established that IS embedded practices have a profound impact on organiza-

tions (e.g. Bjørn-Andersen, Eason, and Robey 1986). PM practices act as a beacon of orientation for organizational actors, for example echoed in fieldwork as 'gaming'. We also know that we may use representations in an effort to *transform* ethos in the organization (Ezzamel, Lilley, and Willmott 2004), also shown empirically. This means that the simple step of representation changes the subject's behavior. If representations can be used as vehicles of change, it follows that there must be some interaction between the world and the process of representing it. So it seems that the act of generating representations in a practical organizational setting may be understood as *both* simply depicting reality *and* altering it. A simple example is the old saying of 'what gets measured, gets managed' and while we may wonder why this "phrase is stated as an axiom, a self-evident or universally recognized truth, and is accepted without formal proof" (Emiliani 2000, 612), there may be *some* truth to it. However, my findings show that for some organizational realities 'what gets measured, gets mismanaged' is equally the case and we could extend this to the ontological variant 'what gets measured, gets created'. The following will expand on this.

We may, for example, have ambitions to legitimize, to learn, and to mobilize the organization (Catasús and Gröjer 2006). The framing of ambitions for using representations such as metrics suggests that there is a *conscious* rationale behind the use. The production and dissemination of indicators becomes a weapon that paints a certain picture of the world: "Indicators can be treated beyond a production discourse and include the aesthetics and poetics that are part of any capable act of communication" (Catasús and Gröjer 2006, 199). So the conclusion is simply that "Rather than reflecting an organizational reality, […] organizations may themselves be transformed by accounting systems" (Preston, Cooper, and Coombs 1992, 589). However, some have ventured further and proposed that accounting practices more fundamentally *constitute* organizational reality, also corroborated in the data.

Hoskin and Macve (1986) reframe what is deemed a regime of objective evaluation using Foucault's 'savoir-pouvoir' (e.g. Foucault and Sheridan 1977). They assert that the "book-keeping on pupils" (Hoskin and Macve 1986, 125) is an example of how quantification through examination inflicts judgment and commanding power, sometimes in questionable ways (Noordegraaf 2008). Power is not to be understood as having negative connotations, but simply as patterns of behavior "which could be specified and which positively produced ways of behaving and predispositions in human subjects" (Hoskin and Macve 1986, 106), which is not far from Giddens' 'structure'. The discourse of PM seems to have produced ways of behaving and grown into our practices to an astonishing degree, to the extent that we, for example, feel completely comfortable measuring people in roles such as that of student. In this way we also impose definitions or statements of truth of what people are, so we both *define* and *control* them. Accounting practices have crept successfully into many other untraditional domains, such as the public sector. This is interesting because we see a clearer change in practices than in private-sector contexts, and for that reason can possibly observe more clearly the effects of these changed practices. Lapsley (1999) suggests that the so-called New Public Management is building a *new ontology*, i.e. building a new public sector.

> "In such routine bureaucracies, there is little hermeneutics, but much method, for dealing with many things or thinglike persons, constructed as roughly similar before being subjected to the same treatments. When this happens, agency declines and structure increases. As a matter of *their* fact, bureaucracies routinely perceive thinglike persons as standard cases, holders of ID numbers, and treat such classes or sets *as if* they were fully describable by the bureaucratic formulas and classifications." (Fuchs 2001, 35)

This conclusion can also be drawn from the empirical data by examining the delineations on the appropriateness of different representational forms made by the interviewees. Chua reflects that "one accounting map of an or-

ganization may be as good as any other since neither works because it better represents reality, each may differ fundamentally in terms of its institutionalized supporting structures and power effects" (Chua 1989, 114). A change in representational practices may be considered an intervention and organizational actors do not produce representations simply to reflect reality but think of them in a game with more wide-ranging power motives. I would not say that one representational form is as good as the next, precisely because we should think of their value as more than simply realistically depicting organizational reality. This represents a move in our understanding of PM from a view which presumes *cohesiveness* and ontological homogeneity, *one* world, to reframing PM practice as best understood as "action emanating from the meanings people attach to their social world" (Nahapiet 1988, 333). The assumption must no longer be that there is *one* reality and we are generating one-way representations, but rather that PM practice and organization are reflexive, i.e. that the two are constituted, or given meaning in relation to the other. Accounting practices therefore are more than simply free-standing systems without interaction with organizational reality.

Although this view seems foreign within the field of PM, it is less so in the wider field of research on accounting practices, for example by theorizing an accounting intervention through Habermas' distinction between three 'modes of rationality': instrumental, moral and aesthetic (Chua and Degeling 1993). This suggests that a strictly functional understanding of accounting practices can seem too constricting. The implication is that we must look beyond a pure functional perspective to other spheres of understanding for insights into what an accounting practice of representing 'is'. Although modernization has brought an emphasis on the instrumental mode of rationality, we see that the moral and aesthetic perspectives 'enlarge the playing field' of our understanding. The moral further supports the conceptualization of accounting practices as legitimizations and power struggles, and I have framed

performance as ultimately a concept relating to a value system rather than having essential meaning in and of itself. This is a shift of emphasis from the realistic type of relationship between organizational reality and representational form from Daft and Wiginton (1979) to a recursive, mutually constitutive, *partially* nominalist perspective. Within this new emphasis, it is less fitting to speak of *variety* of the representation form which implies a quantifiable number of states in the control system (although variety is also present) but rather *ambiguity*. This is a modification of the inheritance from Ashby (1958).

In an uncomplicated world, the relationship between organizational reality and representation would be like taking an all-inclusive photograph, which fully represents the phenomenon in question. If this were the case, we could act simply on the basis of the photograph, confident that we would gain no further insights by interacting with reality first hand. So how do our findings fit with our analogy of accounting as taking 'perfect' pictures? Firstly, it can be concluded that we have different representational forms, which produce different representations of organizational reality. So we are at least not producing a *complete* photographic representation, but merely representing a certain *perspective*, which is based on certain choices. We could also suggest that the 'validity' of the photograph depends on the subject: the organizational reality. For structurally-oriented organizational realities, we might be better able to capture it in a metric, while the inherently fluidity of agency orientations is more difficult to capture quantitatively. If we do try to capture social processes, the resulting metric will be particularly skewed and any action based on it may be particularly prone to being inappropriate. We also know that the process of representing tells the subject what is deemed important and therefore what is not/less important. This changes the behavior of the subject. So the picture-taking process motivates the participants to try to follow the explicit or implicit assertions about importance, and the actions of

the participants are therefore different than they would have been without the accounting practice. In addition to the picture being only *part* of reality, we are actually *altering* reality. This seems blatantly obvious and at the same time not fully integrated into PM practices. But even if we accept that the picture-taking process changes the behavior of the subject, we still believe that the subject and the camera *exist* in a realistic sense. Another view we have seen would insist that the subject and the camera must be understood in relation to each other: we cannot step outside the role of the picture-taker, since we are so deeply embedded in the *savoir-pouvoir* spider's web. The picture-taking therefore *defines* the subject, it *constitutes* certain realities, it *creates* ontologies. However, *consciousness* of being trapped as picture-takers bound to certain perspectives is possible. The subject of the accounting image as well as the picture-taking process and the resulting accounting image, must therefore be understood in *relation* to each other. So representational practices both alter and constitute organizational reality.

A structurally-oriented practice may be thought of as a panopticon (Foucault and Sheridan 1977) due to the one-way visibility inherent in remote *control* numerical representations. An agency-oriented practice might be more analogous to a mirror, where propositions are given an arena to interrelate and evolve. This correlates well to the distinction between control and understanding. A subsequent dialogue based on structurally-oriented representational practices will therefore tend to have control dynamics, while agency-oriented practices will tend towards an objective of understanding. Using agency-oriented practices where ostensive assumptions are most widespread might result in a feeling of disorientation because of the arguably higher complexity of the narrative than in quantitative representations. This means that the representation of the inscriptions would have to have the mental inclination to accept the value of narrative representations. In settings where this aptitude is not present, the narrative might create confusion rather than

greater understanding. The quantification inherent in generating metrics is like viewing the world through a telescope, both getting closer to it by 'magnification' and pushing it away by the abstraction inherent in only seeing a part of reality. There may be a gap between reality and our representational forms, especially for agency-oriented organizational reality, which can be characterized by fewer distinctions where the 'broader' picture is relatively more important.

What consequences does it have to reject the view that especially metrics are perfect representations? Some might claim that agency-oriented processes are simply not suited to be supported by designed practices, but I would challenge that assumption. What would happen if we adapted our conceptualization of PM practices to some of the ideas proposed here, which departs from a realist view? Would the acknowledgement of the power dynamics, the constitutive force, the reciprocal interdependence, the perspectives and modes of rationality that may be embedded in systems of PM not fundamentally change the possibilities of *using* these structures as vehicles of new legitimacies and organizational dynamics? New ways of accounting may obviously be used actively to induce production and reproduction of superior or desirable patterns of thinking, so while acknowledging the constitutive nature of representational systems, we might use this trait as an *instrument* in achieving certain ends. What would the consequences be if we assume that we can use representations and design technological artifacts which, although they do not embody structure as such, do induce either action leaning towards conserving structure or evolving structure. The implication is that agency-oriented representations, potentially mediated via information systems, support a more highly-accelerated structuration process.In organizations where learning is of higher importance than control, we may both *use* our accounting practices to *create* a learning 'reality' and simultaneously create PM practices which *accept* a reality of reciprocal relations. Can we leverage the ability

of information systems to organize information in ways that challenge the objectivist views while still accommodating the practical reality of organizations? Can we leverage an instrumental rationality to induce a certain moral or aesthetic rationality? For the information system field, the question is whether we can *design* systems which emphasize the performative, agency-oriented, or is this fundamentally in opposition to the inherent nature of information *systems*.

PM systems originally come from a world of financials, and the more operational parts of the business such as logistics or manufacturing still form the core of many practices. PM was born in the time where manufacturing was the dominating form of value-adding, and this thinking has moved with us into new ways of adding value. *Significant portions of organizational realities are not structurally oriented, and therefore require a certain degree of ambiguity in their management control systems to support the work*. Using indicators as proxy for performance is a source of legitimization: it is a low-risk way of representing organizational reality, because we can point to something explicit and codified. The dominating paradigm of PM leaning towards something measurable will favor easily quantifiable activities without proving what relation they have to understandings of performance. As an *example*, we have seen that high-risk, unpredictable innovation is an explicit goal in some organizations, but, at the same time, PM practices imply illegitimacy of unpredictability. In our terms, we have a de facto normative authority of valuing development and discontinuity, but have PM practices that assume a normative authority with machine-like properties. Their virtue is sometimes only one of practicality, which is obviously a very valid benefit, but is difficult to value when the costs remain hidden. This has the effect that work is being oriented towards the *representations* of performance of the phenomenon, rather than the performance itself. Thinking of organizational reality as structurally oriented is very tempting, because it is very neat and efficient. The

problem is that we *do not have any clear picture of what part of reality we are missing* when using mainly structurally-oriented methods in PM. Are we managing our organizations in the most effective way? Indeed we are not. Do we have outdated PM practices? Indeed we do. I believe that there is widespread *misalignment* between today's PM practices and many aspects of organizations. Most scholarly work, as we have seen, subscribes to ostensive understandings of reality, widely endorses quantitative methods such as widespread use of metrics, encourages nomothetic knowledge, and in doing so employs a de facto normative authority with notions of control and machine-like qualities.

Twenty years ago we saw the move from measuring financial performance to a balanced approach (Eccles 1991; Kaplan and Norton 1992) in reaction to the limitations of traditional accounting practices and other causes such as the changed mix of production factors (Neely 1999). Before this, Otley (1984) said that accounting research was entrenched in a functionalist view. Although some questions had been raised even earlier about the rationality of information systems in general (e.g. Ackoff 1967; Hopwood 1974) these were quite novel ideas at the time. Accounting systems were viewed primarily as an isolated technology in "a functionally autonomous sphere of practice" (Roberts and Scapens 1985, 444). Scholars are still quite firmly based in this objective tradition, but there are voices that point to dysfunctional behavior and views of irrelevance and ineffectiveness. The PM tradition has roots in accounting, engineering, operations management, but much less is known about how applicable these are to settings that are quite different and where the value creation has different forms. In practice, we as consumers of representations might be skeptical about their validity as true representations, but *the systems we use to generate the images do not 'share' this skepticism*. So although there are voices which object to the structurally-oriented view of social reality, PM practices seem to fully embody these (pos-

sibly) outdated views of accounting practices. Our systems of accounting, such as PM systems, are based mainly on highly organized and engineered patterns of thinking. 'Single-point-of-truth' has been heralded as the ideal in data management, and the large vendors all have enterprise performance management (EPM) systems which purport to be able to effectively represent and manage organizational performance (Business Objects 2008; Microsoft 2008, 2008; SAP 2008). PM as a practice is currently entrenched within a certain epistemological camp which accepts the practice of representing almost anything numerically without losing validity. While this makes sense from an efficiency perspective, the basic assumption behind this ideal is that the whole organization must adopt the same understandings and definitions. This, I propose, might be a hint to understanding the ineffectiveness of PM practices in the sense that they may cause dysfunction and why PM scholars should explore ways of bringing us back in 'alignment'. If we accept that many organizations think of themselves as *also* having agency-oriented characteristics, why should we not expect the information systems which lie at the core of the infrastructure of the organization and to a large extent define the texture of the organization to support these ideals? PM practices should evolve to support current organizational realities in the aim for increased relevance and effectiveness.

In recent decades, we have evolved accounting research from research *in* accounting to research *of* accounting as Burchell, Clubb et al. (1980) suggested. This acknowledges the powerful constitutive forces at play in accounting practices, which could therefore be *instrumental* in achieving various objectives. Based on the conclusion that organizational reality can be described in terms of being made of *distinctions* or *fluidity*, I propose that instrumentality should be thought of in terms of complying with a certain level of *requisite ambiguity.* The level of ambiguity needed should match the organizational reality, and agency orientation is as we know associated with high-

er levels of ambiguity. Embracing the other side of the duality of structure, the agency-oriented, poses significant challenges. This is a messy business! It would mean embracing what might be viewed as chaotic, biased and personal ways of understanding organizational reality and acting on it. It would mean discarding what is thought of as objectivism, the sole provider of legitimacy in the fabric of the organizational reality and in the information systems which support the management of performance. It would suggest that personal views can and should coexist with conflicting 'versions' of the truth. This would be a bitter pill to swallow, for implicitly it would mark the beginning of the end of a paradigm of only risk-aversive dynamics, where we seek the comfort of objective havens and live in an illusion of control. Future research should explore how accounting approaches can use other forms of representation, other picture-taking techniques, which yield other pictures. PM practices, I propose, in principle have the same range of methods available as any other research investigation. It is perhaps only within the last 30-40 years that qualitative methods have found broad legitimacy in science, and we have come to appreciate the complementary nature of the two basic scientific approaches. I would hope that PM scholars take on the significant challenge it would be to explore an agency-oriented understanding of PM, by incorporating subjective approaches to PM, and by thinking creatively about what conceivably could and should be part of the agency-oriented PM toolbox.

Does this mean we should abandon objective approaches to PM? Absolutely not! The huge amount of work done in performance measurement and objective performance management has obvious value. However, while in most organizations we have processes which could be described as having most traits of structural orientation, we also have aspects of organizational reality which could be described as having more traits of agency orientation. But this is not a binary distinction. What we should do is explore how to become more nuanced in our PM tools, using elements from *both* paradigms

in combination. I suggest that methods of representing be explored which allow for the action-oriented aspect to come closer to the surface, where we prefer inconsistent but valid representation over consistent invalid representations. And I suggest that we further investigate the virtues of a balanced *multi-paradigmatic* approach to PM, incorporating elements of both objective and subjective traditions when deemed that this would yield the best balance of cost and benefit. Organizations obviously are not and should not be either structural- or agency-oriented 'thinkers', but both. In practice and in scholarly circles, this move will meet great resistance. Choosing a paradigm of PM that puts less emphasis on the control of behavior and more on understanding of the organization could be interpreted as a weakening of the management power. This will cause resistance. This development-orientated approach would suggest that "a different set of organizational and social arrangements is possible, one in which workers empower 'managers'" (Roslender 1996, 555). But this is *not* for the sake of empowerment, but to induce learning and exploration which might not benefit from predefined structures of measurement. To do this, we need to consider what the agency-oriented PM toolbox should contain. On this basis, I will present ideas for a narrative-based PM system in the appendix and describe a prototype method, 'Talk', which should be integrated with traditional forms of PM and thus support multiple forms of reasoning. The integration is crucial, because data shows that throughout the lifecycle of representations, they are routinely translated, and this should be supported in our PM practices. Also, the complete instrumental potential will only be exploited if multiple representational forms are utilized in a unified practice. In principle, no research method is disqualified, but obviously we must consider whether the benefits outweigh the costs of especially the expensive methods. PM practices using strong qualitative approaches, which we assume in general are more expensive, would need to

have some way of deciding what approach offers the best cost-benefit balance.

Current practices have not been able to fulfill our ambitions for a vision of frictionless, effective and relevant PM. The dominating paradigm of objective practices also inherent in second generation PM as proposed by Kaplan and Norton (1992) do seem in need of evolvement. Multi-paradigmatic PM, also incorporating subjective, agency-oriented practices, might be a way towards third-generation performance management and towards winning back the relevance we seem to keep losing.

Appendix: Next generation performance management?

> "I do not believe that there are imperatives or inviolable relations between technology and structure or computers and structure to name a few possibilities. Organizations are what we want them to be. Computers can be used to centralize decisions or to decentralize decisions. The choice is ours." (Galbraith 1977, x)

'Talk'

We should acknowledge that PM approaches create realities and that we should use this knowledge to pursue our goals. And we should nuance our PM practices to suit the established reality. In this way, our representational approaches would mirror the duality of structure by both influenc*ing* reality and by being influenced *by* reality. Based on insights from fieldwork and extensions to the analysis, I will now turn to discussing how an agency-oriented PM practice could be built and I will attempt to exemplify how a concern for empirical fidelity could manifest itself in a PM practice. Answering *why* we should do it is not as difficult as answering *how* we should do it. But we do know that numeric or other presumed objective representational forms should be augmented with others that can more easily span differences and contrasts. I can think of a number of exotic representational forms, including wondering if *no* representations might be the most ideal approach (Catasús 2008). Nevertheless, as we have previously argued, *narrative* springs to mind as a strong candidate. "Nothing counts as accounting knowledge until it is argued before one's peers" (Arrington and Schweiker 1992, 511). The importance of rhetoric in legitimization is crucial. Rhetoric could be considered a tool to reach justification in a post-modern reaction to positivism which is illustrated by Thompson (1991, 575) as the fuzzy area in the figure below.

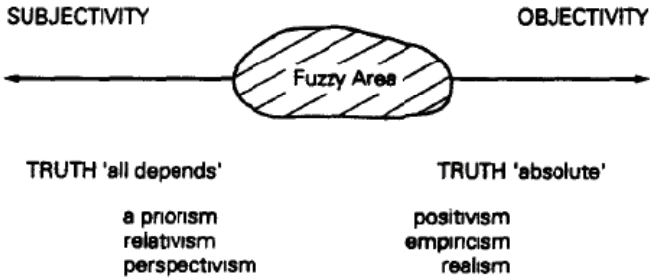


Figure 28: Rhetoric in the fuzzy area

I propose therefore that we, in the name of relevant accounting, investigate narrative as a representational approach in PM practice, and encourage "exploration of the interplay between instrumental and expressive symbolism in accounting" (Nahapiet 1988, 356). Rhetoric lies in the fuzzy area between the quicksand of ultimate subjectivity and the dogmatism of objectivity.

In this section, I first offer some brief thoughts specifically aimed at the design problem of how to actually build agency-oriented PM. Addressing the design problem forces us to think what agency orientation means beyond the atomic relationship between organizational reality and representation; we should consider how narrative stacks up against some essential properties within PM systems, for instance the combinability of numbers. After that, I will exemplify how an actual agency-oriented PM practice could be designed.

Properties of representational forms within a PM practice

Representations of the two different types we have examined, numbers or metrics on one hand and text or narrative on the other, offer different qualities within a bureaucratic system. This term 'bureaucratic' is not a value judgment, but simply an assumption that the consummation of the representation is not done close to the production of the representation: management is normally removed from the production line, for example. To achieve this *remote control*, inscriptions, i.e. representations, must be suitable for this pur-

pose and be "*mobile, stable* and *combinable* inscriptions that expedite long distance control" (Robson 1992, 685). Structurally-oriented representations, metrics, fit these characteristics well, that is, if we accept the underlying assumptions. Both quantities and narrative representations are mobile in a way that verbal accounts are not. They can both travel in time and space and are easily held in an information system, although both forms require that the representation can be interpreted 'back' to the concept. Stability of the representation refers to the conventions attached to it, so that the representation may travel from one context to another and lose as little as possible of the reality it represents. The effectiveness of the stability quality is very dependent on the power of the convention, in my terms the convention of normative authority, but since narrative is considered more contextual, I would propose that quantities would be considered more stable than narrative, all other things being equal. When it comes to combinability, there are distinct differences. "Although numbers are both mobile and stable, combinability is the most obvious triumph of the *numerical* inscription" (Robson 1992, 697). Numeric inscriptions have the immensely practical characteristic of being able, for example, to be superimposed easily. So the manipulation needed for remote control is most easily achievable within the more abstracted inscription of numbers, while narrative will have to pass through further cognitive steps to be combined. The consumer of the inscription would like to 'be' closer to the phenomena via the representation (not by actually entering into the phenomena). Latour's (1999) concept of circulating reference tells us that this process of reduction and abstraction, with the aim of amplifying it in order that it can be consumed by more, has the ironic effect of both bringing reality closer, while pushing it away. It will be brought closer in the sense that the representation is available to a wider audience, e.g. management, but will be pushed away in the sense that the abstraction is inherently a *reduction* of reality. We might say that structurally-oriented practices in bureaucratic settings

are relatively more efficient as a form of representation, while narrative is relatively more effective as a representation of the performance of phenomena: one is more combinable and less rich; the other is less combinable and richer. Following this argument means that utilizing narrative inscriptions will limit the amplification relative to the possible amplification of numeric inscriptions. The less stable nature of narrative is another factor that limits amplification. The trade-off is therefore again between a relatively low-bandwidth, long-range representation and a relatively high-bandwidth, short-range representation. Since narrative representations are less combinable and may be amplified less, consumption has to be relatively close to the location of representation. This implies an acceptance of the existence of a 'horizon of control', and possibly the embracement of that. Alternatively, extra cognition steps may be inserted to 'manually' combine narrative representations for higher-level consumption. This is a critical design property: an agency-oriented PM practice based on narrative will comprise many more interpretative steps than structurally-oriented practices. While examining the saying 'what gets measured gets done' Catasus, Ersson et al. (2007) find that it is the talking about the phenomena that prompts action rather than merely the measurement itself. "Mobilizing [narration] should be part of the discourse on measurement and management in that it enriches our understanding of both indicating and acting" (Catasús et al. 2007, 516). This notion resonates well with the propositions we have made regarding the two necessary dimensions of representing organizational reality. In measurement-based PM systems, much of the talking occurs *after* the measurement and is based on the measurement. Alternatives might be to circumvent the indication of reality by numerical representation, and push the talking further 'back' in the PM process, or, less radically, to integrate the textual representation closer with quantitative representations.

Narrative-based PM

The Talk approach does not mean to promote democracy or higher levels of participation in the organization as an end, but does suggest that a participatory approach in *some* contexts might be more effective in reaching the goal of managerial effectiveness, which here means an appropriate representation of organizational performance. The design therefore tries to strike a balance between the typical quantitatively-oriented PM system design and the other extreme of a fully participatory approach where there is little or no formal system as such. Or to be more precise, the design allows the organization to enforce some arrangement so to allow the performance data to be integrated with the rest of the PM system. Heron makes a similar distinction in the description of the co-operative inquiry methodology and we could consider how to span the three different approaches described here: "Qualitative research *about* people is a halfway house between exclusive, controlling, quantitative, positivist research *on* people and fully participatory, cooperative research *with* people" (Heron 1996, 285).

This method *accepts* a 'predict and control' view of problem solving, and thus accepts the basic tenet of being able to do so (a structurally-oriented property). This just means that I accept that it is possible to plan ahead, providing you have a good quality basis for doing so. The 'good quality basis' is the representation of performance generated by the method. This relates to the concept of ideographic knowledge. Breaking entirely with ideographic knowledge and claiming it to be irrelevant would mean that the method would not be accepted in a practical setting. Within a deterministic view of problem solving, the hope is to design a method that gives a richer representation of organizational performance, so that problem solving will have a more relevant foundation.

This section will present a developed method for soliciting performance data in organizations, called 'Talks'. Talks aims to fill the gap in current PM

system designs between some forms of organizational reality and representational forms, while still being compatible with existing systems, and can therefore be an important piece of a consistent whole along with more traditional PM practices. The prototype design of Talks has been born out of agency-oriented thinking and the inspirations mentioned below.

Inspiration for the Talks method has been found in the thinking on 'Mode 2' research methods (MacLean, MacIntosh, and Grant 2002), concepts adapted from the Cognitive Mapping methodology (e.g. Eden 1988) derived from Kelly's (1955) theory of personal constructs, and co-operative inquiry (e.g. Heron and Reason 1997). "The written word itself can represent both pattern and propositional outcomes: the former by the evocation of metaphor in poetry, story, parable, allegory, myth; the latter by the interlinking of concepts in classificatory and theoretical statements" (Heron 1996, 107). The flexibility of text as a representational form is unsurpassed and the emphasis on text hardly comes as a surprise to the reader at this stage. The co-operative inquiry method builds on the participants' own experiential knowledge, and, as such, is inherently relevant for the design of Talks, since this is a characteristic we are striving for. This *epistemic participation* should therefore enhance the value of the knowledge in contexts characterized by reciprocal (vs. linear) relationships, such as agency-oriented, e.g. highly innovative, settings would be. In addition, the concept of interactive control systems (Simons 1994) has been adopted, in the sense that agency orientation probably favors a more widespread interactive use of control systems, and that this should be encouraged. These are the theoretical inspirations, but similar inspiration can be found in society at large around us. Especially within the last five years or so, other areas of social life have adopted less structured approaches to managing knowledge. Wikis, blogs, crowd sourcing, social networking systems, etc. all take a networked approach to *defining*. The "important" which Burchell, Clubb et al. (1980) tell us is inherent in systems of

accounting such as PM systems is thus not predefined in these systems, but co-created in the relationships and interactions between the participants. Although many organization are exploring how they can leverage so called Web 2.0 ideas in a professional context (e.g. Bughin and Manyika 2007), these ideas have not entered fully into the realm of PM. Typically, these efforts are not thought into an integrated effort, but remain standalone systems creating new islands of knowledge. Personal past experience with a Copenhagen-based consultancy, Competencehouse (2009) also provided important stimulation. While they do not work with PM and have not in any way participated in this work, their tools embrace text-based interactions and have been an inspiration.

Talk method design

The Talk method has been designed as a prototype agency-oriented performance management practice. It has the *same* ultimate goal as we understand traditional PM practices to have: to provide a relevant representation of organizational performance to consumers of that data in the organization. But the nature of Talk lies closer to the agency orientation, and the analytical argument is that more shared assumptions will lead to less conflict between what is managed (i.e. the organization) and the management instrument (PM practices).

So what requirements should we look for in narrative-based PM practice? The following example of a narrative based practice, Talk, is essentially a set of semi-structured, text-based 'discussions' which take place asynchronously for understanding organizational performance. The Talk method is essentially a structured 'conversation' between people. This conversation takes place from within a text-based application. The overall objective has been to balance performative assumptions of processes in an organization with the *practical* need to integrate the method with the rest of the PM system in the

organization. So the Talk method is not thought up in a vacuum of practicality: it must be capable of being *feasibly employed* by real organizations, small and large.

The context remains an organization with a need for representing performance to other consumers of that information, e.g. management. The assumption is that organizational reality characterized by the properties we have associated with agency orientation will lend itself better to a form of representation which shares the same characteristics. The reciprocal interdependency and the local in agency orientation suggest promoting a *group-based* process of defining and representing performance, where multiple iterations of representation are used to achieve consensus.

Simplicity has been a critical requirement in the design. A premise in the underlying thinking is that people close to the work can best judge their own performance and that of their immediate surroundings. The consequence is that it would be desirable to vet more people locally for performance data. To minimize the cost of doing this, the approach needs to be simple to explain and to use. However, the requirement of simplicity is not a constraint. In this case, less is more, and the hope is that Talk can leverage its simplicity as strength.

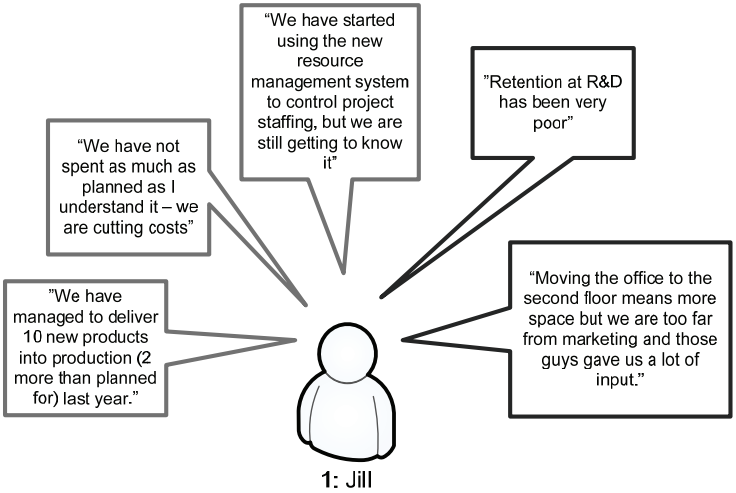
Talk scenario

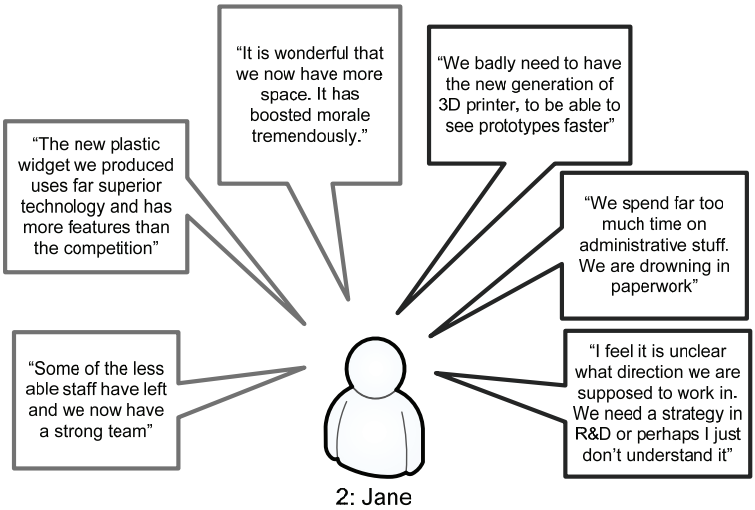
In the following we will exemplify how the Talk method might unfold in an organization in a little scenario. The organization has developed metrics for most aspects of the organization with sound reports going periodically to management. The CEO of this organization is concerned with the R&D department's output performance; the level of innovation in the new product lines seems to be lower than in the past, and also lower than what the competition is presenting. Being a small organization, they decide not to try to integrate Talk with their financial reporting, because the complexity of the or-

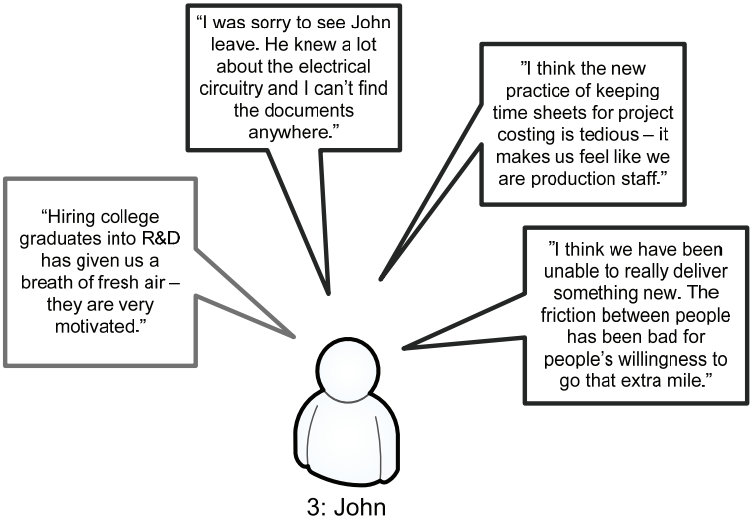
ganization is low, and the costs outweigh the benefits. Talk is employed stand-alone, and, in this scenario, the subject of the Talk is a non-recurring event, i.e. unusually low performance. The CEO might therefore ask the R&D manager to conduct a Talk or the R&D manager decides of her own accord to do so. The Topic for the Talk is formulated to be simply: "What good and bad things about the R&D department's work do you see?" Note that this formulation is balanced, and oriented primarily towards the present, although future aspirations are likely to be raised. Three people participate in the Talk process, they are Speakers. The Flow of the Talk has been designed with the following three Segments: 1. a 'First thought' where each speaker provides initial input on the Topic, in this case good and bad things. 2. Then a Cross Talk where each Speaker provides further Reflections on his or her colleagues' First Thoughts. This is where the dialogue and rhetoric are activated. Lastly, 3. A Cap Segment asks each Speaker to indicate the 5 most important Reflections, either good or bad.

First thought

In the following figures, the results of the First Thought Step are shown, with positive and negative Reflections on the Topic.


"We have started using the new resource management system to control project staffing, but we are still getting to know it"
"Retention at R&D has been very poor"
"We have not spent as much as planned as I understand it – we are cutting costs"
"We have managed to deliver 10 new products into production (2 more than planned for) last year."
"Moving the office to the second floor means more space but we are too far from marketing and those guys gave us a lot of input."
1: Jill


"It is wonderful that we now have more space. It has boosted morale tremendously."
"We badly need to have the new generation of 3D printer, to be able to see prototypes faster"
"The new plastic widget we produced uses far superior technology and has more features than the competition"
"We spend far too much time on administrative stuff. We are drowning in paperwork"
"Some of the less able staff have left and we now have a strong team"
"I feel it is unclear what direction we are supposed to work in. We need a strategy in R&D or perhaps I just don't understand it"
2: Jane



Among the three Speakers, we see six positive Reflections and eight negative Reflections.

X Talk

Now each Speaker is asked to consider *each of the other people's Reflections* and encouraged to provide further Reflection. For Speaker 1, Jill, this might look like this:

First Reflections from other Speakers	Do you mostly agree?	Do you mostly disagree?	Jill, Please Reflect!
Jane says "Some of the less able staff have left and we now have a strong team"	☐	☑	We have lost several of the core staff, and with them a lot of knowledge.
Jane says "The new plastic	☐	☑	But this is in fact not

widget we produced uses far superior technology and has more features than the competition”			what our customers want! Instead we should focus on our simple entry-level products.
Jane says “It is wonderful that we now have more space. It has boosted morale tremendously.”	☐	☑	Yes, we have more space, but I don’t have the opportunity to chat with marketing about what the market is requesting.
John says “Hiring college graduates into R&D has given us a breath of fresh air – they are very motivated.”	☐	☑	These guys are nice, but they just don’t have the experience to pull their weight. It’s not worth the savings.
Jane says “We badly need to have the new generation of 3D printer, to be able to see prototypes faster”	☑	☐	This has probably been due to our cost cutting targets. It is suffocating us!
Jane says “We spend far too much time on administrative stuff. We are drowning in paperwork”	☑	☐	(no Reflection given)
Jane says “I feel it is unclear what direction we are supposed to work in. We need	☑	☐	Couldn’t agree more!

a strategy in R&D or perhaps I just don't understand it"			
John says "I was sorry to see Kevin leave. He knew a lot about the electrical circuitry and I can't find the documents anywhere."	☑	☐	(no Reflection given)
John says "I think the new practice of keeping time sheets for project costing is tedious – it makes us feel like we are in production."	☑	☐	(no Reflection given)
John says "I think we have been unable to really deliver something new. The friction between people has been bad for people's willingness to go that extra mile."	☑	☐	(no Reflection given)

Speaker 2 and 3 do the same and this gives us an additional Reflection on the First Thought. For *each* First Thought Reflection we have similar information:

First thought	Reflection	Reflection
Jane says unfavorably: "We badly need to have the new genera-	Jill agrees: "This has probably been due to our cost cutting tar-	John disagrees: "This is not an investment which is essential to

tion of 3D printer, to be able to see prototypes faster"	gets. It is suffocating us!"	our work now and they will soon come down in price"

We also have a simple indicator of consensus as we asking for the binary distinction of whether the Speaker mostly agrees. However, consensus is not adequate since everybody might agree on something unimportant, but this is probably not an important factor of performance. We now have several threads of discussion relating to the Topic, in which participants have reflected on each other's input.

Cap

In this Step the Speakers are simply asked to choose the most important Reflections among a pool of all First Thought Reflections, where X-Talk reflections are visible. It is possible for Speakers to choose their own Reflections, and there should be no mechanisms against this, but Speakers should be encouraged simply to choose what they genuinely find most important after considering the whole pool of Reflections. Note that we do not differentiate between 'good' and 'bad' Reflections because they can be equally important in representing performance. Speakers are simply asked to indicate a number of the most important Reflections from considering the Topic. The number chosen relates to the desired degree of breadth in the discussion. For example, if one was to choose to cap at five, after this Step we would potentially have a list of 15 Reflections, but probably fewer, as well as an impression of the consensus. The consumer of the information, in this case the R&D manager, may then review this data, which is a list of 5 to 15 positive and negative aspects of performance and reflections on them. The quality of the data cannot be demonstrated as this is inherently, and by design, an interpretation, but this will be a subjective determination on behalf of the consumer of the

information. Presumably, she could use it as input for her report to the CEO on the performance of the department. It is her prerogative to accentuate certain things while ignoring others.

Enterprise requirements

Having covered what a simple one-level Talk could look like in a smaller organization, let us look at how a larger enterprise could use the method. Essentially the enterprise would use the same basic process as a building block, but with emphasis on additional aspects, for example:

- Consistency
- Integration with traditional PM
- Aggregation, i.e. combinability

In larger organizations, there will be a need to be able ensure a level of consistency in the use of Talk, i.e. a structurally-oriented slant. This is *not* because there should be any illusion that the Talks can be used for statistical testing across the organization, but because standards will ease the use of Talk by ensuring familiarity and convenience in use. So standards may be useful, but only a level of standardization which is done in acknowledgement of the relevance of consistency. An organization can design standard Flows for different situations, so that the Talk suits the specific situation without the individual Initiator having to design it from scratch. This will also allow a dedicated unit to have the responsibility for designing Flows with the option to tweak designs based on experience from the whole organization.

The other main requirement is that Talk should be able to be integrated with the rest of the reporting structure. The backbone of the financial reporting in many organizations is the chart of accounts (COA). Reporting typically follows the dimensions (or combination of dimensions) and hierarchies defined within the COA structure. Ideally, a Talk process should be aligned

with the COA structure, so that the focus of the inquiry can be related to a specific COA code combination. This will make the content of the inquiry easily relatable to the rest of the reporting architecture in the organization. This point is *essential* in building an integrated PM system which bridges new and 'old' ways of thinking PM. Technically, this is not a very difficult task. Essentially, we just need to relate the specific Talk to a specific COA code combination. This means that the Talk should be able to be related to, for example, project X within organizational unit Y for a given time span. The Talk method can therefore be integrated with the rest of the financial and non-financial reporting structure. This does *not* mean that it is always appropriate to do so. Many Topics may not be describable in terms of COA nodes or relatable to other metrics. However, the empirical data shows indications that natural language exchanges come before and especially after a quantity representation, so having the two types of data relatable will ensure that an audit-trail is clear and, more importantly, will ensure that people have the best foundation for interpreting the same material.

However, alignment with COA structure does not only mean being able to relate to a COA code combination. It also means that the method should be compatible with the concept of a hierarchy. Quantitative data can be cascaded down a hierarchy by distribution over child nodes and rolled up a hierarchy by summation, and Talk data should be *able* to do something comparable, again not that this is necessarily appropriate in all instances. And again, this does not mean that Talk should necessarily be restricted to following a COA structure, but organizations should have the option of enforcing it. If policy accepts it, this design would allow the data to be explored in a drill-down fashion, similar to financial or other quantitative data. Performance management policies can also be enforced in the Flow designs in this way by gathering inputs in cascades and consequently rolling up into more condensed Reflections. This would be done by having Topics for Talks follow

the individual nodes in the hierarchy corresponding to an account code combination, while having Talks at successive levels in the hierarchy, bottom up. For example, a team might have a performance Talk, which is input to team leaders' performance Talk at department level, and department heads' Talk at division level and so on. In this way the data should to some extent reflect a hierarchy. Obviously the Initiator will determine what is relevant at every level and will act as a gate-keeper for the data to be passed up in the hierarchy. This will allow the organization to obtain rich descriptions for understanding financial or non-financial metrics as well as stand-alone rich discussions not associated with the rest of the PM system.

Topics

Due to the simplicity and flexibility of Talk, the Topic takes an absolutely crucial role in determining how the Talk unfolds. The Topic should frame the discussion and try to balance the objective of letting the Speakers feel in control while not letting the Talk be without boundaries. It is extremely important that a lot of thought goes into the Topic, because it can easily be formulated in a way which will lessen the value of the Reflections. Even though Talks can potentially be about anything, in the PM context we obviously want to work with the performance of the organization. To try to guide the formulation of Topics, it would be beneficial to have structure to organize different types of Topics. PM has both forward-looking and backward-looking elements, as well as establishing current state. The forward-looking elements are about establishing goals, where we would like to be. The backward-oriented elements are about documenting if we are reaching those goals, or on a trajectory to do so. Establishing current state is about knowing where the organization is. Again, this is done to have conceptual overlap between Talks and traditional PM. The most fundamental Topic might be to establish *present state*, for example: Topic example 1: "How

would you characterize the current situation for R&D's work on the Rubix project?" Note that a very important difference between this approach and traditional approaches is that *performance* is not made explicit. It is therefore inherently accepted that the Speaker has a relevant, perhaps tacit, understanding of what performance is for the subject of the Talk, in the example "R&D's work on the Rubix project". This aligns with the concept of normative authority as an often implicit determinant of performance. Focusing on a past perceived failure might be formulated like this: Topic example 2 "How would you characterize our efforts to lower Q3 OPEX to fall within budget?" This means that we know where we were, we know where we are, but we would like to understand the process of getting there. We can continue by thinking of examples of the future: Topic example 3: "Are the stated goals for the corporation's mining business the right ones?" Or topic example 4: "Are we engaged in the right activities to reach our goals?" Here we are interested in the perceived process of getting to a desirable state which we assume is known. These examples merely serve to illustrate different ways of initiating the Talk process. Another differentiating factor of topics is whether it promotes a 'balanced' response. Notice that the examples would benefit from both positive and negative responses, documenting positions in favor and in opposition. An alternative for the wording of example 2 could be: "Why has OPEX not declined to the budgeted amount for Q3?" Then the resulting representation will focus more on root causes of failure, and will likely be more negative in nature. In conducting Talks and in evaluating the usefulness of the reports that are produced, it is worth being aware that there is a risk of people highlighting negative aspects. It is typically easier for many people to formulate what is wrong with a situation than to fully describe the positive aspects of the same situation to the same extent. To try to counter this tendency, it is suggested that balanced Topic formulations are generally desirable. This is not because there is anything wrong with a Talk focusing on neg-

ative aspects. The danger may be that the resulting data is *interpreted* as truly balanced, when representation it is not as balanced as it could be. From a pilot study of this technique conducted by the author, it is clear that respondents have difficulty distinguishing between states and processes, and between different temporal categories. Bleeding occurs between the categories. This is a natural consequence of asking open-ended questions, and should be capitalized on by making sure that the extra information conveyed is duly used. In contexts where the Speakers are not expected to differentiate clearly between different temporal categories, it could be advisable to formulate the topic more broadly. An example of this could be a topic such as this: Topic example 5: "What should we stop doing and instead start doing in the retail marketing department?" This topic is intuitively very easy to understand, and will effectively solicit an implicit performance understanding reflected in how things that are being done do not constitute performance and conversely how things which are not being done, but should be, do constitute performance. However, the temporal category is hazy. Saying something about what we should stop and start doing will uncover negative aspects of the present as well as implicitly indicate future directions.

Summary of Talk

The goal of this brief presentation of the Talk method has been to exemplify a practical process which adheres to the characteristics of agency orientation. It is distinct from very structurally-oriented systems of quantification since it uses a different representational form: text. However, it is also distinct from other forms of text-based communication such as email, forum-type formats, etc. as the method does have borders for how the textual interchange is unfolded. Obviously, to design an IS with certain characteristics is implicitly to argue that some level of determination of organizational dynamics can be made. There are, however, no guarantees that this will happen. "Merely be-

ing capable of changing structural properties does not imply that those capabilities will be exercised, and while human actors always have some capacity for independent action, there are no guarantees that such resources will be drawn on" (Orlikowski and Robey 1991, 150). However, the proposed method is thought to reduce dysfunctional behavior resulting from PM practices in agency-oriented organizational realities because:

- Talk accepts that performance is a multifaceted concept, and that explicitation is difficult, quantification even more so, and may lead to dysfunctional behavior;
- it embraces an organizational reality which is not meaningfully conceptualized as made of distinctions;
- the method shifts the determination of what is relevant towards the people who are closest to the work; and
- it accentuates the value of a posteriori knowledge and circumvents the metrics-based problem of deciding on metrics which assumes that you in advance can know what constitutes performance and how to measure it, which, particularly in innovative settings, may be problematic.

Reference list

Abernethy, Margaret A., and Anne M. Lillis. 1995. The impact of manufacturing flexibility on management control system design. *Accounting, Organizations and Society* 20 (4):241-258.

Acero, Alex. 2009. Interview by author. Redmond, July 6.

Ackoff, Russell L. 1967. Management misinformation systems. *Management Science* 14 (4):B-147-B-156.

Alchian, Armen A., and Harold Demsetz. 1972. Production, information costs, and economic organization. *American Economic Review* 62 (5):777-795.

Allen, Robert L. 1966. Written English is a "Second language". *The English Journal* 55 (6):739-746.

Archer, Margaret S. 1982. Morphogenesis versus structuration: On combining structure and action. *The British Journal of Sociology* 33 (4):455-483.

———. 1995. *Realist social theory: The morphogenetic approach*: Cambridge University Press.

Argyris, Chris. 1952. *The impact of budgets on people*. New York: Controllership Foundation, Cornell University, School of Business and Public Administration.

———. 1990. The dilemma of implementing controls: The case of managerial accounting. *Accounting, Organizations & Society* 15 (6):503-511.

Aristotle. 2004. *Rhetoric*. Translated by W. R. Roberts. Mineola, N.Y.: Dover Publications.

Arrington, Cecil Edward, and William Schweiker. 1992. The rhetoric and rationality of accounting research. *Accounting, Organizations and Society* 17 (6):511-533.

Ashby, William Ross. 1956. *An introduction to cybernetics*. New York: Wiley, Science Editions.

———. 1958. Requisite variety and its implications for the control of complex systems. *Cybernetica* 1 (2):83-99.

Athanassopoulos, Antreas D., and Dimitris Giokas. 2000. The use of data envelopment analysis in banking institutions: Evidence from the commercial bank of greece. *Interfaces* 30 (2):81-95.

Atkinson, Anthony A., John H. Waterhouse, and Robert B. Wells. 1997. A stakeholder approach to strategic performance measurement. *Sloan Management Review* 38 (3):25-37.

Austin, Robert D. 1996. *Measuring and managing performance in organizations*. New York: Dorset House Publishing.

Bahl, Victor. 2009. Interview by author. Redmond, July 10.

Bain, Joe Staten. 1968. *Industrial organization*. New York: Wiley.

Banker, Rajiv D., Hsihui S. Chang, and Mina J. Pizzini. 2004. The Balanced Scorecard: Judgmental effects of performance measures linked to strategy. *Accounting Review* 79 (1):1-23.

Banker, Rajiv D., Gordon Potter, and D. Srinivasan. 2000. An empirical investigation of an incentive plan that includes nonfinancial performance measures. *The Accounting Review* 75 (1):65-92.

Barley, Stephen R. 1986. Technology as an occasion for structuring: Evidence from observations of ct scanners and the social order of radiology departments. *Administrative Science Quarterly* 31 (1):78-108.

Barney, Jay B. 1991. Firm resources and sustained competitive advantage. *Journal of Management* 17 (1):99-120.

Beamon, Benita M. 1999. Measuring supply chain performance. *International Journal of Operations & Production Management* 19 (3-4):275-292.

Behn, Robert D. 2003. Why measure performance? Different purposes require different measures. *Public Administration Review* 63 (5):586-606.

Berente, Nicholas, Uri Gal, and Youngjin Yoo. 2006. Dressage and the illusion of enterprise control. In *Fourteenth European Conference on Information Systems*. Göteborg, Sweden.

Biber, Douglas Edward. 1984. A model of textual relations within the written and spoken modes, University of Southern California.

Bititci, Umit S., Allan S. Carrie, and Liam McDevitt. 1997. Integrated performance measurement systems: A development guide. *International Journal of Operations & Production Management* 17 (5):522-34.

Bititci, Umit S., Allan S. Carrie, Liam McDevitt, and Trevor Turner. 1998. Integrated performance measurement systems: A reference model. In *Organising the extended enterprise*. London: Chapman & Hall.

Bititci, Umit S., Allan S. Carrie, and Trevor Turner. 1998. Diagnosing the integrity of your performance measurement system. *Control, April*:9-13.

Bititci, Umit S., Trevor Turner, and Carsten Begemann. 2000. Dynamics of performance measurement systems. *International Journal of Operations & Production Management* 20.

Bjørn-Andersen, Niels, Ken Eason, and Daniel Robey. 1986. *Managing computer impact: An international study of management and organizations*: Intellect Books.

Blau, Peter M. 1955. *The dynamics of bureaucracy: A study of interpersonal relations in two government agencies*: University of Chicago Press.

Blehm, Andy. 2009. Interview by author. Copenhagen, February 9.

Bourne, Mike, John Mills, Mark Wilcox, Andy Neely, and Ken Platts. 2000. Designing, implementing and updating performance measurement

systems. *International Journal of Operations & Production Management* 20 (7):754-71.

Britten, Jeremy. 2008. Interview by author. Copenhagen, December 17.

Brown, H. I. 1992. Direct realism, indirect realism, and epistemology. *Philosophy and Phenomenological Research* 52 (2):341-363.

Bruner, Jeromy S. 1986. *Actual minds, possible worlds*. Cambridge: Harvard University Press.

Bryant, Christopher G. A., and David Jary. 1997. *Anthony Giddens: Critical assessments 4*. London: Routledge.

Bughin, Jacques, and James Manyika. 2009. *How businesses are using web 2.0: A mckinsey global survey* McKinsey & Company 2007 [cited April 1 2009]. Available from http://www.mckinseyquarterly.com/How_businesses_are_using_Web_20_A_McKinsey_Global_Survey_1913.

Burchell, Stuart, Colin Clubb, Anthony G. Hopwood, John Hughes, and Janine Nahapiet. 1980. The roles of accounting in organizations and society. *Accounting, Organizations and Society* 5 (1):5-27.

Burns, Tom, and G. M. Stalker. 1966. *The management of innovation*, *Ssp6*. London: Tavistock Publications.

Burrell, G., and Gareth Morgan. 1979. *Sociological paradigms and organisational analysis*. London: Heinemann.

Business Objects. 2008. *Enterprise performance management - controlling the future of your business* 2008 [cited February 1 2008]. Available from http://www.businessobjects.com/product/epm/.

Busk Andersen, Claus. 2008. Interview by author. Copenhagen, December 18.

Buxton, Bill. 2009. *The long nose of innovation*. BusinessWeek 2008 [cited June 9 2009]. Available from

http://www.businessweek.com/innovate/content/jan2008/id2008012_297369.htm.

———. 2009. Interview by author. Redmond, July 6.

Callinicos, Alex. 1985. Anthony Giddens: A contemporary critique. *Theory and Society* 14 (2):133-166.

Campbell, Donald T. 1987. Evolutionary epistemology. In *Evolutionary epistemology, rationality, and the sociology of knowledge*, edited by K. R. Popper.

Catasús, Bino. 2008. In search of accounting absence. *Critical Perspectives on Accounting* 19 (7):1004-1019.

Catasús, Bino, Sofi Ersson, Jan-Erik Gröjer, and Fan Yang Wallentin. 2007. What gets measured gets… on indicating, mobilizing and acting. *Accounting, Auditing & Accountability Journal* 20 (4):505-521.

Catasús, Bino, and Jan-Erik Gröjer. 2006. Indicators: On visualizing, classifying and dramatizing. *Journal of Intellectual Capital* 7 (2):187-203.

Chaudhuri, Surajit. 2009. Interview by author. Redmond, August 3.

Cheng, Lili. 2009. Interview by author. Redmond, July 30.

Chiesa, V., P. Coughlan, and C. A. Voss. 1996. Development of a technical innovation audit. *Journal of Product Innovation Management* 13 (2):105-136.

Christensen, Peter. 2009. Interview by author. Copenhagen, February 11.

Chua, Wai-Fong, and Pieter Degeling. 1993. Interrogating an accounting-based intervention on three axes: Instrumental, moral and aesthetic. *Accounting, Organizations and Society* 18:291-291.

Chua, Waif. 1989. Experts, networks and inscriptions in the fabrication of accounting images: A story of the representation of three public hospitals. *Hospital*.

Cohen, I. J. 2000. Theories of action and praxis. In *The blackwell companion to social theory*, edited by B. S. Turner.

Competencehouse. 2009. *About Competencehouse* 2009 [cited February 1 2009]. Available from http://competencehouse.dk/index.php?id=33.

Connor, G., and R. A. Korajczyk. 1986. Performance-measurement with the arbitrage pricing theory - a new framework for analysis. *Journal of Financial Economics* 15 (3):373-394.

Cooren, François. 2004. Textual agency: How texts do things in organizational settings. *Organization* 11 (3):373-393.

Corvellec, H. 1997. *Stories of achievements: Narrative features of organizational performance*: Transaction Publishers.

Courtright, John A., Gail T. Fairhurst, and L. Edna Rogers. 1989. Interaction patterns in organic and mechanistic systems. *The Academy of Management Journal* 32 (4):773-802.

Courty, P., and G. Marschke. 2003. Dynamics of performance-measurement systems. *Oxford Review of Economic Policy* 19 (2):268-284.

Cousin, V. 1826. *Fragments philosophiques*. Paris: Ladrange.

Curtright, J. W., S. C. Stolp-Smith, and E. S. Edell. 2000. Strategic performance management: Development of a performance measurement system at the mayo clinic. *Journal of Healthcare Management* 45 (1):58-68.

Czarniawska-Joerges, Barbara. 1998. *A narrative approach to organization studies*: Sage.

Czarniawska, Barbara. 2009. *A theory of organizing* Glos: Edward Elgar Publishing.

Daft, Richard L., and Robert H. Lengel. 1986. Organizational information requirements, media richness and structural design. *Management Science* 32 (5):554-571.

Daft, Richard L., Robert H. Lengel, and Linda Kiebe Trevino. 1987. Message equivocality, media selection, and manager performance: Implications for information systems. *MIS Quarterly* 11 (3):354-366.

Daft, Richard L., and Norman B. Macintosh. 1981. A tentative exploration into the amount and equivocality of information processing in organizational work units. *Administrative Science Quarterly* 26 (2):207-224.

Daft, Richard L., and John C. Wiginton. 1979. Language and organization. *Academy of Management Review* 4 (2):179-191.

Danto, A. C. 2003. *The abuse of beauty: Aesthetics and the concept of art*. Chicago: Open Court.

Davis, Stan, and Tom Albright. 2004. An investigation of the effect of Balanced Scorecard implementation on financial performance. *Management Accounting Research* 15 (2):135-153.

De Toni, A., and S. Tonchia. 2001. Performance measurement systems - models, characteristics and measures. *International Journal of Operations and Production Management* 21 (1-2):46–70.

De Wit, B., and R. Meyer. 2005. *Strategy synthesis: Resolving strategy paradoxes to create competitive advantage*. Andover: Thomson Learning Emea.

DeSanctis, G., and M. S. Poole. 1994. Capturing the complexity in advanced technology use: Adaptive structuration theory. *Organization science*:121-147.

DeVito, Joseph A. 1965. Comprehension factors in oral and written discourse of skilled communicators. *Speech Monographs* 32 (2):124.

Dewey, John. 1921. *Human nature and conduct: An introduction to social psychology*. London: Allen & Unwin.

Dierickx, Ingemar, and Karel Cool. 1989. Asset stock accumulation and sustainability of competitive advantage. *Management Science* 35 (12):1504-1511.

Dixon, J. R., A. J. Nanni, and T. E. Vollmann. 1990. *The new performance challenge: Measuring operations for world-class competition*: Business One Irwin.

Draves, Rich. 2009. Interview by author. Redmond, July 9.

Drucker, Peter F. 1954. *The practice of management*. New York: Harper.

Eccles, R. G. 1991. The performance measurement manifesto. *Harvard business review* 69 (1):131-137.

Eddy, D. M. 1998. Performance measurement: Problems and solutions. *Health Affairs* 17 (4):7.

Eden, C. 1988. Cognitive mapping. *European Journal of Operational Research* 36 (1):1-13.

———. 1992. On the nature of cognitive maps. *Journal of Management Studies* 29 (3):261-265.

Eisenhardt, Kathleen M. 1985. Control: Organizational and economic approaches. *Management Science* 31 (2):134-149.

———. 1989. Agency theory: An assessment and review. *Academy of Management Review* 14 (1):57-74.

Emiliani, M. L. 2000. The false promise of 'what gets measured gets managed'. *Management Decision* 38 (9):612-15.

Emirbayer, Mustafa, and Ann Mische. 1998. What is agency? *American Journal of Sociology* 103 (4):962-1023.

Engeström, Yrjö. 1999. Communication, discourse and activity. *Communication Review* 3 (1/2):165.

Ezzamel, Mahmoud, Simon Lilley, and Hugh Willmott. 2004. Accounting representation and the road to commercial salvation. *Accounting, Organizations and Society* 29 (8):783-813.

Fairhurst, Gail Theus, and Robert A. Sarr. 1996. *The art of framing : Managing the language of leadership*, *The jossey-bass business & management series*. San Francisco: Jossey-Bass Publishers.

Feldman, M. S., and B. T. Pentland. 2003. Reconceptualizing organizational routines as a source of flexibility and change. *Administrative Science Quarterly* 48 (1):94-121.

Feller, I. 2002. Performance measurement redux. *American Journal of Evaluation* 23 (4):435.

Feyerabend, P. K. 1993. *Against method: Outline of an anarchistic theory of knowledge*. London: Verso Books.

Fitzgerald, Brian, and Debra Howcroft. 1998. Towards dissolution of the is research debate: From polarization to polarity. *Journal of Information Technology (Routledge, Ltd.)* 13 (4):313.

Flapper, S. D. P., L. Fortuin, and P. P. M. Stoop. 1996. Towards consistent performance management systems. *International Journal of Operations & Production Management* 16 (7):27-37.

Foucault, M., and A. Sheridan. 1977. *Discipline & punish: The birth of the prison*. New York: Random House.

Friend, J. K., and Allen Hickling. 2005. *Planning under pressure: The strategic choice approach*. Amsterdam; Boston: Elsevier/Butterworth Heinemann.

Fuchs, Stephan. 2001. Beyond agency. *Sociological Theory* 19 (1):24-40.

Galbraith, Jay R. 1977. *Organization design*. Reading, Mass.: Addison-Wesley Pub. Co.

Ghalayini, Alaa M., and James S. Noble. 1996. The changing basis of performance measurement. *International Journal of Operations & Production Management* 16 (8):63-80.

Gibson, James W., Charles R. Gruner, Robert J. Kibler, and Francis J. Kelly. 1966. A quantitative examination of differences and similarities in written and spoken messages *Speech Monographs* 33 (4):444.

Giddens, Anthony. 1984. *The constitution of society: Outline of the theory of structuration*. Berkeley: University of California Press.

———. 1991. *Modernity and self-identity: Self and society in the late modern age*. Cambridge: Polity.

———. 1993. *New rules of sociological method: A positive critique of interpretative sociologies*. Palo Alto: Stanford University Press.

Giddens, Anthony, and C. Pierson. 1998. *Conversations with Anthony Giddens: Making sense of modernity*: Stanford University Press.

Globerson, S. 1985. Issues in developing a performance criteria system for an organization. *International Journal of Production Research* 23 (4):639-646.

Goddard, M., R. Mannion, and P. C. Smith. 1999. Assessing the performance of NHS hospital trusts: The role of 'hard'and 'soft'information. *Health policy* 48 (2):119-134.

Goddard, M., R. Mannion, and P. C. Smith. 2000. Enhancing performance in health care: A theoretical perspective on agency and the role of information. *Health Economics* 9 (2):95-107.

Goffman, Erving. 1959. *The presentation of self in everyday life*: Doubleday.

Gunasekaran, A., C. Patel, and R. E. McGaughey. 2004. A framework for supply chain performance measurement. *International Journal of Production Economics* 87 (3):333-347.

Gunasekaran, A., C. Patel, and E. Tirtiroglu. 2001. Performance measures and metrics in a supply chain environment. *International Journal of Operations & Production Management* 21 (1-2):71-87.

Hagel III, John, and Marc Singer. 1999. Unbundling the corporation. *Harvard Business Review* 77 (2):133-141.

Hall, Matthew. 2008. The effect of comprehensive performance measurement systems on role clarity, psychological empowerment and managerial performance. *Accounting, Organizations and Society* 33 (2-3):141-163.

Heinrich, C. J. 2002. Outcomes-based performance management in the public sector: Implications for government accountability and effectiveness. *Public Administration Review* 62 (6):712-725.

Heron, J. 1996. *Co-operative inquiry: Research into the human condition*. London: Sage Publications.

Heron, J., and P. Reason. 1997. A participatory inquiry paradigm. *Qualitative Inquiry* 3 (3):274.

Hoebeke, Luc. 1990. Measuring in organisations. *Journal of Applied Systems Analysis* 17:115-122.

Holstein, J. A., and J. F. Gubrium. 1995. *The active interview*. London: Sage Publications.

Hopwood, Anthony G. 1972. An empirical study of the role of accounting data in performance evaluation. *Journal of Accounting Research* 10:156-182.

———. 1974. *Accounting and human behaviour*. London: Haymarket Publishing.

Horvitz, Eric. 2009. Interview by author. Redmond, July 20.

Hoskin, K. W., and R. H. Macve. 1986. Accounting and the examination: A genealogy of disciplinary power. *Accounting, Organizations and Society* 11 (2):105-136.

Huang, S. M., C. L. Lee, and A. C. Kao. 2006. Balancing performance measures for information security management. *Industrial Management & Data Systems* 106 (2).

Hume, David. 1742. *Essays, of tragedy*.

Ibfelt, Kim. 2009. Interview by author. Copenhagen, February 20.

Indjejikian, R., and D. Nanda. 1999. Dynamic incentives and responsibility accounting. *Journal of Accounting and Economics* 27 (2):177-201.

Insights. 2009. *Discovery* 2008 [cited February 15 2009]. Available from http://www.insights.com/LearningSolutions/LearningSystems/Discovery.aspx.

Ittner, C. D., and D. F. Larcker. 2003. Coming up short on nonfinancial performance measurement. *Harvard Business Review* 81 (11):88–95.

Ittner, C. D., D. F. Larcker, and M. W. Meyer. 2003. Subjectivity and the weighting of performance measures: Evidence from a balanced scorecard. *Accounting Review* 78 (3):725-758.

Jacobs, R., M. Goddard, and P. C. Smith. 2005. How robust are hospital ranks based on composite performance measures? *Medical Care* 43 (12):1177.

Jancke, Gavin. 2009. Interview by author. Redmond, July 10.

Joas, Hans. 1993. *Pragmatism and social theory*. Chicago: University of Chicago Press.

Johnson, H. T., and Robert S. Kaplan. 1991. *Relevance lost: The rise and fall of management accounting*. Boston: Harvard Business School Press.

Jones, Matthew R., and Helena Karsten. 2008. Giddens's structuration theory and information systems research. *MIS Quarterly* 32 (1):127-157.

Kajiya, Jim. 2009. Interview by author. Redmond, July 8.

Kanji, G. K., and P. M. E. Sá. 2002. Kanji's business scorecard. *Total Quality Management & Business Excellence* 13 (1):13-27.

Kaplan, Robert S. 1983. Measuring manufacturing performance: A new challenge for managerial accounting research. *The Accounting Review* 58 (4):686-705.

———. 1984. Yesterday's accounting undermines production. *Harvard Business Review* 62 (4):95-101.

———. 1998. Innovation action research: Creating new management theory and practice. *Journal of Management Accounting Research* 10:89-118.

Kaplan, Robert S., and R. Cooper. 1997. *Cost & effect: Using integrated cost systems to drive profitability and performance*: Harvard Business School Press.

Kaplan, Robert S., and David P. Norton. 1992. The Balanced Scorecard - measures that drive performance. *Harvard Business Review* 70 (1):71-79.

———. 1996. *The Balanced Scorecard: Translating strategy into action*: Harvard Business School Press.

———. 2001. *The strategy-focused organization: How balanced scorecard companies thrive in the new business environment*: Harvard Business School Press.

Kaspersen, L. B. 2000. *Anthony Giddens: An introduction to a social theorist*. Oxford: Wiley.

Kasurinen, Tommi. 2002. Exploring management accounting change: The case of balanced scorecard implementation. *Management Accounting Research* 13 (3):323-343.

Kelly, G. A. 1955. The psychology of personal constructs (vols. 1 & 2). *NY: Norton*.

Kelly, J. M., and D. Swindell. 2002. A multiple-indicator approach to municipal service evaluation: Correlating performance measurement and citizen satisfaction across jurisdictions. *Public Administration Review* 62 (5):610-621.

Kennerley, Mike, and Andy Neely. 2002. A framework of the factors affecting the evolution of performance measurement systems. *International Journal of Operations & Production Management* 22 (11):1222-45.

———. 2003. Measuring performance in a changing business environment. *International Journal of Operations & Production Management* 23 (2):213-29.

Kerr, Steven. 1975. On the folly of rewarding a, while hoping for b. *Academy of Management Journal* 18 (4):769-783.

Kleijnen, J. P. C., and M. T. Smits. 2003. Performance metrics in supply chain management. *Journal of the Operational Research Society* 54 (5):507-514.

Knorr-Cetina, Karin 1999. *Epistemic cultures: How the sciences make knowledge*: Harvard University Press.

Knorr-Cetina, Karin, and R. Harré. 1981. *The manufacture of knowledge*. Oxford: Pergamon Press.

Kostoff, Ronald N., and Elie Geisler. 2007. The unintended consequences of metrics in technology evaluation. *Journal of Informetrics* 1 (2):103-114.

Kranzberg, Melvin. 1995. Technology and history: "Kranzberg's laws". *Bulletin of science, technology & society.* 15 (1):5.

Kravchuk, R. S., and R. W. Schack. 1996. Designing effective performance-measurement systems under the government performance and results act of 1993. *Public Administration Review* 56 (4).

Kuhn, T. S. 1970. *The structure of scientific revolutions*. Chicago: University of Chicago Press.

Lakatos, Imre, and Alan Musgrave. 1965. Criticism and the growth of knowledge. Paper read at International Colloquium in the Philosophy of Science, 1970.

Langfield-Smith, K. 1997. Management control systems and strategy: A critical review. *Accounting, Organizations and Society* 22 (2):207-232.

Lapsley, Irvine. 1999. Accounting and the new public management: Instruments of substantive efficiency or a rationalising modernity? *Financial Accountability and Management* 15 (3&4):201-207.

Latour, B. 1999. *Pandora's hope: Essays on the reality of science studies*: Harvard University Press.

———, ed. 1986. *The powers of association*. Edited by J. Law. Vol. 32, *Power, action and belief: A new sociology of knowledge*. London: Routledge and Kegan Paul.

Layder, D. 1987. Key issues in structuration theory: Some critical remarks. *Current Perspectives in Social Theory* 8:25-46.

Lipe, M. G., and S. E. Salterio. 2000. The Balanced Scorecard: Judgmental effects of common and unique performance measures. *Accounting Review* 75 (3):283-298.

Lippman, S. A., and R. P. Rumelt. 1982. Uncertain imitability: An analysis of interfirm differences in efficiency under competition. *The Bell Journal of Economics* 13 (2):418-438.

Lockwood, D. 1964. Social integration and system integration. In *Explorations in social change*: Houghton Mifflin.

Lohman, C., L. Fortuin, and M. Wouters. 2004. Designing a performance measurement system: A case study. *European Journal of Operational Research* 156 (2):267-286.

Lorenz, K. 1977. *Behind the mirror*. New York: Harcourt Brace Jovanovich

Lynch, R. L., and K. F. Cross. 1991. *Measure up!: The essential guide to measuring business performance*. London: Mandarin.

———. 1995. *Measure up!: Yardsticks for continuous improvement*. London: Blackwell Publishing.

Lyotard, Jean François. 1984. *The postmodern condition: A report on knowledge*. Manchester: Manchester University Press. Original edition, 1979.

MacLean, D., R. MacIntosh, and S. Grant. 2002. Mode 2 management research. *British Journal of Management* 13 (3):189-207.

Malina, Mary A., and Frank H. Selto. 2001. Communicating and controlling strategy: An empirical study of the effectiveness of the Balanced Scorecard. *Journal of Management Accounting Research* 13:47-90.

Malvar, Henrique S. 2006. Leading research and innovation. *IEEE Signal Processing Magazine* 23 (5):6-8.

———. 2009. Interview by author. Redmond, August 4.

Manz, Charles C., and Henry P. Sims, Jr. 1987. Leading workers to lead themselves: The external leadership of self-managing work teams. *Administrative Science Quarterly* 32 (1):106-129.

March, James G. 1991. Exploration and exploitation in organizational learning. *Organization Science* 2 (1):71-87.

March, James G., and H. A. Simon. 1958. *Organizations*. New York: Wiley.

Markus, M. Lynne, and Daniel Robey. 1988. Information technology and organizational change: Causal structure in theory and research. *Management Science* 34 (5):583-599.

———. 2004. Why stuff happens: Explaining the unintended consequences of using it. In *Past and future of information systems*, edited by K. V. Andersen and M. T. Vendelø. Oxford: Elsevier Butterworth-Heinemann.

Martinsons, M., R. Davison, and D. Tse. 1999. The Balanced Scorecard: A foundation for the strategic management of information systems. *Decision Support Systems* 25 (1):71-88.

Maskell, B. 1989. Performance measures for world class manufacturing. *Management Accounting* 5:32-33.

Maslow, Abraham H. 1954. *Motivation and personality*: Harper & Row. Original edition, 1954.

McKinlay, A., and K. Starkey, eds. 1998. *Foucault, management and organization theory: From panopticon to technologies of self*. London: SAGE.

McPhee, R. D., and P. Zaug. 2008. The communicative constitution of organizations: A framework for explanation. In *Building theories of organization: The constitutive role of communication*, edited by L. L. Putnam and A. M. Nicotera. New York: Taylor & Francis.

Mead, George Herbert, ed. 1934. *Mind, self, & society from the standpoint of a social behaviorist*. Edited by C. W. Morris. Chicago, Ill.: University of Chicago Press.

Medori, D., and D. Steeple. 2000. A framework for auditing and enhancing performance measurement systems. *International Journal of Operations & Production Management* 20 (5):520-33.

Merton, Robert K. 1936. The unanticipated consequences of purposive social action. *American Sociological Review* 1 (6):894-904.

———. 1940. Bureaucratic structure and personality. *Social Forces* 18:560-568.

Microsoft. 2008. *Performancepoint server 2007 capabilities* 2008 [cited February 1 2008]. Available from http://www.microsoft.com/business/performancepoint/capabilities/default.aspx.

———. 2008. *What is performancepoint server?* 2008 [cited February 1 2008]. Available from http://www.microsoft.com/business/performancepoint/productinfo/whatispps.aspx.

———. 2009. *About microsoft research*. Microsoft 2009 [cited July 20 2009]. Available from http://research.microsoft.com/en-us/About/.

Miles, Raymond E., Charles C. Snow, Alan D. Meyer, and Jr Henry J. Coleman. 1978. Organizational strategy, structure, and process. *Academy of Management Review* 3 (3):546-562.

Mintzberg, H., B. Ahlstrand, and J. Lampel. 1998. *Strategy safari. A guided tour through the wilds of strategic management*: New York: The Free Press.

Mishler, E. G. 1991. *Research interviewing: Context and narrative*: Harvard University Press.

Morgan, Gareth. 1980. Paradigms, metaphors, and puzzle solving in organization theory. *Administrative Science Quarterly* 25 (4):605-622.

———. 2006. *Images of organization*: Sage Publications Inc.

Mouzelis, Nicos. 1997. Social and system integration: Lockwood, Habermas, Giddens. *Sociology* 31 (1):111-119.

Mumby, Dennis K. 1987. The political function of narrative in organizations. *Communication Monographs* 54 (2):113-27.

Murphy, G. B., J. W. Trailer, and R. C. Hill. 1996. Measuring performance in entrepreneurship research. *Journal of Business Research* 36 (1):15-23.

Møller-Pedersen, Jens. 2009. Interview by author. Copenhagen, February 17.

Nahapiet, Janine. 1988. The rhetoric and reality of an accounting change: A study of resource allocation. *Accounting, Organizations and Society* 13 (4):333-358.

Neely, Andy. 1998. *Measuring business performance: Why, what, and how*", *Great britain*. London: Economist.

———. 1999. The performance measurement revolution: Why now and what next? *International Journal of Operations & Production Management* 19 (2):205-228.

———. 2002. *Business performance measurement: Theory and practice*: Cambridge University Press.

———. 2005. The evolution of performance measurement research - developments in the last decade and a research agenda for the next. *International Journal of Operations & Production Management* 25 (12):1264-1277.

Neely, Andy, Chris Adams, and Paul Crowe. 2001. The performance prism in practice. *Measuring Business Excellence* 5:6-13.

Neely, Andy, Chris Adams, and Mike Kennerley. 2002. *Performance prism: The scorecard for measuring and managing stakeholder relationships*: Financial Times Prentice Hall.

Neely, Andy, and Mike Bourne. 2000. Why measurement initiatives fail. *Measuring Business Excellence* 4 (4):3-7.

Neely, Andy, Mike Bourne, and John Mills. 2002. *Strategy and performance: Getting the measure of your business*: Cambridge University Press.

Neely, Andy, Mike Gregory, and Ken Platts. 1995. Performance measurement system design. A literature review and research agenda. *International Journal of Operations & Production Management* 15 (4):80-116.

Neely, Andy, John Mills, Ken Platts, Huw Richards, Mike Gregory, Mike Bourne, and Mike Kennerley. 2000. Performance measurement system design: Developing and testing a process-based approach. *International Journal of Operations & Production Management* 20 (10):1119-1145.

Neely, Andy, Huw Richards, John Mills, Ken Platts, and Mike Bourne. 1997. Designing performance measures: A structured approach. *International Journal of Operations & Production Management* 17 (11):1131-1152.

Neuburger, Mike. 2009. Interview by author. Copenhagen, February 9.

New, Caroline. 1994. Structure, agency and social transformation. *Journal for the Theory of Social Behaviour* 24 (3):187-205.

Nickerson, Raymond S. 1998. Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology* 2 (2):175-220.

Nielander, Martin. 2008. Interview by author. Copenhagen, December 15.

Nielsen, Brian. 2009. Interview by author. Copenhagen, January 7.

Nielsen, Michael. 2009. Interview by author. Copenhagen, February 20.

Noordegraaf, Mirko. 2008. Meanings of measurement. *Public Management Review* 10 (2):221 - 239.

Norreklit, H. 2003. The Balanced Scorecard: What is the score? A rhetorical analysis of the Balanced Scorecard. *Accounting Organizations and Society* 28 (6):591-619.

Oakley, A. 1981. Interviewing women: A contradiction in terms. *Doing feminist research* 30 (6):1.

Obradovic, Josip. 1975. Workers' participation: Who participates? *Industrial Relations* 14 (1):32-44.

Oker, James. 2009. Interview by author. Redmond, July 1.

Orlikowski, Wanda J., and JoAnne Yates. 1994. Genre repertoire: The structuring of communicative practices in organizations. *Administrative Science Quarterly* 39 (4):541-574.

Orlikowski, Wanda, and Daniel Robey. 1991. Information technology and the structuring of organizations. *Information Systems Research* 2 (2):143-169.

Otley, D. T. 1984. Management accounting and organization theory: A review of their interrelationship. In *Management accounting, organizational theory and capital budgeting: Three surveys*, edited by R. Scapens, D. Otley and R. Lister. London: Macmillan Press.

Ouchi, W. G. 1979. A conceptual framework for the design of organizational control mechanisms. *Management Science* 25 (9):833-848.

Pauley, G. S., and R. J. Ormerod. 1998. The evolution of a performance measurement project at rtz. *Interfaces* 28 (4):94-118.

Payne, Geoff, and Malcolm Williams. 2005. Generalization in qualitative research. *Sociology* 39 (2):295-314.

Peirce, Charles Sanders. 1877. The fixation of belief. *Popular Science Monthly* 12:1-15.

———. 1878. How to make our ideas clear. *Popular Science Monthly* 12:286-302.

Peirce, Charles Sanders, and Kenneth Laine Ketner. 1992. *Reasoning and the logic of things : The cambridge conferences lectures of 1898*. Cambridge, Mass.: Harvard University Press.

Perrin, B. 1998. Effective use and misuse of performance measurement. *American Journal of Evaluation* 19 (3):367.

Piaget, Jean. 1950. *The psychology of intelligence*, *International library of psychology, philosophy and scientific method*. London: Routledge & Paul.

Platt, John. 2009. Interview by author. Redmond, July 16.

Poister, Theodore H., and Gregory Streib. 1999. Performance measurement in municipal government: Assessing the state of the practice. *Public Administration Review* 59 (4):325-335.

Polkinghorne, Donald. 1988. *Narrative knowing and the human sciences*. Albany: State University of New York Press.

Popper, K. R. 2002. *The logic of scientific discovery*: Routledge Classics. Original edition, 1935.

Porter, Michael E. 1980. *Competitive strategy: Techniques for analyzing industries and competitors*. New York; London: The Free Press; Collier Macmillan.

Post, T., and J. Spronk. 1999. Performance benchmarking using interactive data envelopment analysis. *European Journal of Operational Research* 115 (3):472-487.

Preston, Alistair M., David J. Cooper, and Rod W. Coombs. 1992. Fabricating budgets: A study of the production of management budgeting in the national health service. *Accounting, Organizations and Society* 17 (6):561-593.

Pun, K. F., and A. S. White. 2005. A performance measurement paradigm for integrating strategy formulation: A review of systems and

frameworks. *International Journal of Management Reviews* 7 (1):49-71.

Putnam, Linda L., and François Cooren. 2004. Alternative perspectives on the role of text and agency in constituting organizations. *Organization* 11 (3):323-333.

Radzik, Linda. 2002. A coherentist theory of normative authority. *The Journal of Ethics* 6 (1):21-42.

Rangone, A. 1996. An analytical hierarchy process framework for comparing the overall performance of manufacturing departments. *International Journal of Operations & Production Management* 16 (8):104-19.

Rashid, Rick. 2009. Interview by author. Redmond, August 3.

Ridgway, V. F. 1956. Dysfunctional consequences of performance measurements. *Administrative Science Quarterly* 1 (2):240-247.

Roberts, John, and Robert Scapens. 1985. Accounting systems and systems of accountability -- understanding accounting practices in their organisational contexts. *Accounting, Organizations and Society* 10 (4):443-456.

Robson, K. 1992. Accounting numbers as 'inscription': Action at a distance and the development of accounting. *Accounting, Organizations and Society* 17 (7):685-708.

Rogers, E. W., and P. M. Wright. 1998. Measuring organizational performance in strategic human resource management: Problems, prospects and performance information markets. *Human Resource Management Review* 8 (3):311-331.

Rolnick, A. J., and W. E. Weber. 1986. Gresham's law or gresham's fallacy? *The Journal of Political Economy* 94 (1):185-199.

Rorty, Richard. 1982. *Consequences of pragmatism*: University of Minnesota Press Minneapolis.

Roslender, Robin. 1996. Relevance lost and found: Critical perspectives on the promise of management accounting. *Critical Perspectives on Accounting* 7 (5):533-561.

Ross, Stephen A. 1973. The economic theory of agency: The principal's problem. *American Economic Review* 63 (2):134-139.

Rubin, Ann D. 1978. *A theoretical taxonomy of the differences between oral and written language*. Edited by Bolt, Beranek and Newman, *Bbn report, no. 3731*. Champaign; Cambridge, MA: University of Illinois

Rubin, H. J., and I. Rubin. 2005. *Qualitative interviewing: The art of hearing data*. Thousand Oaks, CA: Sage.

Sanderson, I. 2001. Performance management, evaluation and learning in 'modern' local government. *Public Administration* 79 (2):297-313.

SAP. 2008. *Sap solutions for enterprise performance management: Controlling the future of your business*. SAP 2008 [cited February 1 2008]. Available from http://www.sap.com/solutions/performancemanagement/index.epx.

Saravanamuthu, Kala, and Tony Tinker. 2003. Politics of managing: The dialectic of control. *Accounting, Organizations and Society* 28 (1):37-64.

Scanlon, D. P., C. Darby, E. Rolph, and H. E. Doty. 2001. The role of performance measures for improving quality in managed care organizations. *Health Services Research* 36 (3):619.

Schall, Maryan S. 1983. A communication-rules approach to organizational culture. *Administrative Science Quarterly* 28 (4):557-581.

Scherer, Andreas Georg. 2003. Modes of explanation in organization theory In *The oxford handbook of organizational theory*, edited by H. Tsoukas and C. Knudsen: Oxford University Press.

Schneiderman, A. M. 1999. Why balanced scorecards fail. *Journal of Strategic Performance Measurement* 2 (S 6):11.

Schofield, Kevin. 2009. Interview by author. Redmond, July 1.

Schütz, Alfred. 1967. *Phenomenology of the social world*. Evanston: Northwestern University Press.

Schøn, Bjarne. 2008. Interview by author. Redmond, December 11.

Seale, Clive. 1999. Quality in qualitative research. *Qualitative Inquiry* 5 (4):465-478.

Siggaard, Torben. 2009. Interview by author. Copenhagen, February 10.

Silverman, D. 2001. *Interpreting qualitative data: Methods for analysing talk, text and interaction*: Sage.

Simons, Robert. 1991. Strategic orientation and top management attention to control systems. *Strategic Management Journal* 12 (1):49-62.

———. 1994. How new top managers use control systems as levers of strategic renewal. *Strategic Management Journal* 15 (3):169-189.

———. 1995. Control in an age of empowerment. *Harvard business review* 73 (2):80-88.

Skrivan, Sam. 2008. Interview by author. Copenhagen, December 16.

Smith, Dorothy E. 2001. Texts and the ontology of organizations and institutions. *Studies in Cultures, Organizations & Societies* 7 (2):159-198.

Solberg, L. I., G. Mosser, and S. McDonald. 1997. The three faces of performance measurement: Improvement, accountability, and research. *Jt Comm J Qual Improv* 23 (3):135-47.

Spencer-Brown, G. 1972. *Laws of form*: Crown Pub.

Stewart, J., and K. Walsh. 1992. Change in the management of public services. *Public Administration* 70 (4):499-518.

Stones, R. 2005. *Structuration theory*: Palgrave Macmillan.

Strauss, A. L. 1978. *Negotiations: Varieties, contexts, processes, and social order*: Jossey-Bass Inc Pub.

Strawson, Galen. 2004. Against narrativity. *Ratio* 17 (4):428-452.

Suwignjo, P., Umit S. Bititci, and Allan S. Carrie. 2000. Quantitative models for performance measurement system. *International Journal of Production Economics* 64 (1-3):231-241.

Svanholm Thomsen, Michael. 2008. Interview by author. Copenhagen, December 5.

Szeliski, Rick. 2009. Interview by author. Redmond, July 9.

Taylor, James R., and Daniel Robichaud. 2004. Finding the organization in the communication: Discourse as action and sensemaking. *Organization* 11 (3):395-413.

Thompson, Grahame. 1991. Is accounting rhetorical? Methodology, luca pacioli and printing. *Accounting, Organizations and Society* 16 (5-6):572-599.

Thurstone, L. L. 1934. The vectors of mind. *Psychological Review* 41 (1):1-32.

Tolbert, Tim. 2009. Interview by author. Copenhagen, February 18.

Toulmin, S. E. 1972. *Human understanding: The collective use and evolution of concepts*: Princeton University Press Princeton, New Jersey.

Townley, Barbara. 2002. Managing with modernity. *Organization* 9 (4):549.

Turner, J. A. 1987. Understanding the elements of systems design. In *Critical issues in information systems research*, edited by R. Boland and R. Hirschheim. New York: John Wiley.

Vogt, T. M., M. Aickin, F. Ahmed, and M. Schmidt. 2004. The prevention index: Using technology to improve quality assessment. *Health Services Research* 39 (3):511-530.

Waggoner, D. B., Andy Neely, and Mike Kennerley. 1999. The forces that shape organisational performance measurement systems: An interdisciplinary review. *International Journal of Production Economics* 60:53-60.

Wagner, Kenneth. C. 1954. Latent functions of an executive control: A sociological analysis of a social system under stress. *Research Previews* 2 (Institute for Research in Social Science).

Weick, K. E. 1979. *The social psychology of organizing*. Mass: Addison-Wesley Pub. Co.

———. 1987. Substitutes for strategy. In *The competitive challenge: Strategies for industrial innovation and renewal*, edited by D. J. Teece.

———. 1995. *Sensemaking in organizations*: Sage Publications Inc.

Westrum, Ron. 1978. Science and social intelligence about anomalies: The case of meteorites. *Social Studies of Science* 8 (4):461-493.

———. 1982. Social intelligence about hidden events: Its significance for scientific research and social policy. *Knowledge* 3 (3):381-400.

Westwood, Robert Ian, and Stephen Linstead, eds. 2001. *The language of organization*. London: Sage.

Williams, Malcolm. 2000. Interpretivism and generalisation. *Sociology* 34 (2):209-224.

Williamson, Oliver E. 1980. *The economics of organization: The transaction cost approach*. Philadelphia, Pa.: University of Pennsylvania, Center for the Study of Organizational Innovation.

Windelband, W. 1904. Geschichte und naturwissenschaft [history and natural science]. *Strassburg, Germany: Heitz.(Original work published 1894)*.

Winograd, Terry, and Fernando Flores. 1986. *Understanding computers and cognition: A new foundation for design*: Intellect Books.

Woolbert, C. H. 1922. Speaking and writing--a study of differences. *Quarterly Journal of Speech Education* 8 (3):271.

Yates, JoAnne, and Wanda J. Orlikowski. 1993. Knee-jerk anti-loopism and other e-mail phenomena: Oral, written, and electronic patterns in computer-mediated communication. In *53rd Annual Meeting of the*

Academy of Management. Cambridge, Mass.: Alfred P. Sloan School of Management, Massachusetts Institute of Technology.

Yin, R. K. 2003. *Case study research: Design and methods*: Sage Publications Inc.

Zadeh, L. A. 1973. Outline of a new approach to the analysis of complex systems and decision processes. *IEEE Transactions on Systems, Man, and Cybernetics* 3 (1):28-44.

Åkerstrøm Andersen, Niels. 1999. *Diskursive analysestrategier: Foucault, Koselleck, Laclau, Luhmann*: Nyt fra samfundsvidenskaberne.