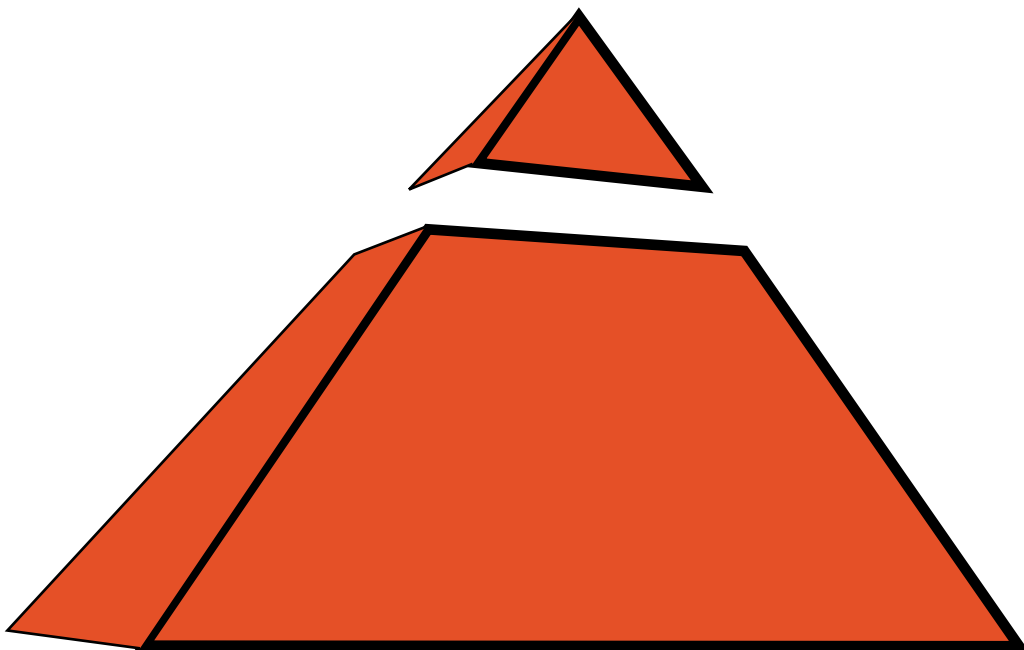


# UNRAVELING REFLECTIONS OF THE ORGANIZATION



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*Sound in New Media MA*

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### Abstract

Design has to update itself constantly and borrow from a variety of disciplines to retain and evolve its shifting identity. Design interventions likewise seek unpredictable spaces for its growth and several companies have been raising their interest in design thinking lately. Some of these interventions can create new opportunities, such as helping organizations to share learning and knowledge more effectively, both within themselves and between other organizations. At the same time organizations are full of very contradictory forces that stagnate their progress and often lead to great uncertainty and inability to react critically to a changing environment. In corporate organizations, themes like growth and profit take precedence over social and cultural tensions that get amplified. On the other hand design is flexible and can choose unique social science structures like Activity Theory to make unique interventions that can . The dynamism and unpredictability of design combined with a robust framework of social science might lead to interesting new opportunities for both fields. The thesis explores the opportunities and challenges of such a combined method toward a more ‘reflecting organization’.

I explore some these approaches with outcomes from a real case study. Between November 2012 to March 2013, I worked on a project for the Innovation Think Tank Group of a Strategy & Innovation section of a Multinational Corporation in the area of knowledge management. My task was to make a proposal of ideas for ongoing transformation of their organization into a common knowledge platform, where common information needs would be met. During the project, new concepts for communication and interaction in knowledge sharing were introduced through a design document, called “ReMediations” as well as presentations. Out of the “ReMediations”, one concept was chosen quite enthusiastically from the project stakeholders. This was based on a design thinking mindset as well as literature research in various related areas of the individual design concepts.

This thesis is an attempt to revisit this case study with more systematic research methods that help an organization to learn through reflection. For the analysis, the ideas and frameworks from the field of Activity Theory are applied. These include the fundamental ideas that contribute to the field in the works by Lev Vygotsky and Aleksei Leontiev. In particular, Yrjö Engeström’s third generation Activity Theory framework is used to trace and analyze how the case study moves toward deeper collective reflection during the design process.

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**Keywords** Organization Design, Activity Theory

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This thesis has been a challenge, especially since I am not an organization designer, least of all for a corporation as old as the inquisition. Yet, few months back I asked if an organization can reflect itself, and I did not have any answers then except for a few analytical frameworks. I tried to answer that question previously and did not reach any concrete solutions. And now I hope the surface is at least mildly scratched.

My previous work was a direct unfiltered representation from the mind onto paper, making it a synthetic mixture of ideas and research snippets. More than a solution to the research problem, it was an unresolved mass of concepts stepping into each other's space. In that thesis I was working with the idea of metaphors, cybernetics, systems thinking and activity theory all at once. Because I could see the connections in the mind's eye. But ended in a confused mess when trying to put that on paper.

So this thesis is my second attempt at synthesis, using the means at hand and a serious attempt at clarity and reflexivity. One way to achieve synthesis without jamming together concepts is to use a different mind to do a different job. So here I am, trying to make the best of analysis of this project by applying a mind from a different ecology than the one typically used to solve these problems. And my only hope is that in the struggle to find new ideas with existing concepts, something unusual has still been achieved. Failure is not scary but redundancy is. Sometimes Fear can be a ladder too.

The main drive and motivation behind my energy for this thesis was because of Cyberneticians Norbert Wiener and Stafford Beer, whose works I found so absorbing, so interesting and so captivating, that I went on a madman's journey through cybernetic wilderness. However, the learning from that journey could not be captured here. Their thoughts are fantastic, however I had to realize they were not baby steps. They were intense explorations after years of concentrated practise and research. To get even a fraction of their 'essence' to my project, I have to walk the talk and this is an amateur's thesis. Yet, the 8 odd months getting deeply into cybernetics has enlightened me. I like the fact that science can also have a revolutionary side, an acceptance of the unknown and willingness to learn from processes of perfection, such as nature.

According to John Chris Jones(1992), the designer's main enemy is the endless loop or 'vicious circle', out of which he cannot break unless the pattern of the problem is changed. My 'vicious circle' was this thesis. Being a Sound in New Media student of all places, it has been a tough, slow and hard process of trying to find the right concepts to synthesize for this thesis to end up as anything relevant to the field of art or design.

## Acknowledgement

The people who granted me freedom and advice for this work irrespective of the challenges in the field or my own master's program, I deeply and profusely thank :

*Sound in New Media course chief Antti Ikonen, I am privileged to have studied under your guidance, thank you for everything.*

*Associate Professor Teemu Leinonen, whose feedback from my previous thesis were accurate, heuristic and yet, semi-structured that it provided me the thesis cage within which I was free to roam. To both of you I thank exceedingly and I deeply regret all the uncertainty caused from a thesis that was in danger of going over the cliff.*

*I would also like to thank Frank Martela for great feedback.*

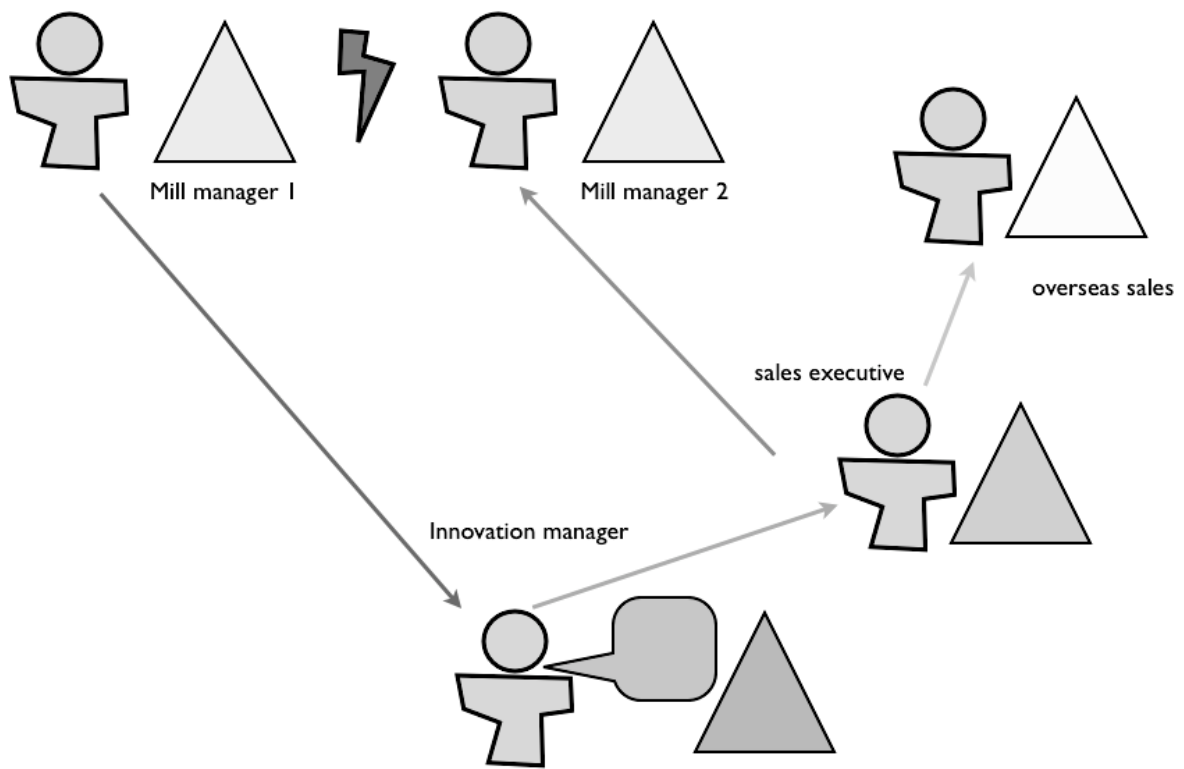
If there is anything good in this thesis, then it is attributed to MediaLab as a whole, a culture, an event, a performance, an experience and sweet randomness that has encouraged me. So Pipsa Asiala, Anna Arsniva, Mari Tammisaari, Rasmus Vuori, Koray Tahiroglu, Jon Fabritius, Lily Diaz, Juhani Tenhunen, Anne Pasanen, Esa Saarinen, Kristian Ekholm + you know who you are, this is a product of all of you (I am just a random variety generator).

Last but not the least, I want to thank the incredible library system of Finland. Where else on earth could you find all the volumes of Stafford Beer, Norbert Wiener, A.N. Leontiev, Lev Vygotsky, at one touch of a button, delivered to your home library?

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*Why can't we say: "Yes of course, the more mediations the better" and that we feel forced to say: "Ah if only there was no mediation, how much better would be our access to truth, to God, to government, etc." In digging further and further into this small conundrum, I, of course, had to come up against the question of fanaticism, or, fundamentalism: that is the opposite of constructivism. Where do those people come from who say: "The less mediation the better is our access to truth, to God, to objectivity, to beauty, to Government, etc"? Is it because of a religious idea about the danger of mediations? Or rather, is it because modernism has induced us into misunderstanding the exact lessons of religions, especially the various monotheisms, about the role of mediations? - Bruno Latour, Framework 2/2004*



# Abstract

Design has to update itself constantly and borrow from a variety of disciplines to retain and evolve its shifting identity. Design interventions likewise seek unpredictable spaces for its growth and several companies have been raising their interest in design thinking lately. Some of these interventions can create new opportunities, such as helping organizations to share learning and knowledge more effectively, both within themselves and between other organizations. At the same time organizations are full of very contradictory forces that stagnate their progress and often lead to great uncertainty and inability to react critically to a changing environment. In corporate organizations, themes like growth and profit take precedence over social and cultural tensions that get amplified. On the other hand design is flexible and can choose unique social science structures like Activity Theory to make unique interventions that can. The dynamism and unpredictability of design combined with a robust framework of social science might lead to interesting new opportunities for both fields. The thesis explores the opportunities and challenges of such a combined method toward a more 'reflecting organization'.

I explore some these approaches with outcomes from a real case study. Between November 2012 to March 2013, I worked on a project for the *Innovation Think Tank Group* of a Strategy & Innovation section of a Multinational Corporation in the area of knowledge management. My task was to make a proposal of ideas for ongoing transformation of their organization into a common knowledge platform, where common information needs would be met. During the project, new concepts for communication and interaction in knowledge sharing were introduced through a design document, called "ReMediations" as well as presentations. Out of the "ReMediations", one concept was chosen quite enthusiastically from the project stakeholders. This was based on a design thinking mindset as well as literature research in various related areas of the individual design concepts.

This thesis is an attempt to revisit this case study with more systematic research methods that help an organization to learn through reflection. For the analysis, the ideas and frameworks from the field of Activity Theory are applied. These include the fundamental ideas that contribute to the field in the works by Lev Vygotsky and Aleksei Leontiev. In particular, Yrjö Engeström's third generation Activity Theory framework is used to trace and analyze how the case study moves toward deeper collective reflection during the design process.

## Part 1:

# Introduction

## 1.1 Question of Relevance

If one glimpses at the mediated world around them, in just ten years many humans have engaged with the new media in an addictive, irreversible manner. Hundreds of variety of information hits the senses, as soon as the Pandora's box of information exploded open. I feel we are faced with a challenge and adoption of strange new behaviors, similar to what the first organisms millions of years ago faced when they developed unique senses to detect the environment. This fascinates me. Which stage of evolution comes next when mediation is self-created and overwhelming? And what happens to the new media "*unmediated*" organisms? Who will keep generating the variety of life, will it be the ones mediated by nature? Or the ones mediated by media? It's a bizarre notion in these early yet rapid cycles of change.

One thing is for sure. Our vertical institutions and rigid protocols will be under direct heat from the horizontally expanding socially mediated forces.

One of the most obvious questions I am asked during this thesis is why I am involved in an organizational design case study, being a Sound in New Media student. Several people, including the ones who do organizational case studies such as business school colleagues, have asked this. It is totally valid; these are so far fetched apart fields. If you discard the name organization and ignore the endless themes from management science, you peer into a machinery that has been running for quite long, redundantly repeating the same patterns and structures again and again that lead to tensions. However, it is not in spite but it's actually because of the fact that I have been involved many years with sound., that I feel nothing has to be rejected just because the field sounds unfamiliar. In fact, a sound designer might just have a different resolution by looking at an organization as an act of 'performance', and in turn might just use the approach differently. Only the future might recall the possibilities, but this is a great chance to try.

I however admit that the design project represented as case study here, itself was an extension of an unexpected encounter with stakeholders of a large corporation, literally from floor level. It never started as a self initiated new media project in sound. It was also the most fresh design related project at the time that I found myself engaged in. So I decided to reflect on the project as part of my thesis by my own choice. Among the various new fields and learning encountered through the project process, I feel I have been able to adapt ideas also from Sound in New Media. Mainly when it comes to 'remediations'. Remediations, through alternative means of mediations like, e.g. Sound in New Media need not gain credibility only in artistic performances. I feel not only Sound in New Media but remediation in general might have interesting ways to reconcile complex reality to important stakeholders.

Here is an example. Many organizations are commonly seen struggling with Skype for online collaboration, on a redundant basis. However, the fact is that Skype<sup>1</sup> is seen mostly as an operation tool and not a mediational object, with various levels of affectation. If its mediation capacity alone was taken and analyzed, one would notice how one tool limits or amplifies collective creativity online, and yet is used sporadically in thousands of organizations where every second can be a resource. If Sound in New Media as a powerful tool can 'remediate' a pathological engagement<sup>2</sup> that affects plenty of lives, contemporary 'collaborative tools' would be more productive

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1 "Skype." Wikipedia. Wikimedia Foundation, 14 Apr. 2014. Web. 14 Apr. 2014

2 Joiner, Richard 2005

and easier to use and experience. However, there are barriers to this innovation space to my understanding and experience. Sophisticated possibilities cannot be generated without deeper insights about the fundamental nature of these conflicts. Being in a real case study, I could attempt to gain those insights in a systematic, research-backed manner.

However, before mediation is used as a common term in the thesis, it is important to get familiar with the general definitions as well. The Merriam-Webster online dictionary<sup>3</sup> seems to have two meanings to mediation:

*a : acting through an intervening agency*  
*b : exhibiting indirect causation, connection, or relation*

We are mediated to reality through these instruments, with limited alternatives. The capacity of an organization to deal with problems or understand reality, relates to the aspect of mediation. Mediation is not as simple as changing a media, e.g. From a 1920s organization with paper to 2014 with database management. The fundamental basis of understanding these ideas etc. will lead to the gain in the essence of mediation. For media design, these could be important ways of restructuring reality.

Russian social psychologist Leontiev's overwhelming desire in studying psychology was "to philosophically understand and make sense of what was happening" in Russia's historical turmoil.<sup>4</sup> From a spark of that will, his work has generatively created value ever since, in learning, work psychology and many development related problems. It is worth asking a similar philosophical question about our way of designing for reality, for organizations, for the future unknown, and so forth because we just might be able to positively affect a future that is running away from us.

## 1.2 Design Rationale

This thesis is about enabling reflexive approaches in the very diagnosis of an organizational system undergoing transformation. However, before starting to discuss the more concrete contents of what makes up this thesis, I would like to initiate a standpoint from where I reflect upon what this means for me as a designer.

We mostly associate organizations with a certain form, and they are represented as a standalone structure in the form of a corporation or a department and so on. However, the very systems that run the world economy, trade and relationships today are a highly complex interdependent cluster of organizational dynamics. To begin with, there are diverse political ideologies, differing foreign policies, opposed cultural histories, all trying to work toward a certain future of consensus. In this huge diversity, we have organizations of many forms. If one takes the example of political organization alone, most of the tools used to represent knowledge and reality between ideologies and administration are as Bruno Latour says, "primitive, unsophisticated and unmediated."<sup>5</sup> Many of these tools fail to differentiate between what Latour calls "matters of concern" from "matters of fact".<sup>6</sup> Tools and technology are often used that represent facts poorly, which in turn influence one's mindset and presumptions. This is the unsophisticated mediation that Latour mentions about.

There have been several organizations that are in the business of mediations, yet do not use that medium as a self-reference. Volkswagen 'mediates' mobility standards, both through their physical products and also through the product semantics, adver-

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3 "Mediation." Merriam-Webster. Merriam-Webster. Web. 12 Apr. 2014

4 Bedny, G. Z., Karwowski, W., & Jeng, O. 2004

5 Finnish Art Review, 2/2004

6 Latour, Bruno 2004

tisements and billboards. However in my student experience as part of IDBM<sup>7</sup>, with Volkswagen's Future Research group, the Research group had problems of communicating their own reality to their managers, through the bureaucratic structures and hierarchies involved. The organization was not so sleek on the inside and had to deal with huge internal communication issues and clashing ideologies. At the time I thought it was because of the size of the firm. However, collaboration in the networked organization is not always easier and faster, and such clashes were predicted before modern social media tools proliferated.<sup>4</sup> Apart from mediation, when tools are designed without even the user's intention taken into account, collaboration can be also a clash of unintended mediations.

In corporate organization, some of the most unintended effects of information technologies are information overload and fear of loss of control among managers in corporate organizations<sup>8</sup>. Modern employees demand a sense of community, borrowed from internet-mediated social reality. In turn, managers demand more 'regulation' because of fears of escalating tensions and loss of control. When enterprise technologies were designed or implemented, they were done usually on an operational basis, under purely technical assumptions that everyone just wants to get their 'tasks done'. When those same systems try to engage more social features, the assumption changes to everyone 'wants to share' and 'wants to be shared with'. This schizophrenic tension between more and more socially orientated horizontal communication and in turn, more vertically oriented protocol communication seems to be a growing concern in several modern organizations. One is curious to know if design has made successful interventions in resolving this complex matter.

However design is itself a wide field with many approaches, increasingly today seen as a way to reorient the traditional approaches to solving problems on a variety of spheres in a more creative, humanistic and unique manner in contemporary movements like design thinking. However, in what capacity is design today able to address these issues and can it adapt to such massive transformations as organizational change?

According to the 2010 copy of *Designed World*<sup>9</sup>, design was getting resolved into catchy, trendy terms such as integration, innovation and creativity. This has happened a lot it seems. A tension between the old and new ways of designing is growing. Previously ambitious and more universal conceptions of design are fragmenting into various design terms, such as design for sustainability, service design, design for business, interaction-digital-interface design and so forth. In these multiple aspects of design, one is unsure if it is able to find or able to build a strong ideological base. The design fragments do tend to clash as each have a different take on the issue.

Design mindset, a certain mental makeup combining gut feeling and rationality, is not considered a contemporary movement at all by some design thinkers. It has been discussed as a certain practice as having its roots in antiquity; from the oldest practices in designing fire<sup>10</sup>, i.e. as an immediate, real need of primitive man; all the way to a totally unknown contemporary ideal of a complex socio-economical nature. Being of a highly dynamic and volatile ontology, design escapes one-shot definitions. However it is always at turning points of subjective meaning creation never satisfied with standard universal definitions.

It seems best to assume that design thinking gains credibility by adapting to a robust

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7 IDBM stands for International Design Business Management course in Aalto University

8 Sproull, Lee, and Sara Kiesler 1991

9 Margolin, Victor, Dennis P. Doordan, and Richard Buchanan 2010

10 Hall, Lisa. "Job Description of an Executive Vice President." EHow. Demand Media, 05 May 2010. Web. 1 Apr. 2014.

framework. However which one should it be? As Ken Friedman writes<sup>11</sup>, no single field can claim the creation of design thinking. This is an interdisciplinary approach, and it draws on perspectives and methods from many disciplines such as engineering, management, informatics, design, architecture, psychology, philosophy, and other fields. It's very internal structure is interdisciplinary. He adds that they also draw on specialized areas within each of these fields, such as knowledge management or innovation studies within management, or creativity studies in psychology. However, to what end and what problems are contemporary design engaged with in the last few years anyway?

Richard Buchanan breaks down the design movement through four orders of design<sup>12</sup> as 1) symbolic and visual communications, 2) material objects, 3) activities and organized services, and 4) complex systems, environments, and the organizations that produce all these other kinds of goods and services. There is a strong suggestion from Buchanan of repositioning design in new places of engagement such as strategic planning and organizational change - the third and fourth orders of design. I would like to think the organization design project I handled and the current thesis are in this latter 4th order space. I have tried to integrate a design thinking approach to the act of resolving existing conflicts in the case study organization.

The outcomes of the organization wide project are hard to evaluate on factual basis, and transformations might have happened from many different factors. That is also precisely one of the reasons why this thesis is an attempt to analyze more critically the outcomes of that project., in relation to design. Design introduces some value, concepts, innovation, strategy, and so on, but was there 'really' a change?

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11 Friedman, Ken. "Design Thinking". Email to PhD-Design. Mon, Jan 13, 2014

12 Margolin, Victor, and Richard Buchanan, eds. 1995

## Part 2:

# Thesis Overview

*“The more probable the message, the less information it gives.”*

*– Norbert Wiener, the human use of human beings, 1954*

## 2.1 Research Question

Gareth Morgan uses metaphors for organizations in his book ‘Images of Organization’<sup>13</sup>.

These include the organization as a machine, as an organism, as a brain, as a culture, as a political system and psychic prison, as a system undergoing flux and transformation and even as instruments of domination. For instance, a management style would suit the mechanical metaphor, whereas a cybernetic approach would suit an analogy with the brain. Specific fields of research have engaged deeply with some of these metaphors.

*“Assuming the existence of enough ranks in the hierarchy – each employee rises to, and remains at, his level of incompetence.”<sup>14</sup>*

The above example is an example of a mechanical hierarchy explained in a famous work on bureaucracies.

While many of the metaphors could be applied to the case study organization, it is interesting to mention ‘reflection’ as it seems to denote a number of Morgan’s metaphors in its meaning. For instance, one can then think of designing an organization that reflects its own behavior like an organism while making decisions like a brain, and adapting through various transformations. However, this would make the research question quite vague.

Finding attributes that define a ‘reflecting organization’ seems too abstract for effectively engaging with the subject. It opens up lots of possible interpretations. On a basic level, it opens up different processes. The reflection first of all has to be defined, what it means, if happens all the time, or through an event or a perception or medium. It also not clear who is doing the reflection?

What does it do about the reflection, and how is this going to affect the organization for better or worse? And there are many other critical questions around these terms.

So, I would like to break my curiosity into a more manageable research question that would relate to the project case study that is referred to in the abstract, i.e. designing concepts for a knowledge platform.

The question is:

*How does one identify the fundamental forces that cause organizations to reflect and how did design intervene to support critical reflection ? Can design develop a systematic process in doing so?*

The title of the thesis is “unraveling reflections of an organization” and still the

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13 Morgan, Gareth 1999

14 Peter, Laurence J., and Raymond Hull 1969

research question is challenging - Unraveling a reflection seems to be an abstract notion, and reflection as a collective activity seems strange.

## 2.2 Thesis Framework

The case study, that serves as a practise based research approach, is a design project conducted for a multinational corporation. The findings from the case are used to evaluate the research questions.

Prior to the case study, thesis begins by opening up some “Organizational Themes of Concern” in section 3. A critical theme of organizations and design is introduced with Lucy Kimbell’s review<sup>15</sup> of the inadequacies of design thinking. This leads to ideas around organization studies and some of their challenges that in turn lead, very briefly to some attributes of Activity Theory.

In the next section 4, “Reflexivity: mediations and re-mediations” is opened up. The theme is then extended in reference to the work of A.N. Leontiev on the development of the mind and biological evolution<sup>16</sup>. From here, the notion of ‘mediations’ is encountered as the important fundamental theme in cultural historical studies of activity theory - where Lev Vygotsky, A. Leontiev and Yrjö Engeström’s work is explored.

The next section “Case Study – Project” begins afresh with the case study of the corporate organization. The goal of the project, the nature of the organization and the circumstances of the stakeholders with whom the project was conducted are introduced. The processes involved in the design project, including the logistics and methods are discussed here.

The outcomes from the design process and analysis are briefly discussed in section 5, “Case Study Outcomes” and results from the analysis are briefly opened up. The issues that lead to the design concepts are mentioned here.

Following this, in “Design Concepts”, one of the 20 knowledge platform design concepts (the deliverables) selected by the Think Tank group for prototyping, is expanded to understand the reasons behind its choice.

The conclusions from here form the foundation for the next section, where the Think Tank of the company is opened up as an Activity System, where various social and cultural forces are evaluated with Engeström’s Activity Theory framework. The organizational challenges are seen here as being grounded in a collection of activity systems with different agendas. An expansive analysis of the project trajectory helps to notice fundamental and typical contradictory forces behind transformation – and how they can systematically support design in unraveling new reflections.

## 2.3 Research Framework

The thesis framework can be seen in two parts - the first part is focused on the general framework around the thesis - research founded ideas around organization, design thinking, mediations, reflection and reflexivity are built steadily toward research practices that lead to Activity Theory.

Within the case study, some design research that refers to design processes and analysis is briefly referred to according to the contexts.

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15 Kimbell, Lucy 2011

16 Sproull, Lee, and Sara Kiesler 1991

Activity Theory research framework is studied as a cultural-historical process. Various attributes of the basic theory, established by Russian psychology scientists Lev Vygotsky and A.N. Leontiev around the central role of mediation such as internalization-externalization and object orientedness is explored.

The more complex understanding of how mediations affect within the multiple activity systems of organizations is explored through the third generation Activity Theory framework of Yrjö Engeström. Within Engeström's research the organization-oriented themes<sup>17</sup> of artifact-mediation, object, multi-voicedness, historicity, contradictions and expansive learning are used for analyzing the case study related issues and outcomes.

#### **2.4 The Limits of this Thesis**

The research questions that the thesis is addressing, are not intended to serve as a 'general rule' for all organizations. It is designed to be relevant for this case study. Similarly, not every organization is a multinational corporation, as the notions of historicity and contradictions try to denote a fundamental structure of the organizational conflicts. My personal design intervention process can be seen as a design intervention depending on a personal approach to design / design thinking as well. One should note that the interest and intention from the side of the corporation, as well as their willingness to explore possibilities was a contributing factor to the outcomes.

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17 Engeström, Yrjö, and Annalisa Sannino. 2011



### Part 3:

## Organizational Themes of Concern

### 3.1 Opening up Organization

Design Thinking is opened up in the 4th order space of designing for organizations, as was mentioned in the introduction. Since reflections take place within a massive corporation, the idea of these investigations done in past is a good starting research.

Moreover the notions of reflexivity and remediation within organization through expansive methods might sound dislocated if not found within the historical practice of organizational studies. The ability of design to resolve organizational issues is seen through a critical review by Lucy Kimbell on the application of design thinking to complex issues that affect organizations. It then briefly looks at the history of organization studies around the concept. The attributes of Yrjö Engeström's Activity Theory are briefly opened and some of its analytical strengths mentioned, particularly in the area of understanding organizational processes.

### 3.2 The Challenge of Design Thinking and the Organization

What is Design Thinking? Tim Brown<sup>18</sup> simply puts it as... *“a discipline that uses the designer’s sensibility and methods to match people’s needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity. Like Edison’s painstaking innovation process, it often entails a great deal of perspiration.”*<sup>19</sup>

He notes such qualities as integrative thinking, experimentalism, optimism, collaboration as personality traits of the design thinker, and offers organizations some innovation tips such as human-centered approach, holism, iterations and prototyping. On the other hand, introducing innovation in an organization can be seen as an uncertain and unstable attempt at a Wicked Problem<sup>20</sup>, where the actual manner of framing of the problem decides the solution. The approaches and definitions vary a lot. However, the notion of design thinking that has become mainstream talk in business circles is similar to the tone used by Tim Brown. This approach of course, has invited criticism from some design researchers.

Lucy Kimbell is one of the critics of the Tim Brown approach.<sup>21</sup> She notes that design suffers from lack of coherence, simplicity and under-theorization in its attempts to take on a large case such as organization design. Further research on the subject, identifies three main types of design thinking :

1. *Design thinking as a cognitive style,*
2. *As a general theory of design, and*
3. *As a resource for organizations.*

As an organizational resource, she mentions that even policy makers, businesses,

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18 Snyder, Carolyn. 2003

19 “Design Thinking.” Harvard Business Review. Web. 3 Apr. 2014.

20 Rittel, Horst WJ, and Melvin M. Webber. 1973

21 Kimbell, Lucy. 2011

military are beginning to use design thinking, in different contexts from academia to consultancy. Similarly there are a huge number of ideas and thoughts on what design thinking really means from several fields including engineering, architecture and product design.

The different ways to evaluate design thinking are thus according to her, fairly ambiguous and varied. There are individual takes on the issue, so that Peter Rowe<sup>22</sup> supports the design process that handles hunches more than facts, while Donald Schön<sup>23</sup> introduces framing and reflection-in-action. Bryan Lawson<sup>24</sup> explores creative constraints and mysterious processes of designers. Cross<sup>25</sup> mentions 'abductive reasoning' as a design thinking feature. There seem many ideas about thoughtfulness, skills, and approaches in aligning design thinking in organizational contexts.

At the same time, while design thinking might seem vague and varied, Kimbell adds that global financial and economic crisis prove that all along other scientific institutions and business schools do not have all the answers either. What is of interest, both in the world of design thinking and context of this thesis, is that there is increasing engagement of design thinking, with the latest challenges facing 'business' organizations. Kimbell notices an interesting definition when some<sup>26</sup> call design thinking "*an attraction to management because it is a de-politicized version of the well known socio-cultural critique of managerial practices.*"

Hence, there seems to be vague and different ideas of its effectiveness, and coherence is only in stages of formation. For Kimbell, modern disseminators of design thinking for organizations, such as Tim Brown, do not reference extensively either design studies or organization studies. Some are in this manner questioning the credibility of what passes for 'design thinking' in organizational projects. Don Norman in his criticism of design education<sup>27</sup> claims that in organization design, "designers have become applied behavioral scientists, but they are woefully undereducated for the task." He adds that design schools, along with the modern emphasis on interaction, experience, and services, should address this competency. In the same article he encourages designers to work on organizational structure and services, where he sees will lead to a new breed of designers.

Kimbell argues here for an alternative and critical 'rethinking of design' that meets current gaps in design thinking research on organizational issues. She is critical of the ahistorical dualism between 'design thinking' and actual practice that results in ineffective design. She suggests extensive work in anthropology, sociology, history and science and technology studies as one way to counter the under-theorization of design.

The general framework used in this thesis is a practice based research based on a somewhat systematic and somewhat ad hoc design process, that might fit Don Norman's category of "woefully undereducated" designer. However, once design is applied, interesting possibilities are supported by a deeper systematic analysis through Activity Theory. While both approaches seem to complement and need each other, reliable conclusions for understanding the organization seem to emerge uniquely from both approaches.

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22 Rubin, Michael A., and Peter Rowe. 1990

23 Schön, Donald. 1983

24 Lawson, Bryan. 1990

25 Ross, John Minor. 2010

26 Researcher "Sam Ladner" is quoted by Kimbell, Lucy 2011

27 "Core77." - Industrial Design Supersite. Web. 10 Apr. 2014

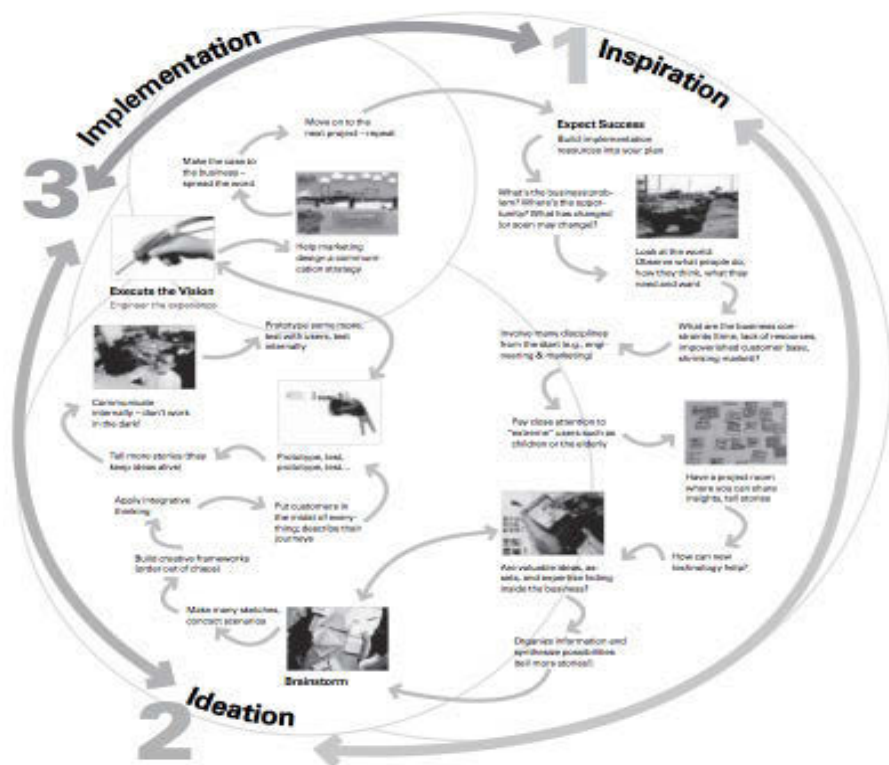


Fig 3.1: Inspiration, Ideation, Implementation: the Ideo way (Brown 2008)

### 3.3 Organization Studies

Frank Blackler<sup>28</sup> who has worked extensively in the field of organization studies, recalls a history of studies done to understand theories behind organizations. He mentions that Formal Organizations are a distinctive part of modern societies, without which it is impossible to understand the nature of contemporary human activity. The Oxford Handbook of Work and Organization<sup>29</sup> is a special edition that documents the changing nature of organizations, technologies, divisions of labor, contemporary issues in management and changing theories of occupational culture. It shows that researchers from many fields - social sciences, business studies, design, ethnography, anthropology etc. - have attracted research to this field. This has created competing paradigms in the field as well, delaying progress<sup>30</sup> while also bringing new insights in the field.

Blackler adds that self-styled critical theorists develop more detached analysis while researchers from many traditions of positivism, social constructionism, critical realism, action research, ethnomethodology, all have made contributions suited to their world view. As a result, while the area has grown rapidly, important foundational issues have become obscured.

Detailed studies<sup>31</sup> done in post-war years resulted in great solid foundational work that remained stable through the 1960s and 1970s because the nature of the work culture was relatively stable. However since the 1970s it led to more abstract theories such as systems analysis, with an emphasis on “management” skills. It also led to an increase in management education with an increasing number of researchers turning to organizational academics. This in turn, created a broad convergence on the idea of management as central to effective corporate organizations. This convergence has taken place more or less globally, with a commonly acknowledge heavy emphasis on certain outcomes, such as ‘shareholder value’ internationally.

Tsoukas<sup>32</sup> critiques this focus on the formal organization by instead urging for a refocus on organizational ‘processes’ that brings back concrete and timely social aspects. The framework of Activity Theory used within this thesis, is a process-oriented approach. Engeström’s work, while still quite marginal, is useful in collective development as it features a systematic understanding of the dynamics between individuals, collectivities, objects and language in a work system.<sup>33</sup> In particular Blackler points to three points of significance<sup>34</sup>, that are generalized here in short:

1. The objects within the activity systems are greater keys to understanding an organization, than an assumption with general organizational objectives.
2. The idea of the activity system ‘within the organization’ should be the core unit, rather than the organization ‘itself.’
3. Engeström’s collective learning is an interventionist approach, where ideas can turn into actual practice.

Engeström’s framework has other inspirations that is useful for this thesis study on “designing reflections”. Through its emphasis on internal contradictions in a cultural-historical approach, it is a powerful method for **collective learning through mediations**.<sup>35</sup>

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28 Blackler, Frank. 2009

29 Ackroyd, Stephen. 2005

30 Pfeffer, Jeffrey. 1993

31 Blackler, Frank. 2009

32 Ibid.

33 Ibid.

34 Ibid.

35 Ibid.

## Reflection, Mediation, Action

### 4.1 Reflections and Reflexivity

Vladislav A. Lektorsky<sup>36</sup> gives a very interesting account by recounting an interesting account from the 18th century. French physicist Charles Augustin Coulomb discovered Coulomb's law through an unusual inspiration. It turns out that when he was researching the theory of elasticity with a scientific group, he discovered the dependence of the angle of a thread's turn on the quantity of the acting force. He re-interpreted while reflecting on this 'mediation'. He applied this insight into a method of measuring forces in different fields, including the interaction of electrical charges with help of a unique device - the turning balance.

Lektorsky thus denotes mediation as:

*“a reflection on results and reinterpretation of the reflection to answer fundamentally different questions.”*

A reflection on his individual action was re-mediated toward a new kind of collective activity. In the same article, he points out many instances in the historical notions of reflections, including philosophical notions. These include ideas of consciousness, self-reflection, self-deception, illusion and other reflexive phenomena. However, reflexivity and reflection has been used interchangeably. Is there a way to differentiate them? Gillie Bolton makes the following conclusion:<sup>37</sup>

*“Reflection is learning and developing through examining what we think happened on any occasion, and how we think others perceived the event and us, opening our practice to scrutiny by others, and studying data and texts from the wider sphere. Reflexivity has also been closely associated an in-depth consideration of events or situations outside of oneself: solitarily, or with critical support. The reflector attempts to work out what happened, what they thought or felt about it, why, who was involved and when, and what these others might have experienced and thought and felt about it. It is looking at whole scenarios from as many angles as possible: people, relationships, situation, place, timing, chronology, causality, connections, and so on, to make situations and people more comprehensible. This involves reviewing or reliving the experience to bring it into focus.”*

Bolton clarifies reflexivity:

*“Reflexivity is finding strategies to question our own attitudes, thought processes, values, assumptions, prejudices and habitual actions, to strive to understand our complex roles in relation to others. It is becoming aware of the limits of our knowledge, of how our own behaviour plays into organizational practices and why such practices might marginalize groups or exclude individuals.”*

It seems that reflexivity is more about finding strategies, in some concrete, situational aspect. The keyword also seems to be 'relation to others', hinting at some sort of social space. Reflections seem to be more abstract and contained within the act of reflexivity, and a personal subjective process. While I personally believe the terms can be used interchangeably, it seems slightly more appropriate to denote a collection reflection as reflexivity.

Reflexivity is referred to in sociological theories, where an act of 'self-reference' makes the entity to rethink the action or examination once instigated. Recently, the works

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36 Lektorsky, Vladislav A. 2009

37 Bolton, Gillie. 2005

of Karl Popper<sup>38</sup> in social science and George Soros<sup>39</sup> in economics, and Gregory Bateson<sup>40</sup> in cybernetics and anthropological studies have emerged around the theme of reflexivity. Influential Urban planners like Alan Altshuler<sup>41</sup> have recognized the consequences of poor reflexivity in urban transportation planning. Reflexivity has also been closely associated with learning, in cases of pedagogies of imagination and play by Steiner<sup>42</sup> and Piaget<sup>43</sup>.

Marking the tradition of reflexivity in organization however, is the work of John Dewey and Donald Schön.

John Dewey in particular can be attributed<sup>44</sup> the four criteria of reflection, as a mode of thought:

1. Reflection is a meaning-making process that moves a learner from one experience into the next with deeper understanding of its relationships with and connections to other experiences and ideas.
2. Reflection is a systematic, rigorous, disciplined way of thinking, with its roots in scientific inquiry.
3. Reflection needs to happen in community, in interaction with others.
4. Reflection requires attitudes that value the personal and intellectual growth of one and of others.

Dewey influenced Donald Schön, another known researcher of reflexivity within organizations. Schön examined closely certain challenges to professionalism in organizations and developed the reflective practitioner' concept<sup>45</sup>. His reflective practice or reflection through practice talks about a capacity to reflect-on-action as to engage in a process of continuous learning. It is the capacity to reflectively engage with a professional situation, through a conscious look at the emotions, experiences, actions and responses that accommodates rather than discards these abilities.

Schön's ideas grew quickly relevant because of a growing interest in organizational learning practices, in areas such as education and healthcare. Schön's "*reflective practitioners*" concept gives great examples on how more reflective processes can be brought to situations of uncertainty, instability, uniqueness and value conflict through such practices as Double loop learning. In Nonaka and Takeuchi's notion of tacit and explicit knowledge, uncertainty and creative chaos may trigger reflection in the member's search for new ways of thinking.<sup>46</sup> So far, in these organization related notions of professionalism, there is very little emphasis on how artefact mediations affect reflexivity.

According to Lektorsky, Engeström<sup>47</sup> analyzes that "*the need to change collective activity arises as a result of the existence of inner contradictions in a system, a certain degree of inner tension. Reflection is a mode of comprehending these contradictions and understanding possibilities of changing activ-*

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38 Lefebvre, Vladimir A., and Karl Raimund Popper. 2006  
39 Soros, George. 2003  
40 Leontjev, Alexej N. 1981  
41 Altshuler, Alan A. 1965  
42 Steiner, Rudolf. 1968  
43 Piaget, Jean. 2013  
44 Rodgers, Carol. 2002  
45 Schön, Donald 1983  
46 Virkkunen, JakkoSannino. 2009  
47 Engestrom, Y. 2000

*ity within the framework of the same system by way of a new mediation.”*  
This is an important premise for this thesis.

Engeström adds that however, reflection should be able to comprehend real contradictions in an activity system and understand the real possibilities of its changes. This is why for his interventionist methodology; a cultural historical aspect is needed.

Engeström theory thus highlights the fact that to understand real, long term possibilities of change, collective activity systems (such as the community of researchers in a university) have to fulfill ‘collective reflection’ triggered by real contradictions.<sup>48</sup> He notes that a collective activity system, such as a corporate organization, has its own structure, history and laws of expansion and transformation.

While some management theory has lately been covering the theme of reflections, it lacks any mention of mediations or re-mediations.<sup>49</sup> On the other hand, the concept of mediations is quite central to the framework of Activity Theory. The evolution of the study of mediations into a robust analytical framework of Activity Theory is explored in next section.

#### **4.2 Leontiev and the seeds of mediation**

Leontiev’s *Problems of the Development of the Mind*<sup>50</sup> is known as one of the most influential books on psychology. This work dealt with an ambitious study of reflections in the evolving organism as a core part of the stages of development of an organism’s activity. In his study of the evolutionary account of living beings, Leontiev started studying the primitive stage of the existence of ‘psyche’<sup>51</sup> in basic life forms. The evolution of these life forms has a correspondence to the development of their responses to environmental properties that are not just those on which the organism’s life ‘directly’ depends. eg. *Daphnia respond to light, not because they need light as such, but because light is related to substances that they do need and can assimilate.*

Apparently, these organisms as they evolved were found to respond / reflect to direct biological stimuli (such as presence of food) as well as indirect stimuli (sound signifying danger triggering a response). This quality is defined by Leontiev as one of ‘sensitivity’ that is nothing more than ‘irritability’ that makes the organism ‘orient’ itself and adapt to the ‘stimuli’. This signaling function from stimuli acts as a ‘mediator’ in order to adjust the organism to more complex conditions of the environment. In this way, an appropriate reflection from the processes of sensitivity adapts the organism to objective properties of the environment. This sensitivity was for Leontiev the most basic manifestation of psyche.

Thus evolutionary advance is seen as one of increasing reflective capacity associated with more advanced forms of psyche caused by dialectical contradictions between organisms and their organizations.<sup>52</sup> By tracing this capacity in the evolutionary process toward greater and greater objectivity in the environment, Leontiev approaches the third stage in the evolution of psyche, the animal intellect.

At the animal intellect stage, complex parts of distinct operations and goals evolve around the higher motive of activity. An ape for instance will appear to try different approaches to a problem because of an evolution in the capacity to reflect relations

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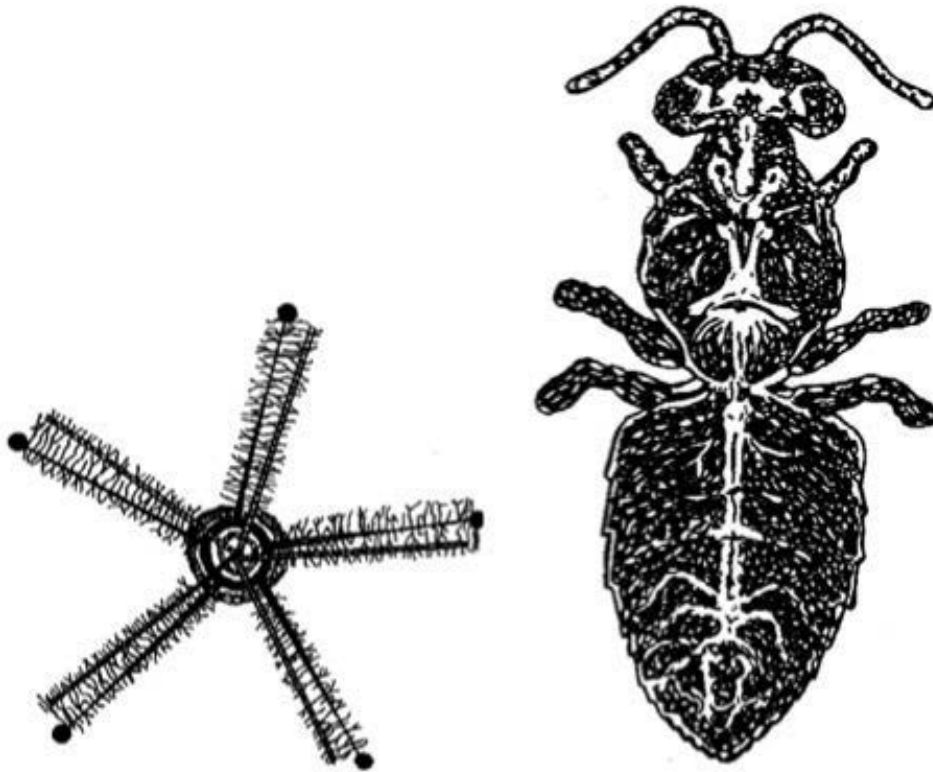
48 Virkkunen, JikkoSannino. 2009

49 Mats Alvesson, Cynthia Hardy and Bill Harley. 2008

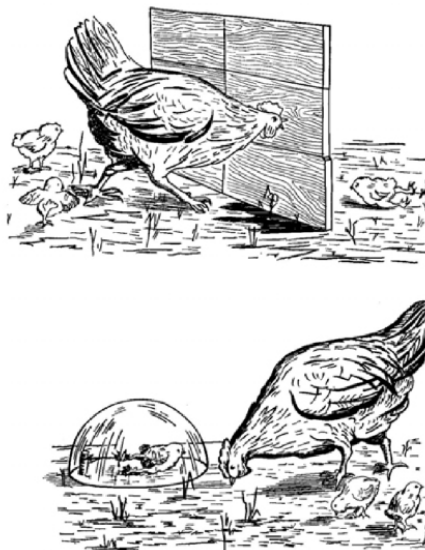
50 Leontiev, A.N. 1977

51 Kaptelinin, V., & Nardi, B. A. 2006

52 notes on Dialectics and contradictions, Center for Research on Activity, Development and Learning, August 2012



*Fig 4.1: A.N. Leontiev's studies on the evolution of psyche and reflection created one of the breakthrough works in psychology "The Development of the Mind". (Leontiev 1977). Above is an excerpt where he denotes the nervous system of a Starfish and Beetle.*



*Fig 4.2: Leontiev compares the reflective capacity of a mother hen when the chicken is restrained under a soundproof jar, and behind a barrier. (Leontiev 1977).*



of things. This is a matter of degree and the reflective capacities vary and differ in their abilities depending on the animal. E.g. As shown in the *figure 4.2*, Leontiev<sup>53</sup> makes an interesting experiment where a chick is restrained by force under two separate experimental conditions, in the presence of the mother hen. In one case it is provoked to cry behind a barrier, and in second case, it is provoked to cry in a glass cage. Leontiev tries to differentiate between object-oriented realities that define human reflections to an animal's by referring to the outcome of the experiment. He notes that the "*chick's cry is an innate, instinctive (un-conditioned reflex) reaction*" provoking a simple, instinctive response from the hen, such as moving around the barrier. However, as shown in the same figure, under the simple addition of a glass cage where the cries are muted and hence inaudible, the situation is different. The mother hen cannot relate to the situational relations, as the cries are unheard. The former was an instinctive reaction from the hen's limited capacity to perceive objective reality through complex relations, and the latter was a blocking of the signals to the reflective capacity as proportional to the creature.

At stages of development where animals have developed their most sophisticated reflexive capacity, is according to Leontiev where the beginning stages of human capacity of reflection begin. According to Leontiev, the principal characteristic of this stage is given by an extraordinary development of the capacity to abstract and deal with abstractions, i.e. the formation of the human mind.

Along with human's extraordinary capacity of reflexivity, comes a proportional ability to be able to manipulate their surroundings and enhance the capacity even more. Mediations in a social system are thus understood from a more sophisticated idea of reflexivity. In the activity system, internalization-externalization, object-orientedness and quite importantly, mediations, are all interactive components that all join to contribute to the idea of reflexivity. Both mediations and re-mediations are important to the reflexivity theme, which is explored next in Leontiev's development of the basic unit that combines these factors known as 'activity system'.

#### **4.3 Activity Theory: Mediation within an Integrative Framework**

Activity Theory by its nature places mediation in a central role, as it is the medium through which people and environments transcend their boundaries.

Activity theory is both practice-based as well as uniquely historical and future-oriented. As one of the 'wholesome' contemporary definitions of the theory, Bonnie Nardi<sup>54</sup> calls it "*an approach in psychology and other social sciences that aims to understand individual human beings, as well as the social entities they compose, in their natural everyday life circumstances, through an analysis of the genesis, structure and processes of their activities.*"

*"Activity theory has its roots in the classical German philosophy of Kant and Hegel which emphasized both the historical development of ideas as well as the active and constructive role of humans. This philosophy provided the foundation for the more contemporary philosophy of Marx and Engels and the Soviet cultural-historical psychology of Vygotsky, Leont'ev, and Luria on which activity theory is based".*<sup>55</sup>

The genesis of activity theory exclusively within psychological studies can be traced to Vygotsky in 1924.<sup>56</sup> Vygotsky maintained that culture and society are not external factors influencing the mind but are generative forces involved in the very production of mind. His unique approach, which became known as the 'formative experiment', transcended the 'absolute' border between people and environment - and in this way, also borders between internal and external, individual and collective, subject and object which was according to him, a constant interactive influence on each other through mediation.

53 Leontiev, A.N. 1977

54 Kaptelinin, V., & Nardi, B. A. 2006

55 Jonassen, David H., and Lucia Rohrer-Murphy. 1999

56 Ibid.

Nardi compressed these main ideas underlying Activity Theory<sup>57</sup>, from Russian psychology of 1920s and 1930s as:

1. *The unity of consciousness and activity and*
2. *The social nature of the human mind.*

However it was in particular, Leontiev who elaborated the theory into a system of concepts and principles known as *Activity Theory*.

Leontiev crystallized the basic foundations of the theory in the form of the following principles<sup>58</sup>:

1. *Object Orientedness*: In a human activity system, objects can be physical things or ideal objects (eg. a car or “I want to be a policeman”). In the latter sense, objects can separate one activity system from another in complex ways. This is why the analysis of objects is seen as a necessary requirement for understanding both the individual and collective nature of the human being. The subject (human) and the object affect each other through the ‘resistance and affordances’ of the world.

2. *Hierarchical Structure of Activity*: The subject-object relationship can be analyzed at different levels of activities: activities, actions and operations. This is an important principle in this context of the thesis. In an organization, the hierarchy of any activity helps to break down the analysis coherently.

For instance, a mill worker is engaged in conscious goal-directed processes to fulfill an object. This object might be a series of actions toward a ‘higher motivational object’ ie ‘to be promoted to post of production supervisor’. An activity thus results in different ‘actions’ toward that object. Each of these actions might have goals (reaching work on time), with subsequent lower level goals (operating machine everyday efficiently), each of which in turn might have their lower-level goals (switching the device on and off), and so on.

3. *Internalization - Externalization*: These are processes that relate the human mind to its social and cultural environment. The internal and external dimensions are not independent of each other, but are closely related and transform into each other.

“Internalization provides a means for people to try potential interactions with reality without performing actual manipulation with real objects (mental simulations, imaginings, considering alternative plans, etc.). Externalization transforms internal activities into external ones.”<sup>59</sup>

The key thing to note is that for instance, an external process might guide a user to learn, for instance, when a welder refers to instructions by colleagues or through a manual during training sessions. This stage is one of externalization, and emerges in what is ‘interpsychological plane’ (distributed between learner and others). After a while, if we assume the welder needs no more instructions to fulfill his tasks, then the operational knowledge has entered the ‘intrapsychological plane’ (former distribution no longer needed), ie the learning has been ‘internalized’ and needs no more assistance.

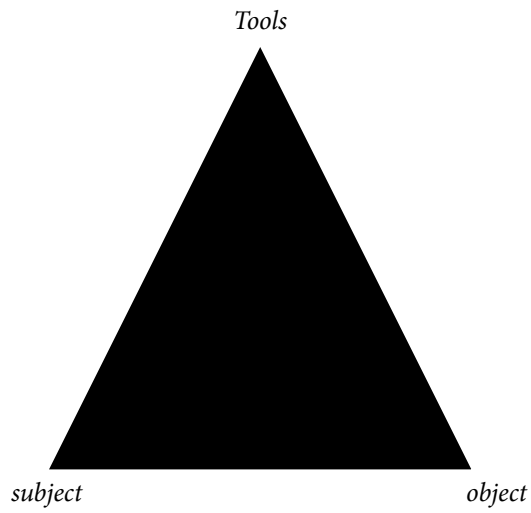
Activity theory thus maintains that internal activities cannot be understood if they are analyzed in isolation from external activities, because the two are engaged in a mutual transformation. Internal activities are transformed into external ones through a process of ‘externalization’. (eg. when an industrial forklift operator shares their tacit

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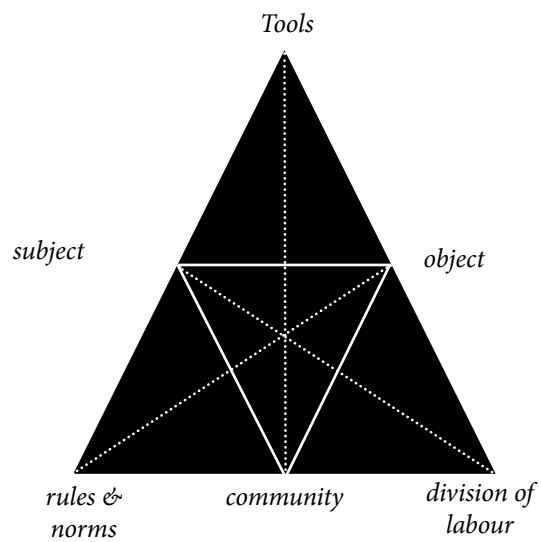
57        *Ibid.* (65)

58        *Ibid.* (68)

59        *Ibid.* (68)



*Fig 4.3: Leontiev's Activity System with less of a community aspect and a focus on the mediational*



*Fig 4.4: Yrjö Engeström's model is influential in organizational and work development, where the individual subject is always in a community context with division of labour, rules.*

operational steps with a researcher). Externalization is also a key aspect of converting tacit knowledge into explicit forms, in the knowledge management concepts of Nonaka and Takeuchi.<sup>60</sup>

*4. Mediation:* In a human activity system, the interaction between internalization and externalization as well as the accumulation, transmission of knowledge and transformation of activities all happen through a mediating interface. Culturally developed mediations, such as digital artefacts, fundamentally mediate the actions between subject, object as well as culture and history.

In this way one identifies the key components of mediation: subjects, objects and mediation artifacts, or tools (eg. the mobile phone). The relationships between these components are in constant change and according to Nardi, a developmental historical analysis is the only way to gain insight into the three way interaction between these entities. The concept of developmental history as well as mediation and re-mediation play a key role in the ‘Expansive Learning’ theory of Yrjö Engeström.

#### **4.4 Engeström’s Activity Theory framework**

Yrjö Engeström’s version is also known as an expansive approach, where learning is understood in a broader and temporally much longer perspective of a third dimension, that is, the dimension of the development of the activity.<sup>61</sup> This expansiveness of activity is considered when there is an objective transformation of the actions themselves and when subjects become aware of the contradictions in their current activity in the perspective of a new form of activity. Rooted in the legacy of Vygotsky and Leontiev, it focuses on current societal concerns that are related to learning and development in work practices.<sup>62</sup> Engeström integrates additional vital aspects within organizational ontology, such as a community, represented and connected through rules and a division of labour.

Engeström’s model looks at subjects as constituted in a “community”. The relations between the subject and the community are mediated, on one hand, by the groups’ “mediating artifacts” and, on the other hand, by “rules” that specify acceptable interactions between members of the community, and “division of labor”, the continuously negotiated distribution of tasks, powers and responsibilities among the participants of the activity system (Cole & Engeström, 1993, p. 7).

Engeström’s work has been considered very useful in the field of work development and knowledge creation. Within those contexts, an important concept that is used in Engeström’s application of the theory to work development is that of contradictions.<sup>63</sup>

Engeström points out, “If activity theory is stripped of its connections to historical analysis of contradictions (of capitalism), the theory becomes either another manage-

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60 Nelson, Harold G., and Erik Stolterman. 2003

61 Engeström, Yrjö, Reijo Miettinen, and Raija-Leena Punamäki

62 Sannino, Annalisa, Harry Daniels, and Kris D. Gutiérrez. 2009

63 Sannino, Annalisa, Harry Daniels, and Kris D. Gutiérrez. 2009

ment toolkit or another psychological approach without potential for radical transformations.”<sup>64</sup>

Contradictions as referred here, as ‘fundamental tensions’ and misalignments that typically manifest themselves as problems, ruptures and breakdowns in the functions of the activity system. For Engeström, the most fundamental contradiction in organizational and work related processes were from a use-exchange value. However for him many manifested types exist and so do many sub categories of the same.<sup>65</sup> Once identified in their positions occupying the network of activities, changing and developing the mediators of the activity can remove them.<sup>66</sup>

However, what is the connection between these contradictions and mediations? This is seen better when Engeström summarizes his model of activity theory based on five principles:<sup>67</sup>

*The first principle:* A collective, artifact-mediated and object-oriented activity system, seen in its network relations to other activity systems, is taken as the prime unit of analysis.

*The second principle:* An activity system is always in a community of multiple points of view, traditions and interests. It has multi-voicedness.

*The third principle:* Activity systems embody historicity. Activity systems take shape and get transformed over lengthy periods of time.

*The fourth principle:* The central role of contradictions as sources of change and development.

*The fifth principle:* As the contradictions of an activity system are aggravated, some individual participants begin to question and deviate from its norms. When this escalates into a collaborative envisioning (a reflection) through a full reconceptualization of object and motive, an expansive transformation is experienced (through learning as one outcome).

To describe the above alternatively, an organization such as the corporation represented in the case study was a collection of ‘activity systems’, each of which were mediating within their system and other systems through *artifacts*. Each activity system was oriented to its own object, and was also affected by the objects of the individual members. Since both the collection of activity systems, and the individual members within the community of each activity system has different goals and tasks, multivoicedness is built into the organization to at least some degree. However that is not all. Organizations have a history that affects in turn, the complex contradictions generated during its evolution. The better the resolution through which these contradictions are identified, the better is the capacity to learn collectively through an expansive, cyclical transformation process.

The next section will allow one to apply these frameworks to the actual case study results. The next section is focused on the case study, and the results the project generated.

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64      Ibid.

65      Engeström, Yrjö, and Annalisa Sannino.

66      Virkkunen, Jarkko Sannino. 2009

67      Engeström, Yrjö. 2005

## Part 5:

# Case Study – Corporate Project

## 5 Case Study – Project

This chapter represents the case study project. It is divided into three sections: the overview, the design process involved and the actual design outcomes from the project, in the form of design concepts.

### 5.1 Company Contact

This huge multi-national corporate organization was introduced to me through a market research project that was involved in developing emerging market scenarios. The market research was for an Innovation Think Tank<sup>68</sup> group from the company that included people from R&D, Strategy, Sales and Business Intelligence. During the market research, they were part of the mentoring team.

My personal interest in the project was not more than a temporary job. However, from some scenario development skills of the potential markets, emerged the team's interest in making use of some design thinking skills that they supposed I had. At the time, there was much pressure to innovate from their side and the current information systems were inadequate to them for the purpose. Their main goal was to enhance their existing knowledge processes. As the organization was undergoing a transformation and wanted to investigate the interactive possibilities of a new collaborative knowledge platform, I was asked if I would like to do a short project to test some concept possibilities with their new knowledge platform.

Every member from the Think Tank group was part of Strategy & Innovation but not vice versa. Only six people within Strategy & Innovation department were in the core 'think tank' group. Almost everyone had dual roles. That is, while being in Strategy & Innovation, the 6 were also in at least one other department in a different role. For instance, 'Overseas Market Innovation' manager who was part of Think Tank was also in 'Overseas Sales & Distribution' department as a 'Business Intelligence' officer. Think Tank members included two R & D members from different units, and an innovation manager. The entire group was headquartered in Helsinki, Finland.

The head of Strategy & Innovation department was the Senior Vice President, who was also head of Business Administration in the R & D group, hence served a dual role too. This Senior Vice President, who will be referred henceforth as the SVP, was in charge of the Think Tank and took the final call as head of the Steering Committee for these kind of projects. He was also considered the person who made very critical and strategic decisions with the CEO for all current and future business innovations. As chair of the Steering Committee, the final go/no go decision-making from my project was completely in his power.

*Pathbreakers:* The SVP was recently appointed as one of the 12 "*pathbreakers*" from across the entire multinational corporation, chosen from a "global company wide open process" from 160 applicants. These 12 candidates, recognized with excellence and reliability, were from five different countries, one of which was China and the

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<sup>68</sup> The Innovation Think tank group is a group within the Strategy & Innovation department of the firm

rest all European. The SVP made several highly critical decisions, and steered the resources for major projects. If the corporation had a leader who would scope completely radical and new markets, then this would have been the individual with the maximum autonomy to fight for it.

## **5.2 Project Brief**

*Project introduction:* Provide a proposal of ideas for ongoing transformation to a common knowledge platform, where common information needs would be easily accessed. Our main information needs are in Finance, Business intelligence, customer and market information and marketing Communication. Concepts for communication and interaction in knowledge sharing that leads to a knowledge platform are much appreciated. You are free to choose your methods and participants.

*Time Frame:* 4 months

## **5.3 Project challenges and opportunities**

The organization, headquartered in Helsinki, is one of the world's leading manufacturers of wood based products and solutions. At the same time it was also one of the world's oldest. It is a merger of two huge companies and hires over 20,000 employees. Each of these two companies had over at least 100 years of history before they merged into one. One of the companies entered forestry business after the merger only, from at least two centuries of mining. Both companies before and after merger, expanded historically through multiple acquisitions of a commendable number of wood and paper businesses and production mills, and were made of many international and 'foreign' components. These included acquisitions of production units, saw mill factories, packaging industries and so on.

They are currently among the top five in market share for high quality biodegradable products that included paper, packaging, bio-fuels and wooden constructions. The business operations concentrated in Helsinki were divided into Baltic, Nordic, Central European operations and also represented operations in other areas in their overseas sales and distribution. Overall, their business operations ran in over twenty countries.

The size and scope of the organization, including the nature of their business, also made this a very challenging project. The main challenge with the organization was the sheer number of delegated roles and responsibilities that overlapped with each other. Even taking them apart at the systemic level, there were sales, marketing, production managers, HR, Business Intelligence, Financial controllers, directs, presidents, business administrators all depending on each other for their viability. Too many voices and too many demands was something the Think Tank had to consider all the time.

For the enterprise however, the need for a knowledge platform concept was for different reasons. The complexity in the everyday information of changing customer orientations, delivery delays, confidentiality, competitiveness, the need for increased agility in today's market scenario of unpredictable changes and accountability were making it difficult for the Strategy department to develop into a streamlined learning organization that follows innovation culturally. Part of this clumsiness manifested itself in the form of a highly fragmented information structure, with fragmented needs and opinions. Most of the fragmentation was at the time I joined, happening because of fragmented tools and systems that had different levels of development. Software tools were from both sides of the decade, some sites were from the late 1990s.

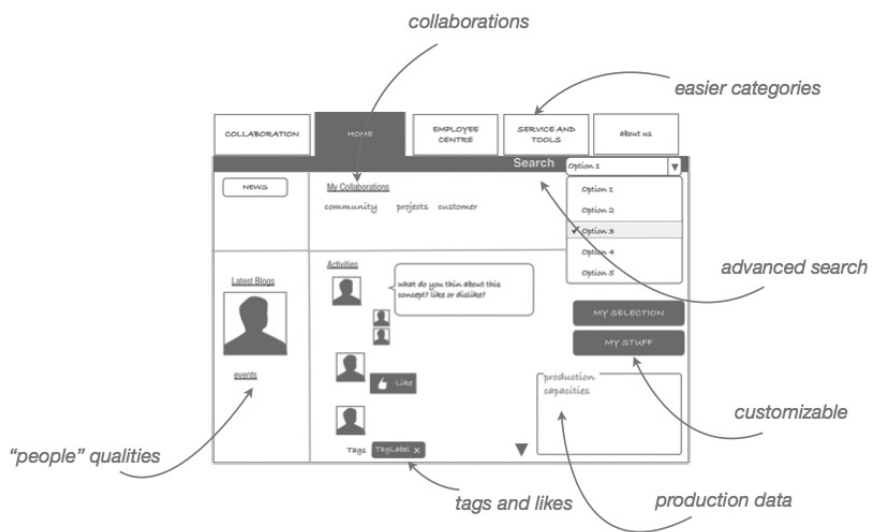


Fig 5.1: The anticipated intranet was supposed to integrate all the fragmented systems of the firm. The system was 'co-designed' with global business units.



Months before my project was initiated, in an attempt to resolve the information chaos, part of the organization intended to introduce one integrated system that would serve diverse information needs at one central place for everyone. As a result, an enterprise-wide intranet system was being planned and implemented at the time of the project that was already on its way. At the same time, they believed that some new design concepts could still be integrated along with the arrival of the new intranet system.

The need for a total renewal of the system was defined in the following terms, in a statement released by their Communications department:

1. Many autonomous and closed digital platforms in use throughout the business
2. Inefficiency in finding the right information and people
3. Doubling costs of hosting different platforms.
4. All users one big mass, with no possibility to address contents to certain target groups
5. Need for a well functioning search
6. Structure too complicated needing many separate services to navigate
7. Need for profiled and personalized dashboards with targeted content
8. Need for internal social networking tools

The new intranet was planned as a corporation wide change to sort most of these by the integration of all fragmented systems into one, and the eradication of the older ones. My intervention was planned as an additional support to the above crisis, with the design concepts for a 'knowledge sharing platform'.

Some of the highlights of the new proposed intranet were that it was apparently co-designed with various global business units over two years. There was also an attempt to migrate from all previous systems including production units, SharePoint systems and extranets. The intranet proposed was designed to be "*people first*" with latest social networking features, advanced search features, language support and highly customizable views.

While the intranet was a organization wide change, the key decision makers and innovative forces of the organization represented only a minute part of the organization. Duringg the project, my challenge was in being able to identify and resolve the 'correct' information needs of a larger diverse group and not just few stakeholders.

## **5.4 Project Planning**

### **5.4.1 Goals:**

The Steering Committee stakeholders, 3 from the Think Tank, were the project support team of my project and were mentors during the project when needed. While trying to define the goal as a knowledge sharing 'platform', the needs of the people even within the Steering Group seemed to differ right at the beginning. Conversations revealed that for some it was overload of email, and for others lack of sharing culture, and so on.

### **5.4.2 Kickoff and Planning:**

My responsibility was kicked off under the supervision of a project manager whose role was distributed between R & D and Innovation, and was part of project support team. My initial plan to get more information was to divide the project into two phases - a survey and interview phase, and a concept development phase. This

made it concrete in terms of methodology, however I needed to have my own design insights from all kind of sources and methods from entirely new fields – information design, organization design, management studies, etc. So, in addition there was a third ‘unofficial’ phase I would like to include here.

This ‘third phase’ I refer to, is the fuzzy phase of a design process. It is asynchronous in nature and makes new connections and synthesizes information all the time.<sup>69</sup>

One part of this phase strategy was to integrate hands-on and tangible design processes like paper prototyping, mind mapping, brainstorming and scenario building as additional, spontaneous participatory strategies<sup>70</sup> within the interview process. About an hour was calculated for face to face sessions and one had to structure/improvise the prototyping and other tangible processes around it. In addition, a modular project management tool was adapted right at the start, in the form of a tool named Podio.<sup>71</sup> This was in order to get the stakeholders on board for project collaboration on what I thought was already the benchmark of a great tool.

Podio was for me then, a great example of customization and modularity with a design based on complex work psychology. As a project management tool, it had already the best features for a comparative review with the stakeholders during interaction design based concept discussions.

#### **5.4.3 Schedule:**

The project was kicked off officially on 12th November 2012 and the deadline was 15th of March 2013. March 15th date was also the day for final deliverable in the form of Change Manual documenting the design concepts and findings in a very simple and ‘quickly scannable format. The concepts were to be discussed with the SVP, who would give feedback and permission for it to go into actual production.

Between November and December was the information gathering stage. In January the preliminary concepts were discussed and reviewed. Project was generally divided into two main phases, phase one (information collection) and phase two (design concepts).

At certain touch points within the first and second phase, the Project Support would review the ideas and share suggestions on the next steps.

On the project schedule map is shown an interview on the 30th of October 2013, which was an unplanned meeting where an informal interview took place with the SVP on communication and control issues.<sup>72</sup>

#### **5.4.4 Phases**

##### **First phase: December 15 - January 5**

*Survey, Interviews and Paper (interface) Prototyping*

The aim of the first phase was to develop an understanding of the complex organization and to identify relevant individuals and groups for studying needs, contradic-

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69 Jones, John Chris. 1992

70 Martin, Bella, Bruce Hanington, and Bruce M. Hanington. 2012

71 "A Collaborative Work Platform Built to Work like You." Citrix.com. Web. 1 March 2014.

72 The October meeting was my personal arrangement, where I was curious to exchange some thoughts with the SVP based on theories from the organizational cybernetics field

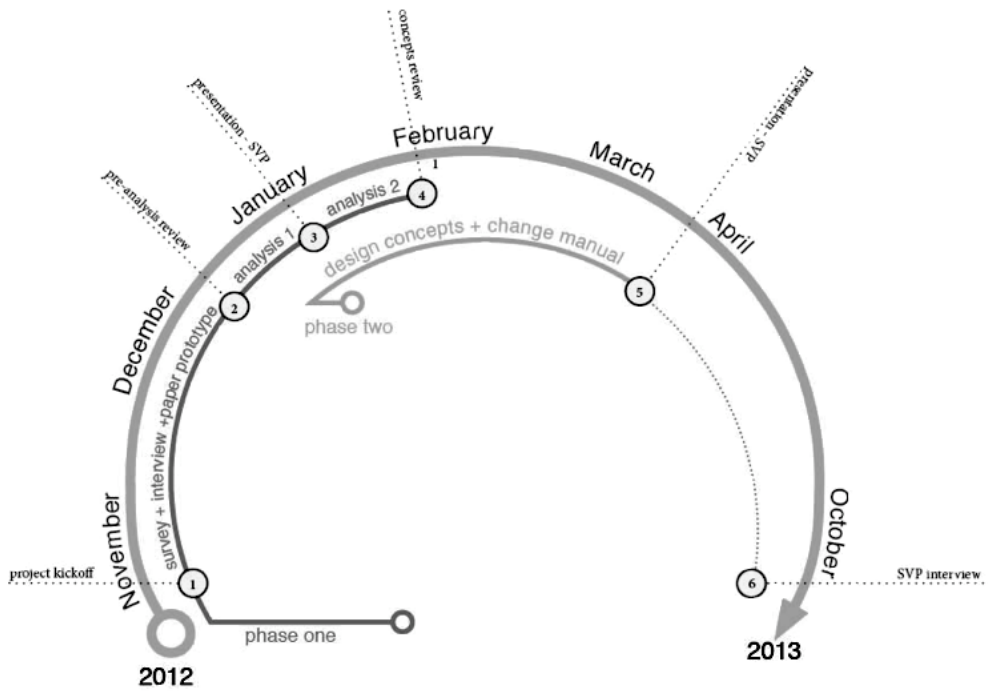


Fig 5.2: Project schedule with information gathering and analysis phase (December - January) and design concept development phase (January - March)

tions and power relationships within their information culture. Also was needed to know the conflicts with the current technology and the tools and services they were using. This was achieved through a corporation wide survey of 26 people. Soon following this was an interview with 17 select individuals in a semi structured and open ended way, somewhat based on the survey findings. This information would then lead to shared ideas toward a knowledge platform.

Three group interviews with different stakeholder groups (including management, communications and business intelligence people) were also arranged separately.

Analysis of First phase:

The first analysis of the data integrated a brief pre-analysis review with project support group. Once the needed information for analysis was gathered<sup>73</sup>, they were categorized along with persona depictions of the various employee roles, such as business innovation, sales, marketing and so on.

### **Second phase: January 15 - March 15**

#### *Concept development and change manual*

The results from the first analysis were presented to the Steering committee of the Strategy & Innovation group headed by the SVP, on January 15. The analyzed results from the phase one of surveys and interview + prototyping session were shown in a narrative form. General benchmarked ideas around tools and strategies for a knowledge platform were isolated here.

The 'go ahead' was then given to work on the design concepts for a 'knowledge platform', due for delivery on the 15th of March, for a final review with the SVP.

Analysis of Second phase:

Various conflicts were identified during the first phase analysis. These issues were then classified according the resources, processes, meanings and systems behind the information. Since I had observed and interviewed most of the archetypal roles in the organization, the proposals were planned in a way to cover the maximum scope of the organization chart.

The underlying strategy with the design concepts was to cover the holistic, synergistic, collaborative, effectual and generative notions of design thinking<sup>74</sup>. The designs thinking approached were combined with needs of users within semi-structured categories of finding patterns in the information gathered. These were 3 information types - systems, culture and types.

The proposals were divided into the following solution areas:

1. *Holism Driven*
2. *Network Knowledge Driven*
3. *Process Driven*
4. *Scenario Driven*
5. *Timeline Driven*

The design concept proposals were part of each of these solution areas. These were integrated into a 'change manual' document, which was the main delivery. The concept behind these proposals was under the theme of 're-mediations'. However this term was then, used loosely. The systematic activity theory based approach was lacking

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73 en1

74 Brown, Tim. + en2

then and it was used an intuitive term ‘from the gut’. Through a re-mediation, it was hoped that the various communities and individuals within the enterprise would lean toward more openness and greater knowledge sharing.

## 5.5 Design Process

I would divide the design process into two parts. A fairly straightforward one and a more personalized one. The straightforward one is the Double Diamond method<sup>75</sup> with the simple ‘divergence-convergence’ stages of the design process, shown clearly by figure 5.3. This model mapped the project schedule too and was easy to communicate and manage the process with the Project managers. The stages in the Double Diamond process are Discover – Define – Develop – Deliver, roughly divided as insights, analysis and synthesis phases. The discovery phases are open-ended, where observations, brainstorming, interviews, surveys, all give an insight to the problem. The definition is the first phase of analysis that helps one to develop the various artifacts related to the findings: such as personas, service blueprints, scenarios and various prototypes.

Additionally Ideo Method Cards<sup>76</sup> were used in some of the phases. It makes the actual analysis quite hard to pin point, as there were constant jumps between methods. The design concepts however evolved from more chaotic and mysterious processes, and the double diamond approach seems to have captured the data capturing and prototyping stages well as externalized processes.

The more inspiration and design conceptualization phase was more subjective, improvisational and chaotic, loosely based on John Chris Jones style design approach, where tools like Podio supported the design activities as a cloud based placeholder for some processes of the approach.

### 5.5.1 John Chris Jones and a modern tool

John Chris Jones, a strong advocate of ‘Design Process’ methods, was repeatedly frustrated by the superficiality in design caused by lack of processes. He integrated rigorous rational and intuitive methods into a design manual known as ‘Design Methods’<sup>77</sup>. According to Jones, *“To organize life by first fixing the goal, and then planning a series of steps by which it can be reached, with certainty, is the essential method of ‘technology’.”* Jones makes a provocative statement that “the future job of a designer is to give substance to new ideas while taking away the physical and organizational foundations of old ones. In this situation, it is nonsense to think of designing as the satisfaction of existing requirements.”

I found resonance with Jones’ approach also because of my experience with previous interdisciplinary projects, i.e. a more design oriented methodological approach that keeps reframing and questioning the problem and challenges the stakeholder’s assumptions was needed. The framed problem had to go through a series of iterations before even beginning to assume the shape of the solution. It is here that I used the design methods identified closely with John Chris Jones approach to somehow articulate the methodology I was seeking for.

My own experience with several interdisciplinary projects has resulted in temporarily interesting yet useless products through design process phases that might look like a double diamond divergence-convergence approach. On the other hand, attempts to

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75 “Introducing Design Methods.” Design Council. Web. 2 Apr. 2014.

76 “Navigate.” Method Cards. Web. 8 Apr. 2014

77 Jones, John Chris. 1992

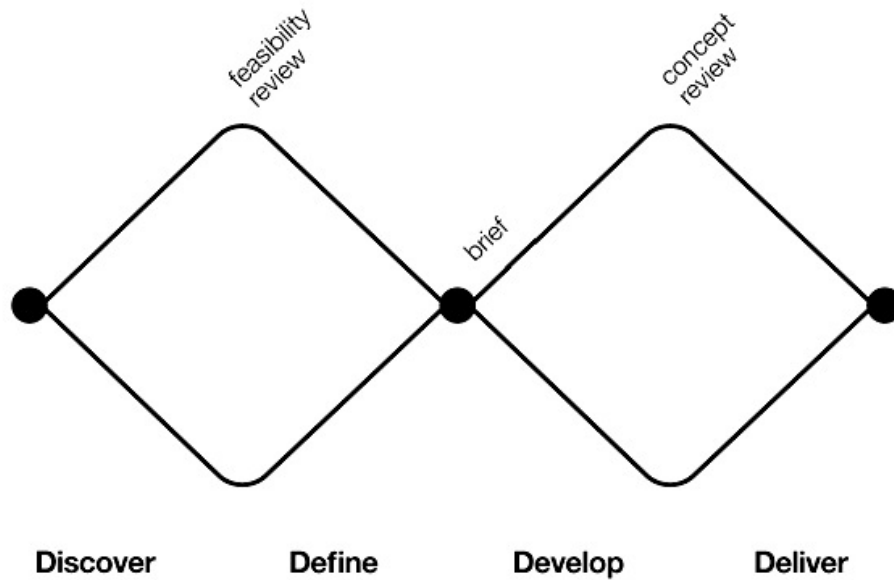


Fig 5.3: The double diamond method from the UK design council is a standard design process of

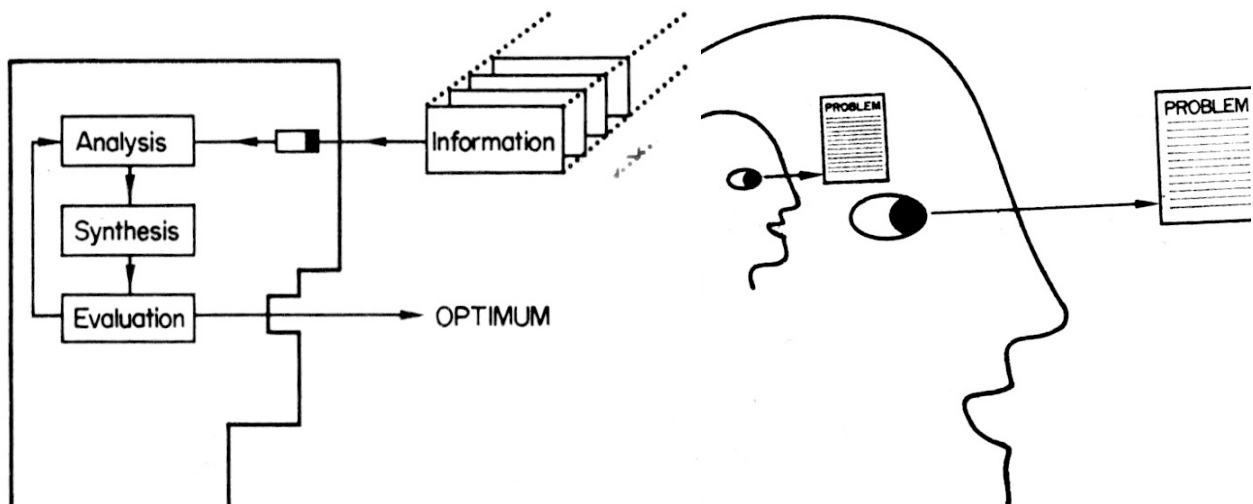


Fig 5.4: John Chris Jones (1992) depiction of a computational mode of design (on the left) where designer is more logical with preset logical plans. To the right is the designer as a self-organizing system, which has a metalanguage of categories where alternative strategies can be switched. My natural approach was the style to the right, and the explicit processes in participatory events followed more like the model on the left, as schedules had to be planned in advance.

introduce processes, had been often considered random, 'out of context and useless' by non-designers. According to Jones, creativity in design methods shows itself in the originality of one's questions, aims, classifications, and processes and is an approach that has clear structures for rapid adaptability.

Adaptability in particular is encouraged through Jones' methods. 'Course-swapping' is one highly adaptive technique, where one can change course when one gets new insights or realizes that one is trying to solve the wrong problem. As Jones argues, "if it (course-swapping) does not happen at all then perhaps it is a sign that one's aims are too modest to permit one to design anything really new."

Additionally, in Design Methods, Jones differentiates between process and procedure. The process is the articulate explicit or implicit thinking part and procedure is the paper work or some orderly categorization that allows one to synthesize easily between different ideas. This synthesis was for Jones one of the main strategies in what he termed as 'Strategy Switching'<sup>78</sup> in the 1970s and was possible because of processes that recorded ideation flows. For example, Jones suggests three logbooks of "data-idea-diary" that are reviewed every time a strategy switching is needed. Podio was used as the 'data - ideas - diary' online logbook in a personalized and collaborative form. Additionally, ideas or events could be highlighted and shared, so that the project manager could also see the progress and comment accordingly.

After the project ended, the tool was adapted for actual project collaboration by various members of the Think Tank team, and seems to have about ten participants. Additionally, personas, strategy switching<sup>79</sup>, boundary searching, brainstorming, paper prototyping all were transformation tools for the rich design space<sup>80</sup>.

### 5.5.2 Survey and Interview

Surveys and face-to-face interviews were scheduled to get information from the various parts of the organization. The survey went out to 40 employees within various hierarchies of the organization. This returned 27 responses. Out of the 27 responses, 17 were interviewed face to face.

#### Survey

The survey was designed in a closed as well as open-ended manner. It focused also on getting both emotive, progress related responses as well as 'task-related' ones, such as tool preferences and operating systems. The survey questions were based on gaining information from three aspects – information systems, culture and types. Questions were co-designed with the project support team.

The overall design of the form was supported by ethnographic research in the area.<sup>81</sup> One needed to capture attitudes, self-reports of the nature and frequencies of issues, and a distinguishing between groups of employees depending on job role, location and working culture. Some questions had to be closed-response types with options and others open ended and some with both options. Some pretesting was conducted with the project support.

The survey questions explored:

1. *How the different users reacted to the prevailing information culture*
2. *What were the different reasons for good and bad days at work, and how these were tied up with the information tools and culture*

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78        Ibid. Jones tries to balance the flow between finding patterns and spontaneous thoughts through rapid switching between strategies

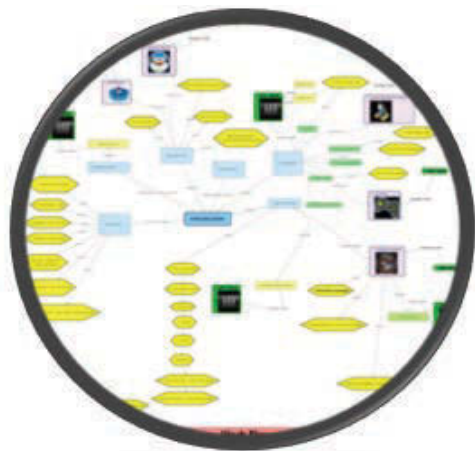
79        Ibid.

80        "The Encyclopedic Entry of Design Methods." Reference.com. Web. 4 Apr. 2014.

81        Ferber, Robert. 1980



Fig 5.5: The interviews covered both Paper Prototyping processes as well as scenario based questions, to capture the mental models of users. The personas developed helped in understanding better the user's mental model. An organization chart was created on a visual concept map environment to tag valuable metadata about various users.





3. *The most preferred and unpreferred media of communication*
4. *Mapping the various information artifacts in terms of reliability, communicability, agency, regulations, information management and anxiety and knowledge capacity*
5. *What categories are used to tag information, such as product number or project, etc*
6. *The information needed and shared by each person and their department*

### **Interviews:**

Face to face interviews were immediately arranged soon after, based on the outcomes of the survey, with 17 people who were chosen from the survey. They were from different work profiles of the organization, and more or less based on the feedback established in the survey as well as their availability. These included the Sales Manager, two senior vice presidents from research, Innovation and Sustainability / Communications, one technical director, three project managers, one business controller, one innovation manager, I.T. systems manager, head of construction solutions and the secretary.

The interviews themselves were *semi-structured*, meaning that some of the questions were dependent on the survey feedback. However, it was evident that there were many points of conflict.

The interview room had a monitor display, which was used to represent the organization in non-hierarchical structure. This was done using software called VUE<sup>82</sup> (*Visual Understanding Environment*). The functionality of VUE made it possible to visualize the organization in many sequences since it had two levels of information. The VUE nodes helped to add metadata from the surveys and insert them in various 'people' nodes of the organization. Also with a more visual and organic framework, the organization could be visualized in a manner and findings from other sections could be pointed out.

The main idea with the interviews (each of which lasted about an hour each) was to offer least resistance and build on the respondent's reflections of the organization. The idea was to create more in-depth insights. These generated a huge amount of 'unstructured data', which was partly the intention to make it freer from pre-assumed categories.

### **Interface prototyping with scenario development:**

However the interviews here extended when time was available, with interface prototyping and scenario development ideas. With some of the participants, the interviews included other methods such as scenario development, interface prototyping exercises, and brainstorming sessions as well.

Studies have shown that interface prototyping can be an excellent interaction design tool<sup>83</sup>, especially when one is trying to gather the user's mental model with existing systems. Also the anticipated system had not arrived. It was great change to do a comparative test of both use cases. The main benefit to this method is that it also allowed me to leverage my previous human factors specialization. The greatest advantage to this method is that it is lo fi and creates a low psychological barrier to speaking openly about the various issues within the system. New

82 "Design Council." Design Council. Web. 4 Apr. 2014.

83 Snyder, Carolyn. 2003

features can be ‘added’ and ‘tested’ almost instantly as its paper. This process revealed, amongst all others, one of the most crucial aspects of the findings. It helped to me to transcend mediation beyond the ‘*artifact/tool*’ based agency to other bottlenecks in the communication process.

For the purpose of paper prototyping *five tasks* in the form of 1 or 2 line scenarios were created and tested with 10 users. Each of these tasks was designed to reveal discrepancies between user, system and environment. Among the prototypes were mockups of the anticipated intranet and some of the old tools, using lo-fi methods (mainly physical mockups from paper), in order to get positive and negative attributes of the user’s touch-points through the system.

In addition, observations of the everyday (terminology, work environment, mindset on disconnected issues, etc.) was included in side notes, to produce more objective information. This is similar to a “fly on the wall”<sup>84</sup> approach, where observations are done with least intervention during various phases such as presentations and meetings.

This information prototyping was mainly paper based but also merged with a contextual enquiry with existing systems as well. While some ‘idealistic’ prototypes in paper were presented to the users, the user was free to demonstrate through the current systems (via an open laptop), on how they would choose the alternatives (by thinking out loud).

Scenario development was also tried from time to time some interview participants. Shell Corporation has used it for simulating oil crisis scenarios and adjusted future strategies accordingly.<sup>85</sup> Volkswagen Future Research group printed newspapers that depicted financial and ecological crisis in ‘future casting’<sup>86</sup> exercises. Harvard has recently published many articles on ‘blue ocean strategy’<sup>87</sup> as a scenario driven method to move forward with global ecosystem contingencies seen as new growth markets.

With the help of interface prototyping exercises, the user’s journey through the current system was also evaluated. In this project, the current systems and the anticipated services were represented. Some benchmarks were used as a “radical analogy” to challenge prevailing assumptions, preconceived notions and hidden prejudices. Example, the senior vice president’s approach to knowledge management was juxtaposed with a similar sized corporations handling of such means through an advanced complex systems simulation.<sup>88</sup>

A core part of this scenario development exercise was using Interface Paper Prototyping methods. These included the following:

*Task 1. Find work done at ‘X’ timber production mill in China by an ex-employee, during 2005 - 2009 from Chinese business administration database?*

*Task 2. Share a concept with one of 3 business units, with Feedback and Debates.*

*Task 3. How to quickly trace your key datasets from the past 21 days?*

*Task 4: How to find out if some Business controller in Sweden has a better dashboard system that you can use?*

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84 The Vision of the Danish Design2020 Committee. Copenhagen: Danish Enterprise & Construction Authority, 2011. Print.

85 Kim, W. Chan, and Renee Mauborgne. 2005

86 Star, Susan Leigh. 2010

87 Kim, W. Chan, and Renee Mauborgne. 2005

88 “Visual Understanding Environment.” Visual Understanding Environment. Web. 1 Apr. 2014. <http://vue.tufts.edu/>

*Task 5: How do you get an overview of your own department, in terms of progress and productivity?*

In addition, a number of visual approaches guided the scenario development process included:

*Data visualization (graphs, pie charts for reporting frequencies etc.)*

*Information visualization (mind maps, concept maps, etc.)*

*Fast Visualization methods (quick sketches, narratives, satire, cartoons)*

### **5.5.3 Data Analysis**

Steps toward highlighting, filtering and reshaping the existing data was quite extensive and partly fragmented because of an emphasis on getting in-depth information.

The main approaches tried were using:

**1. Data Sorting:** A large chunk of the data was partly on the project management software Podio. Here additional comments, feedbacks and discussions took place between stakeholders, the other and me. These were assigned various categories depending on the profiles of the candidates as well as certain work processes and routines, such as travel frequencies, computer systems (IE vs firefox etc). The semi-structured interview and prototyping events generated huge amount of data to sort. Some of the data being on the Podio cloud could be always referred to, and this recall function has been incredibly useful and productive during meetings, or even months later.

**2. Pattern Analysis:** In spite of the huge amount of information, there were clear patterns that divided the organization into seeking more “open and collaborative” information culture and a “regulated, cautious and contingency conscious” regulated culture. However patterns were collected in various orders depending on commonalities and exclusions. Looking for patterns of conflicts also revealed many useful patterns. Technology revealed a lot of patterns of conflict that were technical issues, however information sharing patterns were difficult to isolate because of many of the roles that were completely alien to me. Some of the personas were standard throughout their needs. For instance, the business administrators and project managers were often not too deviated in their feedback. However, others were quite different within a single department too.

**3. Persona development:** Personas were created for assimilated users profiles. Depending on the demographic they were given a certain fictitious persona, with attributes helped enlist their needs, behaviors, goals, demographics and so on.

Personas were quite useful in also activity theory evaluation. As goals, needs, motivations are established along with demographics and other user facts, one can see more easily which of these aspects are more established.

### **5.5.4 Design Concept Deliverable - March 15**

The deliverable was an online design document that was easy to read and comprehend. The conceptualization process took about a month and a half, and was done in close interaction with the project managers, who had an overview of the concepts.

Concepts were detailed within 5 models of strategic changes. These included:

*1. 4 Concepts for Holistic activities*

*2. 4 Concepts for Network based knowledge*

*3. 4 Concepts for Process driven activities*

*4. 4 Concepts for Scenario driven activities*

#### *5.4 Concepts for Timeline driven activities*

The above concepts were delivered in a concchure with the Senior Vice President. The general supporting arguments to verify the credibility of the concepts were:

- *How they would work in real life and in a scenario*
- *Idea of its special use and feasibility of implementation*
- *It's ability to affect the crisis from findings*

The concepts proposed to them in the holistic, network-oriented, process, scenario driven and timeline based areas, attempts to use processes that might be categorized under “design thinking” to resolve issues within such activities in the organization. At the same time, the interviews, surveys, concept presentations bring out different areas of the crisis in the organization that will be explored more rigorously within the Activity Theory framework. As gaining insights into ‘reflexivity’ is still one of the chief aims of the thesis, this is done separately in the next section.

## Part 6:

# Case Study Outcome

One important aspect of the analysis is that by the time the survey and interview proceeded half way, there was agreement between the project managers and me that developing a knowledge platform artifact with premeditated features does not solve the problem. Instead, a lot of tensions between people showed that there was a massive diversity of needs and many were a demand to even get started with basic themes around information finding and sharing. As the overall theme was divided into the cultural and system related aspects, the analysis was also broken down into the same themes:

i.e. Information Culture, Information Systems and Information Types.

### Information Culture

The culture ‘demanded’ by people was to have more transparency and openness in general (92%); whereas only 3 respondents prioritized secrecy (tight regulations). Reliability was rated high, while Panoramic and participatory attitudes were positive. Nobody cared about risk factors as part of information culture ie (0%) within the survey. On the flip side, the current information culture was the very opposite of the demand. Multicultural and usability related issues complicated a chaotic information structure. Lack of structure led to turnarounds and forced interactions between people.

Part of the struggle culturally was that, there were also the pressure on the think tank to transform into one seeking rapid growth and leverage in new areas with a more agile approach. As mentioned in the introduction to the case study, the SVP was among the few chosen path breakers who was to lead the way into a new culture. However, the rest of the Think Tank group it turned out from their own interviews, had very different mental models and history. Some of them were from very bureaucratic styles of work, from the same or other organizations.

Many were working in management with previous DOS background in business databases when information security was a lot less vulnerable as compared to today’s gigantic networked channels and GUI based ease of access. Some of the “open culture” oriented members of the Strategy were actually playing dual roles, with one foot in strategy and other in sales or business development, leaving a dilemma. Another important aspect of the information culture was the cross-cultural differences between various business units across world locations. Mergers, acquisitions and different company legacies and histories especially divided these. There was a deep contradiction in expecting any move toward a shared vision within such a highly fragmented system. To add another layer of confusion, some people were working between two or three different departments.

As the communications project manager mentioned,

*“..Much of the presentations and working styles here are so old way of thinking and the other web and intranet systems seem outdated web 1.0 thinking. We are in 4.0 age where we have to engage as much outside the organization as within. We need pictures, images, videos and most importantly stories!..”*

The communications and sustainability department was also among the more culturally forward minded of the unit, as much as elements within Strategy and Innovation.

For the SVP of Strategy, the culture was in the ability to transform with rapid changes in accordance to the business environment. And culturally his needs were restricted to getting as much information as efficiently and reliably as possible.

*“...In Germany our counterparts are not agile, everyone waits for the Fuehrer to give orders that come trickling down the hierarchy”* - SVP, strategy, Finland

*“Once I just said it like I meant it as in Finland, you know that we don’t care about the roles too much, but it sent one Austrian R and D manager fuming over the top.”* - Business intelligence, Finland

There were international aspects to cultural dimensions<sup>89</sup> too that affected the information sharing culture. Much hope in transcending cultural differences were placed in the new intranet system during the open-ended questions. However it seemed like a symptomatic fix to more fundamental information crisis, as is revealed later in the Activity Theory analysis. Overall younger employees anticipated it and the ones who had seen several systems come and go could not care less. Most of the experienced employees knew such systems come and go without creating any change. A ‘knowledge platform’ within the intranet was unlikely to cause any changes the way the Think Tank were hoping for.

Access to third party tools was apparently blocked and most did not even know if there were any new laws around third party tools, since a decade.

### **Information Type**

The types of information were mostly standard business documents (PDF, excel sheets, word documents, etc.) Lack of coherent protocol was causing hundreds of knowledge and data ‘stocks’ of files with no semantics, tags or filing system with clear ‘house rules’.

Information types were depending on the profiles of the overall organization and depending if it was an administrative, executive, sales and marketing or various support functions. The information types were typical of a corporation of this scale and nature. However, apart from their own work, the information types rarely ‘spoke’ to each other. If there was cross collaboration at all, the only visible sign of it was in a tool called the ‘Idea Space’ where new concept development discussions took place. There was no blogging or social media culture that were anticipated from the new intranet yet.

Some profiles like centrally placed business controllers had to handle thousands of components spread across their three business units, and the products had outdated categorization styles.

### **Information System**

The current system was difficult to track and use. The organization was divided among various profiles, departments crossovers, both internal and external to the organization. There seemed lacking a process, which as replaced by a system that full of heavy regulations that people did not know much about. Internal house rules and detailed group and people information were missing, and much in demand. Data as it was completely fragmented on several drives, i.e. network, cloud and local.

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89 Hofstede, Geert H. 1991

SharePoint<sup>90</sup>, an evolution of the corporate enterprise system by the Microsoft organization, was the most interesting catch. It was the system that was introduced to resolve fragmentation, but in reality caused even more fragmentation. Because of a poor taxonomy, bad usability and differences in working styles, it was the most misused database in the organization.

*“...Sharepoint is useless. We have 10 different SharePoints that no one has a clue of..and we have updates 3-4 times a year, its terrible..”*

Because of the unreliability of Sharepoint, multitude of information was subjectively organized. Some preferred network drives as one alternative, but there was one for each country. Most of the people in the organization were not in a fixed place (as shown in figure 6.2), and were often finding it hard to get crucial information in another country.

The paper prototypes revealed that most people preferred to find their way around most technical systems for information. People ‘oriented’ systems like Lync chat tool, mobile phones and emails were used more than the all the infrastructure and resource management technologies.

Many used local and networked drives to store information away from SharePoint, partly due to not wanting to migrate and partly to share only ‘part’ of useful information

Interface prototyping in particular, revealed lot of discrepancies between the user and both the old legacy systems and the potential futility in the expensive, prospective all-in-one intranet system. SharePoint, smart search functions, none of these could really get around the problem of fragmentation, which was partly a systemic problem but mostly a categorization issue.

The extremely high prevalence of a human agency in information seeking led to interesting outcomes. For instance, Nonaka and Takeuchi<sup>91</sup> have worked extensively on knowledge management in business, especially in the understanding the dichotomy between tacit and explicit knowledge. According to them, tacit knowledge is organized according to the mental model of reality held by the user, as well as their future visions and further implicit know-how and skills. Bound to the person and situation, this is quite hard to transfer. As one survey participant exclaimed, “the system just sits there serving no one’s information needs”. This was the overall impression. Here is where a very interesting aspect enters the analysis.

#### **General Impact on the Knowledge Platform concept:**

Right at the beginning many terms related to knowledge were just data and information and in the turbulent situation of the organization, knowledge was hidden within people, in their tacit memories and practices. Only a high level manager that had been working their way up through many of the myriad departments before various promotions, incentives and experiences could have ‘knowledge’ of processes and variables that sum up as wisdom. The social tools and more horizontal collaboration threatened managers with uncertainty as their job was to defend protocols and regulate any potential leaks, conflicts or risks. The nature of a ‘knowledge-intensive’ corporation of this type could not be ‘externalized’ ny principle. Everyone carried a share of this ‘information hiding’ by mirroring each others likelihood to do so.

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90 “The New Way to Work Together.” Microsoft SharePoint Collaboration Software. Web. 1 Apr. 2014.

91 Nonaka, Ikujiro, and H. Takeuchi. 1995

**2.1 A bad day at work for you is \* typically/usually \* a result of.... - 7 Inter personnel communication problems**

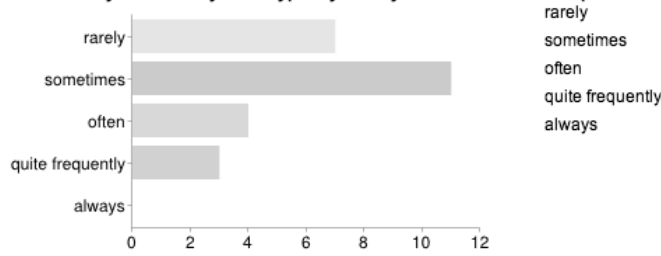


Fig 6.1: Inter personnel communication problems were quite frequent among the 26 survey partici-

**5. Where are you mostly located? - business trips**

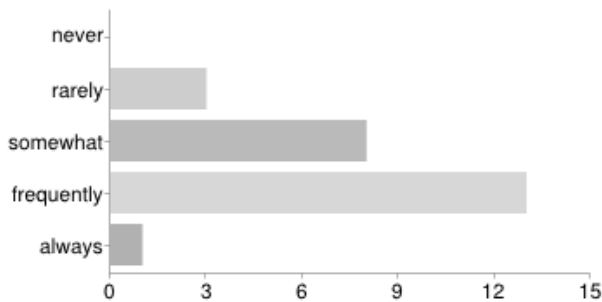


Fig 6.2: Many were traveling or on the move and were badly affected by the already fragmented network drives and other issues with the taxonomical structure. That being said, people were contacting each other more or less directly as well.

**5.2 When you look for ongoing activities in another part of the large organization, what do you basically look for? - person/team**

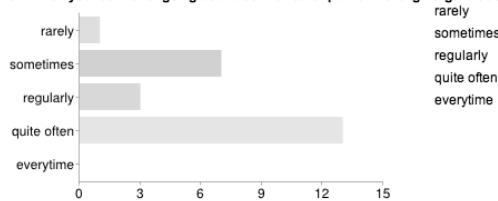


Fig 6.3: The knowledge and memory of the organization was scattered between the people who held a lot of tacit information

**3. Which of these are important to you, when it comes to information sharing within organization? - Sharepoint**

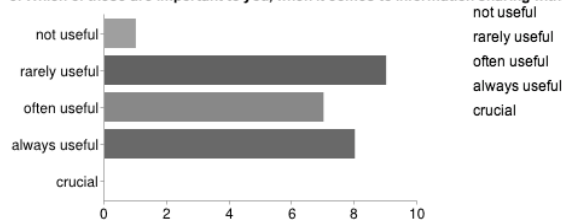
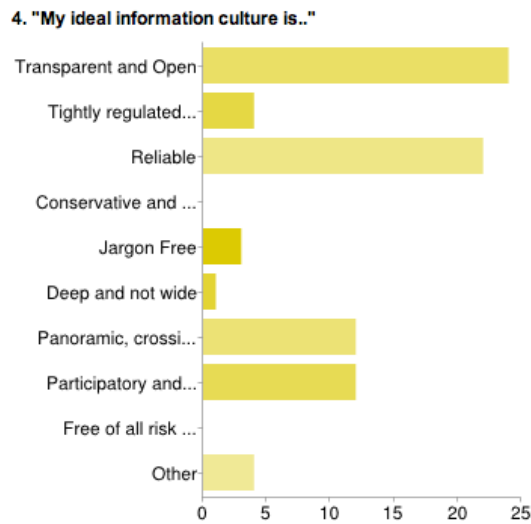


Fig 6.4: The main intranet system of the firm was of barely any use and had high rates of frustration. Old managers called it a black hole for information. Moreover many areas could not be accessed because of the information protocols.





*Fig 6.5: Some of the most frequent complaints from interviews and surveys. The chart above shows that few people held key to resource power as well as information power, most demanded a more open and transparent culture though the idea of openness and sharing was different for different roles.*

*Below are some examples of the nature of complaints.*

*“ There is no channel for everyday issues, and personal concerns like child care or holiday documents are hard to find. Sometimes you don’t feel heard.”*

*“ There is no culture of sharing and company silos do not support the information sharing either.”*

*“ I do not even know if we can use third party software, even if we use inefficient tools and systems.”*

*“ Some hold back from sharing as they think knowledge is power.”*

*“ Focus has been too long on fixing bad business and not in developing processes and own competence.”*

*“ Never gone into this level of change process before. Never seen such levels of fragmentation in much larger organization at previous work.”*

*“There are ten or so different Sharepoints that is updated time after time, with ten different file structures.”*

*“ Over 60 emails are exchanged regularly because of Idea Space.”*

*“ Both mills and business units are competing and don’t want to share information.”*

*“ There are hundreds of files across sharepoint and network drives that can be barely traced”*

*“ Post-it notes come during start stage and not later. There is no design or conceptual process.”*

Additionally the organization was decentralized and recentralized 2-3 times a year, which reshuffled any knowledge and trust shared between some people.

Research has shown that a concept of an organization's memory as an ideal accessible place somewhere in the system, is a myth. Based on an ethnographic study of a telephone hotline group, Ackerman and Halverson<sup>92</sup> have used distributed cognition theory<sup>93</sup> in establishing how *“memory is both an artifact that holds its state and an artifact that is simultaneously embedded in many organizational and individual processes.”*

Nonaka and Takeuchi<sup>94</sup> further articulates this through use of tacit mental models as a key factor in new knowledge creation have implied this. (Miettinen 2005). Their studies have shown how organizational memory works through multiple people and artifacts. Since memories have a mixed province and complex distribution within an organization anyway, it was hard to think of a knowledge platform that would act plainly as a tool, when sharing was not in the core of their internal values or business ethics. Instead, one had to accept the fact that the most useful information was within the tacit experience of the employees, and especially the ones who had internalized a lot of information through time (the managers at senior levels). They were few and they wanted things to be tightly regulated. The important thing they could do with the available information was not so much the data itself, but the ability to map it to the correct context.

In my conclusion, a knowledge platform in the form of a blog, widget or some standalone application would not have solved the deeper information sharing crisis the organization were in. My design concepts, as a result, went beyond interfaces and more into studying processes, where implicit and tacit knowledge could be externalized. Ideally through these concepts, knowledge sharing would be implicit and information stocks would turn into information flows as part of a natural trajectory.' Such concepts to me seemed more useful and generative rather than a conscious or forced attempt 'to share'.

At the same time there were diverse needs across the organization that were encountered in the interview and survey. A part of the approach to introducing design concepts within 4 or 5 broad frameworks was to be able to re-mediate the employees into a culture of design thinking. It felt as though most of the issues with sharing and information culture as well as technical issues could be resolved if some of these were adapted by the organization at the time.

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92 Ackerman, Mark S., and Christine Halverson. 2004

93 Kaptelinin, V., & Nardi, B. A. 2006

94 Ibid.

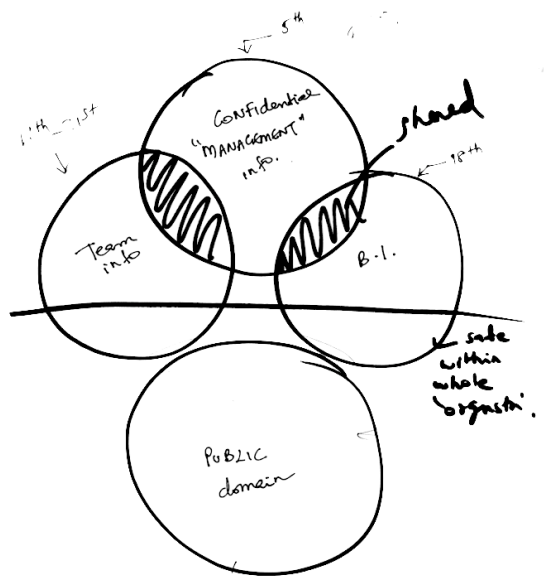
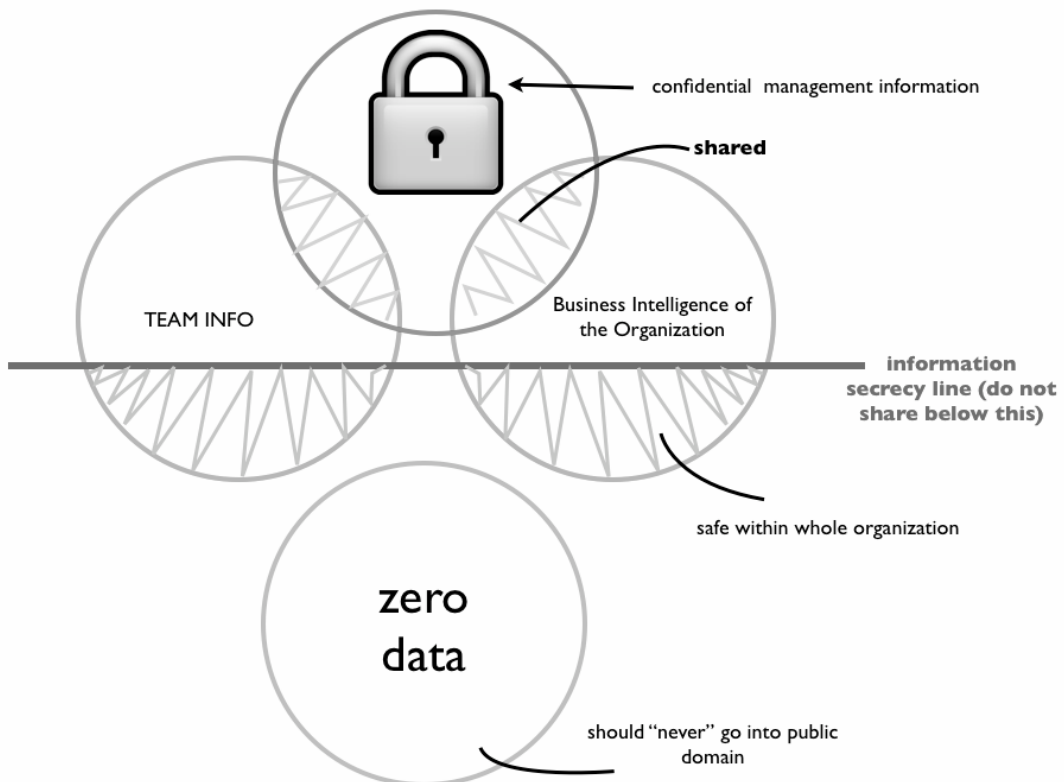


Fig 6.6: The President of overseas sales drew the sketch of how he believed information should be divided in the firm. Absolutely shielded from all risk factors. Confidential management information was top priority secret and his idea of information sharing was restricted to the overlapped shaded areas.



## Part 7:

# Design Concepts

The design concepts were delivered to the SVP toward a knowledge platform were as follows:

1. *Four Concepts that were for Holism driven activities*
2. *Four Concepts for Network based knowledge*
3. *Four Concepts for Process driven activities*
4. *Four Concepts for Scenario driven activities*
5. *Four Concepts for Timeline driven activities*

As for the design concept choices: were they Ad Hoc, Intuitive or Practical?

Regarding the design conceptual splits into holism, network, processes, scenarios and timeline seen as five areas of intervention. To be truthful, these categories are also a bit of a mystery as too many ideas from both practical results of the survey and interview, design thinking and random phenomena and tacit experience all combined to clearly form an image in my mind.

The concepts came first and were loosely based on the ideas around the categories represented.

## 7.1 Design Concept presentation

From the initial brief of a knowledge platform, the final deliverable introduced 20 new concepts in five different areas. The concepts were delivered in a booklet titled 'Remediations'.

Each of the 20 concepts addressed very wide areas of concern. These included concepts for reducing the conflicts between the production mills and the senior managers in the headquarters, scenario building tools for their outdated innovation management platform, incremental improvements to the security visibility of their Sharepoint files, timeline and journey line maps of projects and a new people's tool that would help one to quickly find and get an overview of everyone in the organization and their interconnections. They are too many and most of them do not serve the scope and purpose of the thesis, as far as the interest of the Think Tank go in adopting them.

It is important to note that the other concepts were also interestingly revealed as possibilities by the entire Think Tank along with the SVP. Since all 20 were created in a participatory process with project management as well as other stakeholders in the firm giving their feedback, they had attributes that would have been adopted too. The ideas were in the pipeline of future project and delivered as a brochure. The next section is specifically on the concept that created the most interest and was passed onto production.

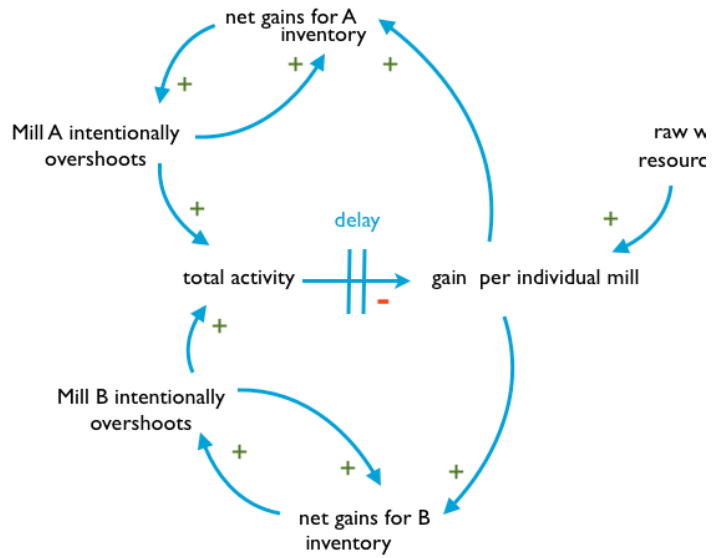
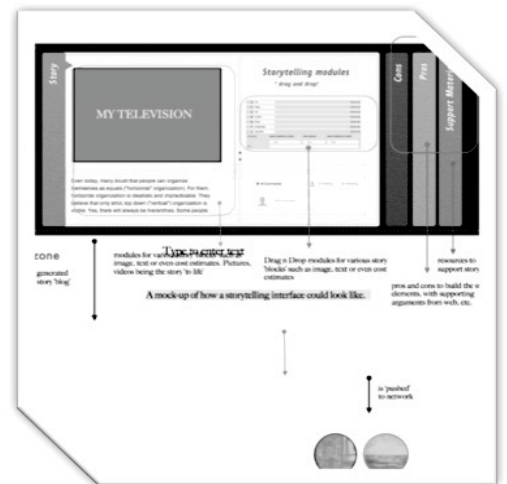


Fig 7.1 Some among the 20 concepts included systems diagram, blog, forecasting newspaper and a SharePoint concept of representing multi dimensional data using icons



**Concept chosen: The Employee Handbook as a “boundary object”<sup>95</sup>**

This particular idea outcome was based on a handbook concept that was getting popular in the game design circuit as an excellent organizational artifact. It was the “*Valve – Handbook for New Employees*.”<sup>96</sup> What made it especially interesting was that it seemed as though no one had thought of such a simple and effective way of reconciling employee’s doubts and uncertainties before.

The analysis revealed that among the many communication issues the organization had, people were frequently complaining about the uncertainty and lack of basic information.

*“ It took 10 months before I had to discover by myself where the wine glasses were”* – Project Manager, Helsinki

*“ .. I once lost my pay because I simply could not find any house rules on parental leave regulations when their kids fall sick..”* – Senior Sales Manager, Sweden

There were several instances of complaints that seemed minimal but hurt the employee morale enough for them to recollect years later.

It was not just newcomers that faced basic problems. There was nothing in the organization that showed connections between people or any emotive side. The only people’s chart was a basic hierarchical organization chart. The communications departments as well as Human Resources were in particular struggling to get the atmosphere improved, in terms of culture through repeated cycle of lengthy surveys, well-being event management, organizing parties and so forth.

*“ .. Sustainability and storytelling should come from the heart. Almost everyone here is still stuck with same old boring slides with numbers. Where are the pictures? The other day the I.T. manager sent me a 120 page document about information regulations, they are stuck in prehistoric times! Talking about stuck up, when our German counterparts come here, they seem shocked to see me with only socks on. I tried to communicate many times that we need to change old ways but people don’t care..”* – Senior Vice President, Communications

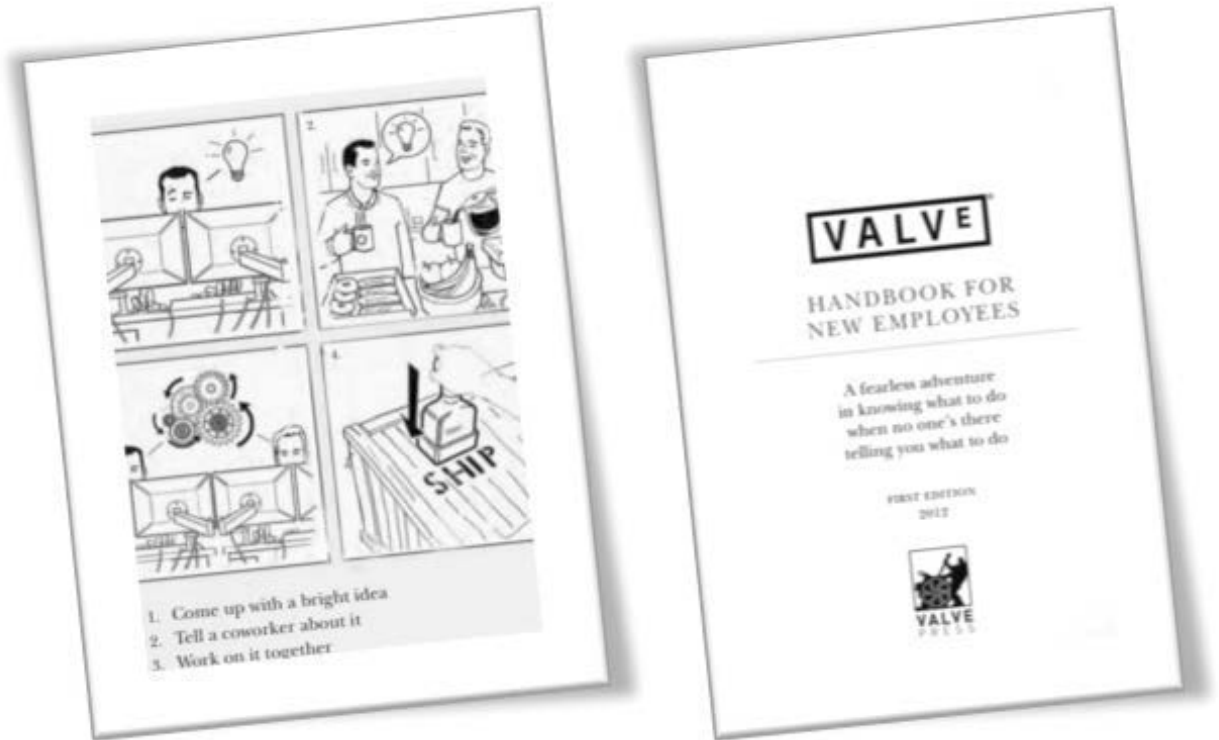
Valve being a game company have possibilities for more agile and more horizontal “flat” hierarchical work culture. This corporation was as far from it one could imagine, and the forces that were creating the “*new*” were simply new to begin with and were pushing hard for change without seeing any and were losing hope. It was easy to try and impose a handbook from one place to the other, especially in so different working cultures.

However, the key takeaway from the Valve example was the fact that the boundary object did strike some kind of an interest among the sheer diversity of needs. At the very least it would amplify differences and force a way to reach consensus on issues that might not have been discussed before. In addition it would have been a practical tool. It would have made all the units with key differences an opportunity to discuss and eliminate their tensions by generating the need for discussions.

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95 Star, Susan Leigh. 2010

96 “Valve.” Valve. Web. 14 Apr. 2014.



*Fig 7.2 Valve handbook as a Boundary Object*

The concept was well received by the entire Think Tank as everyone could relate to some aspect of the book. It was extremely well received by the SVP and was forwarded to the Human Resource department the same day, for further plans on implementation.

In one way, it was not hard to see why the Valve handbook was singled out as something very interesting to develop. The other concepts were more specialized to managerial level needs such as a taxonomy structure that would suit the business controllers and other analytical outcomes through “*noise filtering*” approaches such as the persona developments that represented the tensions in a less organic manner.

The concept of a boundary object and boundary crossing is frequently encountered in Activity Theory as well and it was interesting to why interest in this object generates a deeper idea of community based needs in an organization undergoing transformation.

## **7.2 Turbulence and Uncertainty**

At the end of the design deliverables on March 15th 2013, there were planned some next steps with regard to the design concepts. However this was soon overshadowed by a period of inertia where there was no initial steps taken by anyone. Of late, there were also major transformations where sales teams, managers and other supporting factions were fired and mills shut down.

Earlier I expected some of the decided changes to transform into reality and action. However there was even greater indecisiveness. The organization was on one hand going through not only transformation but also sudden turbulences. The project manager was concerned. After a few weeks I was asked by some members of the Think Tank group if I knew \*how\* some of these changes could be brought in by such a “*large and clumsy*” organization. I suggested that the HR department, such as work on the Valve-inspired “Organization Handbook” or some other ‘change agents’, could bring in remediations by following the ideas in the change document that was delivered.

It seemed there was greater fragmentation even within the Strategy and Innovation group than when the project first began. This was mystifying to me for a long time, and thought it was the failure of the design intervention. The organization handbook design was not initiated and it had been already 2-3 months since it first began. Somehow they could not find a way to gather people’s interest to form the initial discussions around it.

Both the causes and the roots of this uncertainty are certainly divided over many complex matters. It is hard to see the patterns apart from the ones revealed from the study, which in turn came from all possible departments across the entire corporation. However, applying activity theory to the situation helps to frame the crisis in coherent ways. This is also in what seems, answers related to the research space of this thesis - *on enabling and unraveling critical stages of reflection among the project stakeholder* -

In the next section, beginning with the organization handbook, the problems are traced alongside the Activity Theory framework.



## Part 8:

# Activity Theory Analysis

## 8.1 Recap

To recap the project, the previous project used design thinking to meet challenges with the current information culture that created problems in knowledge sharing platform. An analysis was conducted and design concepts delivered to the Innovation Think Tank Steering Group headed by the Senior Vice President.

The design concepts generated different sorts of feedback. Design thinking transcended the boundaries between hard systems like information types and technological means and offered concepts to resolve the differences and problems in the system using a variety of options.

One design concept, “*the organization handbook*” was chosen for implementation. However its implementation could not proceed into reality.

## 8.2 The Boundary Object as evidence

Boundary objects are abstract or concrete artifacts that bridge diverse communities and people on common tasks.<sup>97</sup> “*Boundary negotiating artifacts*” allow coordination without need for consensus. They are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual site use.<sup>98</sup>

According to Engeström’s (2001) activity theoretical research boundaries emerge in the middle of conflict, where the different members of the organization could evolve and learn or may collapse and develop deeper contradictions. Multiple activity systems are related to the concept of Boundary Crossing. Boundary crossing tends toward a certain systematicity and the involvement of different parts of the organization as ‘active’ systems.<sup>99</sup> The handbook was a mediating artefact that being embedded in multiple activity systems, would have created the “*articulation, questioning and the expansive transformation of values that can only be successful at the level of collective activity systems.*”

## 8.3 Activity Analysis:

Here one recalls the Activity System represented by Lev Vygotsky (1978) and Aleksei Leontiev (1978) attributed object-orientedness, hierarchy of activities, internalization & externalization and mediation. These are interesting notions to analyze the case study. For example, when we look at object-orientedness alone, each subject even within the Think Tank had a different notion of the outcome of a knowledge plat-

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97      Ibid.

98      Geisler, Cheryl. 2001

99      Russell, David R.

form. Also the hierarchy of activities seemed to struggle on basic operational levels.

*“The production mill manager contacts me to get basic information about each other all the time. They don’t even ask each other, that’s how bad the competition is!”* – Innovation Manager

Both internalization and externalization patterns were seen in the way organization memory was conditioned, mainly through the agency of people through operational uses of the technical tools like chat. Generally speaking, externalization was not creating value. The managers were merely tacit bodies of knowledge, some of who focused exclusively on more and more secrecy.

In terms of mediation, there were many interesting aspects. Analyzing through Leontiev’s mediational aspects of artefact generated mediation, the tools that the organization had did little more than sustain their circles of tensions by reducing all higher level motives (seen as vision statements from the firm), to relatively operational level of tasks. As a result, many of the products of the enterprise rarely evolved into anything that inspired toward a higher level of activity that moved toward a motive.

For instance, Sharepoint was a cause of conflict.

*“We have 10 different SharePoints, updated 2-3 times each year. I store my files on email and my hard drive”* - Business intelligence officer

Their only concept development tool that led to a sense of higher level of activities, by creating the need to discuss innovations, was ineffective.

*“The Idea Box tool was made so that 100 experts across the firm could brainstorm around a theme. Instead 60 emails are encountered per day and ideas discussion is clumsy.”* - Innovation Manager

Their taxonomy was fragmented creating very poor information Findability.

*“ We have 1000s of products and IPs. Search is relatively useless and there is no way to find almost anything in the system without calling the relevant person. There is no taxonomical order that is a standard, which makes Excel files a bit more easy to find. I depend on others to send ”* - Business Controller

None of the tools were designed so that the organizations basic operations would happen at an unconscious level of flow. The operational level tools, which were the design of most parts of the organization, created two major obstacles.

1. It was a hindrance to actions that led concertedly to higher level goals and activities.
2. It shifted the agency<sup>100</sup> of use from tools to human beings.

Amplified across the organization, through 20,000 employees, it created a system that was fundamentally flawed in terms of information and knowledge. The externalization of knowledge happened usually in politicized pockets of context and rarely served the purpose of building the overall motive and vision behind the organization.

*“We cannot use third party tools. There are acquisitions going on, IPs being*

*filed, deals being made that cause mills to shut down or open, we have to be very tight on information secrecy at these levels.*" - Vice president, Overseas Sales.

Conflicts at a basic level of operations and tasks, and heavy regulation of third party tools, further hindered using tools that would help to bypass ineffective in-house systems.

In conclude from the classical Activity Theory perspectives, the organization was a collection of hundreds of various activity systems in different stages of development and embodied various aspects of the above problems. Engeström as introduced earlier in the thesis, has developed his model where Activity Theory is a multi-voiced and multi-layered entity. In these cases, each activity system has diverse partnerships, interrelationships, and networks that work across cultural, organizational and occupational boundaries. The decisions or actions taken within the activity system at a time are toward various kinds of objects, depending on the individual and community roles representation within the Activity.

The next section is an expansion of these concepts through Engeström's (2005) five principles of Activity Theory in the third generation aspect of the framework.

#### **8.4 Organization as Activity Systems**

Engeström five principles of Activity Theory analysis are relisted below, in context to the organizational case study.

*1. The first principle: A collective, artifact-mediated and object-oriented activity system, seen in its network relations to other activity systems, is taken as the prime unit of analysis.*

Organization was a mixture of collectives. There were sales departments, managers, production staff, blue collar workers, HR, communications officers, business controllers, and so on that make up collective systems of activities. This unit was itself just one component of many other units in the headquarters, including unit for Nordic Business, unit for Central Europe, unit for Technology and Constructions and the unit for Baltic and Components.

These activity systems used tools suited to their relative activities. As discussed in the previous section, artefact influenced mediation had a massive role to play in the underlying tensions created on a daily basis.

The object-orientedness likewise, in a complex collective system with an unstable artefact mediation meant that the goals of each individual and group, as well as their operations varied according to the instability at the time. When evaluated against the backdrop of the entire activity system of the organization, the multiple objects can be seen in conflict both within their Activity System as well as between Activity Systems. For example, we can see that the Think Tank team while based in Helsinki, was actually just one part of the Strategy and Innovation Business unit.

*2. The second principle: An activity system is always in a community of multiple points of view, traditions and interests. It has multi-voicedness.*

In the Think Tank alone, within Strategy & Innovation, each profile of work was brought in from a pre-existing profile functioning under a different department. Business Intelligence worked as Sales executive in another team simultaneously. The Senior Vice President (SVP) was both head of the Think Tan and Strategy as well as Business Administrator of Research & development. Innovation manager was having

a dual function in their old business unit, outside the current firm.

Even if this Think Tank was a collective, the overall Strategy department had other actors too. As an overall Strategy and Innovation department, it was 'multi-voiced'. It had the opinions of many different actors.

*3. The third principle: Activity systems embody historicity. Activity systems take shape and get transformed over lengthy periods of time.*

This brings one to a previously obscured key aspect of analysis. One part of the corporation was hundreds of years old and the other part was at least a hundred years old. Historicity lies at the core of their narrative. The corporation merger however, was a recent phenomena. This meant that two mega structures with incredible historical, during their merger, also merged all of their conflicts, differences, political tensions and incompatible artefact mediations without a clear process. The merger, if seen as a collision, threw historically developed tensions from each corporation into deeper confrontation with new tensions, that were competing with each other in a business environment.

*4. The fourth principle: The central role of contradictions as sources of change and development.*

Engeström (1987; 1999c) argues that four levels of contradictions are present in every collective activity. He contends that by identifying the tensions in interactions within and between activity systems illuminated by all four levels of contradictions, it becomes possible to reconstruct the system in its concrete diversity and richness, and thereby anticipate its likely trajectory of development in what he terms "expansive learning cycles".

For instance, the introduction of a Strategy and Innovation team seeking to discover new untraditional markets and fresh ways of thinking, were in a direct contradiction with every other part of the organization. They were in conflict with the shareholders as well as the 100s of mills in operation across the entire world, in case their strategies changes. In its essence, the new parts of the organization were in direct contradiction with the old.

As the contradictions of an activity system are aggravated, some individual participants begin to question and deviate from its norms. When this escalates into a collaborative envisioning (alternatively, reflection) through a full reconceptualization of object and motive, an expansive transformation is experienced (through learning as one outcome).

*5. The fifth principle: Activity Systems move through relatively long cycles of qualitative transformations. This principle proclaims the possibility of expansive transformations in activity systems.*

Cultural Historical Activity theorists along with other critical theorists view human activity and social order as interpenetrated with systemic, irreconcilable contradictions between inherently oppositional forces, and contend that the concrete manifestations of such constant contradictions drive organizational development.<sup>101</sup> In other words, the constant tension within the activity systems can be also the leading cause of its transformation.

It seems promising to analyze these cycles in terms of the stepwise formation and resolution of internal contradictions in activity systems. Engeström locates the dynamics of knowledge creation not primarily on the level of representations, but rather on the level of contradictory forces within human activities.<sup>102</sup> This is taken forward in the next section, as a source of possible reflection.

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101 Sannino, Annalisa, Harry Daniels, and Kris D. Gutiérrez. 2009

102 Ibid.

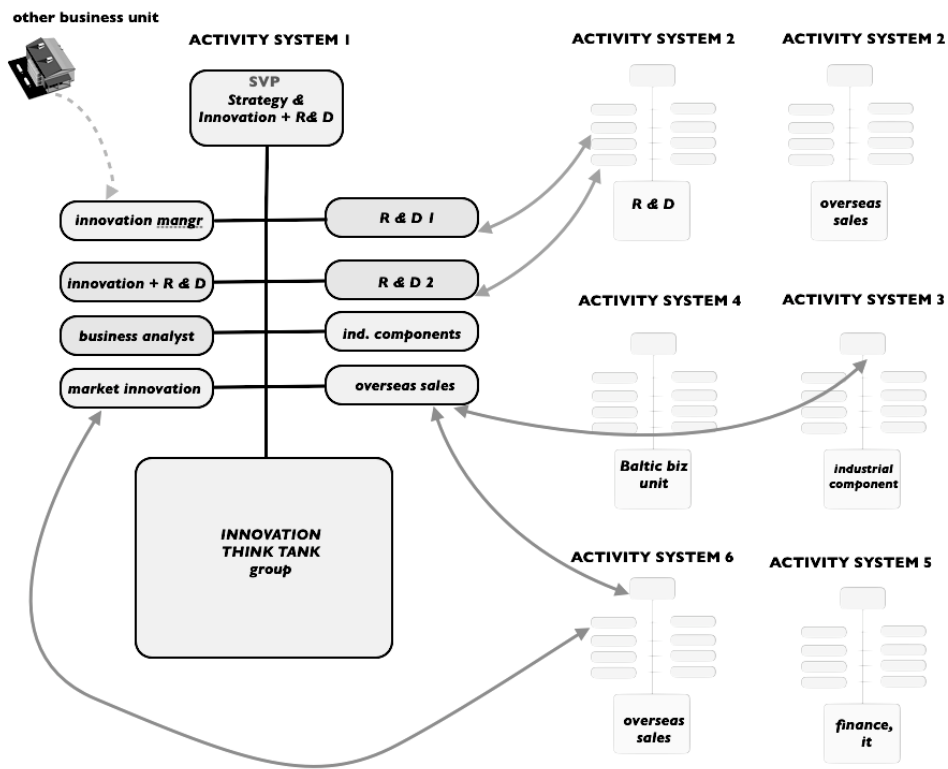
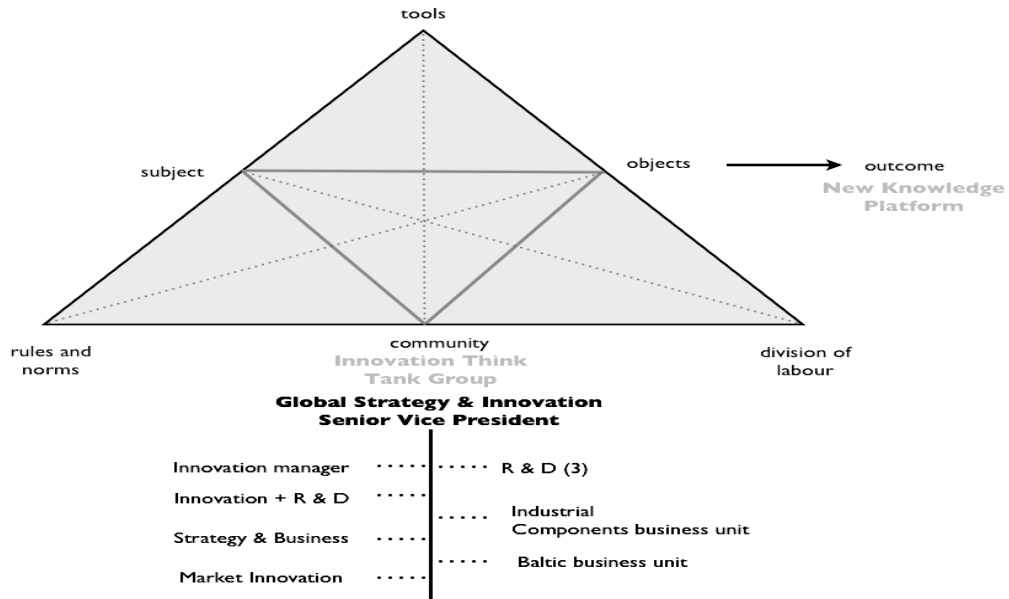
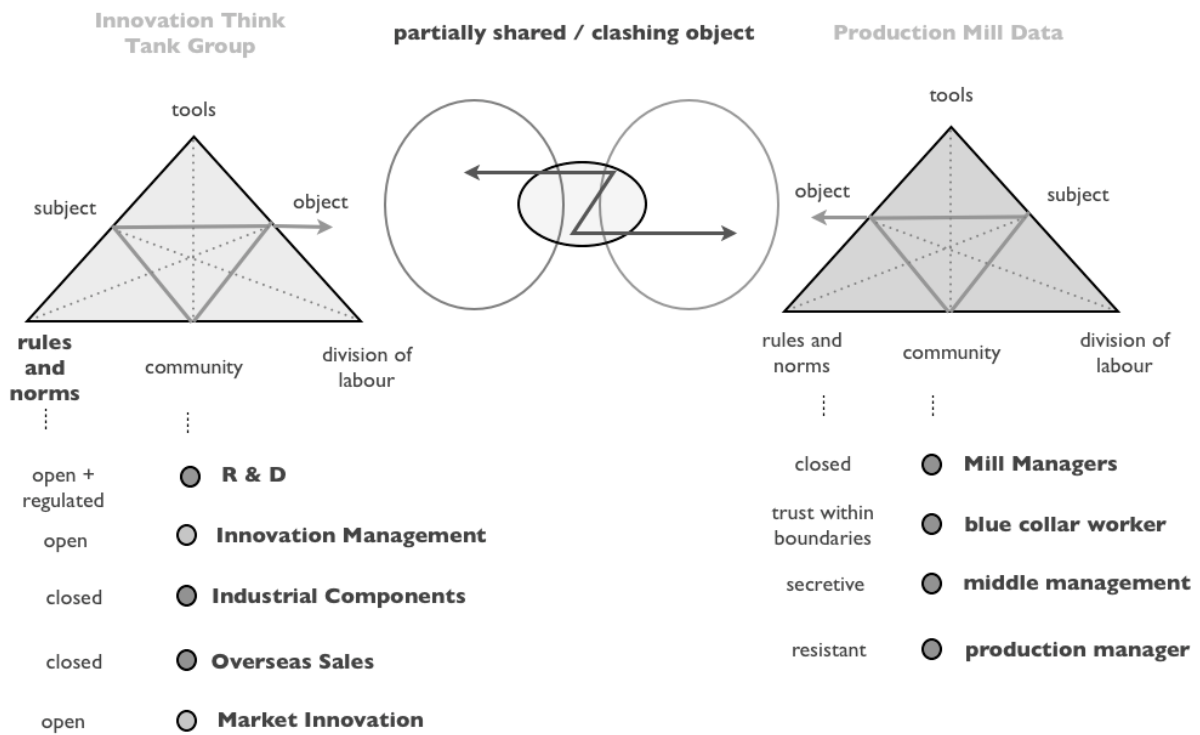


Fig 8.1 The Think Tank within the Strategy and Innovation department was multi-voiced and had each members in double roles in other activity systems



*Fig 8.2 a Strategy and Innovation department – multivoiced collective, accommodating a range of individual objects toward a certain outcome*



*Fig 8.2 b Strategy and Innovation department – multivoiced collective, accommodating a range of individual objects toward a certain outcome*

## Part 9:

# Unraveling reflections, toward conclusions

The research questions at the beginning of the thesis were framed as follows:

*How does one identify the fundamental forces that cause organizations to reflect and how did design intervene to support critical reflection? Can design develop a systematic process in doing so?*

One can begin to approach the relatively abstract notion of reflections of an organization by retracing the critical steps of the project, in accordance with the fifth principle of Engeström's framework that integrates all the other principles in effect. By examining the stages where deep collective evaluations, leading to notions of reflexivity and reflections were caused, one could try to unravel not only where the fundamental source of contradictions leading to transformation were, but also note how they could lead to stages of reflections.

## 9.1 Contradictions and the birth of tension

One thing that was not taken into account during the design phase was that this was an organization where departments like Communications & Sustainability as well as Strategy and Innovation were emerging from the old and transforming into something new. Even in the new, there were people with one foot in the old culture or system. The new also could not move forward without concrete methods in engaging with the old. This interrelatedness of old and new and various in between activity systems allows us to make sense of complex organising processes involved especially in the evolution of a centuries old corporation that has emerged and evolved over the years. When seen from this angle, the opposition between two forces were the root of a lot of conflicts. These included struggle between new markets and old, new technologies and old, and new ways of networked organization fighting old bureaucratic structures. The Think Tank was a force for the new trapped under several recursive boxes of the old. However, there is also a deeper contradiction that leads to historical struggles between the old and the new, and this is what Engeström, influenced from the Marxist mindset, introduces as primary contradiction.

According to Engeström (2005), a *primary contradiction* reflects the fundamental tensions in the general realm/society, which stem from the *opposition between use value and exchange value* in capitalist political economies. Primary contradictions between use value and exchange value occur within each node of the activity system, even if attempts to resolve the other levels of contradictions are temporarily successful, the primary contradiction remains. The primary contradiction is not only continually present, it is also foundational to the other levels of contradiction. While this fundamental tension conceptualized as a primary contradiction keeps the activity system in constant tension, it surfaces in everyday contexts in various forms and in the other levels of contradiction.

On a holistic level, for a corporation that had been around for over hundred years, many huge changes had been experienced in less than ten years. Their presence in Asia and America was very recent. Even more recent were their new corporate identity as well as philosophy, which rebranded the whole company. From a resource exhausting organisation, they had now marketed themselves as a global 'sustainable products' organisation that *apparently* took ecological issues seriously. From a corporate juggernaut indulged in resources grabbing, they had transformed at least cosmetically overnight into 'job givers'

and *'community developers'*. Considering the history of the firm, these were overnight changes and tiny departments with few people were trying to transform the organization into something new. While the CEO and high profile events were in the press for embracing new thinking, in reality the path breakers who were hired for the job of putting those into action, were quite limited in their scope and in many ways had their resources accountable to the intentions of the board of directors and CEO. Relatively minor interventions such as this knowledge platform design project were no match for massive primary contradictions because of exchange value of their primary product was under severe strain.

While achieving brand makeover, they failed to achieve structural makeovers. A very traditional way of working where demand was proportional to the unstable future in paper (See figure 9.2). Huge changes in the last few years, caused by usage of electronic devices in terms of demographics had severely impacted their American and European markets. As a result they had to focus on Asia, which was an emerging adapter to technology and had various needs in the resource sector.

Coincidentally, the new departments like Strategy & Innovation that were pressured toward more future oriented approaches to the business, were threatened by the emergence of the electronic media, as was the board and CEO. However there were contradictions in the interpretation of events.

*"New Media has always been expected to displace older ones. Television was supposed to edge out radio and cinema, but the opposite happened."* - a popular consultant with the firm

However, the Senior Vice President of Strategy had a different view.

*"It took 20 years for the PC revolution, 15 for mobiles, 5-7 for touch screens and these cycles of adoption are getting shorter. Directly or indirectly, this has affected our structural changes too. We used to centralize - decentralize and recentralize in cycles of few years. Now these cycles are much more rapid and we actually change our roles 3-5 times a year. Also we need to get consumer friendly, a tradition we almost never had before, as an internal competence. We have a lot of turbulences expected and our secret information must be safe guarded from these, and our current systems are well regulated because they are too fragmented and risky."* - Senior Vice President, Strategy & Innovation

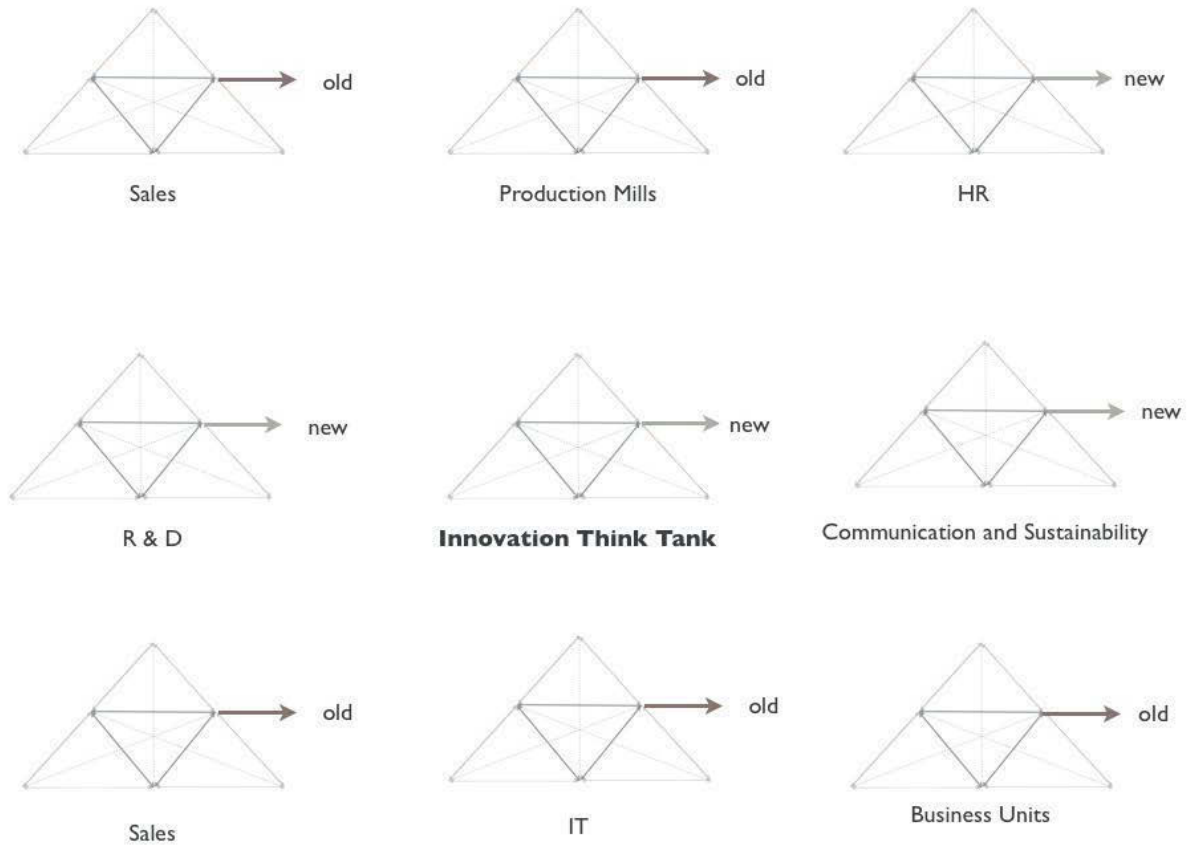
Here one can see, that the primary contradiction generated between the use-exchange value of the product created a secondary level of contradictions. The information strategy was driven from an underlying secondary contradiction. This is also the area where the knowledge platform project found its voice. The dissent was voiced with the creation of a new system, such as the intranet, that was hoped to integrate all the fragments together into *"one system"*. One can notice here easily, that the technical transformation would have created nothing else but subsequent transformations of the secondary contradiction.

And in order to reinstate Engeström;

*"As the contradictions of an activity system are aggravated, some individual participants begin to question and deviate from its norms. When this escalates into a collaborative envisioning through a full reconceptualization of object and motive, an expansive transformation is experienced.."* Engestrom 2005

The emergence and presence of underlying contradictions are identified in this way as the fundamental forces that caused the need for transformation. These forces, as part of





*Fig 9.1 : The old and new parts of the system were in conflict, as the new tried to change the structure and processes with tools like the anticipated intranet and knowledge platform concepts*

our research question, can be expanded even further to find the critical stages where reflection occurs.

## 9.2 Four Levels of Contradictions

Yrjö Engeström's fifth principle notices the contradictions can be developed into methodological cycles of change by identifying the contradiction stages.

*Primary Contradiction:* This is also known as the need state where the contradiction is between the use and exchange value. In this case study it was the value of the resource because of which number of changes took place such as mergers and makeovers that manifested its primary force into the battle between old and the new.

The primary contradiction is connected to the first phase of this expansive cycle and is the "need state".

*Secondary Contradiction:* The secondary contradictions relating to the second phase creates a double bind.<sup>103</sup> This stage creates "*an intense analysis*" of the conflicting activities and many of these contradictions are caught between the elements of activity systems, such as the new Communications and sustainability branding department vs the old IT department.

This stage creates the need for transformation among the dissidents toward a new system. In the case study, this was the need for a new intranet and the need for a new knowledge platform by the Think Tank.

In Engeström's words (1987) the secondary contradiction leads to "*...a hypothetical picture of the next, more advanced form of activity system.*"

*"...We need to change to a better integrated platform..we have too Many autonomous and closed digital platforms in use throughout the business, Inefficiency in finding the right information and people, Doubling costs of hosting different platforms, All users one big mass, with no possibility to address contents to certain target group, Need for a well functioning search, Structure too complicated ..."* - Statement from Communication Department for new knowledge platform and new intranet with social tools

*Tertiary Contradictions:* These contradictions continue along the path toward the tertiary contradiction when the new tools capable of changing the situation are modeled and result in internal conflict of rejected and choosing the correct one. In the case study this was the actual modeling of the new intranet, as well as the design concepts by me for the new knowledge platform. I was in the middle of the tertiary stage of the overall contradiction.

*Quaternary Contradiction:* These are contradictions that emerge between the changing central activity and its neighboring activities in their interaction.<sup>104</sup>

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103 Bateson, Gregory, and Mary Catherine Bateson. 1972

104 "Center for Activity Theory and Developmental Work Research." University of Helsinki -. Web. 2 Apr. 2014.

In Western Europe paper consumption could decrease 15–20% by 2020.

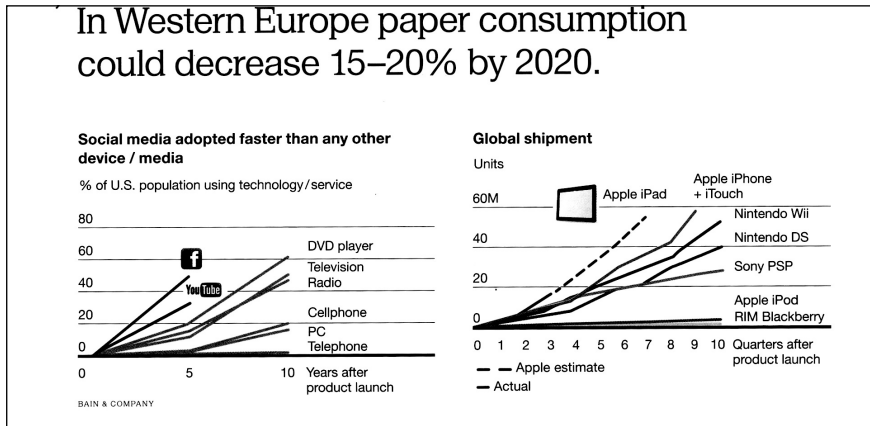


Fig 9.2 (Bain & Company 2011): One of the future scenario speculations in their promotional brand report predicted a huge decrease in their business potential

In the case study, the implementation attempts at the new intranet with social features as well as the organization handbook as a boundary object, created a tension or uncertainty and clumsiness during the implementation. I was told recently by their business intelligence, with whom I have been in touch, that their new intranet made alienation even worse and many started to react against the upper management very openly.

The earlier implementation stage was led by Think Tank and the Communications departments, in the belief that it will transform the system for the better. However, at this stage, those parts of the system that has been engaged since the secondary contradiction with *analyzing the issue, modeling the new changes and implementing them*, comes into direct conflict with those parts of the organization that are resistant to the change. This can happen either because of lack of inclusion or because it is not in their interest to transform.

In the case study this stage is seen as one of consolidation and *reflection*.

### 9.3 Reflections from fundamental forces

Following in this way, the expansive cycle of development as developed from primary to quaternary contradictions, the fundamental forces that drive development are seen. If one has a pre-awareness of these stages, then one can take the appropriate actions too as a collective activity system.

*“The ultimate aim of the analysis is to make the participants, the potential subjects of the activity, themselves face the secondary contradictions. In other words, the analysis functions as a midwife for birthing about a double bind or at least a grasp of the double bind in the form of intense conceptual conflict.”* - Engeström 1987

Reinterpreting Engeström, ‘facing’ the secondary contradictions is critical. And this is exactly where I find the value of *Reflection*. For a collective activity system caught in a double bind at the secondary contradiction level, the system could use improved tools that *reinterpret* and *remediate* reality (reality in this case being the ability to face intense conceptual conflict as a collective) and in this way, amplify their *reflexivity*.

Going back through the four contradictions, one can see how the stages of design could have influenced critical reflections at specific stages in the expansive development of contradictions.

At the secondary contradiction level, during the project kickoff, the new part of the organization initiated the project. However this stage is the project brief and is mediated from their tools and devices (such as the PowerPoint presentation of their issues) to the designer. At this stage the brief cannot be traced to its multi-voiced or historical basis and is hard to estimate whether this is a secondary or a quaternary level contradiction of a previous stage. Still it is a moment where remediated reflections would be more clear as “an intense grasp of the double bind” is attempted by a collective activity system that has been referred here as the Stakeholders or Think Tank team. In the case study this stage was instead a one way communication of design briefing.

From the double bind, the survey and interview led to concept evaluation stage where concepts were modeled collaboratively and presented to the senior vice president. There was resistance to the new models in the various peculiar concepts which was part of the tertiary contradiction. This stage was then followed by the agreement to implement the organization handbook concept in my case. This ended in uncertainty and it might have

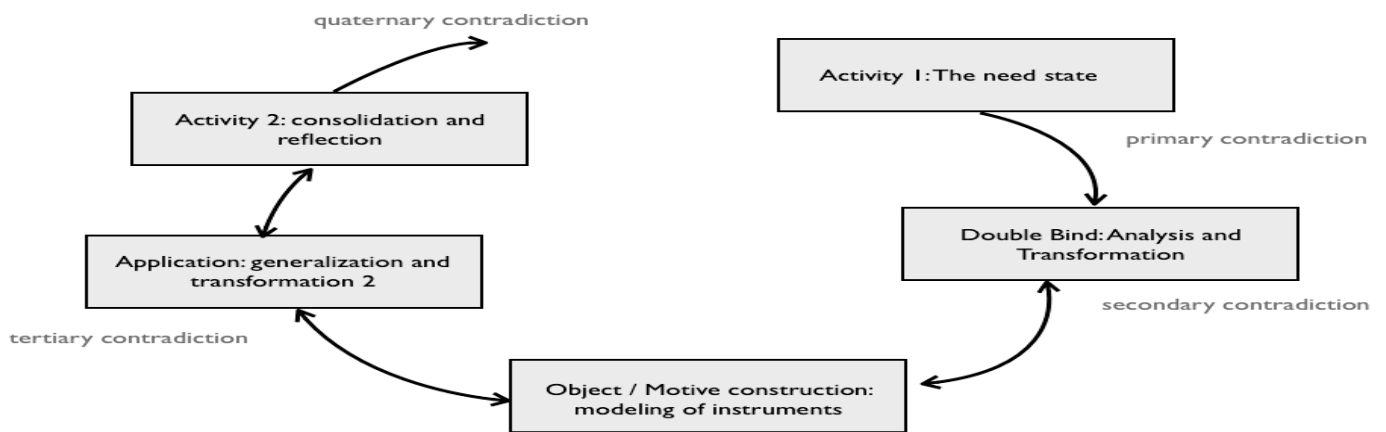


Fig 9.3: The four stages of contradiction in an expansive transformation (Engeström 1987, p.189)

been the new conflicts created from the departments having to face the ones outside the project. (It was the design of a boundary object). On the other hand, the intranet followed the entire cycle and clearly resulted in a conflict between the ones ready to adapt to new social tools and the ones who were not so much in favour of it from the regulation minded management teams.

In each of these contradictory stages, there is a collective attempt at resolving as well as getting a clear resolution of the crisis. If I had to redo the project and had this awareness in mind, then I would be ready for these stages where contradictions are manifested to be able to reinterpret and represent the contradictions using the remedial possibilities in New Media. It would also have changed my overall object as a designer in community or organization oriented projects like these, to be conscious of my ability to intervene with design by amplifying the communities collective reflection.

#### **9.4 Conclusion**

Using knowledge from new fields such as Activity Theory, it seems possible that design can intervene in these systems with a high predictive ability. Gut feeling or intuition is one of the common forces that drive creativity in the designer. If that is combined with a deeper fundamental idea of the environments they intervene in, they can be a lot more effective.

Usually there is a mindset conflict between the intervening designer and the people involved directly with problem situation. In an organization, there is tacit knowledge embedded in various levels that lead to certain mindsets. On the other hand there are radical ways to overcome problems that use a different mindset, more commonly seen among designers. In this case, understanding what the fundamental nature of the problem really is, would have in particular increased the reflexivity of both the stakeholders as well as the designer so that the 'secondary contradiction' would have become the stage for creating higher level objectives that tackle the underlying fundamental cause rather than symptomatic fixes.

During the design intervention, the intention of the organization as a collective system also matters. Ironically, if there is enough force in the contradictions to inspire a collective action, it increases both the motivation and reflection capacity of the members in the activity system. The Think Tank wanted to go through a change, and would have been more open to consider alternatives. But in organizations which do not feel too contradictory forces, like a university or a electronics company, the 'double bind' state might be lingering without any body particularly noticing the same.

In its essence the organization seems like an alternative form of organisms too, that tend to increase its mediational capacity in order to evolve. The complex circumstances now from an overload of information and possibilities might be there is an oversaturation of the capacity without any new channels. It is interesting to see if the organizations will be able to make a new set of tools for completely new remediations of their business operations or industry. For example, we all now know that something is important if several people write about it on social media sites and not necessarily in the reliable newspaper.

The foundation of Engeström's Activity Theory framework that has helped to get a deeper perspective on reflections through contradictions, is based on Leontiev's framework. (Sannino 2009) The experiments of Leontiev, briefly mentioned earlier in this thesis, involved a detailed study of the evolution of biological species in the development of psyche. The contradictions and irritations in the environment that are used by the organism to reflect and react, are also present in every complex social level activity system of humans. In the experiment with the hen (figure 4.2) whose limited ability to catch stimuli caused it to react mainly to sound, similar situations are likely to exist around us but fail to cause reflections in our everyday life. Similarly, the new media tools such as an ideal knowledge platform or blogs might interfere with the stimuli

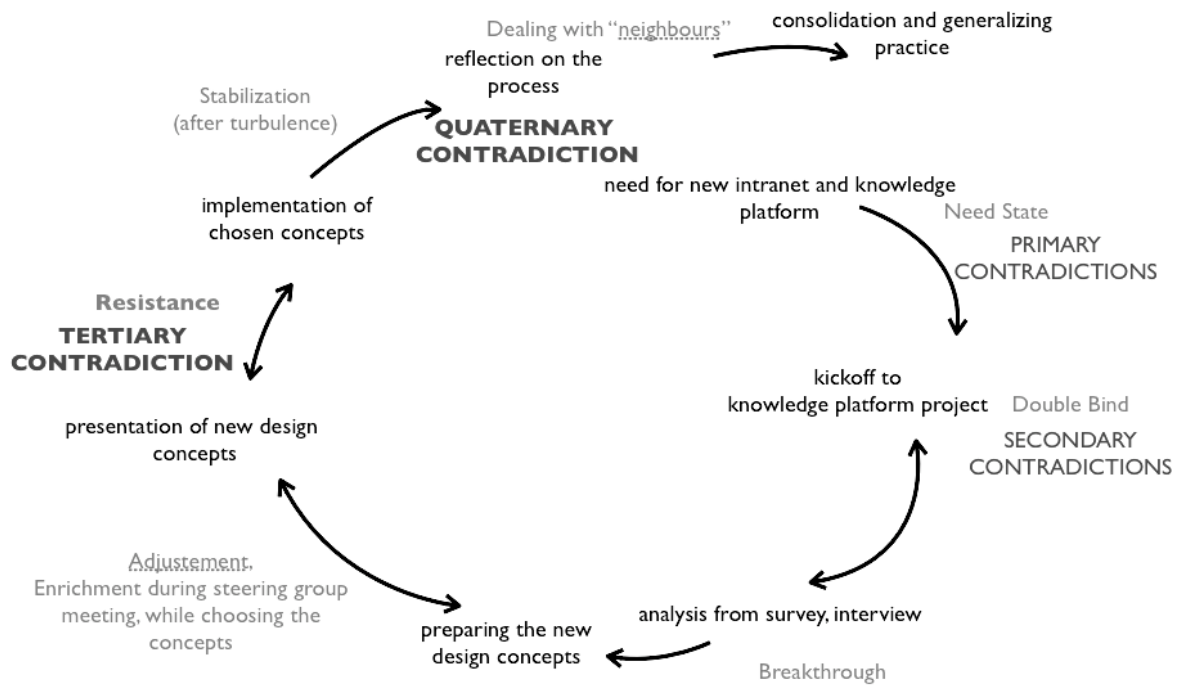


Fig 9.4: The four stages of contradiction in the case study project - at least four potential stages for reflection could be imagined.

from reality, and how reality is stored in the longer timescale.

Discussions in general about Organizations and remediations have been hardly encountered in the various material that I had been encountering. However, in quite far fetched area of work, such as Cyborg literature, there were found many alternative views.

*“(Cyborg) doesn’t just apply to our individual bodies, either. Corporations transcend particular countries and are now global, no longer really “centered” anywhere. As these larger “bodies” - of people, business, and government - are more closely tied to vast technologies, they too become cyborgs and we struggle to find ways to understand and predict how they are shifting. As with our individual bodies, so with these: the changes are both good and bad because the technologies are themselves ambivalent, capable of many contradictory uses.”<sup>105</sup>*

*“The meta-cyborg is the non-cyborg citizen in cyborg society; it is cyborg society itself. They are not cyborgs in the strict definition of the technical term, but in context and process they are most certainly cyborgs.”<sup>106</sup>*

Furthermore, Alexander Galloway (2004), in his book “How control exists after decentralization” makes the following quote

*“As the biological and life sciences become more and more integrated with computer and networking technology, the familiar line between the body and technology, between biologies and machines, begins to undergo a set of transformations.... protocol is isomorphic with biopolitics.”*

The contradictions that affect protocol were not discussed and this is something that Georg Ruckriem, points out as a shortcoming of Yrjö Engeström’s theory. He points out that by restricting discussions to activity systems within social systems, the theory itself is unable to reflect on the mediatedness of society as a whole by the new media.

The new contradictions it seems, might indeed be driven by a revolutionary transformation where the entire activity system might be a product of one media in terms of the other. And like Galloway claims it might be of a metacognitive nature. If we don’t start to reflect and intervene with design remediations at this stage, metacognition might so late that it will be the conflict of the new vs the old on a whole new level. Where the only difference will be that the old will be our human activity systems. And the new might be a runaway object<sup>107</sup> that is hiding in our midst.

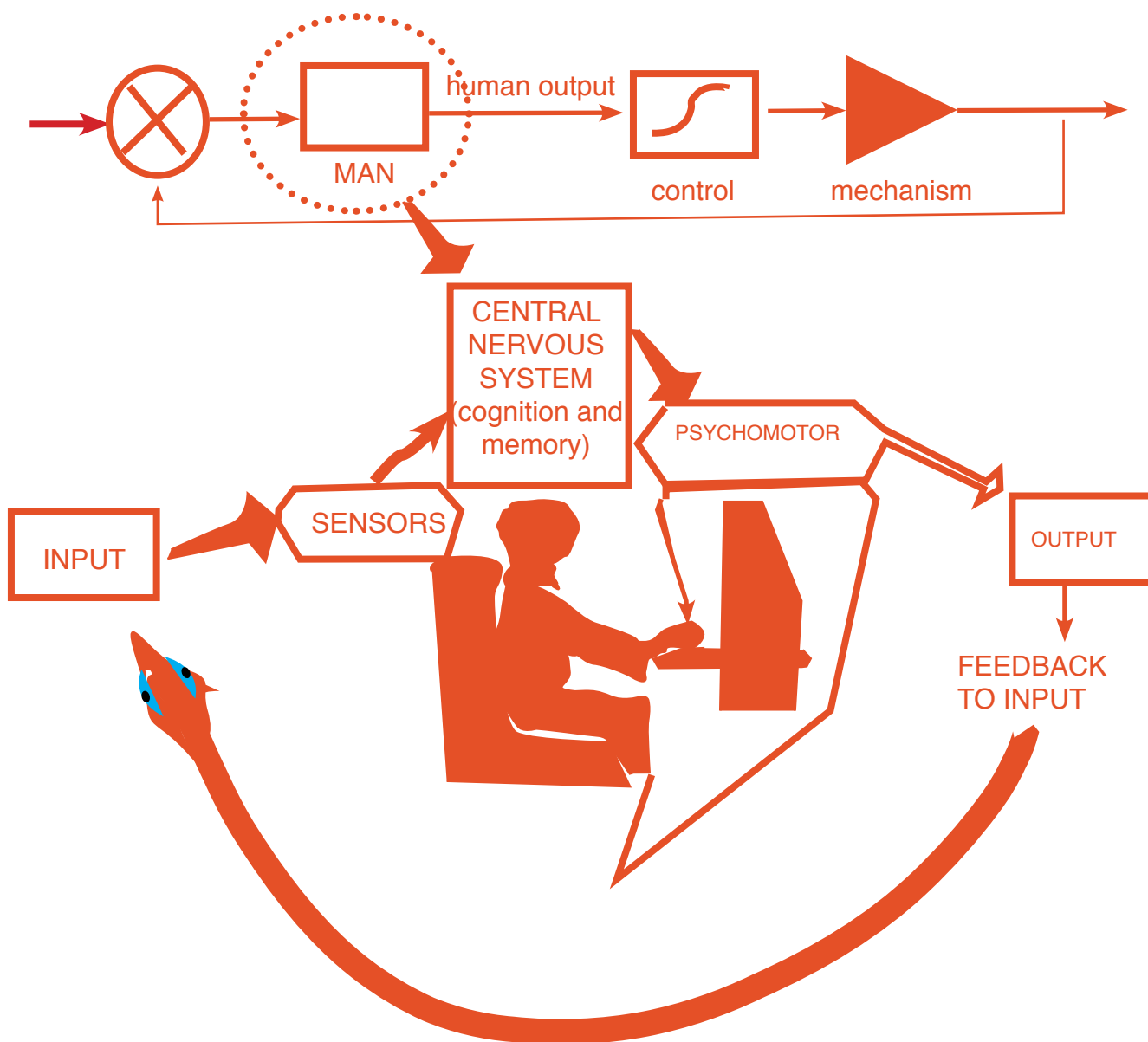
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105 Gray, Chris Hables. 1995

106 Ibid.

107 Engeström, Yrjö 2009 - Runaway objects are not in any person’s control and have potential to escalate and scale to the global level to far-reaching and unexpected effects, and is often nobody’s immediate problem e.g. - Global Warming





*Fig 9.5: The runaway object in the organization – modified from cybernetic diagram in Chris Gable Ray's Cyborg Handbook (1995)*



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