

**Value co-creation in practice: an activity theory
approach to service-based and networked
business relations**

By:

Paulo Sergio Altman Ferreira

**Newcastle University Business School
Newcastle University**

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Abstract

This study examines value co-creation in networked service-for-service business relations. Current literature considers value through the experiential and circumstantial properties that permeates co-creation. Contemporary research also indicates the integration of resources and value facilitation as key aspects for co-creating value. This work suggests that value co-creation is a continuously changing practice that expands within on-going knowing and learning movements.

The research collected the data of the study during the years of 2010-2012 in the city of Fortaleza – Brazil. Fieldwork concerned the implementation of IT systems in hospitals and clinics. The investigation comprised six case studies nested in two main cases. The first main case presents the perspective of the supplier side, while the second approaches a client organization. The methodology of the study, the case study ethnography, draws on cultural-historical activity theory and applies developmental work research in natural settings.

Value co-creation in networked service-for-service relations emerges as multifaceted systems of diverging interests. Resource integration relates to questioning daily practices and envisioning potentialities. Interactions evolve through fast and distributed encounters that co-configure resolutions. In the context of multiple and diverging interests and contradictions, co-creating value refers to managing change. Knowing and learning how to co-create value consist in practicing transformational movements of navigating and interacting within multiple locations and participants in order to resolve contradictions in and between activity systems.

The study identifies value co-creation as a dialectical system of practice. Contradictory elements hamper mutually benefiting relations at the same time that create possibilities for changes in the direction of co-creating value. The practice of value co-creation concerns questioning daily practices, knotworking value, and managing change. The central aspect of this practice concerns knowing and learning to accomplish these situated performances within the flow of daily market interactions.

To my beloved wife Larissa.

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Chapter 1. Introduction

1.1 The proposition of the Thesis

How do service-based networks co-create value? As service dominates today's market and value co-creation is the current promise for success, answering this question is relevant to practitioners as much as it is important to scholars. Service is at the core of every market interaction, and especially in business relations (Vargo and Lusch, 2008a). In turn, co-creation is the latest development for performing mutual benefiting market interactions (Prahalad and Ramaswamy, 2004). Mutually beneficial relations emerge as networked players endeavour to achieve the co-creation of value through service-based exchanges (Vargo, 2008). As value co-creation within service systems has taken centre stage in describing successful market interactions, scholars and practitioners demonstrate an increasing interest in developing and applying the nascent principles of this promising strand of management studies.

The broad range of new possibilities for market interactions based on value co-creation has given rise to the establishment of dedicated departments and functions, such as Senior Manager of Co-creation and Chief Co-creation Officer. Publications directed to a practitioner audience have indicated the need to focus attention on the key activity of knowledge sharing throughout a network of multiple partnerships (i.e. McKinsey Global Institute, 2012). Within this emerging new paradigm, managers will be increasingly required to attend to the intricate relations between knowledge, process and interactions.

In line with the practitioners' perspective, scholars have acknowledged the importance of developing a value co-creation theory that could cope with the fast pace of markets, as well as encompass the integration of multiple businesses into a unified service system (i.e. Chesbrough and Spohrer, 2006). Moreover, there is the need to advance understandings of value co-creating processes as integrated with technology and as encompassing a complex network of actors and roles (Vargo, Maglio and Akaka, 2008). A number of relevant studies has built on these initial signals and formulated preliminary proposals of a value co-creation theory (e.g. Chandler and Vargo, 2011; Gummesson and Mele, 2010; Ramaswamy and Gouillart, 2010). Nonetheless, as Ordanini and Pasini (2008) indicated, the disconnection of academy and practice remains. Whilst practitioners search for business models that could succeed in the market, scholars are only in the initial stages of abstracting a theory.

Previous studies have addressed the relevant aspects of value co-creation by focusing on managing networks (e.g. Nenonen and Storbacka, 2010; Cova and Salle, 2008), resource integration processes (Gummeson, 2006) and managing market interactions (Payne, Storbacka and Frow; 2008; Prahalad and Ramaswamy, 2004). However, the rapid changing features of the market and the complexity of effectively transforming multiple business interactions into an integrated system of services co-creating value remains grounded in traditional conceptual foundations that no longer cope with this velocity and intricacy. These traditional concepts involve static and linear notions of knowledge and learning (e.g. Paulin and Ferguson, 2010; Ramaswamy, 2008) which do not and cannot explain the changing patterns of multiple service-based interactions. Consequently, contemporary studies keep proving inadequate for elucidating the origins and character of transforming market interactions.

The absence of critical studies investigating the intricacies of changing market interactions, knowledge, learning and management for co-creating value is a significant lapse considering the importance of these aspects in value co-creation frameworks. In order for the notions of knowledge and learning as well as managing and changing market interaction to be integrated in a conceptual framework compatible with the dynamic context that surrounds service-based networks, it is necessary to develop a theoretical construction elaborating and emphasising the following aspects:

- 1- The changing processes in market interactions through approaching value co-creation as an organising activity.
- 2- The interventions for change in the direction of value co-creation through collective strategies of communication.
- 3- Transformation processes as intertwined with mutual influences and with diverse interests in networked activity.
- 4- Knowledge and learning as intertwined with distributed operations and activities for co-creating value.

Such theoretical construction draws on a particular strand of practice theory: activity theory (Vygotsky, 1978). Practice theory departs from the structural perspectives related to static notions of organisational environments (Geiger, 2009) and approaches transformations through collective action and distributed agency (Blackler and Regan, 2009). Activity theory views knowledge development as an integral part of interdependent interactions. Learning therefore intertwines with interactive work,

historical and contextual processes, and culture (Roth and Lee, 2007). A particularly relevant development within activity theory relates to Engeström's (1987) cultural-historical activity theory which arose from the expansion of analysis from individuals to communities. Cultural-historical activity theory recognises transformations and learning as emerging through inherent contradictions of organised activity (Blackler, 1993). In spite of the centrality of multiple interactions, change, and knowledge and learning in value co-creation theory, value co-creation studies have not applied the tenets of cultural-historical activity to advance these themes.

The present study specifically draws on cultural-historical activity theory in order to depart from linear and static views of changing market interactions and advance a novel perspective on value co-creation as a dynamic practice involving the intertwined transformation of contradictory social interactions and of the cultural-historical world producing and reproducing these complex relations.

1.2 Value, value co-creation and service-based networks

This study examines value co-creation in networked service-based business relations. This section introduces the key terms forming the theme of the thesis: value, value co-creation and service-based networks. *Value* is the central aspect of every market interaction (Lindgreen and Wynstra, 2005). Market interactions currently emerge as interwoven by *service-based networks* (Vargo and Lusch, 2004). Individual actors create and *co-create* value in networked interactions (Vargo, 2009). Thus, a network of market interactions simultaneously affects actors, the search for value and value co-creating activities.

Many of the traditional value definitions derived from propositions based on static notions. In this sense, studies have proposed value as an attribute (e.g. Brandt, 1988), as the result of customer interpretations (e.g. Matthing, Sandén, and Edvardsson, 2004) and as the economic potential of a customer (e.g. Bruhn, Georgi, and Hadwich, 2008). Often, these aspects are interrelated with other aspects of business success, such as loyalty and satisfaction (e.g. Lam, Shankar, and Erramilli, 2004). Now that customers are recognised as active participants in the configuration of products and services (Prahalad and Ramaswamy, 2004), many of the traditional understandings about value are confronted with novel propositions.

Contemporary studies have brought to the fore new considerations on value and on how suppliers and customers engage and perform in market interactions. In this novel

understanding of the features of the market, suppliers and customers undertake new roles and relations. Suppliers are value facilitators (Grönroos, 2008). This means that suppliers support value creation by the customers (Grönroos, 2011). In turn, customers experience value in their own terms (Ramaswamy, 2008; Prahalad and Ramaswamy, 2003). Facilitating and experiencing value takes place in the context of service systems (Jaakkola, Helkkula and Aarikka-Stenroos, 2015; Chandler and Vargo, 2011; Vargo, 2009; Vargo, Maglio, and Akaka, 2008) and resource integration (Vargo and Lusch, 2011). Service systems concern a network of players interconnecting people and technology through sharing information and methods (Maglio and Spohrer, 2008). In resource integration, these service-based relationships originate the co-production of value through mutual influence and reciprocal support (Grönroos, 2011; 2008; Vargo and Akaka, 2009). Thus, in service-based networks, experiential and circumstantial properties permeate the integration of resources for co-creating value.

The integration of technology in the workplace through service systems is also a political activity. Interactions concerning people and technology involve contradictory relations, rhetorical action and diverging interpretations (Hayes and Walsham, 2000a; 2000b). However, the value co-creation literature contrasts with these prior notions already well perceived by studies about the use of computer systems in the workplace. Contemporary studies approach these business interactions as collaborative endeavours (e.g. Aarikka-Stenroos and Jaakkola, 2012; Ordanini and Pasini, 2008). In business markets, customer organisations are particularly expected to perform an active role. Existent collaborative competencies on the customer side determine process improvement and resource integration possibilities (Lusch, Vargo, and O'Brien, 2007). Moreover, suppliers need access to the knowledge base of the customer organisations (Norman and Ramirez, 1999). The business relationship requires transparency (Prahalad and Ramaswamy, 2004). Deficient sharing of information and reduced participation of the customer hamper service quality (Ordanini and Pasini, 2008). In sum, service-based and networked business relations require the management of complex and changing interactions and defy theory to abstract value co-creation in a model that would disclose its challenging political nature.

There is the need to explore the web of interests in these multiple interactions. Value co-creation theory tends to give little attention to the problem of enabling mutually beneficial interactions within a network of diverging standpoints. Thus far, the main focus of studies of interacting for co-creating value is on mutual collaboration and

support for integrating resources, whilst explanations of how to achieve co-operation within a host of divergent perspectives has been underexplored. Moreover, despite advancing a view of value as contextual and experiential and offering a fresh perspective on suppliers as value facilitators supporting resource integration, the theoretical position assuming fixed roles and contextualised experiences of value does not explain the dynamic processes that are capable of originating value co-creating interactions. This means that value co-creation theory requires further considerations of changing roles and value transformations in market relations.

In the co-creation perspective, value stems from networks and business relations. The main principle of this view is that all players interact in networks of value creating services (Vargo and Lusch, 2011). Multiple interactions provide mutual benefits through resource integration (Gummesson and Mele, 2010). This means that interactions in value co-creating business networks essentially concern the mutual improvement of processes through mutual service provision (Vargo, 2009). The number of interactions and the character of relations grounds the complexity and fluidity of co-creating value (Lusch, Vargo, and M. O'Brien, 2007). Thus, to manage these service-based interactions is to intervene in the configuration of the market and to co-ordinate the integration of processes in complex and changing contexts.

The approach of studies of value co-creation to management issues is fragmented and multi-faceted. Communication and the alignment of interests are acknowledged as important managerial performances for enabling co-creation (Prahalad and Ramaswamy, 2004). In turn, the focus on resource integration draws managerial attention to the need for the establishment of patterns of networking behaviour (Gummesson, 2006). Finally, a strand of thought emphasising mechanisms of co-ordination and control approaches value co-creation management through determining activities and metrics of outcomes (Payne et al. 2008).

Thus, managing value co-creation requires three main further advancements. Firstly, there is the need for an integrated framework of management as a value co-creation endeavour. Secondly, the perspective of value co-creation as change management within networks, whilst essential to the study of service-based market interactions, has thus far been largely overlooked in value co-creation theory. Thirdly, little attention has been given to the role of managing value co-creation in relation to possibilities of

articulating the diversity of networked interests with the participation of actors for knowledge development and learning.

The key propositions of the service-based view of the market relate to fundamental exchanges based on services wherein “the customer is always a co-creator” (Vargo and Lusch, 2008b, p. 7). Service relates to processes and benefits (Lusch, Vargo, and O’Brien, 2007). Mutual exchanges of services are the fundamental economic processes from which products evolve (Vargo and Lusch, 2004). The central elements for evolving services refers to knowledge and skills underpinning market exchanges (Vargo and Lusch, 2004). Services occur in networks of people, technology and information. Service systems refer to the arrangement of these resources, especially knowledge resources, in order to create mutual benefits (Vargo, Maglio and Akaka, 2008). Value co-creation emerges from this context of networked service-based markets. Value co-creation concerns mutually beneficial service-to-service exchanges wherein multiple players “market with” each other (Vargo and Lusch, 2006). Therefore, as Maglio and Spohrer (2008) indicate, a fundamental understanding of business relations in value co-creation concerns the individual, organisational and technological characters of service-based interactions, i.e. service systems.

Knowledge and learning are central themes in studies of service-based networks of value co-creation. Current propositions of value co-creation models regard knowledge as underpinning suppliers’ skills to engage customers in value co-creating interactions (e.g. Ramaswamy, 2008). Knowledge in value co-creation studies also refers to the ability of integrating resources through enhancing processes (e.g. Gummesson and Mele, 2010). In turn, learning relates to enhancing organisational capacities for interacting in networked service systems and applying resources (Paulin and Ferguson, 2010; Ramaswamy, 2008). Consequently, knowledge and learning in value co-creation theory are the skills and capacities for supporting and assimilating the integration of resources through services (Grönroos, 2011; 2008; Vargo and Lusch, 2011; 2008; 2004). The problematic understandings of knowledge and learning in value co-creation theory is a consequence of previous oversights in studies of dynamic changes and management. As extant theory defines value in terms of static and linear processes of co-creation, management relates to static functions of communication, co-ordination and control. Hence, value co-creation theory neglects knowledge and learning as relevant aspects of dynamic developments of mutual capacities for transforming market interactions into value co-creating service systems.

1.3 Aims and objectives

The main objective of this study is to *develop a comprehensive advancing of the nature of value co-creation in service-based business networks*. This aim relates to unveiling the key features and aspects underpinning value co-creating practices and their reciprocal relations. In this sense, the search is for disclosing a framework that could cope with the complex and changing traits of value co-creation. Other than the seminal propositions for fundamental tenets of a value co-creation theory (e.g. Vargo, 2009; Vargo, Maglio, and Akaka, 2008; Vargo and Lusch, 2004) and initial models focusing on network patterns (e.g. Gummesson and Mele, 2010) or dyadic relations of managing encounter processes (e.g. Payne, Storbacka, and Frow, 2008) and engagement (e.g. Ramaswamy and Gouillart, 2010; Prahalad and Ramaswamy, 2004), an integrated management framework encompassing the networked features and the dyadic relations for co-creating value is inexistent. Three major objectives support the achievement of the central aim of advancing a model of service-based business networks for co-creating value:

Objective 1: To determine and examine the key aspects of value in value co-creation

In this research, I will examine the character of value in three topical areas: (1) what players do when they initiate value co-creation; and (2) how players search for value co-creation. There is a need for examining the character and conceptualisation of value as an alternative to the existent contextual and experiential definitions, which do not enable the construction of a dynamic view of value as intertwined with the evolving interactions of co-creation.

The second topic of examination, i.e. *how players initiate value co-creation*, relates to investigating the process underpinning value. In this sense, focus will be directed to the fundamental activity for allowing the co-creation of value. This investigation of primary activities will contribute to identifying the origins of changing behaviours in market interactions. Identifying and observing the background of transformations is important for revealing the initial difficulties in resource integration and understanding how actors recognise potentialities of value co-creation.

The third area of examination, i.e. *how players search for value co-creation*, pertains to the analysis of actors' roles. This scrutiny concerns investigation of the nature of value co-creating market interactions. This objective will comprise examination of how multiple service-based market relationships evolve. The main contribution of seeing

evolving interactions concerns the possibility of departing from the current understandings of fixed suppliers' and customers' roles. The investigation of actors' roles will explore the negotiated participation of multiple actors underpinned by the diversity of value standpoints. Constructing this view of shifting roles is necessary in order to capture the flow of transformations and develop an approach to value co-creation as a change management activity.

Objective 2: To identify and explain the relevant aspects of management in value co-creation

There is a need to a clearer picture of managing value co-creation in service-based business networks. Little is known about relevant practices, which could explain managerial action enabling value co-creation. This study will investigate management activities in the context of multiple fluid interactions of diverse actors, processes and perspectives and uncertain outcomes. The objective of explaining management in the context of value co-creation involves considering the management of networks and the character of engagement in negotiations. Moreover, it is important to identify the relevant aspects of managing change for allowing value co-creation in market interactions. The study of the changing features of multiple and divergent interactions offers possibilities for making a significant contribution to current views of management in value co-creation studies. This further understanding potentially sheds light on the practices of articulation of divergent perspectives and the search for resolutions in distributed activity thus far underexplored by value co-creation theory.

Objective 3: To ascertain the relevant features of knowledge and explain the learning path for co-creating value

This objective refers to the intention of verifying and scrutinising the aspects of knowledge and learning for co-creating value. Consequently, the focus of attention will be on the investigation and analysis of knowledge features supporting transformations in the direction of value co-creation. This knowledge concerns how players interact and produce value within the market. In turn, explaining learning relates to the investigation of mutual transformations for enabling value co-creation. There is a lack of consideration of the interaction between knowledge, learning and practice in value co-creation theory. A scrutiny of knowledge and learning in value co-creation in terms of multiple interests at stake, distributed operations and activity, and the creation of potentialities for change has not been undertaken before. The fundamental importance of such an approach is to identify the significant transformations leading to value co-

creating interactions and to explain the learning movements of these relevant changes. The relevance of interconnecting knowledge and learning relates to the search for determining the fundamental features of transforming patterns of behaviour in value co-creating service-for-service networks.

In sum, the achievement of these three specific objectives will support the general aim of developing understanding of value co-creation. These three supporting objectives will interconnect to construct an original framework incorporating: (a) the origin of changing movements for co-creating value; (b) the evolving roles and processes that underpin value co-creating interactions; (c) the managerial facet of the value co-creation endeavour; and (d) the necessary transformation of knowledge and learning features in the direction of value co-creation.

1.4 Theoretical Lens: cultural-historical activity theory

The literature on value co-creation explores actors' roles, patterns of interactions, management issues and knowledge development as fixed and stable entities. There has been little discussion on changing practices, fluid market interactions and management discontinuities. Hence, it is opportune to propose a theoretical perspective for advancing the study of the rearrangement of organised activity, of collective and distributed activity and change within networked interactions. Cultural-historical activity (Engeström, 1987, 1999a; 2010) enables a fresh view on value co-creation since its fundamental tenets concern the transformative nature of organising activity and the inherent potential for changing interactions.

Cultural- historical activity theory has been a significantly influencing theory in the last two decades of management studies. Relevant explanations of organisational learning and management (e.g. Blackler and Regan, 2009; Blackler, Crump, and McDonald, 2000; Blackler, 1993) and empirical studies on networked interactions (e.g. Macpherson and Jones, 2008; Rose-Andersen and Allen, 2008; Miettinen, 2006a; Blackler, Crump, and McDonald, 1999) relied on cultural- historical activity theory for drawing their fundamental propositions. In particular, the concept of activity systems has grounded significant studies related to change and materiality (Nicolini, Mengis, and Swan, 2012; Dale, 2005; Miettinen and Virkkunen, 2005; Sturdy and Grey, 2003).

This study will apply the lens of cultural- historical activity theory for examining and explaining underexplored issues of value co-creation literature. These issues, as has been mentioned above and will be discussed at length the literature review in Chapters 2

and 3, mainly relate to managing change in networks as embedding multiple diverging interests, and to knowledge and learning. The networked and service-based view of contemporary studies in value co-creation has contributed to bringing novel insights to the fore. In fact, the most important of these, i.e. the engagement of a variety of players in the co-production of services and in the course of value co-creation (i.e. Grönroos, 2011b; Cova and Salle, 2008; Vargo and Lusch, 2008a), has already been highlighted in this introductory chapter. Notwithstanding other significant contributions related to the perspectives of mutual process transformations and the exchange of knowledge resources (e.g. Gummesson and Mele, 2010; Prahalad and Ramaswamy, 2004), value co-creation theory could benefit from cultural- historical activity theory in many ways.

It is argued that the concepts of activity, activity system and learning by expanding (Engeström, 2001; 2000a; 1987) offer a framework for analysing networked and service-based market interactions. This analysis relates to the collective construction of motives, meanings, tools and concepts, which integrate and support value co-creation practice. Redefining value co-creation practices through an appreciation of knowledge and learning could, furthermore, provide a way out of current static, cognitive and vertical notions of learning in value co-creation literature. Consequently, a more vivid depiction of fluid interactions, change of practices through networks and situated market discontinuities could be achievable.

1.5 Methodological approach and research settings

The methodological approach follows the guideline of observing participants' search for value. Following the objectives indicated previously, this work presents a research design aimed at understanding value co-creation within simultaneous interactive transformations, managerial action and learning. The conceptual elaboration of expansive learning, i.e. a process initiated through tensions and incoherencies that are inherent to all activity and can lead to significant change (Engeström, 1987), grounds the methodology of this study. Yrjö Engeström developed the general approach of research associated with the concept of expansive learning: Developmental Work Research (i.e. Engeström, 2005). In Developmental Work Research, learning occurs as distributed in situated work groups. This methodology is currently used for studying everyday activities and transforming work (e.g. Prenkert, 2006; Blackler and Kennedy, 2004).

Consistent with the tenets of Developmental Work Research, ontological and epistemological instances will be used (see Chapter 5 – Methodology) in order to unveil

the inner contradictions under the surface of daily problems, disturbances or discreet innovations occurring in organisational work and market interactions. The main concern is to facilitate the expansion of understandings related to these troubles of routine work and relations so as to create possibilities for changing and learning. Overall, Developmental Work Research represents “a radical reconceptualization of the possible role of workplace research in facilitating practical change” (Engeström, 2000a, p. 151).

This fresh methodological conduit enables an alternative way for researching management in value co-creation as:

- 1- Evolving practices in the context of situated interactive daily activities (Blackler and Regan, 2009), where these activities are understood as the interplay of being formed by socio-cultural elements whilst transforming them (Roth and Lee, 2007; Stetsenko and Arievitch, 2004);
- 2- Emerging knowledge and changing capacity focused on the potentialities for continuing longitudinal transformations (Engeström, 2000b);
- 3- Organisational activities towards the co-configuring of new tools (Engeström, 2004) and concepts affording the development of new capacities (Miettinen, Lehenkari, and Tuunainen, 2008).
- 4- Changing practices and learning within multiple relations disclosing the dynamic process of negotiation based on different interests and positions (Toiviainen, 2007).

Combined, these four fresh research outlooks can explain and anticipate the potentialities of value co-creating practices and address the four propositions stated in Section 1.1.

The research will follow, largely, a research strategy and approach bridging ethnography with case study. This approach can allow “thicker descriptions of organizational reality and richer representations of companies’ lived experience” (Visconti, 2010, p. 25). The case study is suitable for providing descriptions, explorations and explanations of the studied phenomena (Yin, 2010). The ethnographic approach is appropriate for collecting, interpreting and reporting findings through researcher’s immersion and participation and by means of shared interpretation of data (Denzin, 1997). These combined features resonate well with the aim and objectives of the present research. These aspects of ethnographic case study will provide the basis for selecting empirical cases in business contexts and market interactions. The ethnographic

case study will also enable depiction, scrutiny and explanation of on-going transformations in value co-creating practices. Furthermore, the ethnographic approach to case study allows explanation of how participants interpret these practices and translate them in generating value co-creation knowledge.

The remainder of this part is a description of the research settings of the case studies.

1.5.1 The organisations in the study

The selection of case studies aims to expand understandings of a specified phenomenon (Stake, 1994). The cases selected should be relevant to the research problem and consistent with the theoretical framework used (Ghauri, 2004). This work will investigate the daily activities and interactions amongst IT professionals and hospital personnel in two case studies. These interactions will concern the implementation and use of information technology services in hospitals. The case studies were based in the city of Fortaleza (fifth largest city of Brazil and capital of Ceara State) and involved two main organisations: Tener (IT company) and HGF (General Hospital of Fortaleza). Each case explores the multiple interactions for implementing and solving problems related to technological appliances (software and hardware). The research included the network of stakeholders related to Tener and HGF. In the course of the fieldwork, network relations surfaced as the resolution of difficulties encompassed other participants.

The selected organisations enable a view of complex market interactions. Moreover, these organisations stress the role of knowledge generation as they are based on complex service-for-service provision. Service-based businesses (i.e. Vargo and Lusch, 2008a) require problem solving, knowledge sharing and learning within multiple inter-organisational relations (Gumesson and Mele, 2010; Vargo, Lusch and Malter, 2006).

a. Developmental history of Tener

Tener is an IT solution provider mainly performing in the segment of Enterprise Resource Planning (ERP) solutions for hospitals, medical clinics and restaurants. More recently, its portfolio extended to projects and maintenance of computational hardware and network. The company has 40 employees. Three of the four partners work as Tener's executives. Its annual revenue is around R\$ 1.5 million (570,000 GBP¹). Two thirds of that amount comes from the portfolio of products and services related to the medical area.

¹ Source: Brazilian Central Bank currency converter website - <http://www4.bcb.gov.br/pec/conversao/conversao.asp> - date of consult: 06/09/2011

The origin of the company goes back to the merger of three companies: Escopo, Sologica and Dart. The first merger occurred in the year of 2002 when Sologica and Escopo merged and created Tergus. Escopo was an IT consultancy company that had in its portfolio the trading rights of an ERP solution for restaurants named Colibri. Sologica, by that time, had a diversity of computational software appliances but was already focusing on ERP development for the medical sector. Five years later Tergus and Dart merged to form Tener. Dart had a portfolio of products and services encompassing project and maintenance of computational hardware and network appliances. It also had finished the development of ERP systems for factories and for logistics service companies. The two latter products were discontinued. As a result, the remaining products in Tener's portfolio are the Naja series for hospitals and clinics (Naja Medical, Naja Doctor and Naja RIS) and Colibri for restaurants. Services related to connectivity, and support and maintenance of computational devices complement the company's portfolio.

The first merger, Escopo with Sologica, was strongly motivated by cost reduction. The current perception from one of the partners is that the objective of the first merger was fully achieved while the second merger, Tergus with Dart, caused some frustration. This disappointing result is now understood to be a consequence of setting the target on market growth without paying attention to the possible synergies in operations efficiency. Having no focus on cost reduction, the partners did not seek the combined effect of cost efficiency and maintained the staff of both companies. The merger that originated Tener represented a strategy for growth and reputation on the market. The main goal was related to increase the capacity for expansion.

Many investments done in the first two years of Tener's existence did not bring the expected returns. Consequently, the company had to be restructured, downsized, and one of the partners left his role as an executive. The others had to reduce their earnings. The office was also physically reduced. In the worst moment, the profit margin was evaluated at -20%. Nowadays it is stabilised at 15% to 20%. In addition, a new managerial structure was meant to give more agility to the daily decisions. One of the partners was elected general director. As executives, the other two executive partners are subordinated to the partner that is currently the general director. However, in the partners' meeting, the general director reports to the board of partners.

As the growth strategy did not work, the focus is currently on the Naja Series, more specifically on Naja RIS. Naja RIS is an ERP solution exclusive to image diagnosis clinics. The partners understand that this market is growing fast. They also believe that Tener has the most complete product. The product for image diagnosis clinics is less complex than that for hospitals. The partners feel that they are getting close to be the best product of the market and that with Naja RIS they can compete nationally. All the best-known clinics of diagnosis by image in the region are using the Naja RIS. Nonetheless, in the most representative region of the country in economic terms (Southeast and South), it is practically unknown.

Competition is seen as segmented for each product of the Naja Series. The partners evaluate that every software development company in the medical sector offers one of the products, for hospitals, general clinics or image clinics, and Tener needs to focus on one product as well. Also in relation to competitors' moves, Tener is facing the acquisition of competitors by larger players in the medical segment. A global corporation producing imaging equipment for diagnosis bought one of the competitors in the computational appliances segment. In the ERP for hospitals segment, a competitor lowered its price to a level that was sufficient to take two clients away from Tener. A few months later, this competitor was acquired by another bigger competitor. Tener is facing the challenge of fierce competition in a market that is starting to be dominated by bigger enterprises. Moreover, clients are being pressured by leading private healthcare plans for the reduction of costs in IT services. Tener's partners feel that the market relations need to have their full attention as a way of surviving and growing in this context.

b. Developmental History of HGF

Fortaleza General Hospital (*HGF-Hospital Geral de Fortaleza*) is the largest hospital of Ceara State. HGF has the status of a "reference hospital in high complexity procedures" in the Brazilian national system of healthcare. The hospital currently carries out 1,150 surgeries, 16,000 clinical consults and more than 100,000 laboratorial exams every month. The work force is more than 3,000 people. Nowadays, the hospital performs 63 medical specialties and many other healthcare services such as psychology and physiotherapy.

Alongside being the largest hospital of the Ceara State it is also one of the leading national centres for research and teaching in medical science. HGF offers 24 areas for post-graduate studies. In the year of 2009 the National Network for Clinical Research

instituted the hospital as a member. In February of 2012 HGF advertised on its website that the publication of the American Heart Association “Stroke” has stated in the editorial the following remarks related to an article written by HGF scholars: “this piece of work has the potential to influence the developers of policies impacting on the lives of patients not only in the city of Fortaleza, but also globally.”

Fortaleza General Hospital was founded in 1969. The federal health care system managed HGF until the year 1990 when it was handed over to the administration of the State Secretary of Healthcare. Within this shift, HGF becomes a member of a new organization of the Ministry of Healthcare at the federal level named Unified Healthcare System (SUS- *Sistema Unico de Saude*). The management of the hospital is the responsibility of Ceara State government.

These two decades of Ceara State control were followed by many structural and managerial improvements. The General Hospital of Fortaleza was one of the first public hospitals in Brazil to use real time monitoring of the intensive treatment unit through the internet. The new Stroke Unit is the largest unit in the country and reduced the death rate caused by the disease in the city of Fortaleza by 30%. The implementation of a GPS navigation system allows the hospital to provide prosthesis surgeries using one of the most effective techniques in the area of orthopaedics.

The managerial developments include the creation of a unit for quality management, the development of the managerial basic plan and the hospital’s strategic plan, the implementation of the system for calculation of hospital costs and the operation of an ombudsman service. Systematic poll research verifies the level of satisfaction of collaborators and users. Moreover, there was the standardisation of the procedures and routines, implementation of programmes for capacitation and continued education and the creation of a Sector for Permanent Education.

All the structural enhancements and managerial developments are, frequently, not sufficient to meet the increasing demand for the hospital’s services. In fact, for being a reference hospital, where the most specialized physicians of the region are working, it pays the price of having a great proportion of the population requesting its services, even when HGF is not the appropriate hospital. A situation was witnessed during fieldwork where a patient arrived at the emergency unit of the hospital presenting an injury from a motorcycle crash. She insisted on treatment there although she knew that her case should be treated in another hospital. The managerial improvements have

indeed increased the capacity of production and assistance, yet, the demand is constantly pushing the limits of the hospital.

The laboratory was a case where the resources applied and the managerial progresses increased the capacity of production and, yet, the demand was pushing the limits of delivery of the sector. After a complete restructuring of the laboratory, the second increase of capacity was achieved through resolving bottlenecks by using a variety of mechanisms throughout the network of partners, tools and machines. This case is explored in the Findings chapter of the thesis.

1.6 The structure of the dissertation

The title of the thesis – Value co-creation in practice: an activity theory approach to service-based and networked business relations – points to the emphasis of the thesis on the practice of value co-creation within multiple service-for-service market interactions. The structure of the thesis includes nine chapters. This introductory chapter provides the proposal of the study, its grounding motivation, the aims and objectives, the theoretical lens and methodological approach including the research settings. Introduction (Chapter 1) outlines the contributions and key themes of the thesis, i.e. value, value co-creation and service-based networks.

Chapters 2 and 3 provide a literature review of value co-creation and establish the research agenda. Chapter 2 develops an analytical framework of value through elaborating three layers of exploration in terms of conceptual, procedural and role dimensions of value. Chapter 2 contrasts the traditional and emergent views of value through exploring the value creation paradigm as against the co-creation propositions. This comparison along the dimensions of value indicates the need for improving a dynamic perspective of value within the changing flow of market interactions. The main contribution of Chapter 2 lies in demonstrating that current views of the concept, procedures and interactional roles of value co-creation underexplore the key aspects of managing knowledge and learning within the flow of diverse, and possibly conflicting, interactions.

Chapter 3 further examines value co-creation from the managerial perspective and provides a scrutiny of value co-creation theory within the aspects of networking, change and knowledge and learning. Chapter 3 contributes in confirming that value co-creation theory requires further developments referring to knowledge development, change and managing networks within a diversity of value standpoints. Examining the value co-

creation models of managing networks, managing change, and knowledge and learning Chapter 3 points out that these models propose activities for co-creating value without exploring the nature of the necessary transformations. Moreover, there is a fragmentation of focus – either on networks or dyads – which neglects the need for an integrated perspective on managing value co-creation. Ultimately, existing studies do not examine how different interests affect managerial practice within value co-creation.

Chapter 4 proposes a theoretical perspective, i.e. cultural-historical activity theory, to address the research agenda proposed in Chapters 2 and 3. Equally importantly, Chapter 4 develops a conceptual framework for advancing value co-creation theory in relation to a dynamic and integral view of: (a) the procedures for co-creating value; (b) the roles of players in value co-creation, (c) the management for co-creating value; and (d) of the knowledge and learning for developing market interactions and organised activity in the direction of value co-creation. Chapter 4 concludes by indicating the research questions, which are derived from the literature review of Chapters 2 and 3 and the conceptual framework of Chapter 4. The set of research questions is as follows:

1. How do internal contradictions and learning possibilities relate to the integration of resources for value co-creation?
2. How do interactions evolve amongst multiple players with divergent perspectives on value? What is the nature of these interactions?
3. How can value co-creation management allow transformation in the direction of the zone of proximal development?
4. How does value co-creation knowledge and learning evolve within market interactions?

Chapter 5 presents the research methodology. Chapter 5 moves the discussion to the ontological and epistemological foundations of developmental work research. The ontology of the dialectical materialism of practice underpins a view of the interactive-dynamic relations between subjective, inter-subjective and socio-cultural levels of value in the context of co-creation. Chapter 5 also explains the combination of the ethnographic approach with the case study strategy as a means for developing an understanding of practices situated within cultural and social structures in way that captures the production and reproduction of market interactions. The main contribution of this research design relates to enabling the capturing the transformations in

managerial practices and market interactions in service-for-service networks of value co-creation.

Chapters 6 and 7 relate to the fieldwork and findings. Chapter 6 captures the process of value co-creation as facing internal difficulties stemming from personal, departmental and organisational interests in contradictory relations. However, these contradictions are also a source for reflection upon potentialities and developments in the direction of co-creating value. In relation to the roles and interactions for co-creating value, Chapter 6 observes the movements of players in wider interconnections throughout the network of the service system. These movements characterise fast and improvised encounters and search for resolving disturbances. Chapter 6 also observes that actors orchestrate interactions, anticipate difficulties, and engage in alliances, rhetorical actions and politics in the pursuit of personal or organisational value standpoints. As Chapter 6 indicates, the managerial aspect of co-creating value relates to co-ordinating diverse perspectives through communication within dyadic and networked perspectives.

Chapter 7 is dedicated to the examination of the data from fieldwork reported in Chapter 6 with a view to analysing the nature of knowledge and learning within value co-creation. Chapter 7 observes knowledge and learning within the practice of communicating a collective idea of value and interacting in multiple sites.

Finally, Chapter 8 elaborates the discussion and conclusions of the thesis. The discussion considers the significance of the literature review in Chapters 2 and 3, of the conceptual framework of Chapter 4 and of the philosophical stance of Chapter 5 in comparison with the fieldwork and findings reported in Chapters 6 and 7. This analysis results in the proposition of value co-creation as a dialectical system of practice wherein actors search for resolving contradictions obstructing the configuration of mutually beneficial market interactions. The contributions of the thesis are identified in relation to the specific advancements derived from this proposition. Finally, a reflection upon research objectives explains how the study achieves its purpose.

Chapter 2. Value Dimensions

The conceptual, procedural and interactional constituents of value creation and co-creation

2.1. Introduction

Traditional research has been approaching value in the terms and context of value creation (Möller and Törrönen, 2003; Bowman and Ambrosini, 2000; Moran and Ghoshal, 1996). A more recent approach has advanced the view of value to a novel standpoint wherein value relates to a process of co-creation (i.e. Grönroos and Voima, 2013; Ind and Coates, 2013; Leroy, Cova and Salle, 2013; Saarijärvi, Kannan and Kuusela, 2013). The focus of discussion in this section is on the more recent of the two perspectives, i.e. value co-creation as a process of integrating resources through a network of organisations (Vargo and Lusch, 2004; 2008a) where value is co-produced by multiple participants (Prahalad and Ramaswamy, 2004; Ramirez, 1999; Norman and Ramirez, 1993). In contrast, the tradition of value creation theory has focused on the exchanges in the marketplace in terms of output units within which value is created by a single actor: the supplier (Chandler and Vargo, 2011). This study approaches value co-creation as a new form of competition wherein the boundaries between suppliers and customers are removed in order to enable the determination of value as the result of multiple interactions (i.e. Zuboff, 2010).

The central objective of this section is to outline a structure for thinking about contrasting understandings of value creation and co-creation by comparing them along three key dimensions: conceptual, procedural and interactional. The purpose of this analytical comparison is to highlight the key dimensions of value creation theory, indicate overlaps and differences between the two perspectives in relation to these dimensions, and provide suggestions about possibilities for integrating the two perspectives. Studies on value co-creation have proceeded without establishing firm links across prior value creation perspectives. For example, recent studies on value co-creation do not connect to a turbulent and changing view of the market already well perceived and constructed in the traditional value creation perspective. Table 1 identifies the three dimensions of value creation and co-creation as seen within the respective literatures.

The following section starts with the conceptual dimension. It explores the basic conceptual elements of value creation and co-creation. Next, the discussion refers to the

procedural dimension associated with resource combination and resource exchange and integration. The final section explores the role of suppliers and customers within the contrasting perspectives of value creation and co-creation.

Dimension	Standpoint	
	<i>Value creation</i>	<i>Value co-creation</i>
1. Conceptual	Exchange value and use value	Value-in-context
2. Procedural	Resource combination and exchange	Resource integration
3. Interactional		
3.1. Roles related to suppliers	Value propositions to customers Value delivery	Value propositions to stakeholders Value facilitation
3.2. Roles related to customers	Perceiving value	Experiencing value

Table 1 Dimensions of value

2.2. The Conceptual Dimension

This section identifies three main concepts that are particularly relevant for exploring and contrasting value creation and value co-creation: exchange value, use value and value-in-context. In the context of business relations, exchange value describes the monetary amount that is associated with the payment for the improvement of customer processes (Bowman and Ambrosini, 2010). Use value refers to the customer's evaluations of the creation of value (Sandström et al., 2008). Exchange value and use value concern the conceptual dimension of value creation. Value-in-context is a concept referring to the networked, temporal and contextual nature of value as it is based on service provision. This concept of value is fundamental to the conceptual dimension of the value co-creation perspective.

2.2.1. Exchange Value and Use Value

Exchange value constitutes the transactional character of value wherein a supplier transfers products and services to customers. Exchange value is the monetary amount paid by the customer to the supplier for tasks, products or services delivered (Lepak et al., 2007). The concept of exchange value assumes the centrality of the value creation perspective based on the transaction features of the market (Lindgreen and Wynstra,

2005; Lapierre, 1997). The underlying premise is that value is created through market transactions wherein exchange is the core activity shaping the marketplace.

In the business relations view of value creation, *exchange value* relies on market processes within which competitors strive to deliver superior value. In this sense, superior value concerns delivering higher benefits or lower costs (Hu and Tsai, 2007). As the market is predominantly seen as an exchange environment, competitors' practices are grounded in comparisons and perceptions of exchange value from customers' perspectives. As competitors strive to provide superior value in business market transactions, knowledge is seen as the core element of constructing this competitive advantage. Thus, exchange value is key for value creating processes.

In the value creation domain, the concept of *use value* refers to the effectiveness of goods and services in satisfying consumer needs and wants. More specifically, use value refers to value creation capabilities in terms of the properties of products and services, which enable customers to conduct specific activity (Holcomb, Holmes Jr., and Connelly, 2009). The evaluation of these properties and qualities relies on customers' perceptions (Bowman and Ambrosini, 2000). As Lepak, Smith and Taylor (2007) summarise:

“[...] use value refers to the specific quality of a new job, task, product, or service as perceived by users in relation to their needs, such as the speed or quality of performance on a new task or the aesthetics or performance features of a new product or service.” (p. 181)

Use value, therefore, results from customers' subjective interpretations and judgments on the provision of products and services by suppliers (Bowman and Ambrosini, 2010).

In sum, the conceptual dimension of the process of value creation concerns exchange value and use value. In the exchange value perspective, value creation implies the provision of higher benefits and/or lower costs. Value exchange is a perspective from the supplier standpoint (supplier-centric view). In turn, the use value concept highlights customers' evaluations in terms of appropriateness of services and capacity for improvements (Lepak et al., 2007). Use value refers to the customer standpoint of value (customer-centric view). The next section advances a view on market interactions as service-based relationships. The service-based view originates a different conceptualization of value as *value-in-context*. More importantly, it brings to the fore a novel type of market interactions where value is co-created.

2.2.2. Value-in-context

Value-in-context is the key premise behind the value co-creation perspective. The concept of value-in-context advances the proposition of value as created by the customer within the process of service use (Vargo and Lusch, 2004). This notion forms a fundamental contrast to previous ideas on value. Traditionally, market interactions concern value as embedded in products (Gummesson and Mele, 2010; Ballantyne and Varey, 2008; Grönroos, 2008; Lusch and Vargo, 2006). By contrast, the value-in-context concept, as proposed by value co-creation studies refers to market activities in networked interactions as originating and determining value through service systems (e.g. Vargo, 2009; Vargo, Maglio, and Akaka, 2008).

The view of value as formed within a network of service systems places the conceptual dimension of value-in-context within the service-dominant logic (Vargo and Lusch, 2004; 2008). Value-in-context is thus grounded in two of the ten premises regarding the foundation of the service-dominant logic (i.e. Vargo and Lusch, 2008). The foundational premise number nine indicates that “all economic and social actors are resource integrators” within the context of “networks of networks” (Vargo and Lusch, 2008, p. 7). The foundational premise number ten, in turn, explains the experiential and contextualised facets of value as value-in-context by pointing out that it “is always uniquely and phenomenologically determined by the beneficiary” (Vargo and Lusch, 2008, p. 7).

These two premises give rise to three main developments in terms of the understanding of the nature of value (Vargo, 2008). Firstly, value is embedded in a complex web of market interactions. Secondly, value is created in a temporal and emergent fashion. Thirdly, value is contextual. Therefore, it is impossible to understand value as isolated from the circumstances and the situation. Value-in-context thus captures the complex, temporal and contextual nature of value.

As Gummesson and Mele (2010) point out, value-in-context is the articulating link that binds the notions of use and exchange value. In this sense, value-in-context extends both the customer-centric (use value) and supplier-centric (exchange value) view to the broader network perspective (Gummesson et al., 2010; Lusch et al., 2010). Following Vargo, Maglio and Akaka (2008), the service logic of value redirects attention from value exchange in market relations to value-in-context as embedded in interconnected service systems wherein value is co-created. Service systems have the property of configuring resources, especially people, knowledge and technology, for the mutual

benefit of interacting market players (Vargo, Maglio and Akaka, 2008). Mutually beneficial relations occur in collaboration throughout a network of mutual provision of services.

In the value co-creation domain the concept of value-in-context also represents a crucial departure from the idea of use value as previously presented. As pointed out in the previous section, use value refers to performance capacity related to a given product or service. Value-in-context advances a dynamic view of the enhancement of customer capabilities through service. While use value represents a static notion of value creation, value-in-context highlights the transformational nature of value. The crucial difference between the concepts of value-in-context and use value is thus the focus of value-in-context related literature on the dynamic transformations accomplished by suppliers and customers, once they are able to acquire new capabilities within market interactions.

Although the value-in-context idea assumes that value is inherently a transformative process based on capabilities improvement, further study on the contextual properties of value has emphasised the static social structures which shape market interactions (e.g. Edvardsson, Tronvoll, and Gruber, 2011; Vargo, 2009). In this sense, Vargo (2009) supports the idea of embeddedness of market interactions in networks based on new institutional economics. Two vital problems emerge from these propositions. Firstly, embeddedness relates to a conceptual framework that places market interactions in social and economic networked relations, which tend to be inertial and imply repetitive transactions (Granovetter, 1985). Secondly, new institutional economics also presupposes an intricate structure of institutional relations shaping the market through formal and informal rules (Williamson, 2000). Again, there is the problem of the need to explain change, i.e. how these enduring structures and networks transform. Ultimately, the focus on network structure and institutions grounded in new institutional economics fails satisfactorily to account for the emergent nature of value in constantly changing market interactions.

Value-in-context needs to be considered through theories that are capable of explaining transformative processes, not just stable and long-lasting structures and institutions. Such conceptualization of value is crucial for studying the processes and roles related to value creation and co-creation. As the next section will elaborate, the extant literature on the process of value creation proposes a more dynamic foundation for studying market interactions. The value-in-context idea requires the development of further

understandings on the contextual and temporal character of value articulated with environmental influences and, consequently, requires a more dynamic approach to studying the transformative character of value co-creation.

The next section examines the process of value creation and value co-creation by comparing and contrasting the two perspectives. The former refers to seeing value creation as a process of resource combination and exchange, the latter refers to considering resource integration as the core of the value co-creation process.

2.3. The Procedural Dimension

Value drives market interactions, and interactions are the conduit for value creation (Eggert, Ulaga and Schultz, 2006; Spekman and Carraway, 2006; Prahalad and Ramaswamy, 2004; Ballantyne, Christopher, and Payne, 2003; Normann and Ramirez, 1993). This section highlights the specific dimension of value related to the process of value creation and co-creation. As value does not occur in a vacuum, the strategic action of using resources in particular interactions determines the character of the market (Sirmon, Hitt, and Ireland, 2007; Ballantyne and Varey, 2006; Srivastava, Fahey and Christensen, 2001). Thus, the procedural dimension of value advances strategic issues associated with whether and how value stems from particular bundles of resources. The present section identifies the creation of value through the combination and exchange of resources, and the co-creation of value by means of the integration of resources.

2.3.1. Resource Combination and Exchange

Business management studies have been approaching and highlighting value creation as a process of resource combination and exchange for nearly two decades (e.g. Holcomb, Holmes Jr, and Connelly, 2009; Håkansson and Waluszewski, 2005; Moran and Goshal, 1996). The most influential advances in this perspective refer to formulations based on two main ideas: the economic theory developed by Schumpeter (1934); and the concept of social capital (i.e. Adler and Kwon, 2002). Following Schumpeter (1934), the combination and exchange of resources consist in organisations' procedures to "reallocate resources, to combine new resources, or to combine existing resources in new ways" (Tsai and Goshal, 1998). Resource combination provides new possibilities for value creation and prompts new sources of rents. In turn, social capital is a fundamental concept depicting the dynamics of the market leading to value creation (Nahapiet and Goshal, 1998). The main property of social capital refers to initiating collaboration for innovative associations towards the creation of value.

Many recent works on value creation have suggested that crucial resource interchanges occur in the marketplace, through inter-organisational interactions (e.g. Baraldi, Gressetvold, Harrison, 2011; Chou and Zolkiewski, 2011; Wassmer and Dussauge, 2011). Inter-organisational combination and exchange of resources is, in effect, a coping reaction to the constant changes of markets. Again, Schumpeter (1934) prepares the ground for thinking about the market environment. Lin (2006) translates the Schumpeterian view and its consequences for creating value in inter-organisational collaborations:

“ [...] violent environmental change highlights the importance of interfirm resources combination and exchange for continuing value creation. The shift in competition to innovation emphasizes the current importance of the ability to create value via interorganizational collaboration.” (p. 549)

Key for successful value creation in inter-organisational relations is the exchange of strategic resources. Strategic resources refer to the features of information asymmetry, resource inimitability, and resource immobility within which organisations can obtain sustainable competitive advantage (Barney, Wright, and Ketchen, 2001). Strategic resources consist of knowledge and skills (Campbell, Coff, and Kryscynski, 2012) which are related to tacit knowledge, i.e. knowledge only acquired by personal experience and through inhabiting a practice (Polanyi, 2012). The coordination of strategic resource exchange is especially needed in inter-organisational networks for providing participants with access to ambiguous and inimitable resources, such as tacit knowledge. In this sense, knowledge is assumed as a valuable, rare and inimitable resource (Barney, 1991).

In sum, value creation is a process based on the combination and exchange of resources. This main process takes place through market interactions wherein suppliers search for rents through creating more value than their competitors. It has also been stressed that the current abrupt changes of the market environment bring about the need for combining and exchanging resources through inter-organisational collaborations. The main challenge in this context is to accomplish the combination and exchange of strategic resources, i.e. primarily tacit knowledge. The process of value co-creation provides yet another standpoint for exploring the process dimension of value as resource integration, as the following section explores.

2.3.2. Resource Integration

“[...] all actors are fundamentally doing the same things, co-creating value through resource integration and service provision.”

(Vargo and Lusch, 2011, p. 182)

The value co-creation perspective advances the process of resource integration in order to offer a different view of market interactions. The core of the resource integration idea engenders a view on value co-creation as grounded in collaborative relations wherein services are integrated. The service-dominant logic, which is fundamentally a model of value co-creation (Vargo, Maglio, and Akaka, 2009; Lusch and Vargo, 2006), differentiates resources into two categories: operand and operant resources (Constantin and Lusch, 1994). The concept of operant resources is a crucial element supporting the depiction of value co-creation processes as resource integration. It refers to intangible and dynamic components forming capacities for creating value (Vargo and Lusch 2004, 2008a). In contrast, operand resources are static, tangible and physical goods with no intrinsic capacity for activating value creation (Vargo and Lusch 2004). Consequently, in service-based relations, where capabilities are exchanged and developed for process improvements, key resource integration occurs through integrating operant resources.

According to Madhavaram and Hunt (2008) sustainable competitive advantage stems from interconnected operant resources. As organisations increase operant resource interconnectivity, it is more difficult for competition to assess, develop and acquire the same pattern of resource integration. All interconnected operand resources arise from the interaction of basic operant resources. Basic operant resources are the human, organisational, informational and relational capabilities which contribute to the production of value offers in the market. This notion of increasing interaction and interconnection amongst operant resources furthers the main idea of value creation in terms of resource combination. It advances a view on the mutual influence and reciprocal support of interacting operant resources such as knowledge, skills and capabilities.

The sources of operant resources, especially knowledge, are spread in a web of interactivity and reciprocity based on service provision. This web of reciprocal provision of services crosses the integration of resources on many levels. Following Vargo and Lusch (2011), resource integration stems from a network of service provision that incorporates, frequently at the same time, private, market and public sources. Therefore, resource integration concerns a vast number of interacting participants including: a) the customer and partners; b) the market and related entities taking part in market exchanges mechanisms; and c) community and public sources made available

through collective access. As Vargo and Lusch (2008) indicate, all these participants are resource integrators.

The foundational premise for all participation and interactivity based on resource integration and service provision is reciprocal access to new resources. Access to new resources is the desirable outcome of interconnecting operant resources within this multi-level network. Thus, change and innovation become central aspects of resource integration processes. As Vargo and Lusch (2004) noted, resources are constantly changing potentialities that are realised through integration. The conditions for accessing new resources and realising these potentialities relate to the availability of resources throughout the network, as well the participants' ability of integrating resources by removing resistances. Resource integration is, therefore, an inherent process of change in market interactions that also includes or requires innovations in private and public spheres.

This proposed perspective on resource integration processes, and their relation with a broader set of elements with the environment, resonates well with previous notions of the resource exchange and combination view. It is important to note that the renewal of operant resources, with a special emphasis on knowledge (i.e. Ballantyne and Varey, 2006), in the value co-creation literature is similar to the prominence of dynamic elements in the marketplace as indicated and examined in the value creation domain.

It is argued here that the Schumpeterian world, based on innovation for competing in a turbulent and changing environment, offers a more appropriate view of the changing forces of the environment than the institutional focus that is currently being explored in the value co-creation domain (e.g. Vargo and Akaka, 2012). Thus, it is proposed here that the process dimension of value co-creation should follow a perspective centred on the changing forces of the environment, which departs from the notions grounded on stable entities (i.e. structure and institutions) advanced by the conceptual dimension of value-in-context.

Two main themes arise from focusing on the changing traits of resource integration: collaboration and agency. In relation to these themes, Kleinaltenkamp et al. (2012) indicate the need for further studies on resource integration practices and design in order to better understand the agency of networked actors. As these authors suggest, a number of pathways could lead to a dynamic view of collaboration and agency for resource integration. Firstly, it is essential to explore the dynamics of multiple commitments

initiated by the networks of interacting participants. Secondly, the configuration of resource integration must be viewed as a response to environmental pressures. Thirdly, technology is a crucial element in service provision (Maglio and Spohrer, 2008). Hence, there is a need to deepen explanations of how actors interact with technology for resource integration in the direction of value co-creating practices. The following section examines the roles of participants in market interactions as portrayed by the current literature on value creation and value co-creation.

2.4. The Role Dimension

The tradition of business research has been exploring and explaining market interactions by studying two focal characters: suppliers and customers (e.g. Lam, Shankar, Erramilli and Murthy, 2004; Parasuraman, 1998). In the context of business relationships, suppliers and customers are goal-oriented participants interrelating and searching for value (Ulaga and Eggert, 2006). The supplier roles inherent in the conventional view on market interactions are value proposer (i.e. Anderson, Narus and van Rossum, 2006) and value deliverer (i.e. Lindgreen and Wynstra, 2005), whilst customers have been mainly seen as value perceivers and users (i.e. Parasuraman and Grewal, 2000).

Recent research on the relations between suppliers and customers has uncovered the joint participation of these two main actors in market interactions for co-creating value (e.g. Cova and Salle, 2008; Möller and Törrönen, 2003). Value co-creation emerges therefore as a novel theory on market interactions that goes beyond organisational relations based on value creation. Consequently, these fresh understandings of market interactions give rise to new ideas on management practices (i.e. Vargo, 2011; 2007). The objective of the following subsections is to examine these changing roles shaping the evolving interactions in the marketplace.

2.4.1. Roles Related to Suppliers

a. Value propositions to customers: the value creation perspective

Suppliers initiate interactions towards value creation by forming and establishing value propositions. A value proposition is a statement built by organisations and directed to its internal and external publics (Barnes, Blake and Pinder, 2009, p. 21-23). Following Barnes, Blake and Pinder (2009), value propositions function as messages guiding the organisation towards an idealised performance while constructing expectancies of benefits for customers. Proposing value to customers is a fundamental role for suppliers. Through proposing value, suppliers attempt to communicate a reason for being preferred in the market.

The starting point for creating value refers to the capability of integrating a proposition statement. A proposition statement is the capacity of selecting inputs related to market information and processing them into outputs as messages for the market (Doyle, 2000). The main objective is to articulate and present better offers than competitors. Value propositions, as integrated statements, are responsible for initiating distinctive positionings in the market (Fahey, 2012, p. 154; Slater, 1997). Thus, well-integrated statements enable enhanced business performance by providing competitive advantage.

The literature on value proposition advances three main aspects of inter-organisational relations for value creation. First, suppliers are responsible for the entire process of developing a value proposition (i.e. Lanning and Michaels, 1988). Second, market interactions for structuring value propositions are concentrated on supplier-customer relations (i.e. Bowder and Garda, 1985). Third, the main emphasis is given to the supplier standpoint of obtaining competitive advantage through value propositions (Anderson, Narus, and van Rossum, 2006; Porter, 1985). The emergence of a contrasting view of market interactions has broadened the scope of supplier and customer roles in constructing value propositions.

b. Value proposition to stakeholders: a value co-creation view

The idea of value co-creation broadens the scope of research to a wider range of market interaction participants. As a consequence, proposing value is currently being understood as “a value alignment mechanism” (Frow and Payne, 2011, p. 223) towards value co-creation. The key implication of that is the need to co-create a value proposition by exploring the relational aspects regarding interactions between suppliers, customers and others stakeholders (Gouillart, 2014). Ultimately, co-created value propositions would provide stable relations amongst stakeholders and ground the co-creation of value:

“We argue such VPs [value propositions] can play an important role in helping identify opportunities for value co-creation and provide a potential mechanism for creating stability within stakeholder relationships.” (Frow and Payne, 2011, p. 236)

Studies into the co-construction of value propositions bring novel and relevant market interaction elements to the fore (i.e. Ballantyne, Frow, Varey, and Payne, 2011; Frow and Payne, 2011). Firstly, co-created value propositions are grounded in supplier attention to aligning diverse interests at stake, and indicate the co-construction of a set of priorities. Secondly, co-created value propositions are built upon dialogue and collaborative engagements. Thirdly, customers and other stakeholders are active

participants in co-creating value propositions. These elements of market interaction function as suppliers' value alignment mechanisms with customers' active participation in co-creating the relevant priorities, the value proposition and, ultimately, co-creating value (Figure 1).

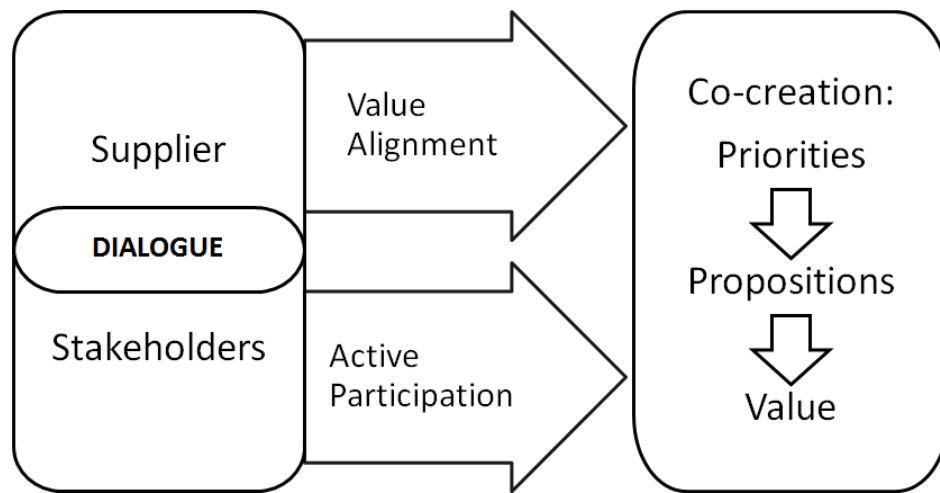


Figure 1 Co-construction of value propositions

Elaborated by the author. Based on Ballantyne, Frow, Varey, and Payne (2011); and Payne and Frow (2011).

Stakeholders co-creating value propositions inter-connect in a constructive and supportive dialogue. This dialogical set embeds teamwork and common interests that are essentially “based on trust, learning, and adaptation, with co-created outcomes” (Ballantyne and Varey, 2006, p. 226). Constructive and supportive dialogue grounds the essential capabilities of collaborating and absorbing new information (Lusch, Vargo and Malter, 2006). In turn, collaboration and information absorption are key conditions for identifying opportunities for co-creating value.

The identification of value co-creating opportunities also concerns the idea of customer engagement. Engagement is a fundamental notion forming the view of customers as “active players” in the formulation of value propositions (i.e. Prahalad and Ramaswamy, 2004). Engagement initiates the creation of value propositions based on the principle of “mutual value”, i.e. a shared value proposition that represents the symmetric spread of benefits amongst participants (Payne and Frow, 2011). In sum, the co-construction of value propositions involves a network of engaged participants where the role of suppliers is to activate value alignment mechanisms throughout a web of stakeholders.

There is a fundamental contrast between the value co-creation outlook and the traditional ideas on value proposition based on value creation. The value creation tradition places the formation of value propositions in a duality of supplier-customer relations. As a result, the relevant activity of building value propositions within market interactions encompasses fixed and static roles of suppliers and customers. Suppliers propose value. Customers react and provide feedback for suppliers to adapt the value propositions. The value co-creation outlook sees suppliers, customers and other stakeholders as collaborators in jointly proposing value. All participants in a given market interaction engage in joint activities of setting priorities, elaborating value propositions and, ultimately, co-creating value. The co-construction of value propositions is an interactional and dynamic view of initiating market relations towards value co-creation. The main role of suppliers in co-constructing value propositions is to activate value alignment mechanisms throughout a web of stakeholders.

Despite the relevant advancements, there is still a need better to understand the role of diverse interests involved in the shaping of market interactions in value co-creation. The idea of proposing value to a network of stakeholders does not explain how conflicting interests affect the building of value propositions through the interpretation and alignment of diverse and conflicting interests. There is, consequently, a need for advancing explanations of how participants cope with reconciling the co-construction of value propositions.

c. Value delivery as suppliers' role in creating value

Conventional perspectives on business markets indicate that value delivery is a key role performed by suppliers. In service-based business relations, the value delivery role refers to the provision of inputs by suppliers into the processes of the customers (Gummesson and Mele, 2010; Grönroos, 2008; Parasuraman, 1998). Following the delivery, the supplier is not able to influence customers' practices and use of resources (Grönroos, 2011). Value delivery is thus solely the supplier's role, whilst using the services is exclusively the role of the customer. An important aspect of supplier practices towards value delivery refers to the idea of participative behaviour. Suppliers' participative behaviour prompts further customers' understandings of the processes of service provision (Ennew and Binks, 1999). Customers can, consequently, have more accurate expectations in relation to offers from suppliers. The idea of participative behaviour to deliver value is where the value creation view and the value co-creation perspective meet. The main areas of similarity relate to mutual participation of suppliers

and customers in the creation of value, and the risk reduction related to inaccurate expectations. However, a fundamental shift in the way we see the process of value delivery, and consequently the patterns of management activities, emerges from the claim that value is co-produced by a network of participants including suppliers, business partners, allies and customers (i.e. Ramirez, 1999; Evans and Wurster, 1997; Norman and Ramirez, 1993).

d. Role of suppliers in co-creating value: value facilitation

The role of suppliers in the value co-creation perspective is to facilitate the creation of value by the customers (i.e. Grönroos, 2008; Payne, Storbacka, and Frow, 2008; Prahalad and Ramaswamy, 2004; Simpson, Siguaw, and Baker, 2001). Seeing suppliers as value facilitators originates a fundamental shift in the way we see supplier-customer enduring relationships. Instead of seeing unidirectional relations of value being created, proposed and delivered from supplier to customer (Ballantyne, Frow, Varey, and Payne, 2011), the notion of suppliers as value facilitators prompts a holistic view of supplier-customer relations. This relationship emerges in the context of “an interactive platform where the customer can influence the supplier’s processes and the supplier can influence the customer’s value creation” (Grönroos, 2011, p. 244). According to Grönroos (2011), in practical market interactions these platforms work as suppliers’ functions and specifications (invoicing systems, installation, maintenance, service recovery) interrelating with buyers’ process (order making, storage, using, paying).

Figure 2 depicts the insertion of facilitating roles of suppliers towards the co-creation of value. Value alignment, operational change and active participation occur through interactive platforms. Interactive platforms are tools and systems supporting ongoing dialogue between supplier and stakeholders. Ultimately, operational and change delivery translate activities wherein suppliers facilitate value by affecting improvements and innovations in customers’ process.

Facilitating value refers to a view of the supplier roles based on a new form of market interaction. In this novel way of seeing the market through value co-creation, suppliers search for initiating mutually beneficial transformations with customers. In value co-creating interactions, suppliers and customers engage in reciprocal processes of improvement and change (Prahalad and Ramaswamy, 2004). This new role for supplier-customer interactions induces the transformation of contemporary market interactions in. The practice of co-creating value refers to integrating supplier and customer processes and acting as change facilitator.

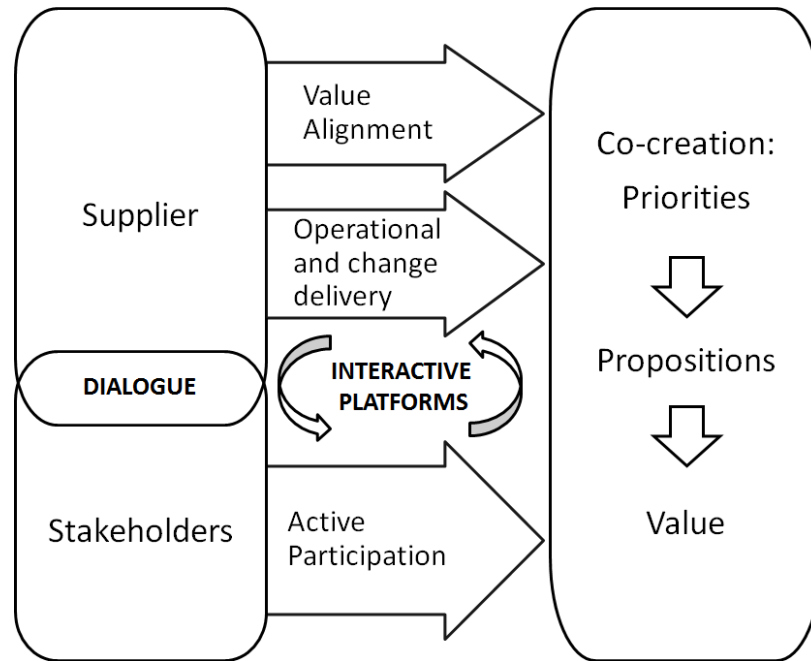


Figure 2 Co-construction of value propositions

Elaborated by the author. Based on Ballantyne, Frow, Varey, and Payne (2011); and Payne and Frow (2011).

This section has contrasted the role of delivering value with the value co-creation perspective of facilitating value. The latter role prompts a way of seeing value co-creation as a change mechanism for both supplier and customer processes. However, the course of transformations of practices from delivering to facilitating remains underexplored in terms of systematic understanding of change. The examined theory refers to stable roles of suppliers in conducting value facilitation. Thus, the flow of transformations of market interactions for value co-creation remains obscure. More importantly, the learning capacities involving both suppliers and customers moving to value co-creating interactions are not explained. Therefore, current ideas regarding facilitating value as a supplier role fail to take into account a dynamic view of value co-creating activities, the learning processes intrinsic to these practices, and the evolving market interactions.

2.4.2. Roles Related to Customers

Perceiving value creation

Perceptions of value can be formed in different stages of purchasing and consumption. Current research indicates that value perception could take place at a stage before

purchasing, after purchasing or both (Parasuraman and Grewal, 2000; Patterson and Spreng, 1997; Dodds, Monroe and Grewal 1991). The pre-purchasing phase of value perception is conventionally approached from a utilitarian perspective. In this view, customers prospect a transaction of utility obtained by means of a service and its consequent disutility for acquiring and using (Sinden and Worrell, 1979; Ostrom and Iacobucci, 1995). The post-purchasing phase of perceiving value is advanced by the perspective of customers forming rational evaluations (i.e. Iacobucci, Ostrom, Baig, and Beezjian-Avery, 1996). Customers' appraisal is undertaken through a process of comparison between the perceived performance of the product and the previously constructed expectations.

Perceiving value requires a view of the multiple influencing elements acting in different moments of the customers' behaviour. Extant models related to perceptions of value indicate the interrelation of these elements. Lam, Shankar, Erramilli and Murthy (2004) examined the post-purchase concepts of perceived value, satisfaction and loyalty in the context of service-based businesses. Assuming perceived value as a cognitive process of assessing benefits against sacrifices and satisfaction as an emotional response, these authors point out that customers' loyalty is obtained through a sequence of "cognition-affect-behaviour" (p. 293). Thus, repurchasing intentions (a desired behaviour) emerge as perceived value initiates a positive sentiment of satisfaction.

In service-based business, however, the complexity of the customers' processes obscures the value perceived from an offer delivered by a supplier. Following Hultén (2012), the importance of other aspects such as interaction and use emerge as key factors in customers' perception of value. According to this author, upgraded product offers can be perceived as value creating artefacts within buyer-seller relationships under certain circumstances. The setting of these relationships can facilitate value perceptions whereas the combination of the usage of the product and buyer-seller interactions forms "a joint understanding about problems and their solutions" (Hultén, 2012, p. 786). Overall, the concept of perceived value treats customer value as resultant from a process of learning, evaluating and affecting. This intricate process needs to be contextualised in the organisational settings as occurring within the process of service usage as well as the building of supplier- customer relationship.

Experiencing value co-creation

The notion of customers experiencing value advances the idea of interrelating suppliers and customers. The idea of value as customers' experiences extends the role of clients

to a more pro-active approach (Prahalad and Ramaswamy, 2000). The main proposition refers to de-centring and to democratising value creation (Prahalad and Ramaswamy, 2004; Ramaswamy, 2008). The main proposal implies a movement from firm-centric value creation to co-creation alongside customers. De-centralisation means that suppliers no longer offer products or services. Instead, customers experience value co-creation by means of interactions through “engagement platforms” (Ramaswamy, 2008, p. 9). Therefore, the notion of experiencing value entails a shift of focus from value perceptions to a more integrative and dialogical idea of engaging customers in value co-creating involvements.

Customers’ involvement in value creating activities requires tailoring products and services while using them. There are two main dimensions of experiencing value: 1) it is contextual; 2) it is personal (i.e. Prahalad and Ramaswamy, 2004). The nature of value experiences depends on the environment within which customers are involved. This contextual character means that experiencing value requires the consideration of unique situations and conditions of the customers. The contextual dimension is relevant for the customer to indicate and select the type of involvement needed and wanted. In this sense, a value experience is also personal. Customers choose and shape their individual experiences of co-creating. As Prahalad and Ramaswamy (2003) argue, the idea of customers experiencing the co-creation of value transforms the role of customers as they construct value on their own terms. In such an environment of interactive customisation, the roles of buyers can become unpredictable and emergent.

As customers come to be “informed, networked, empowered, and active consumers” (Prahalad and Ramaswamy, 2004, p. 5) they can act as participants in a wider field of interactions. Customers can engage in conversations embracing other customers and organisations for sharing evolving experiences of using and customising products and services (Prahalad and Ramaswamy, 2004; Ramaswamy, 2008). It is through developing interactive experiences that customers shape their subjective preferences (Holbrook, 1996). Thus, customers’ experience of value is a personal and contextualised process wherein engaged individuals assume the role of participating in a networked environment.

Two main terms associated with the emerging understanding of the role of customers’ experience of value in the co-creation context are “prosumption” and co-production. The expression “prosumption” is largely credited to Alvin Toffler (1980) in his

prominent book *The Third Wave*. Xie, Bagozzi and Troye (2008) explored the term in the context of consumers as value co-creators by means of propositions established in the S-D logic (Vargo and Lusch, 2008a; 2004). These authors conceptualise “prosumption”:

“value creation activities undertaken by the consumer that result in the production of products they eventually consume and that become their consumption experiences.” (Xie, Bagozzi and Troye, 2008, p. 110)

The main point of this definition is to differentiate the incipient nature and form of consumption that advances the active role of customers. Resonating with the idea of value as experiencing, the pro-active customers who assume a “prosumption” role take part in a number of collective acts in which the creation of value is shared and interpreted in a dynamic and innovative way (i.e. Xie et al., 2008). Consequently, the “prosumption” role of customers permeates the contextual, personal and mutable view of experiencing value.

The second term, co-production, intertwines customers’ roles with the roles of suppliers. Co-production is, thus, a role of customers that engage with suppliers to extract their value experiences. Xie et al (2008) define co-production:

“It involves the participation in the creation of the core offering itself. It can occur through shared inventiveness, co-design, or shared production of related goods, and can occur with customers and any other partners in the value network.” (p. 110)

The concept of co-production signifies experiencing value whilst participating in the shaping and formation of the value proposition.

In the context of inter-organisational relations, Ordanini and Pasini (2008) investigated the use of a collaborative IT platform amongst business firms. The authors argue that this platform “fits well with the idea of service co-production, especially because of the key role that the business customer plays in planning the system and using/assembling different modules over time.” (p. 291). They conclude by reaffirming the importance of having an open communication for the improvement of business customers’ capabilities. This means that, for the business provider to contribute to value experiencing through enhancing the customer firm resources, it is essential to understand the actual context of customers’ knowledge and expertise.

The perspective of customers as experiencers of value advances ideas on consumers’ roles as invested with power and active participation. In this sense, customers

experience value in a pro-active fashion where value is achieved through their independent and changing activities (Jaakkola and Hakanen, 2013). Moreover, customers are now networked co-producers of value offerings. This new way of seeing customer roles in value co-creating market interactions reveals the shaping of the market through an empowered consumer. It sheds light on novel prerogatives of management and business relations as releasing control to the other side of the table. However, current research on customer roles in value co-creation advances a depoliticized view of the customer. As a result we currently have limited understandings on how customers experience engagement in value searching negotiations. There is not a clear view on customer experience based on individual and collective interests surrounding value co-creation versus the appropriation of value. In addition, the role of customers as “co-producers” and “prosumers” has, up to now, not been considered in relation to the diversity of value perceptions that networked customers are involved in and interact about.

2.5. Conclusion

Value is crucially relevant for both supplier and customer organisations. Studies on value have been reviewed above along three main dimensions across two contrasting perspectives. The conceptual, procedural and role dimensions of value are the fundamental constituents of the formation of value creation. The value creation view is a traditional, and mature, view of market interactions based on supplier activities related to exchanging value through propositions and offerings. The value co-creation view is a recent, and still nascent, view of market interactions based on the co-production of the mutual provision of services between supplier, customer, and a web of stakeholders. In addition, the multiple inter-organisational relations and knowledge (as the key resource for enhancing novel and mutual capacities), are key components engendering value creation and permeating all value dimensions.

This section set out to delineate the dimensions of value as a mechanism for unfolding the multiple layers of value and comparing and contrasting two perspectives: value creation and value co-creation. As Table 2 provides an integrated perspective revealing current gaps in the understanding of value co-creation management, which will be considered next.

Dimension	Value co-creation notion	Needs further understandings on
1. Conceptual	a. Value-in-context	Environmental transformative processes, instead of stable and enduring elements as structure and institutions. The contextual and temporal character of value articulated with environmental influences and the inherent transformative character of value co-creation.
2. Procedural	a. Resource integration	Resource integration as a learning process of networked service provision.
3. Interactional 3.1.Roles of suppliers	a. Propose value to stakeholders	How conflicting interests affect the building of co-created value propositions.
	b. Facilitating value	The flow of transformations of market interactions from value delivery to value facilitation. The learning capacities involving both suppliers and customers for moving to value co-creating interactions.
3.2.Roles of customers	a. Experiencing value	The diversity of value perceptions that networked customers are involved in and interact about.

Table 2 Value dimensions and opportunities for development of the value co-creation theory

Understanding value in terms of its multiple constituents enabled cross-fertilisation between value creation and co-creation perspectives. Whilst previous studies have provided the fundamental tenets of value creation theory, the exercise of contrasting two main perspectives enabled a more integrated view. More importantly, the comparison through value dimensions unveiled possible directions for research aiming to advance our current understandings of value creation and co-creation. That is, ultimately, an indication of the major challenges that value co-creation, as a managerial endeavour, is possibly facing.

As the third column of table 2 suggests, value co-creation theory could benefit from novel strands of work, which could enhance the dynamic view of the nature of value in its contextualised flow of transformations. This changing process, viewed as embedded in networks of resource integration, is currently lacking exploration regarding the learning and knowledge aspects of mutually improved capacities. The conditions for learning through interactions that could lead to value co-creation are also under-examined. In sum, table 2 indicates the need for further research focusing on exploring and scrutinising possible conflicting interests, the shaping of interactions and the knowledge outcomes resulting from diverse and clashing perspectives.

Chapter 3. Management, Knowledge and Learning

Organising processes for transforming market interactions in the direction of co-creating value

3.1. Introduction

This chapter intends to advance fresh understandings of a managerial activity for organising value co-creation. The relevant topics that require further exploration as Chapter 2 indicated will ground analysis of current value co-creation frameworks. These relevant topics concern managing networks, change and knowledge. The purpose is to disclose a more integrated examination of current value co-creation models.

The following discussion reveals that relevant frameworks fail to take into account the need to situate knowledge and learning, and more specifically value co-creation knowledge and learning, in a *changing environment*. In effect, it is argued that extant literature on value co-creation has not as yet yielded sufficient insight into value co-creation knowledge that would be consistent with the novel propositions that this paradigm has brought to the fore. Consequently, there is still room for deepening our understanding of dynamic transformations implicated in value co-creation through knowledge development.

Managing market interactions relate to directing customer behaviour towards the function of consumption (Schor, 2004). Value co-creation is a novel management process of initiating specific types of customer behaviour (Zwick et al., 2008). In the value co-creation perspective customers are fundamentally active resources for value creation (i.e. operant resources (Vargo and Lusch, 2004)). Thus, management is a quest for transforming customers into active participants for the joint creation and production of value. This desired behaviour consists of customer engagement, pro-activity, creativity and innovativeness (Grönroos, 2011; Nambisan and Baron, 2009; Sawhney, Verona, and Prandelli, 2005)

By focusing on services, networked inter-organisational relations and resource integration, value co-creation theory has considerably added to our ability to recognise and explain emerging forms of market interactions (i.e. Grönroos, 2011b; Cova and Salle, 2008; Vargo and Lusch, 2008a). Although the value co-creation literature has indicated the importance of mutual transformations and knowledge creation in an interactive fashion (e.g. Gummesson and Mele, 2010; Prahalad and Ramaswamy, 2004),

as the present chapter will highlight, we still have limited understandings of transformational processes which could lead to effective value co-creation.

3.2. Value co-creation as an Organising System

This section advances value co-creation management as intervention. In effect, it is through interventions that organisations essentially approach and interact with the market (e.g. Rust and Verhoef, 2005; Hugh et al., 2002; Srivastava, Fahey and Christensen, 2001; Mahajan, 1990; Zeithaml and Zeithaml, 1984). The co-construction of marketplaces is an interventionist activity (Gebhardt et al., 2006). Value co-creation as a managerial endeavour consists in driving customers' activities as well as shaping the market according to the interests of the organisation (Zwick et al., 2008). This intervention embeds the use of tools within a system of interconnected actors and activity.

3.2.1. Managing service-based networks

Managing market systems refer to the design, arrangement and operations of multiple interactions with the aim of establishing mutually benefiting relations (i.e. Anderson and Narus, 1999; 1998; Srivastava, Shervani and Fahey, 1999). The management of business markets systems in networks refers to intra-firm and inter-firm coordination. Intra-firm coordination refers to managing processes amongst functional units of the organisation (Ho and Tang, 2004). The inter-firm coordination includes the view of "suppliers, strategic partners, and customer firms" (Lindgreen and Wynstra, 2005, p. 744). Coordinating practices in service-based networks is well beyond a single organisation's management capabilities.

Coordination towards mutual beneficial business interactions includes a vast number of other players. Managing business markets systems requires the integration of inter-organisational processes, distributing roles (Zhang, Hu, and Gu, 2008) and the use of tools (Parasuraman and Zinkhan, 2002). Managerial tools need to be aligned with the use and design of business markets systems (Lindgreen and Wynstra, 2005). In these coordination processes, roles and instruments are organised in order to make available all the relevant resources (Fredericks, 2005) that could afford the delivery of value. The challenge to value co-creation as a managerial endeavour consists of establishing a framework capable of facilitating the use of resources in the organisation of customer processes (Grönroos, 2011). Managing value co-creation is thus an activity intertwined with the co-production of service. This service co-production encompasses suppliers' engagement in mutual service provision with customers and others stakeholders (Vargo

and Lusch, 2011). Nonetheless, due to the fact that the value co-creation literature is still in its nascent stage, these insights should not be treated as established approaches to value co-creation management.

Contemporary studies on value co-creation need to be seen as propositions aiming “to amplify weak signals” and normatively to drive “next best practices” (Prahalad and Ramaswamy, 2003, p. 14). Extant frameworks of value co-creation management incorporate these early empirical insights. Relevant frameworks focusing on networks of service interactions emphasise resource integration as the fundamental activity for co-creating value. Consequently, managing value co-creation relates to networking for integrating resources. The model of managing value co-creation through resource integration within networks relies on many-to-many marketing principles (i.e. Gummesson, 2006), which resonate with the business markets systems view previously described. In this sense, successful resource integration requires internal configuration of processes and activities, as well as external configuration throughout the network (Gummesson and Mele, 2010). Therefore, value functions as an orientation for each participant in the network:

“The value creation potential of an actor does not only arise from its core competences and distinctive resources, but also from its capability to match, to position itself in a network and to contribute to its success and evolution”
(Gummesson and Mele, 2010, p. 194)

These performances of interacting and integrating activities involve learning, resource transfer and dialogue. While performing the mutual transfer of resources and the integration of capabilities, players search for complementarity, redundancy or a mix of both (Gummesson and Mele, 2010). In this sense, managing service-based interactions for co-creating value comprises matching resources, activities and processes amongst suppliers, customers and other participants in the network. Value co-creation within these multiple interactions relates to collaboration and control.

As Hakansson and Ford (2002) recognise, every organisation attempts to control the understandings and nature of their relationships with partners. Nonetheless, the web of interrelations of management practices embeds a paradox between control and support:

“[...] companies should aim for control but as soon as they acquire some “final” control over the surrounding network (or their supply chain or value chain!) they should be worried! Of course, a company’s task is to try to modify its own network position and to influence what happens in their own and others’ relationships. But the management task is also to encourage and help others to continuously clarify their

understanding of the network. It is their actions, based on their perspectives that provide the dynamics of a network.” (Hakansson and Ford, 2002, pp. 138-139)

In this sense, managing networks relates to control and empowerment. Current theory of value co-creation stresses that managing networks involves close communication that can foster learning and resource transfer. The main task is outlining configurations of activities and resources (i.e. Gummesson and Mele, 2010). The basic emphasis is on configuring mutual processes and activities in such a way that they can fit in, integrate and create patterns (Nenonen and Storbacka, 2010; Pels, Möller and Saren, 2009). This intervention can reach social group activities through channelling organisational processes toward productivity.

In terms of relevant interactions for resource integration, norms for effective participation in networks comprise particularly expected attitudes. Participants move toward the centre of networks and profit from them as long as they are capable of assisting and benefiting others (Vargo 2008). This notion translates the interventions referring to process enhancements and to exchange and sharing capacities and resources (i.e. Gummesson and Mele, 2010). In spite of the idiosyncrasies related to the contribution of each organisation within a network (Mele, 2009), this normative feature of market interactions in the value co-creation view regulates and directs thoughts and ideas of participants. Managing value co-creation is therefore managing the transformation of the nature of market interactions.

3.2.2. Managing Change

The models of managing transformations in the directions of value co-creating practices explored here represent different and, arguably, complementary views on management approaches for co-creating value. The first model described is the DART model (i.e. Ramaswamy and Gouillart, 2010; Ramaswamy, 2008; Prahalad and Ramaswamy, 2004). The second is a proposed framework for managing encounter processes and facilitating value co-creation (Payne et al., 2008). These two models indicate that changes in the direction of value co-creation concern significant transformations. Changing the nature of market interactions “involves the co-creation of value through personalized interactions based on how each individual wants to interact with the company” (Prahalad and Ramaswamy, 2004, p. 10). Moreover, transformations toward value co-creation relate to radical modifications in the logic of business (Payne et al., 2008).

Prahalad and Ramaswamy (2004) name dialogue, access, risk-benefit and transparency (DART MODEL) as the fundamental aspects of supplier-customer interactions. These four dimensions constitute what these authors suggest to be the “building blocks” for engaging customers in value co-creation. The model prescribes that marketers should be involved in open conversation with clients. Dialogue, consequently, needs to be raised around themes and matters of equal interest to them. The value co-creation management framework developed by Payne, Storbacka and Frow (2008) - here referred to as MEP (“Managing the Encounter Process”) - depicts supplier-customer interactions as mutual exchange connections. The core idea of MEP is that a number of evolving transactions take place at each point of the interactive encounter. MEP emphasises the process. DART focuses on the customer experience. Both models identify the necessity of transforming the character of market interactions.

The DART model specifies that market interactions in value co-creation are meant to create an open environment facilitating access to meaningful and correct information about each other. In MEP, each one of these interactive moments needs to be translated into tools so as to connect supplier-customer processes. In this sense, the MEP framework specifies the routines of interactional processes while the DART model relates to a more general strategy of activity. In the latter value co-creation model, transparent information should include the community that is surrounding the central market interaction. Dialogue, access and transparency are the primary aspects of interactions towards value co-creation that, once performed, can help reduce risk for the customer. In the MEP framework, market interactions constitute a series of opportunities for the supplier to facilitate value co-creation. While the DART model centres on transformation within the community of players, the MEP relates to a supplier-centric perspective for changing market interactions.

The entire MEP process, Payne et al. (2008) argue, requires a facilitating role of management for value co-creation. As MEP focuses on facilitating these encounters, one of the key managerial activities within that model is aimed at identifying and designing the opportunities for value co-creation. This proposition refers to formatting activities translated into the specification of small operations that complex services consist of (Vargo and Lusch 2006, p. 53). The DART model regards the customer perceptions for decision making and taking, as well as the supplier role within this process through considering the risk-benefit component. Fundamentally, the four constitutive aspects of the DART model, i.e. dialogue, access, risk-benefit and

transparency, form a framework of supplier-customer interactions that prescribes effective transformation in the character of interactions toward value co-creation. The MEP framework outlines supplier-customer encounters as a planning tool that contributes to determine value co-creation tasks throughout the entire process of market interaction.

The two models stress the ability of co-ordinating changes in the direction of value co-creation as grounded in communication. Communication is a fundamental component regarding value co-creation frameworks. Indeed, the models stress the key importance of communication skills and dialogue in value co-creation processes. Communication is translated in the DART model as the dialogue function. Dialogue, as Prahalad and Ramaswamy (2004) indicate, consists of “creating an experience environment in which consumers can have active dialogue and co-construct personalized experiences.” (p. 9). The “Managing the Encounter Process” framework stresses that co-ordination enables value co-creation throughout the series of supplier-customer encounters (Payne et al., 2008). The MEP framework implies that coordinating value co-creation relies primarily on communication for supporting customer behaviour. Supportive tasks are conducted through stimulating cognition and emotion within a series of supplier-customer encounters. The reviewed value co-creation management frameworks therefore vary in terms of emphasis and specific outcomes of co-ordinating change as grounded in tools of communication. While the DART model focuses on dialogue for aligning information, interests and expertise (Prahalad and Ramaswamy, 2004), the MEP stresses the necessary communication for facilitating value creation by the customer.

Contemporary customers, despite being difficult to manage, can be effectively approached through management models (Zwick et al., 2008), such as the frameworks previously presented. Engagement tools and encounter planning practices channel customer creativity into novel value creation formats (Payne et al., 2008; Prahalad and Ramaswamy; 2004). Nonetheless, controlling changes in market interactions unfolds a paradox in value co-creation. At the same time as customers play an empowered role in the market, the closer interaction with buyers creates a wider scope for influence.

The DART model and the “Managing the Encounter Process” (MEP) framework demonstrate a robust controlling mode of managing change in market interactions by means of setting goals and, consequently, the performance metrics for value co-creation interactions (i.e. Prahalad and Ramaswamy, 2004; Payne et al., 2008). The main idea

follows the prescription of connecting business performance with management activities (as in Clark and Ambler, 2001). The DART and MEP frameworks align, therefore, with what O'Sullivan and Abela (2007) have indicated as assessing marketing productivity. According to these authors, measuring marketing performance takes place by means of considering the relationships embedded in the value chain and the respective metrics.

Managers seek to direct customer performance towards value co-creation. In MEP, these interventions include a set of "procedures, tasks, mechanisms, activities and interactions" (Payne et al., 2008, p. 85) directed at influencing customer participation in the co-creation of value. This perspective of managerial practice aligns with Vargo and Lusch's (2006) indication of value co-creation as organising each particular skill in the co-production of value. The DART model advances the notion of directing feelings, thoughts and experiences as a scope of managerial intervention. Accordingly, DART addresses the identification, satisfaction and commitment of participants within the market interactions.

In sum, current frameworks on managing value co-creation present initial insights into managing networks and transformations in market interactions that can lead to value co-creation. Managing networks for co-creating value has advanced key aspects of integrating resources through the mutual interconnection of processes within the network of partnerships. Ultimately, management in service-based networks has encompassed control and support of multiple participants for enhancing mutual capabilities within interconnected processes. In turn, the frameworks related to managing change have been focusing on the transformation of market interaction at the more specific level of each dyadic relation. More importantly, the dyadic models of managing value co-creation do not approach the character of transformations in terms of their origins, pathways and outcomes. In other words, current models of value co-creation do not develop the key foundations for seeing value co-creation as change management. The notions of creating platforms for customers' engagement (i.e. DART) and designing the encounter process for facilitating value inform managerial strategies and performances for enabling value co-creation.

In spite of these relevant advancements, contemporary understandings of value co-creation as an organising system could benefit from further investigation. The constitution of paradoxes in networked relations as controlling and empowering partners still requires further reflection on its origins, character and consequences for

value co-creation. Current understandings of co-creating value treat management in networks and in dyads separately without providing a thorough explanation of how these two may be interrelated. In addition, value co-creation management necessitates advancements on how to perform the complicated task of ensuring networking benefits within a net of diverse and conflicting interests. This fact challenges assumptions of multiple market interactions wherein networked participants should benefit from benefiting others.

3.2.3. Reflecting on current perspectives of value co-creation as management

When placed together, the managerial aspects of the value co-creation studies' approaches to multiple and changing market interactions consist of scattered and diverse pathways of means and outcomes of value co-creation (Table 3). Value co-creation theory could benefit from an integrative view providing new insights and new perspectives. For example, communication has been the main foundation of managing networked market interactions, but insights regarding the outcomes are dispersed amongst the value co-creation models. More importantly, the frameworks of value co-creation management represent general frameworks of micro behaviour still in their conceptual stage. Empirical research is needed to explore the potential for integration of these frameworks allowing for the development of more complete models of value co-creation.

The current approaches related to value co-creation as management have been preoccupied almost entirely with managing the mutual processes of interacting for process improvement. Issues related to socio-political participation and process possibilities and constraints in the workplace (i.e. Hayes and Walsham, 2001) remain neglected. Previous studies about computer supported co-operative work have indicated that the formal managerial hierarchy and structured workflow plans do not cope with the exceptions and with the need for improvisation in daily activities (Hayes, 2000). Moreover, current value co-creation studies have not considered the consequences of these novel models in terms of new assumptions about knowledge and learning. The next section describes the current approach to knowledge and learning and discusses the possible new understanding for this subject in the context of value co-creation.

Managing value co-creation by means of	In order to
Communicating	Transfer resources; Stimulate cognition and emotion; Align interests and knowledge.
Creating patterns of networking; Setting metrics of performance and objectives.	Match processes for improvements; Assess productivity.
Delineating tasks and activities; Regulating network participation; Influencing thoughts and emotions.	Elicit customer participation; Enhance processes; Impact behaviour.

Table 3 The managerial character of value co-creation

Elaborated by the author based on Gummesson and Mele (2010); Payne et al. (2008); and Prahalad and Ramaswamy (2004).

3.3. Knowledge and Learning in value co-creation

As has been widely recognised, the exchange of knowledge is anything but an easy task (e.g. Collins and Smith, 2006; Muthusamy and White, 2005; Tidd and Izumimoto, 2002). The main difficulty of exchanging knowledge stems from the high level of tacitness that it may contain (Teece, Pisano, and Shuen, 1997). The exchange of intangible strategic resources, and especially of tacit knowledge, is difficult to coordinate (Teece, 1982). Yet, the essential capacity of suppliers to create value stems from the absorption of new knowledge combined with existent knowledge (Vainio, 2005; Moran and Goshal, 1996). As Lin (2006) indicates, two main possibilities arise for overcoming the difficulties of combining and exchanging strategic resources. Firstly, knowledge as the core strategic resource could be combined in inter-organisational collaboration by means of the conversion process of tacit into explicit knowledge as indicated by Nonaka and Takeuchi (1995). Secondly, strategic resource exchange could be coordinated through network theory tenets (i.e. Rowley, 1997; Salancik, 1995; Granovetter, 1983). That is, through identifying the nature of difficulties by means of analysing the structure of relations in terms of roles, positions and properties of the network.

3.3.1. The traditional view of knowledge and learning within market interactions

Traditional understandings of knowledge in the business management literature emphasise the role of knowledge as a capability to cope with dynamic environments. The foundations of this strand of thought are related to the resource-based view of the firm (Barney, 1991), dynamic capabilities (Teece, Pisano and Shuen, 1997) and the knowledge-based view of the firm (Grant, 1996b). Based upon the concept of dynamic capabilities, knowledge is an asset or a resource to be integrated and transformed (i.e. Eisenhardt and Martin, 2000). The main concern is the integration of knowledge for the creation of capabilities (Grant, 1996a). The capacity of creation and operation of different sets of capabilities would then enable organisations to cope with unstable market conditions.

Extant studies of market interactions focus on managerial practices advancing the creation of the necessary capabilities for surviving in the changing context of the market. These works are grounded on the market orientation paradigm (i.e. Kumar, Jones, Venkatesan, and Leone, 2011; Morgan, Vorhies, and Mason, 2009; Slater and Narver, 1994; Jaworski and Kohli, 1993). Market orientation is the business philosophy directing the generation, integration and use of market knowledge (Kholi and Jaworski, 1990). Firms driven by market knowledge concerning customer needs and competitors' strategies, while applying cross-functional co-ordination, are regarded as marketing oriented (Narver and Slater, 1990). The main proposition of market orientation relates to translating marketing knowledge (i.e. capability of responding to market conditions (Morgan, Zou, Vorhies and Katsikeas, 2003)) into capabilities. These capabilities could drive firms' strategies and actions according to environmental conditions (Jaworski and Kholi, 1993). The processes of capabilities deployment and market knowledge use become then the main challenge for management.

The works of Slater and Narver (1995) and Day (1994) have suggested that knowledge is built through interfacing adaptive and proactive strategies for learning. The adaptive learning, based on information processing (Tyre and von Hippel, 1997; Shrivastava, 1983), is responsible for the adjustment of internal practices that enable the flow and use of knowledge throughout the organization (Baker and Sinkula, 2002). Proactive learning is based on market experiences and is responsible for the generation of new knowledge to allow the necessary internal transformations through market interactions (Sinkula, Baker et al., 1997). Learning is therefore the result of adaptive and proactive strategies of learning based on bottom-up processes. Moreover, the co-ordination and

integration of knowledge has been indicated as dependent on top management strategies (Vorhies, Morgan and Autry, 2009). Managerial capabilities deployed by organisations are predominantly influenced by the strategy that is adopted (Desarbo, Benedetto, Song and Sinha, 2005). This view of the key role performed by strategic intent suggests the assumption of the top down approach to implementing strategies for learning.

In sum, the traditional view of knowledge and learning in market interactions is based upon two key concepts: marketing knowledge, i.e. the required know-how to create and deliver value; and marketing learning, i.e. learning based on reactive processes of experiencing the market and on proactive processes of transforming it. More generally, these two conceptual foundations highlight a vertical view of managing knowledge within the organisation, and a linear approach for learning based on past experiences and experimentation. As there is a lack of research attempting to develop an understanding reaching beyond the vertical movements of learning, we have scarce knowledge about inter-organisational developments of knowledge.

The value co-creation idea has given rise to a body of fresh studies on networked co-production of value. However, current works within this strand of studies have not advanced a discussion on the consequences of this new paradigm for our understanding of knowledge and learning in networked market interactions. The following section explores propositions for defining knowledge and learning in terms of managing value co-creation.

3.3.2. Developing novel propositions for knowledge and learning towards managing value co-creation

a. Knowledge in value co-creation

In the context of *Service Dominant - Logic*, value co-creation knowledge can be seen as a specialised competence. Interactional abilities are the operant resources constituting the necessary knowledge and skills for conducting processes through which the co-creation of value is accomplished (Vargo and Lusch, 2008b). Value co-creation knowledge is thus related to the application of useful skills for interacting with the market and prompting resource integration and the interchange of competencies. This application of skills for integrating resources involves “the practical application of relational competencies” (Paulin and Ferguson, 2010). As the development of knowledge is understood as a necessary condition for developing value co-creating relationships in inter-organisational networks (Lusch, Vargo, and Tanniru, 2010; Madhavaram, Sreedhar and Hunt, 2008), knowledge is a key operant resource for

dynamic exchanges in markets based on value co-creating interactions (Vargo, 2009; Vargo and Lusch, 2008a; 2008b; 2004).

Two key abilities emerge in the literature on managing value co-creation and form the character of knowledge in value co-creating interactions. The capacity for engaging participants is central. This special capacity is based on abilities for building engagement platforms (i.e. Ramaswamy, 2008). Another crucial ability is integrating and transforming the multiple resources of the network into effective processes (i.e. Gummesson and Mele, 2010). These two key abilities basically involve knowing how to initiate and sustain dialogue in market interactions (i.e. Ballantyne and Varey 2006) through: a) designing value co-creating encounters (i.e. Payne, Storbacka et al., 2008); b) creating platforms for customer engagement and experiencing value co-creation (Prahalad and Ramaswamy, 2004); c) integrating resources and, as a result, enhancing customers' processes (Gummesson and Mele, 2010).

What is of primary interest in understanding knowledge in value co-creation is not so much how knowledge is currently understood as how we can enhance our understanding through new avenues of enquiry into value co-creation knowledge. It is argued here that the concept of knowledge within the value co-creation context neglects the conflicting and changing nature of market interactions. Further research is also needed to shed light on other facets of knowledge besides the well explored technical character of value co-creating capacities. A focus on change and clashing interests highlights the fact that value co-creation is a social practice that relies on knowledge built through social interactions and mutual interpretations. Moreover, the active participation of the customer indicates the empowering nature of knowing how to co-produce value. As Walsham (2005) indicates, the present study focus on managerial aspects of knowledgeable action in the terms of a political context wherein people bring diverging understandings to the fore. The following subsection considers how knowledge is seen to evolve within current value co-creation models.

b. Learning value co-creation

In value co-creation, learning can be viewed as the course of action that originates capabilities with regard to conducting market interactions based on value co-creation processes. To the extent that learning is embedded in these capabilities, a primary view on value co-creation learning refers to how organisations learn to develop exchange relationships based on resources integration for value co-creation. Learning value co-creation is learning how to perform interactions for providing and receiving resources

(Paulin and Ferguson, 2010). Thus, a primary view of learning refers to how to enhance organisational capacities towards networked interactions that could prompt resource sharing and use (Ramaswamy, 2008). Consequently, extant literature on learning in the context of value co-creation refers to how organisations learn to develop exchange relationships based on resource integration. Furthermore, rather than relying on experiencing market interactions and experimental transformations, learning how to co-create value is about developing capabilities of manipulating market interactions in order to manage customer activities and control process improvements.

The assumptions underlying the notion of learning have much in common with the main frameworks in relation to the role of dialogue. Dialogue is proposed as a means of lowering costs and reducing risk because it grounds the development of mutual expectancies (Prahalad and Ramaswamy, 2003). Dialogue is also seen as the basis for organisational learning and for supporting mutual resource creation (Gummesson and Mele, 2010). In networked inter-organisational relations, learning is based on dialogue for assessing processes and competencies (Gummesson and Mele, 2010). The same frameworks, however, differ with regard to the process of learning.

The fundamental difference amongst the frameworks of value co-creation regards the issue of how learning takes place. Prahalad and Ramaswamy (2004) describe developing skills for anticipating and leading the expectations and experiences of customers through the DART framework. Gummesson and Mele (2010) address learning mainly by reference to the knowledge creation process indicated by Nonaka (1994) combined with the sharing of mental models proposed by Senge (1990). The main proposition is seeing learning in business networks through the spiral of socialising and internalising tacit and explicit knowledge in a conversion process. Payne, Storbacka et al. (2008) focus on the process of customer learning through the cognition-emotion-behaviour framework. In customers' learning process of "thinking, feeling and doing" (Payne, Storbacka et al., 2008, p. 87), the development of capacities of co-creation is related to capturing and utilising this process for intervening in customers' perceptions of their learning experience.

The management frameworks approaching value co-creation represent two alternative underlying assumptions about learning. One relates to understandings about learning as a linear and static process grounded on experimentation, knowledge and learning as separated and stable entities. The idea of learning as a linear and static process is

embedded in the notions of managing value co-creation provided by the DART (Prahalad and Ramaswamy, 2004) and the “Managing the Encounter Process” (Payne et al., 2008) frameworks. These frameworks rely on market interactions as the locus of experimentation and separated from learning processes which occur through past experiences. In turn, the perspective of networks for resource integration (Gummesson and Mele, 2010) approaches learning as top-down and bottom-up movements creating new knowledge and sharing understandings.

Learning based on linear models cannot explain the character and nature of discontinuity in market interactions such as, for example, from value creation to value co-creation processes. Fast changing markets require a different approach to learning. What is missing is a view of the joint transformation of activities and interactions within the on-going change of market processes. A fast moving market calls for explanations of learning which could cope with the current pace of market change. Furthermore, propositions based on learning understood in terms of knowledge transfer and knowledge sharing based on top-down and bottom-up organizational movements (i.e. Collins, 1990) lack consideration of individual and collective moves within interacting networks. These networking movements are important sources for approaching the situated political context of understandings, interests and power relations (i.e. Walsham, 2005), which have been overlooked by value co-creation literature. In addition, value co-creation requires a view on the participatory learning movements of players as they interact and construct artefacts that co-evolve (i.e. Hartswood et al, 2008) within workplace interactions.

3.4 Conclusion

This chapter has examined value co-creation as an interventionist mechanism in the market. This approach to the topic has prompted discussion not only on the character of value co-creation within this paradigm, but also enabled the identification of a number of interconnected avenues of research. Firstly, value co-creation management could gain new insights by integrating perspectives of networked resource integration with managing transformations in market interactions. Secondly, contemporary notions of value co-creation could profit from developing novel constructs of knowledge and learning that could cope with the constant transformations and discontinuities of the marketplace. By describing, contrasting and examining current topical value co-creation management models, this section has led to the conclusion that there is a need for a new

theoretical lens that could grasp change, conflict and learning in consonance with the changing environment that managing value co-creation is challenged to face.

The following chapter presents and explores a framework for examining knowledge and learning within the value co-creation perspective. It advances Activity Theory (Vygotsky, 1978) as a relevant model for grasping knowledge and learning in conjunction with the dynamic transformations embedded in practices associated with inter-organisational value co-creation. The main potential contributions of this fresh view conveyed by Activity Theory refer to explaining and scrutinising *how service-based networks co-create value* through four key underexplored aspects of value co-creation:

- I. None of the models explain the transformation of market relations and interactions intertwined with knowledge, learning and practices of value co-creation.
- II. The frameworks do not explain how each element of value co-creating interactions (i.e. value itself, interactional procedures and roles performed) transforms within the changing market relationships.
- III. In spite of recognising that “a complex host of interests have to be taken into account in the analysis of value co-creation” (Gummesson and Mele, 2010), current perspectives do not explain how diverse interests affect value co-creating practices.
- IV. A perspective on value co-creation as change management has been neglected. As a result there is no understanding of knowledge and learning in terms of their capacity for changing multiple market interactions towards value co-creation.

The next chapter (Chapter 4) demonstrates how Activity Theory principles, concepts and models provide the necessary instruments for advancing the understanding of these aspects.

Chapter 4. Lens of Cultural-Historical Activity Theory

4.1. Introduction

Cultural-historical activity theory has been influential in explaining organisational change (Miettinen and Virkkunen, 2005). Network studies have also made use of ideas and principles drawn from cultural-historical activity theory (Hemetsberger and Reinhardt, 2009; Toiviainen, Kerosuo, and Syrjälä, 2009; Miettinen, 2006a). However, cultural-historical activity theory has not been used for explaining change and learning in networks of value co-creation. This is surprising in view of the fact that cultural-historical activity theory elaborates on specific characteristics of work activities that are central for transforming market interactions in the direction of value co-creation. For example, cultural-historical activity theory research on management and organising has emphasised: a) process transformation through the rearrangement of organised activity (Blackler and Regan, 2009; Lee and Roth, 2007; Prenkert, 2006; Jarzabkowski, 2003); b) the collective strategies for enhancing communication and interventions for change (Rose Andersen and Allen, 2008; Miettinen and Virkkunen, 2005; Engeström, 2004; Virkkunen and Kuutti, 2000); and c) the networked features of transformative processes (Miettinen, Samra-Fredericks, and Yanow, 2009; Engeström and Kerosuo, 2007; Engeström, Kerosuo, and Kajamaa, 2007; Engeström, 2006).

The main purpose of this chapter is to draw on the concepts of knowledge, learning and activity as activity theory approaches and develops them (i.e. Engeström, 1987), and to apply them to the insights now being generated in the value co-creation literature. It is argued that activity theory's treatment of knowledge and learning as collective activities that are de-centred, emergent and intertwined with practice (i.e. Engeström, 2000a; 2000b) could provide a way out of current static, cognitive and bounded notions of vertical flows of knowledge creation. Consequently, a more vivid depiction of value co-creation as embedded in fluid interactions, change of practices and situated market discontinuities could be achievable.

4.2. Background

4.2.1. *Practice-based studies*

Influences on practice-based studies (henceforth, PBS) encompass a variety of sociological and philosophical traditions. PBS offers an alternative perspective from studies on structural aspects of organisations, which provide abstract conceptualizations and static depictions of management tools (Geiger, 2009). From phenomenology and

ethnomethodology PBS draws the idea of knowing in practice as preceding theoretical knowledge and develops the idea of socio-culturally situated practice (Bjorkeng, Clegg, and Pitsis, 2009). From symbolic interactionism PBS derives the view of meaning as emerging through social interactions and mutual interpretation of actions (Blackler and Regan, 2009). Moreover, the Marxist intellectual tradition is the foundation for actor-network theory and activity theory, i.e. the PBS strands that propose that human action is situated in its social and historical context (Corradi, Gherardi, and Verzelloni, 2010). Consequently, concepts, theories and methodologies within PBS provide a different framework from the conceptualisations of knowledge as possessed by rational individuals (Nicolini, 2009).

PBS advances the socially constructed, relational, and situated view of knowing and learning. Its underlying theories investigate intentionality embedded in collective action, as well as distributed character of agency (Blackler and Regan, 2009). Within this perspective, social relations mediate knowing. Knowing is not located in individuals' minds but in collective subjects (Engeström, 2000a; Brown and Duguid, 1991; Gherardi, 2001). Consequently knowing can only be comprehended in terms of inter-subjective motives and meanings prompting activity (Llewellyn and Spence, 2009; Engeström, 2000a). Knowing in the PBS perspective is collectively performed. It is co-constituted within practice and participation. Therefore, knowing is situated in relational practices involving individuals and communities, tools and technologies, activities and places (Blackler, 1993; Gherardi and Nicolini, 2000).

PBS is, nonetheless, a term encompassing multiple theoretical approaches to practice. In fact, as Schatzki (2001) indicates, a unified theory of practice does not exist. Arguably, the pragmatic perspective (Orlikowski, 2002), the communities of practice view (Brown and Duguid, 2001; Wenger, 1998), actor-network theory (Callon, 1987; Latour, 1986) and activity theory (Blackler, 1993; Engeström, 2000a; Vygotsky, 1978) are amongst the most influential strands of PBS. The pragmatic stance assumes that actors' knowledgeability is constituted and reconstituted by means of their recurrent useful practices (Orlikowski, 2002). The community of practice strand stresses the flow of knowledge through shared understandings and meanings that bond individuals in collective activity (Swan, Scarbrough, and Robertson, 2002). In turn, actor-network theory discusses the production and circulation of knowledge by relational networks where intermediaries, i.e. artefacts, individuals, groups, texts, appropriate and translate knowledge according to their interest (Gherardi and Nicolini, 2000). Finally, activity

theory emphasises that knowing is culturally and historically situated. The conduit for knowing in activity theory is an activity system wherein interdependent individuals and groups seek complementary or contradictory objectives (Blackler, 2009).

The present work focuses on activity theory as theoretical and methodological framework for a number of reasons. First, unlike pragmatic and communities of practice perspectives, in activity theory contradictions and multiple diverging interests are taken into consideration (e.g. Hemetsberger & Reinhardt, 2009; Jarzabkowski, 2003; Engeström, 1993). The actor-network theory resonates with the conflicting view of knowing within multiple interactions in activity theory. However, the interventionist character of activity theory enables approaching management within interdependent interactions and mediations (Blackler, Crump, & McDonald, 1999; 2000; Prenekert, 2006). Contrary to actor-network theory, activity theory distinguishes the role of individuals and groups as the agents (Engeström, 1987, 2000a). This provides a managerial approach in relation to other components of the activity system as tools, signs and discourses. In other words, the equal treatment of people and things in actor-network theory (Whittle and Spicer, 2008) would undermine the focus of this present research on the process of resolution of conflict and disturbances occurring between people within market interactions.

4.2.2. Activity theory

The present work focuses on activity theory as a theoretical and methodological framework for a number of reasons. Activity theory places knowing and practice within a discussion of interdependent interactions and mediations (Engeström, 1999a; 1999b; Blackler, 1993). This view enables approaching the multiple market interactions that surround value co-creation within the flow of work and in relation to evolving changes in collective activity. While activity theory regards tools, signs and communication as participative components of the activity system, it distinguishes the role of individuals and groups as agents (Engeström, 1987, 2000a). Thus interdependent actions of individuals and community, alongside with a variety of mediators within the system, could be seen in terms of the contradictory and changing nature of interdependent relations within that system. This perspective allows exploring the sources of change and investigating the dynamic transformations of value co-creating market relations within management practice, knowledge and learning.

Activity theory primarily stems from research aimed at developing a psychological theory based on Marxist thought (Bedny and Karwowski, 2004, Blackler, 1993).

Following Marxist tradition, activity theory advances the view of work in terms of its purposive and social character (Bedny et al., 2000). This main proposition about the influence of work and material relations on behaviour has produced two contrasting standpoints of activity theory: cultural-historical activity theory and systemic-structural activity theory. In what follows, cultural-historical activity theory will be explored, and, subsequently, systemic-structural activity theory will be presented and compared. The reason for contrasting these two perspectives regards building discussion that could allow explanations of the main tenets of different contemporary approaches to activity theory. More importantly, it will help develop the rationale for choosing one of these perspectives in terms of potential explanations of service-based networks as a value co-creating practice wherein interactions are transformed and learning occurs within the changing market relationships.

4.2.3. One foundation and two contrasting views

Vygotsky (1978) developed foundational explorations of the socio-cultural nature of mental operations. Regarding language as primary sign system, Vygotsky advanced the relevance of language as a cultural tool. For Vygotsky the development of the mind requires situated relations of people with their tools through language:

‘[...] internal development processes [...] are able to operate only when the child is interacting with people in his environment and in cooperation with peers.’ (p. 90)

Knowledge therefore develops by acquisition of culture and stems from internalisation of signs, which is a historical and contextual process as it occurs through interactive work (Roth and Lee, 2007).

Through the work of Leont’ev (1978), cultural-historical activity theory initiated an exploration of the constitution of activity in terms of actions and operations. Leont’ev (1978) examines the dynamic relations of activity, action and operation with goals and motives. Activity is therefore goal-directed and motives are underpinning goals. The activity as the unit of analysis encompasses social, cultural and historical dimensions as origins of consciousness and, consequently, of interpretations people form about an activity (Blackler et al., 2000).

Engeström (1987; 2000a; 2000b) expands the unit of analysis from activity to mediated activity systems. Activity systems, in the cultural-historical tradition, consist of mediated relations between individuals, communities and their objects of transformation (see inner triangle of figure 3). Theoretically, this analysis relates to relevant

interactional practices, which this study presents as key co-creating activities with the specific focus of transformation in the direction of value. This means that value co-creation is here assumed as performed and reflected upon the interrelations of people and the broader community. In activity systems, concepts and tools, i.e. new propositions for market interactions and technology, mediate individual activities and the object of transformation, i.e. value. Simultaneously with the mediating community, the use of concepts and tools underpin crucial practices of reflection for transforming patterns of interactions. Rules mediate the relation of individuals and the wider community engaged in the specific activity. Since individual interests and networked perspectives are important topics of analysis in this study, rules mediating the performance of individual within the community involved represent relevant sources for explaining the evolving interactional patterns. Division of labour is the mediator between community and the object of activity (see figure 3). In the present study, the division of labour translates the roles of each participant in market interactions.

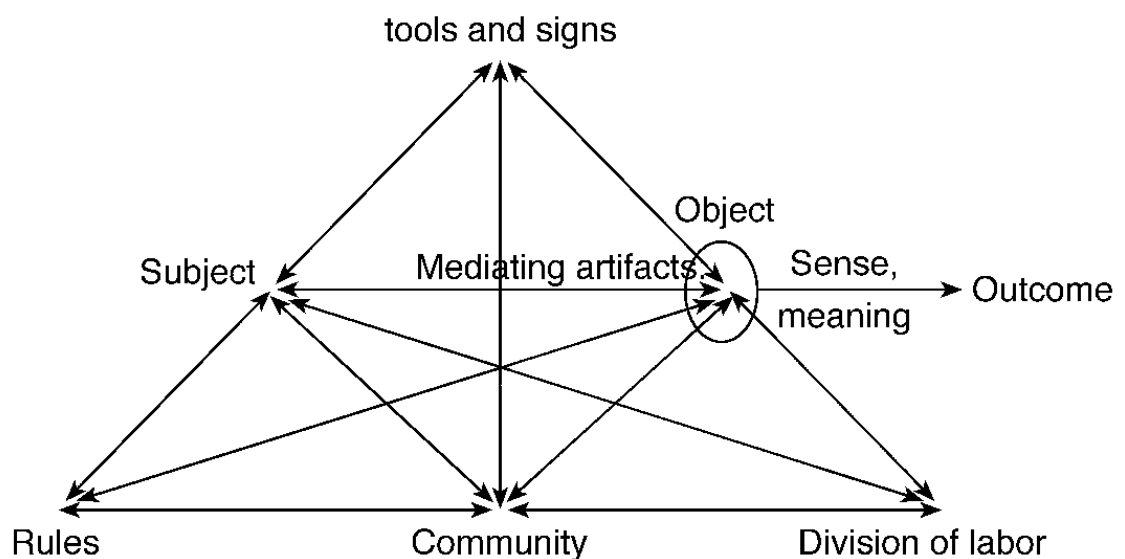


Figure 3 The structure of a human activity system
(Engeström, 1987, p. 78)

The approach advanced by the idea of work within activity systems dissolves traditional dualities of knowledge such as social versus technical and individual versus collective. Knowledge is constantly evolving through contradictions, conflict and tensions that are inherent to every activity system (Engeström, 1999a; Blackler, 1993). There are contradictory aspects within and between activity systems. These contradictions provide the basis for expansive learning processes and change (Engeström, 2001). Expansive

learning refers to significant transformations, which resolve contradictions and occurs through collective reflection and movements within and between activity systems (Engeström, 1987). In identification and resolution of contradictions by expansive learning, activity systems are transformed and the object of activity can be modified (Engeström, 2000). The notion of work development by means of activity systems contests the idea of knowledge as something that individuals possess. As it has been highlighted, the main premise of this theory is that knowing and activity are mutually engendered by the inherent contradictions related to systems of activity.

Another approach to work analysis through activity theory refers to the systemic-structural strand. Crucial to this strand is Bernstein's (1967) ideas on the self-regulation of activity systems (Bedny and Karwowski, 2004) (figure 4). As in cultural-historical activity theory, the *subject* refers to the conscious individual, or group of individuals, performing an activity and the *object* is what the subject envisions, explores and strives for changing (i.e. Bedny and Harris, 2005). *Task* relates to a defined performance towards a defined goal. In this sense, the activity is a task-goal performance. Tools are instruments, meanings and signs simultaneously used and constructed during activity.

Contrasting with cultural-historical activity theory, the systemic-structural approach assumes change as the result of feedback mechanisms. The process of continual adjustment through feedback means that players may change the approach for reaching their goals, i.e. methods and procedures, or change the goal itself, i.e. goal-condition (Bedny and Harris, 2005). Following basic tenets of activity theory, systemic-structural activity proposes that transformation stems from reflexive action. While cultural-historical activity theory postulates that reflection and transformation are upon contradictions of activity systems, systemic-structural activity theory proposes that change occurs by reflexive action focused on results. Consistent with the informational view on knowledge, systemic-structural activity theory proposes that "goals are the cognitive, informational components of activity" (Bedny and Karwowski, 2004). Goals are mental representations concerning an anticipated state to be accomplished. In turn, results relate to the outcomes.

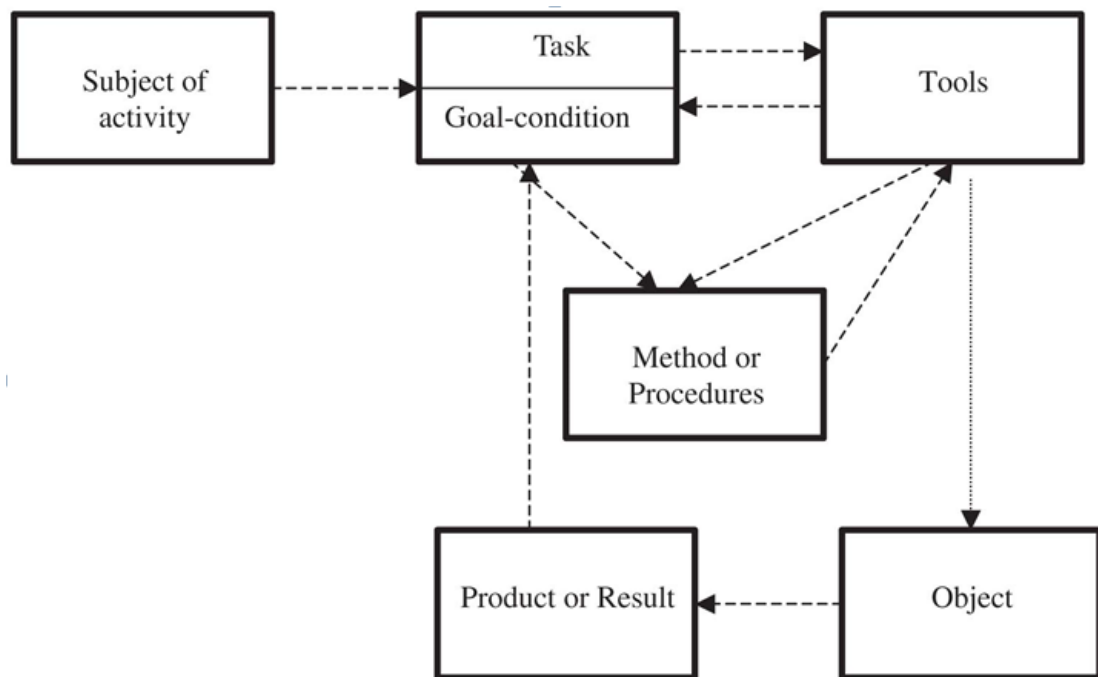


Figure 4 The systemic-structural process
(Bedny and Karwowski, 2004)

The present study adopts cultural-historical activity theory perspective as the theoretical lens for examining value co-creation for several crucial reasons. Firstly, it is suitable for studying the changing character of managing value co-creation and market interactions processes in terms of underexplored notions of knowledge as intertwined with practice. The systemic-structural version of activity theory, based on feedback, relates to linear and static views of learning. Secondly, cultural-historical activity theory is a promising framework for advancing novel perspectives on value co-creation knowledge and learning beyond their technical nature, which should help to form a view on the social groups, individuals and conflicting interests. Third, it can also help advance the idea of multifaceted constitution of learning within the network of parallel activity systems, whilst systemic-structural activity theory has been focused only on intra organisational working processes. The following section presents the basic concepts of cultural-historical activity theory. The purpose is to lay the foundations for further analytical discussion.

4.2.4. Fundamental tenets of cultural-historical activity theory

a. Hierarchical structure of activity

Activity corresponds to three layers forming a hierarchical structure. At the top of the structure is the activity itself. All activity has collective orientation to an object. When a

collective need encounters a potential fulfilment of the need, a communal motive takes shape and embeds the object of activity (Engeström, 1999a). The activity level is thus collective and object-driven (Engeström, 1999c). The second layer relates to actions. Actions are individual and conscious movements. As an integral part of activity, actions concern individual performances within a sense of collective enactment. Actions refer to conscious, goal directed, performances. Goal-directed actions live a shorter period than enduring object-oriented activity (Engeström, 2000a). Actions constitute activity as sub-units. The lower level units, which constitute actions, are operations. Operations relate to unconscious routines comprising automatic tasks. The nature and context of activity conditions the conduct of operations.

The hierarchical structure of activity in the system of three layers allows the examination of collective motivation, individual goals and operational routines in service-for-service businesses. The analysis of activity, action and operation can inform investigations of why actors engage in market interactions and collective activity, what actors do and how they perform. However, the idea of activity as structured in three hierarchical levels is not sufficient for explaining these issues or for understanding the origin or course of transformations towards value co-creating practices. These issues require a further elaboration of the tenets of cultural-historical activity theory, which is offered in the following sections.

b. Mediated action

A complex system represented by tools, concepts, language and culture mediates the approach to the object of activity. This system reflects the structure of the material and non-material world allowing and constraining activity. Collective action refers to the accumulation of experiences and understandings that permeate social forms of producing and using mediating tools (Engeström, 1999c). Thus, mediated action relates to the use of this complex system of culture and knowledge for applying the transformation of the object by the subject.

Mediated action occurs in systems of activity as previously presented (Figure 3, p. 59). In collective activity, the concept of the object embeds ambiguity concerning communal and personal understandings. The general historically developed object as transformed by society or the focus of attention of social groups is also the object of individual interpretation for particular approaches and specific action (Engeström and Sanino, 2010). This means that collective challenges involve individual conditions. Collective perspectives can differ from individual standpoints causing ambiguity and

contradiction. Thus, mediated action is inherently tensioned by dilemmas and disturbances within and between activity systems.

Systems of activity present the following elements of mediation (i.e. Engeström, 1987). Tools and concepts are instruments used in the subject-object interaction. Community concerns individuals, groups and subgroups involved in the same purposeful activity and motive. The subject approaches the object using instruments and community as mediators. Rules mediate the interaction of the subject with the community. Rules constrain actions as they consist in norms, standards, conventions, and regulations (Engeström and Sanino, 2010). Division of labour relates to the distribution of tasks and power relations between members. The division of labour defines the roles and shapes the interactions of the community with its object of attention. Different positions in the distribution of labour generate *multi-voicedness* (Engeström, 2001). The principle of multi-voicedness underpins the multiple interests stemming from different positions and histories of participants. Finally, mediated activity presents an outcome, i.e. the result of the transformation of the object.

The concept of mediated relations within activity systems can render accessible the complexity of interrelations permeating service-based networks. The perspective of mediated actions can enable a view of the complex interactions of business relations regarding the social forms, i.e. prior experiences, knowledge and current understandings, surrounding market activity. Approaches to collective motives, individual conditions and multi-voicedness in the distribution of labour can disclose the diversity of interests. Moreover, mediating elements can unveil the material relations and the character of these complex interactions. Ultimately, both the concept of mediated action and the idea of the hierarchical structure of activity provide the foundation for further elaborations on the issue of change and learning within networks. These issues are also implicated in the development concerns discussed below.

c. Development

Development relates to a journey of resolving difficulties, reflecting upon dilemmas and envisioning potentialities. Dilemmas, daily problems, difficulties, tensions and small innovations embed contradictory relations as the source of transformations and learning (Engeström, 2000c). “Contradictions are historically accumulating structural tensions within and between activity systems” (Engeström, 2001, p. 137). Significant transformation and learning emerge within the resolution of contradictory relations. The notion of learning by expansion, i.e. Expansive Learning (Engeström and Sanino,

2010), relates to the collective envisioning of novel potentialities through reconceptualization of the motive of activity and object of collective attention. As cultural-historical activity also approaches development as a research methodology, i.e. Developmental Work Research (Engeström, 2005), Chapter 5 (Methodology) will further discuss key concepts related to development, i.e. Zone of Proximal Development and Expansive Learning Cycle.

The conceptual foundation concerning development in activity theory can provide a basis of analysis for transformations and learning in service-based market interactions. The exploration of routinized disturbances can disclose the source of change in service-for-service relations. The envisioning of resolutions of contradictions and potentialities of a new object can trace learning paths in the direction of value co-creation. Ultimately, developmental concepts of activity theory can allow a view of managing change and knowledge and learning as intertwined processes of co-creating value.

d. Networks of activity systems

Recent developments of cultural-historical activity theory included the perspective of activity systems interacting with other activity systems. The analytical focus consequently shifted from activity system to the network of interacting systems of activity (Engeström and Kerusuo, 2007). Networks of activity systems partially share the motive of activity and object of attention (figure 5). The partially shared object represents the focus of attention and the motive of activity amongst two or more interconnected activity systems (Yamazumi, 2009). This means that collective activity in networked activity systems embeds mutual needs and shared the envisioning of potential benefits. The network of interacting activity systems multiplies multi-voicedness (Engeström, 2001). Significant transformations occur in interconnected systems of activity. These transformation stem from knowledge creation allowing the solution of networked difficulties (Miettinen, 1999, p. 331). Thus, learning in networks of activity systems refers to a socio-expansion affecting the entire network.

The view of activity systems within networks, as well as the combination with the other three tenets explored here, i.e. the hierarchical structure of activity, mediated action and development, might imply interesting transformations in the way we see value co-creation. An analysis of the network of interacting activity systems can help capture the complexity of service-based interactions aligned with the sources of transformations and the historical structures of positions and interests. Exploring this perspective can unlock possibilities for addressing diverging interests affecting value co-creation. The

network view combined with the other tenets can also allow scrutiny of significant changes and learning paths affecting interacting activity systems as integral entities of co-creating value. Section 4.3, which is dedicated to applying activity theory to value co-creation, will examine and discuss these potentialities. The next section depicts the development of activity theory in management studies.

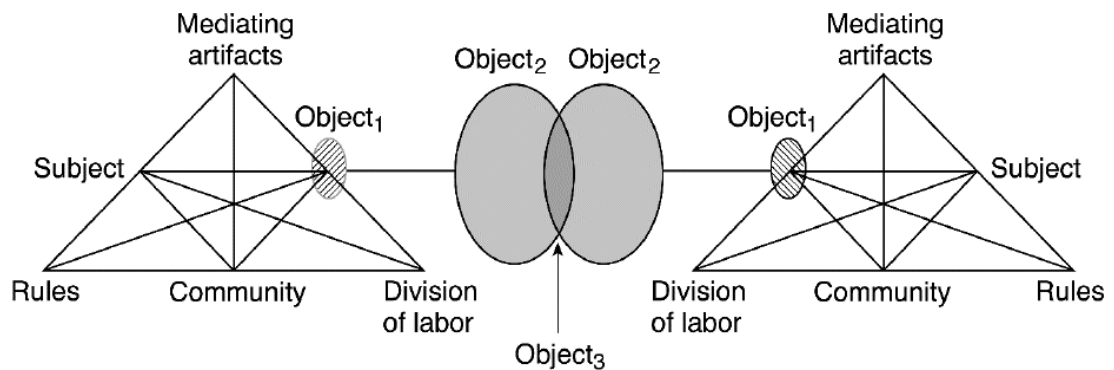


Figure 5 Two interacting activity systems partially sharing an object of attention (Engeström, 2001, p. 136)

4.2.5. Activity theory and organisation studies: knowledge, change and management

Activity theory and, more specifically, cultural-historical activity theory has proven to be very germane in the area of management studies, where it was introduced through the work of Frank Blackler (1993). He points out:

“Recent developments in the theory of knowing and doing challenge conventional, deep-seated assumptions about managerial and organizational rationality. This, and the increased emphasis being placed on the importance of esoteric knowledge and specialist know-how for business success, suggest that a review of the relationship between knowledge, organization and management is timely.”

(Blackler, 1993, p. 881)

An activity theory perspective highlights the fact that organisational practices are rooted in the changing character of contemporary work and reveals the conflicted and contradictory nature of practices.

Blackler (1993), building on Engeström’s (1987) cultural-historical activity theory, presented activity theory as an alternative to traditional views on knowledge, management and organisations. Blackler and his collaborators assert that expert knowledge in organising processes within networks is distributed, decentred and

emergent (Blackler, Crump, and McDonald, 2000). According to this view, collective learning is a process initiated through tensions and incoherencies that are inherent to all activity systems and can lead to significant change (i.e. expansive learning (Engeström, 2001, 1987). Activity theory implies therefore that management practice is fundamentally dealing with dilemmas, tensions and the course of changing practices (Blackler and Kennedy, 2004).

The cultural-historical perspective of activity theory has grounded relevant explanations of changing forms of organising and transformations of practices. In practice-based communities, knowledge transformations and the development of new practices embedded communication, politics and power as key elements for change (Macpherson and Jones, 2008). Learning, the key requirement for significant inter-organisational change, encompasses dialogue and collaboration while involving tensions and power relationships (Rose-Andersen and Allen, 2008).

Management can have an important role in approaching contradictions and paradox. For example, Prenkert (2006) pointed out that, through locating the sources of contradictions, management prompts the rearrangement and substitution of organising elements. Managerial action can prompt change by activating reflexive action on inner contradictions of the system (Prenkert, 2006). This disturbed context however is not always a source of change. Extant research identified stabilised activities stemming from culturally rooted tools, signs and procedures forming the unvarying and continuous part of a collective project (Blackler and Regan, 2009). Thus, managing change and learning rely on relating with such contradictory elements as dialogue/ collaboration and tensions/ struggle, and transformation/discontinuity and stabilisation/ continuity.

These topical propositions and principles of activity theory applied to organisation and management studies unveil potentialities for capturing tensions, difficulties and collaborative dialogue in service-based networks. Value co-creation could thus relate to market interactions in order to resolve tensions and dilemmas through reflexive action. In what follows, the tenets of activity theory will be proposed as an analytical framework suitable for developing insights into multiple business relations in service-for-service context.

4.3. Applying cultural-historical activity theory to value co-creation

4.3.1. Value-in-practice

As the object of activity is the motive and focus of collective action, value can be examined through the lens of cultural activity theory as such. The object of activity, as Engeström (2000a) indicates, is the central focus and foundational motive for an activity to be collectively endeavoured. Value is, in effect, the focus and motive for every market interaction (Ballantyne and Varey, 2006; Day, 2000). Value is the object of networked inter-organisational relations since it constitutes the centre of collective attention and the motive for business interactions.

Activity theory provides novel grounds for the conceptual dimension of value. Seen through the lens of activity theory, value is the motive of collective activity, which is constituted and transformed in practice through interaction. Seeing value within activity systems advances its conceptual dimension in the direction of fresh understandings regarding its interactional features and its dynamics of change. This means that current notions of value co-creation related to resource integration and value co-creating experiences can be understood as stemming from daily practices and collective communication.

Explaining the conceptual dimension of value through routines and communications is important for providing a view on the possibilities of transformations in the direction of co-creating value. Prior activity theory studies indicated that communication concerns potentialities for transformation within individual and collective interests (e.g. Ardichvili, 2008; Jarzabkowski, 2003; Blackler, 1993, 1995). According to this view communication and operations have the capability of forming new meanings setting novel interactive spaces (Gutierrez, Baquedano-lópez, and Tejada, 1999; Gutierrez, Rymes and Larson, 1995). As Engeström (1987) pointed out, significant transformations occur in these interactive spaces within reflective communication.

Since activity systems (see Section 4.2.2.b) are cultural-historical constructions, viewing the formation of value notions through routines and communication also involves understanding the dynamic interactions with the broader contextualised environment. The activity system is a field of practice wherein value could be advanced in terms of its complex, temporal and contextual nature (Vargo, 2008). Instead of seeing value as the creation of capabilities in static social structures (Section 2.2.) by approaching interactions within and between activity systems, value can be viewed in terms of its creation, continuation and discontinuity embedded in networked practices.

Thus, it could shed further light on the constitution of value through diverse points of view in the field of practice.

Importantly, the view of cultural-historical activity theory on value highlights the contradictory relations underpinning the dynamics of market interactions. Chapter 2 highlighted the relevance of articulating the nature of value with environmental influences. There are critical environmental features that cultural-historical activity theory can bring to the fore. As Engeström and Sannino (2010) note:

“[...] the rhythm of overall concept-level transformations is accelerated. In other words, what needs to be mastered is variation in the sense of constantly shifting product, production and business concepts.” (p. 3)

The notions of temporality and context need articulation with environmental influences and the inherent *transformative nature of value co-creation*. Following Engeström and Blackler (2005), the notion of practice advances the interplay of material and human relations, as well as the cultural and psychological features. The main notion of object places emphasis on practices aimed at possibilities and change. Thus, the conceptual dimension of value in the context of value co-creation principles could relate to the collective activity within which participants share collective motives while presenting individual standpoints. Furthermore, activity theory can explain how actors initiate the resolution of tensions and dilemmas and, consequently, develop capacities for engaging in transformative action.

Table 4 summarises the proposition for seeing value-in-practice as a complement of value-in-context.

The value co-creation notion of value-in-context	Complemented and extended by the concept of value-in-practice
Value is <i>contextual</i> : it is impossible to understand it in isolation from the circumstances of the environment and its situation.	Value is <i>practical</i> : individual and collective routines and communications delineate shared notions of value. Value-in-practice embeds tensions and dilemmas as potential initiators of significant transformations.

Table 4 Value-in-practice

4.3.2. Value co-creation initiated by internal conflicts allowing transformations for integrating resources

Studies on value co-creation assume knowledge as skills and capabilities for prompting the change of processes and increasing performance. These studies rely on the view of learning as the acquisition of skills through a source of transfer or from own experience, or both (e.g. Hamel, 1991; Inkpen, 1998; Elkjaer, 2004). Furthermore, extant research assumes the existence of competent participants knowing what should be learned (e.g. Wenger, 2000). The recognition of knowledge as the main resource for accomplishing integration amongst a vast array of participants (e.g. Grant and Baden-Fuller, 2004) is an important advance, but it does leave problematic views on knowledge and learning within changing environments. As Engeström (2001) explains:

“People and organizations are all the time learning something that is not stable, not even defined or understood ahead of time. In important transformations of our personal lives and organizational practices, we must learn new forms of activity which are not yet there. They are literally learned as they are being created. There is no competent teacher.” (pp. 137-138)

Chapter 2 identified that resource integration could benefit from further understandings of *learning processes* within networks. Cultural-historical activity theory’s concern with change and discontinuity widens the focus beyond process improvements for value co-creation. Learning within networks includes both the unpredictability of process transformation and the conflicted nature of change (Engeström and Kerusuo, 2007). Examining tensions and dilemmas, rather than knowledge transfer and acquisition, highlights the problems of process discontinuity and conflict resolution.

Emphasising contradictions and conflicts also helps address the shortcomings of resource integration as a functional service system. Whenever tensions aggravate and actors identify *internal contradictions*, relentless learning efforts can emerge. Actors engage in collaboration in order to develop new instruments and concepts, or new rules and a fresh division of labour, which mediate their approach to the object of activity, i.e. approach to value. Transformation is initiated in each organisation as activity systems are “energized by their own inner contradictions.” (Engeström, 2001, p. 140). Practice and learning are thereby simultaneous, and the constitution of novel material relations within transformed activity systems initiates value co-creation. Table 5 summarises:

The value co-creation process of resource integration	Initiated and allowed by the process of development
Key resource integration occurs through the mutual influence and reciprocal support of combining and assimilating operant resources including knowledge, skills and capabilities.	Relevant mutual transformation of processes is prompted by the internal contradictions, which could initiate the search for the construction of novel tools, concepts and mediated relations, which, in turn, could prompt resolution of conflicts and dilemmas.

Table 5 Value and development

4.3.3. The co-configuration of value through knotworking

The idea of knotworking is explored in this section as a crucial element in the interactional dimension of value co-creation as co-configuration. Engeström (2005) points out that “knotworking is characterized by a movement of tying, untying and retying together seemingly separate threads of activity” (p. 308). In other words, interactions take place in the course of collaboration, which is distributed amongst rapid and improvised encounters between participants. Engeström (2000a, p. 972) also notes that the “locus of initiative changes from moment to moment within a knotworking sequence.”

The concept of knotworking brings to the fore the multi-layered format of team work. This format, which represents a redefinition of temporary groups (i.e. Meyerson et al. 1996) in inter-organisational networks, may be triggered by the on-going co-configuration of the object of activity. Chapter 2 pointed out that the flow of transformations for allowing value co-creation needed further investigation. Current value co-creation approaches sustain traditional views of transformation based on temporary groups as related to time-bounded task and well defined goals (e.g. Frow and Payne, 2008; Payne et al., 2008). However, dynamic interactions in complex and changing environments require procedures of constant change of partners within rapid negotiations and improvisation (Engeström, 2000a).

As the review of the roles of customers and suppliers pointed out in Chapter 2, the effects of diverging interests and of the diversity of perspectives on value has been overlooked in current value co-creation literature. The approach of co-configuration

through knotworking stresses the formation, dissolution and reformation of encounters amongst participants with diverse interests. This is in contrast with the perspective of prompting value propositions following a continuous process improvement through cooperation within established schedules and centralised coordination. Co-creating value through knotworking represents a departure from proposing value to a network of stakeholders in a centralised fashion. In co-configuration through knotworking, multiple systems of activity must interconnect in order to produce services (i.e. Engeström et al., 2007; Engeström, 2000a). As Kangasoja (2002, p. 5) states, “demanding the transition towards knotworking is when traditional rules, divisions of labour and power positions are strongly present, but no longer sufficient to guide the collaboration”. Arguably, the complexity of interactions and diversity of interests in value co-creation demand collaboration as knotworking.

The examination of the role of suppliers in terms of facilitating value, i.e. Chapter 2 indicated the need for a novel perspective that could capture the phenomenon of mutual integration of capabilities. Through the concept of co-configuration, activity theory enables studying mutual relations of knowledge exchange and reciprocal learning. Learning in co-configuration can be viewed in two ways. Firstly, one could envision the structure of interacting activity systems and the construction of social spaces through boundary crossing and tying knots, i.e. activity fields (Engeström and Kerusuo, 2007) or landscape of learning (Engeström, 2004, 2002). Secondly, one could view learning at the level of action, where participants negotiate and interact through knotworking and through bridging small and otherwise trivial transformations ((Engeström, 2004). This means that value co-creation refers to tying operations, personnel and resources vertically, i.e. in activity systems, and horizontally, i.e. between activity systems, while interacting through navigating in multiple sites.

The emphasis on the individual and collective competence, skill, and knowledge that encourages participants’ engagement in efforts of change is an important aspect that emerges from viewing learning in co-configuration. In order to face challenging transformations individuals can experience the search for relevant expertise by means of crossing boundaries and finding knotworking partners.

The value co-creation approach on interactional features	Challenged by the concept of co-configuration through knotworking
Fixed supplier and customer roles whereby suppliers act by means of articulating value propositions and facilitating value creation, while the customer creates value through experiencing.	Suppliers and customers co-configuring value in interaction and jointly. Value co-creating interactions could then be seen as continuing networked transformations of the supplier, the customer and other parties and their material historical relations with the product/service.

Table 6 Value co-creation as co-configuration through knotworking

4.3.4. Value co-creation as change management

Understanding management as an organising endeavour in networks helps in seeing value co-creation as a change activity. In order to develop an explanation of *co-creating value as change management*, the present section explores the work of Blackler, Crump and McDonald (2000). These authors provide an extension of activity system’s terminology following Boland and Tenkasi’s (1995) ideas concerning the construction of perspectives in “communities of knowing”. The key difference between Blackler’s et al. (2000) model and the original cultural-historical activity theory is that Blackler et al. (2000) look at the managing of meditational elements of activity systems through the practice of perspective shaping, perspective taking and perspective making (figure 6).

There are a number of reasons why these managerial assumptions in the context of cultural-historical activity theory should be related to the process transformations and conflicting perspectives issues of value co-creation. An important aspect of cultural-historical activity theory as elaborated by Blackler et al. (2000) is the ability to articulate change and diversity of interests with organising in networks. Two main features operationalise this framework. On the one hand, strong central control hampers the transformation of activities, while temporary and task oriented groups that are self-organised within the processes of perspective shaping, perspective taking and perspective making are able to conduct effective transformations. On the other hand, these relevant transformations stem from three main factors: a participant’s familiarity with the collective activity as a multi-faceted practice, collective understanding of the broader cultural and procedural history of the development of the activity system, and

an actor's response to emerging contradictions and dilemmas. This means value co-creation management must be able to recognise the origins and nature of conflicting market interactions, and to understand how to interact in the construction of perspectives and articulate task oriented groups throughout the broader multifaceted net of interests.

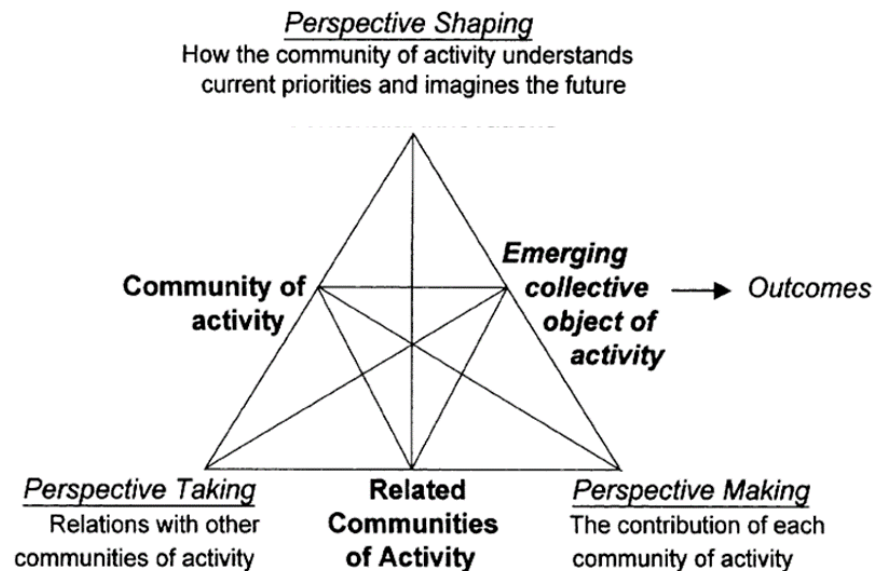


Figure 6 Organising through networking
(Blackler et al.,2000, p. 283)

It is argued here that value co-creation management cannot be viewed as an organisational mechanism of control in its networked relations. As Engeström (2004; 2001; 2000) emphasises “the centre does not hold.” Managing value co-creation needs to be viewed as an emergent, distributed and decentred practice. Value co-creation requires exploration of the variety of networked activities that are involved. Players sharing common objects of collective attention and desired outcomes achieve stronger bonds for stabilising the performed transformations (Engeström, 2007b). This means exploration of perspective shaping, taking and making that is implicated in the co-production of value. Finally, value co-creation is, through the lens of cultural-historical activity theory a practice of communicating and acknowledging that the mutual transformations of processes in networked relations require working with complex and possibly competing interests and priorities.

Current view	Activity theory lens
Focus on communication that could enable interest alignment and resource integration.	Focus on the articulation of diverse perspectives towards the resolution of contradictions and the consequent transformation of the processes.
Emphasis in the creation of networking patterns and in setting metrics of performance and objectives.	There is no control. Collective activity is decentred, distributed and emergent.
Highlights the delineation of tasks and activities through regulating network participation.	Highlights collective participation and engagement for the resolution of disturbances.

Table 7 Value co-creation management and the lens of activity theory

4.3.5. Value co-creation practice: knowledge and learning issues

Knowledge is assumed here as a practical element of value co-creating relations in inter-organisational networks. In order fully to understand knowledge in market interactions, it is crucial to consider the collective activity that ties participants' actions. In a cultural-historical activity theory view, "a collective activity system is driven by a deeply communal motive" (Engeström, 2000a, p. 964) which emphasises negotiated interactions rather than technical content or knowledge transfer and acquisition of capabilities. In market interactions, the view of knowledge as practice promotes emphasis on struggles and negotiations towards consensus and shared meanings, exercised often through the construction of a shared motive of activity. This happens when participants engage in collaboration and jointly produce meaningful transformations.

Through practice, knowledge can be seen as stemming from what Engeström (2001; 1999) refers to as multi-voiced activity systems. In the context of multi-voiced activity systems, diverse interests and points of view emerge and can give rise to actions of translation and negotiation which can produce transformations for both process and structure of relationships (Engeström, 2001). Such outcomes can have effects on participants' positions and create fresh conventions, rules and concepts. Furthermore, the view of knowledge as intertwined and distributed within collective activity can bring into focus the empowered nature of customer knowledge and participation. When acknowledged, this empowered view can shed light on active transformation as further

consequence of customer engagement. This can have the effect of improved understandings of customer initiatives for co-creation of value as well as co-production of new knowledge.

It has been argued above (Chapter 2 and 3) that fast moving markets calls for explanations of learning which could capture the current pace of market change. This encompasses further understandings of individual and collective moves “between multiple parallel activity contexts” (Engeström, Engeström, and Karkkainen, 1995). Participants in market interactions do this by reflexive action for problems and potentials that “can only be understood against their own history” (Engeström, 2001, p. 136). Contradictions within and between activity systems, i.e. historically developed tensions (Engeström, 1987), can be the source of reflexive action of market participants. This initiates conscious efforts toward changes that can be made possible by collective envisioning of value creating potentialities. It also means that value can be reconceptualised, leading to radically transformed interaction patterns as well as novel organisational processes.

An important consequence of viewing knowledge and learning in value co-creation through the lens of activity theory is that it provides a sense of knowing and learning through reflexive and collective interaction towards change. It opens up the possibility of studying knowledge creation as collective questioning and debate. For value co-creation, this signifies a different view of knowledge and learning. Instead of emphasising knowledge as know-how about initiating dialogue in market interactions by designing encounters and creating platforms for engagement, cultural-historical view stresses the sources of transformative knowledge and learning.

Perhaps more importantly, the cultural-historical activity theory lens highlights the situated and distributed nature of knowledge and learning in practice. In this sense it helps to support the emergent view of value co-creating knowledge creation in the course of striving to resolve conflicts. If participants are able collectively to identify the source of problems and the locus of possible transformations, they can learn new rules and roles and create new conceptual tools that could afford relevant transformations towards value co-creation. This makes the lens of cultural-historical activity theory an important resource for expanding our current view on value co-creation.

Value co-creation	Current view	Activity theory lens
<i>Knowledge</i>	Related to the application of useful skills for interacting with the market and prompting resource integration as well as the interchange of competencies.	Is engendered in multi-voiced activity systems and intertwined within distributed collective activity. It can produce transformations for both the process and the structure of market relationships.
<i>Learning</i>	Learning how to co-create value is about developing capabilities of manipulating market interactions in order to manage customer activities and control process improvements.	Conscious effort toward changes that can be made possible by collective envisioning of value co-creating potentialities. It is a situated and distributed view of collective learning in everyday market practices.

Table 8 Value co-creation knowledge, learning and the lens of activity theory

4.4. Conclusion

Chapter 2 scrutinised the dimensions of value, i.e. conceptual, procedural and interactional, through contrasting the traditional view with an increasingly relevant strand of thought stemming from the value co-creation principles of Vargo and Lusch (2004) and Prahalad and Ramaswamy (2004). The analysis of the conceptual, procedural and interactional dimensions of value indicated that contemporary perspectives needed further advancements. These developments concerned the interrelation of networked, managerial and learning aspects that surround transformations in the direction of co-creating value. In addition, the analytical juxtaposition of the traditional perspective of value and the co-creation approach unveiled that value co-creation also requires a more dynamic view of the environment. It was argued that a dynamic view of the environment is in line with the changing nature of value co-creating markets.

Chapter 3 explored the topical issues brought to the fore in Chapter 2, i.e. change, networks and knowledge and learning, through examining the propositions of relevant frameworks for organising value co-creation. The purpose was to continue the analysis

initiated in Chapter 2 through investigating current models of managing transformations, networked relations and learning for co-creating value. Chapter 3 demonstrated that extant frameworks rely on communication for transferring resources (Prahalad and Ramaswamy, 2004), on the creation of patterns of networking (Gummeson and Mele, 2010), and on delineating tasks in exchange activities (Payne et al. 2008). In turn, value co-creation theory assumes knowledge as technical capacities and learning as a static and linear process of experimentation (Prahalad and Ramaswamy, 2004) or internal vertical movements (Gummeson and Mele, 2010). These frameworks have scarce understandings of the interplay of changing market interactions and management, knowledge and learning. Moreover, current perspectives of managing value co-creation has given little attention to the host of conflicting interests permeating networked interactions and its consequences for value co-creating practices. Thus, the need for developing current considerations of value co-creation in terms of its conceptual, procedural, interactional dimensions, as well as its organising processes, required a fresh theoretical perspective that could advance issues related to change, conflict, knowledge and learning, and provide a comprehensive understanding of how these issues intertwine for enabling value co-creation.

Chapter 4 introduced cultural-historical activity theory in terms of its foundations, its fundamental tenets and its potentialities for application in value co-creation theory. This was done against the background of the growing attention dedicated to the distributed, fluid and emergent character of practice, knowledge and learning in organisational and management studies. Within the latter view, value is seen not only in context but also in practice. Value, thus is not only a process of resource integration but is constituted through the collective search for the construction of novel tools, concepts and mediated relations, which could prompt resolutions of conflicts and dilemmas. Moreover, value is not accomplished through static roles – instead, fast moving and distributed interactions shape a complex network of alternating tasks, functions and positions. Value co-creation management, therefore, is focused on the articulation of diverse perspectives towards the resolution of contradictions and the consequent transformation of the relevant processes. Similarly, knowledge in value co-creating interactions stems from multi-voiced activity systems and is intertwined and distributed within collective activity. Value co-creation learning is seen as a conscious effort toward change that can be made possible by collective envisioning of value creating potentialities.

This account of value co-creation based upon cultural-historical activity theory entails a more dynamic view of market interactions. Instead of viewing value co-creation as a fixed managerial function based on know-how, skills and technical knowledge, each situated market interaction should be understood as part of a wider collective activity wherein value co-creation practice is being formed and reformed in conjunction with knowledge. Thus, it becomes necessary to extend our view to consensual and empowering dimensions of knowledge. The character of value co-creation needs to be explored not only in terms of expanding our current understandings of value, but also in terms of its managerial nature. Ultimately, as the proposition, offer and creation of value are no longer a solely managerial task but a collective activity encompassing all participants in market interactions, value co-creation is a mutual learning endeavour, which is jointly accomplished in practice.

4.4.1. Research Questions

This literature review indicates the importance of situated practices for investigating value co-creation and related transformations of service-based and networked business interactions. The transformation of market relations and interactions intertwined with knowledge, learning and practices of value co-creation emerges as a key under-explored aspect of value co-creation as an organising activity. In combination, the topical issues related to change, knowledge and learning surrounding value co-creation ground the need for a general model informing how management practice can enable value co-creation. Therefore, the main research question derives from the gaps in current value co-creation literature and the aim of a generating a relevant managerial framework of value co-creation. The general line of enquiry underpins empirical research in order to develop a comprehensive understanding of value co-creation in this context. The central research question is:

- How do service-based networks co-create value?

The literature highlights the fact that resource integration underpins the process of value co-creation and stresses that resource integration occurs through the mutual influence and reciprocal support of combining and assimilating operant resources including knowledge, skills and capabilities (Grönroos, 2011; 2008; Vargo and Lusch, 2011; 2008; 2004). However, as it has been previously highlighted, a perspective on value co-creation as change management has been neglected. In consequence there is a lack of understanding of knowledge and learning as a change capacity in the direction of value

co-creation. The present research will search for answering the following questions in order to examine these topics and to answer the main question:

- How do internal contradictions and learning possibilities relate to the integration of resources for value co-creation?
- How does knowledge and learning evolve within market interactions?

Interactional features referring to value co-creation have been indicated as fixed roles that are performed by suppliers and customers. Literature suggests that the role of suppliers is to articulate and facilitate value co-creation (Payne, Storbacka, and Frow, 2008; Prahalad and Ramaswamy, 2004). In turn, the role of customer is to create value through experiencing (Prahalad and Ramaswamy, 2004; 2003). As a consequence, current value co-creation frameworks fall short of explaining the transformation of interactions and changing market relationships. In addition, the consequences of diverging interests in the nature of market interactions and its significances for co-creating value are underexplored. The following questions scrutinise these themes while also contributing to answering the main question:

- How do interactions evolve amongst multiple players with divergent perspectives of value? What is the nature of these interactions?

The managerial facet of co-creating value is an overlooked topic in value co-creation research and there is a great opportunity for developments in this area. Much of the literature looks at communication for integrating resources and alignment of interests whilst participation is regulated through determination of patterns, metrics and activities (Gummesson, 2006; Payne et al. 2008; Prahalad and Ramaswamy, 2004). The research question below relates to extending research on managing market interactions for value co-creation in terms of possible articulations of diverse interests and collective participation for learning:

- How can value co-creation management allow transformation and learning?

The main question of the present research and its supportive enquiries provide fundamental strands of investigation to scrutinise the practice of value co-creation in the context of inter-organisational service-for-service market relations. These questions will drive and support modelling the methodology of research and conducting fieldwork as outlined in the next chapter.

Chapter 5. Methodology

5.1 Introduction

The purpose of this chapter is to outline the methodology and methods applied in this study so as to investigate the process of value co-creation and outcomes of service-based market relations under the perspective of cultural-historical activity theory. The first part of this chapter examines the methodology of developmental work research as a general approach for researching value co-creation. The ontological and epistemological foundations are discussed first, followed by the analytical models of developmental work research. These constitute the foundations for interpreting and analysing value co-creation as a dynamic and continuous transformation.

The second part of the present chapter presents and explains the specific methods and techniques used for collecting, interpreting and analysing the data. The research is based on the strategy of case study (i.e. Eisenhardt, 1989) within an ethnographic approach (i.e. Visconti, 2010). The ethnographic case study enables capturing the dynamics of inter-organisational relationships as a process embedded in everyday practices. The third and final part outlines relevant issues related to rigour, quality and trustworthiness, as well as the ethical concerns that needed consideration during fieldwork. This last part indicates reflexivity as the main principle permeating the conduct of the present research.

5.2 Developmental Work Research

5.2.1 Ontology

Approaching change in value co-creation through the dialectical materialism of practice

Research based on the realist ontology of cognitivism, i.e. information processing as a procedure of the mind in relation to an external reality (Hackley, 1998), treats value as a subjective perception of individuals derived from their lived experiences as consumers (Mathwick, Malhotra, and Rigdon, 2002; Zeithaml, 1988). While it results from accumulated sensorial experiences of the real world, value exists as an abstract entity assessed by inner cognitive processes of the mind. Value is thus an assessment of the accumulation of perception in comparison with the expectations of individuals in each relational encounter (Johnson, Anderson, and Fornell 1995). According to the perspective of the service-dominant logic (i.e. Vargo and Lusch, 2004), in these relational encounters co-creation occurs by means of integration and exchange of networked resources, especially knowledge and skills (Vargo et al., 2008). The

ontological standpoint of cognitive realism grounding this main notion of value in co-creating interactions puts forward the accumulative process of experiencing, which can originate value through multiple relational interactions of resource exchanges (e.g. Baron and Warnaby, 2011; Tynan et al., 2010). In the realist ontology, individuals delineate accumulated valuation from their factual experiences of exchanging resources.

Contrasting with the realist ontology for examining value co-creation, a recent proposition brought to the fore the underlying social construction of value (i.e. Edvardsson et al., 2011). The view of value co-creation in the social construction ontology advances its inter-subjective character. Value co-creation as a social construction emphasises value as shared understandings and meanings, and as built in relation to social contexts. In the social construction ontology, value is enacted to sense-making activities that are embedded in the social structure of “norms, values and ethical standards” (Edvardsson et al., 2011, p. 336). This proposition of a social constructionist view of value assumes that the social-cultural environment imposes the notion of value on individuals. Consequently, the central aspect of this ontological stance relies on asserting that a cultural logic underlies what individuals interpret as value.

Despite being distinct ontological views, these separate standpoints result in a framework indicating the existence of a) cognitive/individual; b) inter-subjective/interactive; and c) social/cultural elements that permeate the ontological basis of value in terms of the co-creation processes. These ontological stances afford the possibility of understanding how value is assessed at the subjective level within exchanging practices, as well as how it is moulded by sense-making at the inter-subjective level. The present work argues for a third, complementary, ontology that unifies value co-creation in terms of its interactive-dynamic relations between subjective, inter-subjective and socio-cultural levels: *the dialectical materialism of practice*.

The *dialectical materialism of practice* forms the ontological foundations of Developmental Work Research (Miettinen, 2004). From dialectics, this ontology assumes that the performance of single elements composing an entire function cannot be understood outside its intricate relation with other performing elements and with the whole function (Roth and Lee, 2007). These elements are in reciprocal contradiction, e.g. individual-collective, agency-structure. The presupposition of mutually contradictory elements encompasses the transformative nature of the whole entity. This changing character entails the ontological stance of a dialectically becoming being.

The ontology related to dialectical materialism of practice offers transcendence from individualistic and socio-cultural views (Engeström, 1999c). To overcome this duality of “the social versus the individual”, the conception of “practical-critical-activity” is fundamental. Practical-critical-activity refers to the mundane and communal work of using and producing tools for approaching and directing activities with a conscious motive (Leont’ev, 1981). The critical aspect of these collective practices refers to the “transformative interactions” amongst individuals, artefacts and activity (Miettinen, 1999, p. 175). Viewing these interactions with a dialectical materialist basis translates the collective practices as an evolving mutual transformation of the individual and the social through material relations.

In practical-dialectical materialism “transformative collective material practices constitute the very foundation of human social life, producing and reciprocally being produced by social interactions and human selves” (Stetsenko and Arieviditch, 2004, p. 480). This means that material artefacts condition the individual and the social as much as individuals and collective practices that produce these material artefacts condition them in turn. By transforming nature, individuals transform themselves and their interrelations. Thus, transformations are at the centre of interactive processes of production. This collective practice unveils the dynamic interplay of mutual influence between cultural material artefacts, individuals and collective activity as the basic foundation of Developmental Work Research. This relation of mutual influence amongst material, subjective and inter-subjective elements adds new insights to currently established views of the roles and processes of learning and change towards value co-creation developments.

Developmental Work Research is proposed here as a possibility of moving away from adaptive models of transformation where value co-creating activities perform as “unique” experience providers (Ramaswamy and Guillard, 2010). This experience-based model views co-creation as allowing individuals to undertake the cognitive operation of adapting, studying and unifying use values. Change takes place as organisations learn and adapt to novel patterns of collaboration with a community (Brown and Duguid, 1991). This adaptation process unfolds the creation of new types of value co-creating activities and organising. In researching the motives for clients’ engagement, Nambisan and Baron (2009) fall into the static view of learning and change for co-creating value. These authors indicate the relevant factors for successfully implementing engagement platforms, i.e. web based tools designed to mobilise

customers, suppliers and partners into value co-creation (Ramaswamy and Gouillart, 2010), according to customers' wants. The ontology of dialectical materialism can approximate "platforms of engagement" as tools emerging from and simultaneously grounding the changes in value co-creation practices.

Grounding material tools (platforms of engagement), activity (managing) and individuals (customers and other stakeholders) in the same ontological basis of dialectics provides a pathway for advancing change as it dynamically unfolds. It is proposed here that the conduit for unveiling the dynamic changes in value co-creating practices refers to considering the relationships amongst these components with no starting point. The standpoint of dialectical materialism places each one of the elements of value co-creation as essentially necessary for the existence of each of the others. Like fibres and threads in a strand (i.e. Roth and Lee, 2007) their character is reciprocally conditioned and can only be understood as a part of the whole. This ontological aspect entails a perspective on value co-creation as giving a sense of simultaneous transformations amongst platforms of engagement, individuals and managing activities. As their existence is mutually conditioned, so are their concomitant changes. The vision of these reciprocal transformations unveils the inherent character of on-going movements of mutual influence embedded in value co-creating activities.

Turning to the Service Dominant logic paradigm of value co-creation, Vargo (2009) indicates the changing nature of multiple elements in value co-creation by asserting:

"[...] value co-creation is a complex process involving the integration of resources from numerous sources in unique ways, which in turn provide the possibility of new types of service provision. [...] The elements are value, relationships, and networks; the driving force, and thus the nature of value, relationships, and networks, is mutual service provision for mutual wellbeing." (p. 378).

The ontological foundations of *Developmental Work Research*, assuming mutually necessary and changing beings, are consistent with the principle above. More importantly, it is argued here that it *provides an enhanced basis for empirical findings in the direction of the mutual provision of new forms of service comprising value, relationships and networks* as Vargo (2009) pointed out. This epistemological issue is discussed in detail in the next subsection.

5.2.2 Epistemology

Expansive transformations by means of the epistemology of practice

In this section, the epistemological foundation of Developmental Work Research is compared, contrasted and connected with the philosophical stances of value co-creation research. Particularly, the epistemology related to positivist and social constructivist standpoints is analysed in its potentialities and limitations for current topical research of value co-creation. The contemporary challenges of studying value co-creation, are associated with the complex and unstable context of the markets (i.e. Gummesson, 2006a). It is argued here that to cope with the actual market circumstances, *we need to transcend the established dualistic epistemology*.

In the mainstream epistemologies regarding market interaction research, the dualism between positivism and social constructionism is reflected in, respectively, objective empiricist reductionism and subjective interpretivist pluralism (Tapp and Hughes, 2008). Objectivist epistemology places the researcher in a detached position in relation to its external object of inquiry. This separation is intended to enable knowledge and understanding of an “objective world” (Realin, 2007, p. 496). In turn, reductionism advocates the isolation of the elements within objective experiments (Tapp and Hughes, 2008). This reduction to a few relevant and stabilised constituents (Gummesson, 2006b) results, for value co-creation studies, in understandings in which generalising properties of management and/or consumers’ behaviour enable the necessary engagement for value co-creation.

The objective and impartial role of the researcher can also assume a qualitative character and put forward relevant aspects of locally bounded situations and contexts. Following these terms, positivist case studies have provided insights on the process of interactions affording value co-creation (e.g. Tynan et al., 2010; Ramaswamy, 2008). At its best, this current strand of case studies will enhance our knowledge of patterns of interaction exploring dynamic and, possibly, blurred roles in the market (e.g. Michel, Brown, and Gallan, 2008). However, these pluralistic understandings of roles and interactions interwoven with value co-creation practices necessitate further advancement that is constrained by the positivist approach.

Tapp and Hughes (2008) point out that the resulting models of empirical positivism need to be seen as initial stages for practical results, thus, current research is required to penetrate the “gap between the model and the final solution” (p. 276). Within this gap, practitioners deal with doubts and incomplete information that research is only able to capture if it can access the world as it is perceived by the actors. Focusing on the

evolving perceptions of participants involved in market interactions and consumption activities can afford new understandings on how to manage in the context of contemporary markets (Tapp and Hughes, 2008). The philosophical basis for elucidating this alternative inquiry is grounded in the subjective interpretivist epistemology.

Interpretivism searches for understanding the perspective of the participants in specific contexts. It contributes to a dynamic view of the phenomena by focusing on actors' "behaviour through investigating how they experience, sustain, articulate and share with others [the] socially constituted everyday realities" (Johnson, Buehring, Cassell, and Symon, 2006, p. 132). The epistemology of interpretivism, bounded within pluralistic views, is relevant to value co-creation by explaining how actors mould their perceptions by means of shared understandings, as well as the role of the wider societal context in the production of these perceptions (Edvardsson, Tronvoll and Gruber 2011). Thus, the value co-creation concept could benefit from this underexplored epistemological strand in two ways. Firstly, it would enable gaining fresh insights related to the nature and framing of participants' perceptions about their actions in value co-creation activities. Secondly, it would also make it possible to advance further explanation of how collective value is ultimately established.

Developmental Work Research resonates with the main perspective of this strand of research regarding the need for a closer connection between the researcher and the subject. Epistemological foundations of Developmental Work Research ground a dialogic approach between the researcher and participants enacting the view of multiple understandings, beliefs and commitments, which shape the resultant interpretations (Long and Long, 1992, p. 212-213). Through the dialogue between the researcher and participants, Developmental Work Research follows an emic epistemology focusing on the perceptions and "world views of the members of the culture under study" (Realin, 2007, p. 497). Despite the similarities that approximate epistemological stances of Developmental Work Research with the notions of a subjective, interpretivist and pluralistic epistemology, Developmental Work Research is fundamentally different from current research strands being proposed in value co-creation (e.g. Edvardsson et al. 2011).

A critical presupposition of Developmental Work Research epistemology is that the attempt of constructing mutual understandings of phenomena is a communication

activity requiring engagement of all participants in solving critical issues together (Engeström, 1999c). The key distinguishing feature of the epistemological foundation in Developmental Work Research is bringing to the fore “the processes that encourage more knowing-in-action and their outcomes” (Realin, 2007, p. 496). This fundamental difference places individual actors of research in “participation in an unfinished universe and not [...] spectator[s] of a completed cosmos” (Garrison 1995, 111).

The epistemology of Developmental Work Research is an “epistemology of practice” (Realin, 2007). It transcends the dualistic view of subjective interpretivism against objective empiricism by acknowledging that the nature of work has epistemological consequences. Actors anticipate cultural tools and the way they interact by controlling and reproducing roles, meanings and forms of organising (Leont’ev, 1978, p. 23). Thus the epistemological basis of developmentally focused research relates to “understanding the conditions of social change and transformative human agency” (Miettinen, 2006b, p. 402). As a consequence of this epistemology, Developmental Work Research opens exciting avenues for researching value co-creation. It advances the circumstances of the relationship between participants as embedded in activities toward the transformation of material relations, workplace actions (Miettinen, 2006b) and, ultimately, the creation of new capacities (Miettinen et al., 2008).

Before moving on to the research approach and strategy of ethnographic case study, there is a need to further explain the methodological issues related to the unit and level of analysis. This is crucial for establishing congruence between data collection and theory (Klein, Dansereau, and Hall, 1994).

5.2.3 Central analytical models

The development of methodological aspects related to cultural-historical activity theory evolved from focusing on development of human cognition of single individuals towards having collective conscious activity as its unit of analysis and focus of intervention (Leont’ev, 1978). More recently, it has been applied as a research approach striving to reach developmental understandings on networks of activity (e.g. Toiviainen, 2007). At present, this methodology is essentially seen as a way to approach work practice through practical, real-world investigations that are designed for and oriented to organisational settings (Miettinen, 2004). In contrast to traditional workplace research (e.g. Ancona, 1991) Developmental Work Research captures dynamic interactive processes, changing mediational artefacts and activity transformation. This means that, beyond stable classifications and typologies of work teams and interactions, through

applying the Developmental Work Research methodology the present study seeks the evolving trajectory of problem solving in the direction of value co-creation.

Workplace research of science and technology studies have established important contributions for seeing organisational work beyond structures. Relevant research focusing on activities through following the actors (e.g. Latour, 1987; Latour and Woolgar, 1979) has expertly captured the formation of workplace activities intertwined with the construction of the social world. Although present research will indeed follow actors in a similar way to science and technology studies, the focus relies on following the transformations of the object of activity, i.e. value, through the critical interactions within the network of activity. In this sense, Developmental Work Research is a more appropriate methodology for the present study since it allows the focus on value in terms of its changing and diverse perspectives.

a. Unit of analysis

The unit of analysis of research conducted in the cultural-historical activity theory tradition is the *activity system* as originally advanced by Leont`ev (1978) or, alternatively, the network of two or more interacting activity systems (e.g. Toiviainen, 2007) (Figure 5, p. 65). An activity is defined as a set of collective, and often implicit, object-oriented performances that are mediated by a system of material artefacts, concepts and related community (Engeström, 1987). In the activity system interactions amongst individuals are also mediated by rules and roles reflecting a division of labour (Engeström, 1987; Leont`ev, 1978). The performance of an activity consists of goal driven actions at the level of individuals. Individual conscious action embodies sense and meaning within the wider context provided by the activity. Purposive action involves individual unconscious operations that are automatically performed without direct attention. Activity systems are dynamic and contradictory in nature. They “realize and reproduce themselves by generating actions and operations” (Engeström, 2000c, p. 16). Activity systems create the possibility for accessing inter-organisational aspects of practice.

Assuming interacting activity systems as the unit of analysis affords the investigation of evolving practices and learning within multiple interactions (Toiviainen, 2007). This fresh outlook allows for the development of an original view on two aspects relevant for the understanding of *value co-creation as it evolves*. It renders accessible the dynamic process of negotiation based on diverse interests and positions of a vast array of participants playing different roles within and between activity systems. Seeing the net

of multiple relations in value co-creation (i.e. Achrol and Kotler, 2006) as systems of activity also allows locating novelty as emerging through the contradictory nature of the activity systems (Engeström, 1987).

Taking interactive activity systems as the unit of analysis incorporates the “historicity” inscribed in activity systems into the analysis. As Engeström (2000c) indicates “the activity system itself carries multiple layers and strands of history engraved in its artefacts, rules and conventions.” (p. 14). This is translated in analysing longitudinal transformations of the motives for activity as well as the shaping, employment and change of tools, concepts, rules and roles. The importance of the historical perspective on activity systems relates to unfolding the problems and potentialities of activity systems that “can only be understood against their own history” (Engeström, 2000c, p.17).

An important analytical unit associated with activity systems is the object of activity. Understanding the interactions of actors with their object of activity is crucial to depicting the underlying motives of participants’ actions and their intricate interrelations. The object of activity is the focus of work and transformation (Vygotsky, 1978). It is simultaneously given (present in material or nonmaterial form), socially constructed (different representations regarding different social relations), contested (presenting different understandings according to different standpoints) and emergent (susceptible to changes) (Blackler and Regan, 2009). As previously explained, subjects’ interaction with the object of activity is mediated by cultural artefacts such as tools and signs (Vygotsky, 1978).

In a collective activity, individuals also have mediated interactions with the envisioned object of transformation through a wider community (Engeström, 2000a). It signifies that individuals’ interactions are shaped by mediated interrelations of different subjects and a related community for transformation of a respective object of activity. This perspective forms the ‘tradition’ of discussion in terms of organizing processes prompted by cultural-historical activity theory. It is important to remember at this point that rules for action and roles of participants are also elements of the activity system mediating the interrelation of actors with the community involved and forming the manner within which this community will approach the object. The effects and interplay between the object of activity, the mediating components of activity systems and the

historicity of collective activity is best understood in terms of examining the dynamics between different levels of analysis.

b. Moving levels of analysis within the developmental cycle of expansive learning
 Following Engeström (2001, 2000a, 1987), the developmental cycle of expansive learning comprises five steps as depicted in figure 7.

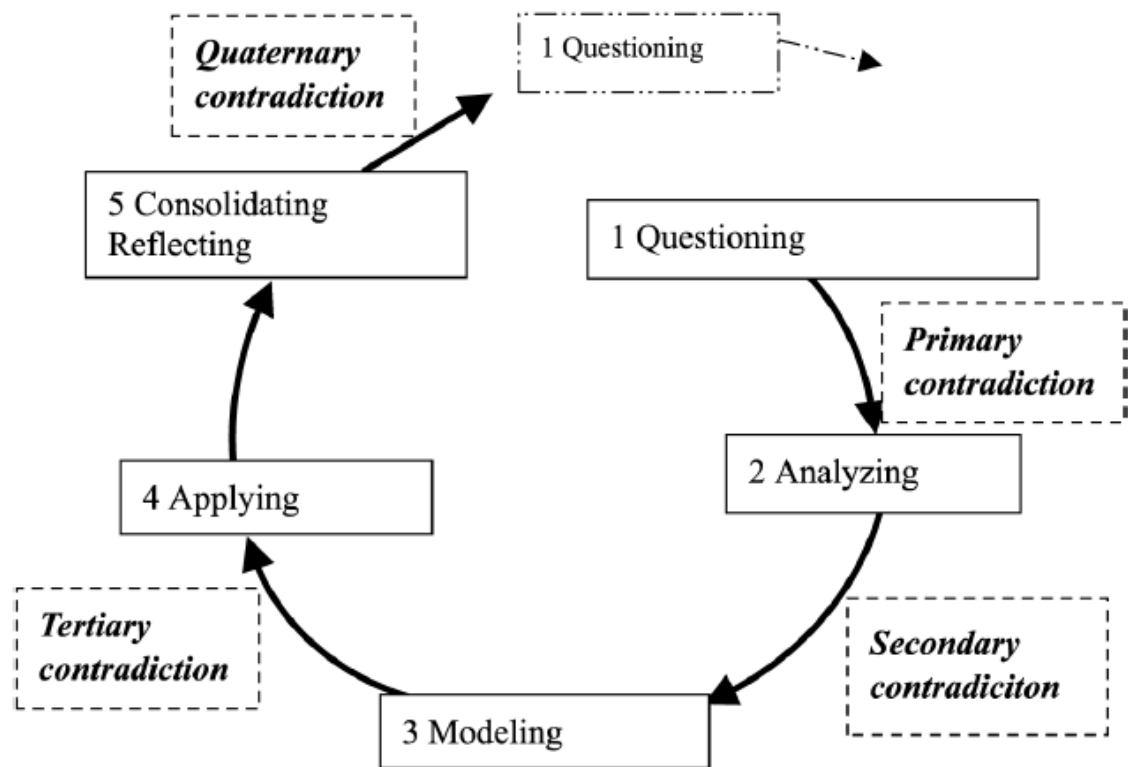


Figure 7 Developmental cycle of expansive learning
 Toiviainen (2007, p. 346) based on Engeström (1987)

These fundamental five stages are here explored and outlined in terms of the conceptual underpinnings, aims and related enquiry that are rendered accessible by using a developmentally oriented analysis in the context of value co-creation. In the core of this process is a methodological attitude that puts interactive practices and the object of activity as fundamental aspects for analysis (Miettinen, 2004, pp., 105-121; Virkkunen, 2004, pp. 37-66). Fundamental to the expansive transformation is the movement from individual action to the collective activity and back to individual action (Engeström, 2001, 2000a).

The first analytical task is to delineate the activity system and outline the dilemmas and uncertainties of participants within their daily work. These daily actions are viewed in

terms of the emerging tensions, disturbances or minor innovations in regular work. The introductory focus relates, thus, to these strained everyday performances that constitute individual actions at work. In the pursuit of unfolding the transformation of activities towards value co-creating experiences, this outline of troubles in daily work would unveil what Engeström (1987) highlighted as *critical moments of interactive struggle*. Problematic experiences permit the emergence of contradictory roles in the form of disorders and conflicts. The contradictory order of capitalist society related to the use value versus the exchange value, i.e. the *primary contradiction* manifested by internal contradictions within each component of the activity system (Engeström, 1987; Engeström, 2000a), would materialise at the process level in terms of the dual role of being a creator of value for customers and, at the same time, for the networked organisation (Payne and Frow, 2005). The main aim of this first analytical stage refers to examining the difficulties and disturbances of performing daily tasks in relation to putting value co-creation into practice. This first stage of present research - questioning - attempts to answer to the research question: *'How do internal contradictions and learning possibilities relate to the integration of resources for value co-creation'?*

Stage two of Developmental Work Research – analysing - is concerned with daily problems as they appear in common work practices and interactions. These daily problems are rooted in inner contradictions of the wider collective activity, i.e. *secondary contradictions*. Thus, everyday problems and tensions that are taken as randomised incidents are related, analysed and interpreted by means of the fundamental contradictions originating such events. Stage two connects the lower level of individual actions to the higher collective structure of the activity systems level of analysis.

In order to understand the transformation of market interactions beyond localised relations and grasp the wider context permeating value co-creation it is necessary to analyse materialised cultural tools, rules and divisions of labour that are at stake for transformation. This need for understanding the wider context relates to comparing multiple sites and situations using multiple cases within a single organisation and its networks and between different organisations. The depiction of activity systems as developed by Engeström (1987) (Figure 3, p. 59) is a good starting point for researchers to account for the process and outcomes of market interactions between organisations.

Stage three of the expansive cycle of learning in Developmental Work Research - modelling - refers to the emergence of new instruments that could resolve contradictions

expressed in disturbances, conflicts and dilemmas. The potentiality of development is indicated by means of participants' recognition of the need for resolution and creation of new models of activity. The prospective new system of activity is analytically recognised by means of the zone of proximal development. Engeström (1999a) explains and depicts (figure 8) this zone as follows:

“The zone of proximal development may be depicted as a grey area between actions embedded in the current activity with its historical roots and contradictions, the foreseeable activity in which the contradictions are expansively resolved, and the foreseeable activity in which the contradictions have led to contraction and destruction of opportunities.” (1999a, p. 67)

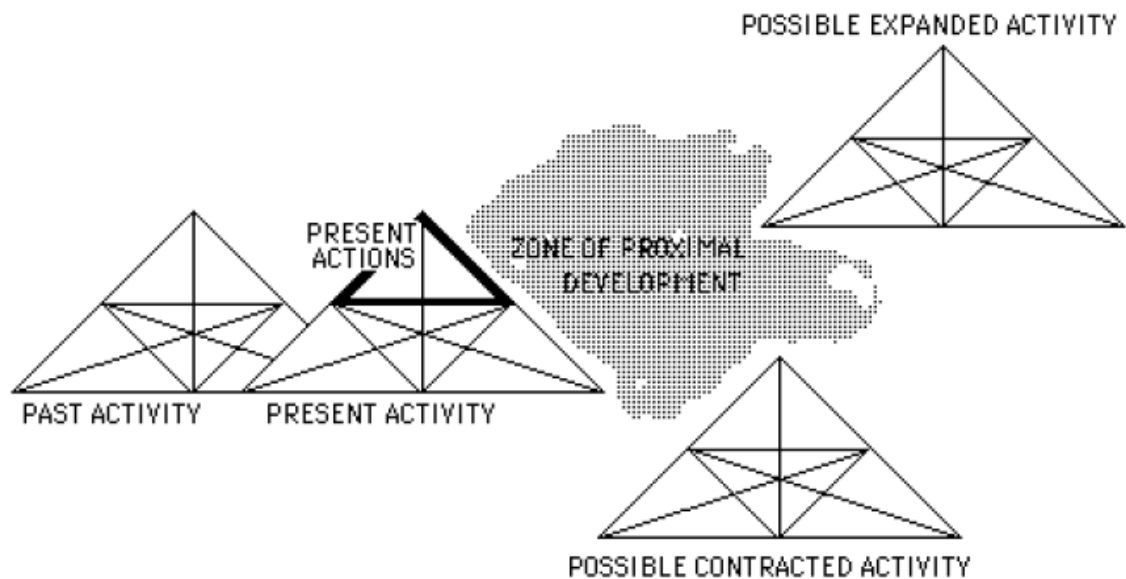


Figure 8 Expansive visibilization of work
(Engeström, 1999a, p. 67)

Changing movements in the zone of proximal development involve a great amount of uncertainty. This is because transformations are not predetermined. The zone of proximal development concerns an interactional field wherein transformations are complex and changes occur within situated learning challenges (Engeström, 2004; 2001). In the present research, the journey through the zone of proximal development concerns evolving market interactions leading to mutually beneficial relationships amongst the network of players, i.e. *the possible expanded activity*. However, changing market interactions can also undermine individual and collective benefits, i.e. *the possible contracted activity*. Ultimately, in this research the zone of proximal development is both a structure of investigation and a result of market interactions.

The connection back to action from the envisioned model stems from building a new set of material and conceptual tools that could enable change in actions at the individual level (Engeström, 2000c). By means of changing material instruments and conceptual tools, new patterns of interactions and activities may possibly emerge producing, therefore, new material relations.

Observing the creation of new material tools and relations is central to the objectives of present research. As the interest of present research relies on the transformations of market relations that could lead to value co-creation, identifying the emergence of new material tools and explaining the related process and outcomes is crucial for developing an understanding of the role of tools for transforming rules and the division of labour in inter-organisational interactions. The research question that grounds investigation based on stages two and three is: *'How do interactions evolve amongst multiple players with divergent perspectives of value? What is the nature of these interactions?'*

The fourth stage - applying - relates to the application of the instruments constructed in stage three for the transformation of activity. In stage four, analytical focus returns to individual tasks and action. The level of analysis returns to actions related to the implementation of the new tools in the "real world". This stage is infused by conflicts generated by the new form of action clashing with rules, roles and long-standing instruments (Engeström, 1987). In other words, the main clash is between the implementation of the evolved activity and the previous dominant activity, i.e. the transition from modelling to applying generates the *tertiary contradiction*. As Kerosuo and Engeström (2003) highlight implementing new instruments and concepts is anything but an easy task. Nonetheless, these authors also observe that the implementation and simultaneous development of tools strengthens as it becomes an instrument for connecting the network.

Stage four offers the possibility of understanding relevant processes for maturing the proposed advances of value co-creation in stage three as it reproduces in real settings the developments that occurred in the modelling stage (Engeström, 1987). The fourth stage of expansive learning resembles what Ramaswamy and Guillard (2010) and Payne, Storbacka and Frow (2008) proposed as the mapping of value co-creation tasks. In this prescribed activity towards value co-creation, participants would select strategic tasks that could allow the co-creation of value. The specific analytical emphasis would then rely on the tasks that could possibly initiate breakthroughs into new advanced

forms of activity (Engeström, 1987, p. 330). The fieldwork concerning stage four of developmental work research regards answering the research question: '*How can value co-creation management allow transformation and learning?*'

The fifth stage - consolidating and reflecting - shifts the analytical focus onto the historical transformation of activity. This stage of expansive learning refers to reflecting on the process whilst consolidating and generalising the new practice (Engeström, 1999b). This analytical stage will be conducted guided by the research question: '*How does learning evolve within market interactions?*'

The “visibilization of work as a movement from actions to activity and back” (Engeström, 1999a, p. 69) is seen here as a powerful investigative instrument for unveiling and unfolding the potentialities of value co-creating transformations whilst producing a new basis of knowledge and learning. The present research adopts the ethnographic approach within a case study strategy in order to grasp these mutually influencing transformations.

Critique about the transformational nature of Developmental Work Research has suggested that organisational changes concerning this methodology involves superficial transformations, which sustain a conservative practice (Avis, 2007). For Avis (2007) the methodology of cultural-historical activity theory refers to transformations in the workplace with no critical impact in higher order structural relations of society. Despite the counter-arguments provided (see Engeström and Sanino, 2010), the present study aims at the transformations in direction to the co-creation of value as a market interaction outcome. In this sense, higher order changes in societal structures is out of the scope of this work.

5.3 Research approach and strategy

Ethnographic case study

Case study constitutes a well established strategy for investigating the dynamics of organisational life. First, case study is regarded as especially suitable for examining situated practices and contextualised experiences and actions (Bensabat, Goldstein, and Mead, 1987). Second, case study researchers may endeavour a great portion of time on site and in personal contact with participants and related activities (Stake, 1998). Case study is, ultimately, focused on the process of inducting theory and operationalised by iterative scrutiny of particular environments (Eisenhardt, 1989).

This section is dedicated to these three topical features of traditional understandings of case study research in relation to an ethnographic approach (i.e. Visconti, 2010). This embeds a qualitative methodology underpinning the search for understandings on the perspective of participants in specific organisational (i.e. Davenport, Sirkka, Jarvenpaa, and Beers, 1996), business (i.e. D'Iribarne, 1996) and market interaction contexts (i.e. Hopkinson and Hogg, 2006, p. 157). Ethnography intends to “uncover and explicate the ways in which people in particular work settings come to understand, account for, take action, and otherwise manage their day-to-day situation” (Van Maanen, 1979, p. 540). Thus, ethnography presupposes the understanding of processes in organisational-life in ‘natural settings’ (Sharpe, 2004, pp. 307-308). As De Geer et al. (2004) point out “ethnography allows us to understand the ‘life’ of the organisations we are studying” (p., 327). This means that the central purpose of ethnography is to go beyond what participants say and explore their understandings in everyday practices.

An ethnographic approach to case study research strategy contrasts with positivist case study frameworks (e.g. Yin, 2010; Eisenhardt, 1989) that aim at propositions and hypothesis to be empirically verified (Yin, 2010). Ethnography allows the description and explanation of actors’ “behaviour through investigating how they experiences sustain, articulate and share with others [the] socially constituted everyday realities” (Johnson et al., 2006). Thus, through the ethnographic approach, value co-creation can be explored in terms of how actors conduct, and possibly transform, value co-creating activities and develop perceptions of their practices by means of experiencing and articulating multiple interactions.

Ethnography is well established in the consumer behaviour strand of market interaction studies (e.g. Kates, 2002; Schouten and McAlexander, 1995; Wallendorf and Arnould, 1994). This stems from the opportunities this approach provides in understanding how people give meanings to objects, as well as supporting a comprehension of the social relations deriving from these meanings. However, its potentialities are underexplored in the market interactions field (Visconti, 2010; Goulding, 2005), especially considering the recent conceptual developments in relation to organisational knowledge and learning. Ethnographic research represents a relevant opportunity to enlighten the cultural situated dimension of value co-creating practices and its interrelation with knowledge and learning. As Arnould (1998, p. 86) indicated “ethnography attempts to explicate structured patterns of action that are cultural and/or social rather than merely cognitive, behavioral or affective”. In this sense, the ethnographic approach and the

theoretical lens of cultural-historical activity theory represent well aligned perspectives to provide the basis for understanding knowledge and learning whilst confronting the current challenges of value co-creation practices. The next section specifies and describes the research methods applied toward this end.

5.4 Methods

Bridging theory, research methodology and procedures

5.4.1 Selection and design of case studies

The design of the case study in the present research follows the criteria of variety and contrast in qualitative studies. This provides a multiplicity of comparisons and interpretations (Miles and Huberman, 1984). The theoretical framework applied here as the lens for studying market practices assumes knowledge and learning as intertwined with action. Consequently, the search is for comparing and contrasting the different characteristics of learning, knowing and doing in diverse settings of relational practices between medical organisations and technology providers. Therefore, the research design adopted here refers to six case studies nested in two main cases, i.e. Tener and HGF, in order to explore and analyse the connections between partners, clients and the wider community. This nested case study design (i.e. Burgelman, 1994; Leonard-Barton, 1990) is here deployed in order to examine the processes, developments and constraints of value co-creation comparatively within and between the two focal organisations.

5.4.2 Fieldwork procedures

a. Selection of participants

Visconti (2010) points out that the selection of participants should be conducted by focusing on the “most competent informants” who are likely to provide valuable and rare information. The selection of participants was based on the preference for individuals conducting activities across organisational or departmental boundaries so as to access relevant intra and inter-organisational relations. More specifically, following cultural-historical activity theory lens and developmental work research propositions (Engeström, 1987; 1993; 2000a), preference was given to approaching activities wherein problems and difficulties were recurrent, and interactions were permeated with conflicts and disturbances. These critical activities were firstly identified through initial contacts with organisations’ managers and, secondly, through the interviews and observations that led to the identification of occurring difficulties and disturbances. The latter attitude resonates with Engeström’s (2000a; 2000b; 2000c) advice in following not only participants, but also activities, tools and, most importantly, conflicts.

b. The role of the researcher

In ethnography the researcher needs to be an instrument of inquiry. This is accomplished when “cultural competence” is acquired (Bonder, Martin, and Miracle, 2001). Through cultural immersion, the researcher is able to understand the meanings of the language and behaviours used in the situated activities and develop the sensitivity required for interpretation (Visconti, 2010). This continuing achievement of cultural competence was accomplished by following Visconti’s (2010) steps: 1. desk research on companies’ websites and general publications; 2. analysis of documents; 3. interviewing and observation. Furthermore, as Roth and Lee (2007) pointed out, researching interconnected activity systems requires engagement in dialogue for deeper understandings on “multiple perspectives and issues of power” (p., 200). As the next section points out, I engaged in a wide range of interactive moments with participants. These moments included observing and talking about a wide range of issues such as personal views of the problems, the situation of inter-organisational relations and the broader picture of the market. In addition, my engagement spanned the boundaries of the research settings to increase personal connections through informal social events.

c. Data collection

Data collection followed the principles of expansive learning as an analytical stance which moves between different levels of analysis and follows the analytical model of Developmental Work Research. Nonetheless, the first approach to fieldwork was conducted through interviews and initial observation of daily routines. This line of fieldwork had two main objectives. Firstly, it was set to allow the researcher to have a general understanding of the research environment. This stage of data collection focused on catching perceptions and discourses regarding daily practices. Secondly, the introductory stage of data collection also allowed the delimitation of the activity system in terms of the place of activities and people involved. In order to delimit the field of research it was necessary to observe participants conducting their tasks. Alongside the initial observations, interviews were conducted through the technique of the “interview to the double” (Nicolini, 2009).

The general purpose of interviews in this present research refers to capture the interpretations of participants in relation to their daily tasks, interactions and context. Opposing to positivistic interviews based on surveys, this research uses of in-depth interviews and brings to the fore the shaping of interpretations and beliefs surrounding market interactions in service-based networks. More specifically, this research uses the

method of Interview to the Double (Nicolini, 2009) in order to elicit the idealised norms and forms of practice related to the lived experiences of participants. The interview to the double is especially useful to the focus of the present study in the terms of articulating and representing value co-creation as practice. *Interview to the double* is a method of interviewing to determine the priorities and moral behaviour of participants, i.e. models of how to perform day-to-day tasks that represent “moral pillars” sustaining idealised practices (Nicolini, 2009). As Nicolini (2009) indicated the interview to the double method referred to asking the interviewee to imagine that the interviewer is going to substitute her in the next day. The interviewer would need to know how to perform the activities in such a way that the replacement would remain unnoticed. This method combined with initial observations of daily routines helped in examining the motives of activity in connection with the broader social environment.

The *introductory stage* consisted of 9 interviews at Tener and 8 at HGF (Appendix 1 indicates the details of fieldwork). The interviews followed the interview to the double method and had around one hour of duration. At Tener they were conducted in the period of February and March of 2011. At HGF interviews were conducted from January to March of 2012. At this stage observations at the HGF consisted of following the IT technicians around all the departments of the hospital in the course of their solving computational problems. There were eight observations of IT Technicians at HGF. The research technique used for capturing the interactional experiences of participants referred to shadowing (i.e. Czarniawska, 2008; McDonald, 2005). Differing from participant observation wherein “a researcher takes part in the daily activities, rituals, interactions, and events of a group” (DeWalt and DeWalt, 2010, p. 1), shadowing is a method enabling the researcher to follow the experts and focus on the flow of relevant experiences. Shadowing was especially valuable in the second part of the fieldwork, wherein the flow of interactions occurred as focused participants navigated and sought for resolutions throughout multiple and interconnected systems. Capturing the flow of these critical events would be impossible through participant observations (cf. McDonald, 2005).

At Tener, the introductory fieldwork consisted in observing the internal support department, especially through shadowing the support assistant, in six observations. The strategy was to follow the advice of the projects and services manager. The support assistant concentrated on the administration of all duties of projects and services analysts. After the introductory stage, fieldwork was conducted following analytical

stages of Developmental Work Research. Nonetheless, data collection was based on natural occurrences in the field. The methods of data collection through developmental work research analytical steps were observations and interviews. Interviews followed a protocol based on the developmental history of the organisation or department. These interviews were initially conducted as an introductory overview of the historical transformations of organising activities and interactions. The protocol followed questions about changes and difficulties in each element of the activity system, i.e. organisation/ department as the object, tools and concepts, roles, community, rules, focus of attention and motive of activity. Four developmental history interviews were conducted at HGF in the following sectors: IT (one with the manager and one with two analysts together), Laboratory (manager), Customer Service (manager). In addition, I conducted an interview using the developmental history protocol with the general manager of the software supplier of the laboratory department. The managers of the Project and Services and Administration/ Commercial departments from Tener were approached through developmental history interviews. All interviews were audio recorded with the permission of participants.

During fieldwork, the researcher applied intermediate levels of participation (Gobo, 2008). The researcher kept his distance and conducted non-participant observation on several occasions as formal meetings and tense moments of work interactions. The main goal was to be a complete observer in such moments (i.e. Flick, 2009). It was important to observe such events with the least possible level of interference. However, I needed to conduct follow-up interviews in occasions wherein it was difficult to understand and interpret participants' meanings.

While shadowing participants, I interacted with individual actors while staying in their work environment and following them through their practice. These moments referred to conversations and participants' explanations about what they were doing, their complaints and demonstrations of difficulties in conducting activities, as well as their interpretations of contextual and factual situations (cf. McDonald, 2004). In this sense, in a significant part of the fieldwork, I engaged in interactions that could generate further understandings.

Field research at Tener client's organisations was conducted from March to August 2011. Field research at HGF finished on July 2012. Seven formal meetings (3 at Tener and 4 at HGF) each of two hours' average duration were audio recorded (originals and

transcripts available at request). Audio recorded observations were mostly undertaken during four to eight hours of working activities of participants each day. The field notes complemented the audio transcripts of recorded observations. Combined, the recorded observations and the field notes counted seventy five thousand words.

At Tener most of the 22 net days of observations were focused on two analysts of the projects and services department. The researcher perceived that these two analysts were having difficulties in implementing the software in at least one of their client sites. At HGF the 48 days of observations concentrated on three departments: IT, Customer Service and Laboratory. Firstly, the researcher followed the implementation of software appliances in the customer service sector. As the implementation was discontinued, the laboratory and its struggle to accomplish technological advancements into the functional system of the sector became the focus of research at HGF. Following the tradition of Developmental Work Research observations were focused on disturbances, troubles and otherwise trivial innovations. In this sense, the present research was crucially interested in these “critical incidents” (Engeström, 2005, p. 447) rather than long periods of observations related to the ethnographic tradition.

d. Interpretation

The aim of interpreting the collected data in this present research is to bridge the gap between the complex changing practices related to value co-creation and current theoretical understanding of value co-creation. More specifically, *the bridging challenge relates to explaining how intertwined transformations of interactions, knowledge and learning affect our understandings of value as a co-creation endeavour.* Hence, the essence of change in market interactions is captured by constructing a model that condenses transformations in market interactions and business practices in the search for value co-creation. Data interpretation through modelling was endeavoured by using two main methods. The main method of interpreting data is based on Engeström’s (2000a; 2000b) depictions of work transformation through indicating the contradictory relations within (figure 9) and between activity systems (figure 10) and the horizontal and vertical movements of learning.

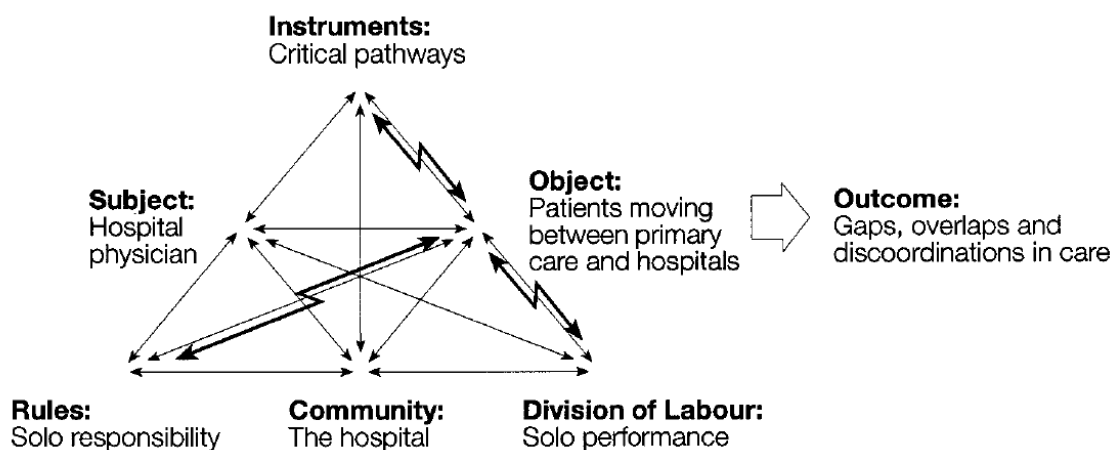


Figure 9 Identifying and demonstrating contradictory relations in an activity system
 (Engeström, 2000a, p. 966)

Figure 9 exemplifies data interpretation through the depiction of an activity system and the identification of its components. The broken arrows represent the crucial indication of this example referring to contradictions in rules, instruments and the division of labour in relation to the object of activity. The following depiction (figure 10) refers to an example of interpreting contradictory relations between activity systems. Broken arrows in the vertical position indicate vertical contradictions in the activity system, while broken arrows in the horizontal direction refer to contradictions between systems of activity.

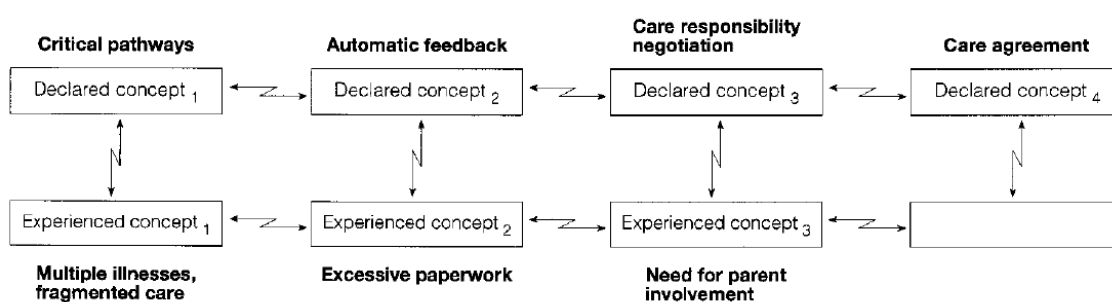


Figure 10 Identifying and demonstrating contradictory relations in and between activity system
 (Engeström, 2000a, p. 972)

A supporting method involved the use of coding as a means of qualitative analysis of the language and meanings in the collected data (i.e. Miles and Huberman, 1994). This process was guided by the intent of controlling and reducing data into categories and concepts that could depict and model the similarities and differences (i.e. Dey, 1993)

amongst the diversity of sets and situations related to the search for value. The coding structure and coding system followed the analytical terminology provided by Strauss and Corbin (1990). Appendix 2 indicates the structure and system of coding used in the study as well as the coding tables generated.

Combined, the method of coding for interpreting data and the depiction of work transformation is particularly relevant for the present research as it enables interpretation of objective relations. Objective relations are manifested in the unconscious level of participants through their social behaviour. It thus provides the interpretive framework for scrutinising the origins of the collective motives of activity. Collective motives were rooted in the moral discourse about participants' daily practices, i.e. data collected through the interview to the double (Nicolini, 2009). Besides the use of coding for interpreting data collected in the initial stages of fieldwork, this technique was also useful for interpreting the conceptual tools that participants constructed which could lead to changes in the motives of collective activity and, ultimately, transformations of the entire system of activity.

The use of a combination of a coding system with more traditional Developmental Work Research methods was selected as the most appropriate technique since it allowed capturing the search for value as a process within participants' situated practices and related outcomes, which resonates well with the theoretical lens of the present research. While discourse analysis takes a similar standpoint by viewing talks and conversations as social practices, it departs from the objectives of this research by taking the discourse itself as the topic (i.e. Gill, 2000, p. 174). This research intends to go beyond the logic of discourse based on rhetorical action and follows El-Amir and Burt's (2010) articulated standpoint between the logic of practice (i.e. daily participation), the logic of representation (i.e. culturally based understandings) and the logic of theory (i.e. researcher's participation). Paraphrasing the same authors, this approach is reflected in the present research in the construction of the "culture of value" in terms of searching for meanings common to a range of participants (logic of representation) in order socially to model transformations in the search for value co-creation (logic of theory), through exploring everyday interactions (logic of practice).

5.5 Trustworthiness, rigour and limitations of research

The present work relies on a number of measures in order to assert the quality of current research in terms of trustworthiness and rigour as Guba and Lincoln (1994) recommend. Confidence in the findings was therefore implemented through the typical expedient

used to this end in qualitative research and in the case study strategy: triangulation (Mathison, 1988; Yin, 2010). Following Patton (2001), the present research strengthens its findings by means of a combination of methods. Following Yin (2010, pp. 13-14), current work verifies the convergence of information through data triangulation using different data sources and cross-checking findings. Data triangulation is also a useful way of supporting the construction of multiple perspectives of participants (Johnson, 1997) and helps clarify meaning (Stake, 2000, p. 443).

Every effort was made to ensure trustworthiness and rigour in the research proceedings. The nested case study design allowed for data collection (i.e. interviews, observations, and documents) across multiple organisations in a variety of departments. The multiple site investigation was meant to ensure the apprehension of the network and its related dynamics regarding value co-creation. The ethnographic case study methodology entailed two main thoroughly developed techniques as the interview to the double and non-participant observation. These techniques were supported by document analysis, unstructured interviews during observations and participant observation in order to verify accurate interpretation. I also used the assistance of participants with the data collection by following indications of where (departments and processes) problems, complaints and struggle resided. The latter measure allowed the construction of multiple sources and perspectives as the problems of value co-creation unfolded.

In the pursuit of rigour, I attempted to apply the principles of reflexivity (Alvesson and Sköldberg, 2009) in terms of constructing interpretations by means of actively questioning the character and origin of those interpretations. Thus, I conducted the process of knowledge construction by following the development of observations leading to findings that could answer “what do I know?” questions which were then reflected as how these findings came about as related to “how do I know?” questions (Hertz, 1997, p. viii). As Guillemin and Gillam (2004) indicate this research also consists in “a process of critical reflection both on the kind of knowledge produced from research and how that knowledge is generated” (p. 274). The main aim of applying reflexivity in the present research is therefore to guarantee the quality and rigour of knowledge production.

Nevertheless, certain limitations of the present research need to be noted. The access to several sites of field research was gained through working covert as a consultant for one of the studied organisations, thus I could not interview staff of client companies in one

of the cases, i.e. Tener. The checking of their perspectives and understandings about what was observed was conducted by means of informal talks. Moreover, what participants stated to me in this case study was obviously filtered by their perception that I was “on the other side”. The necessity of exploring the view of the customer was one of the main reasons for conducting research in a hospital. However, the access to the partner (technology provider) of the hospital was limited to interviews and observations of their staff at the hospital locations and one interview with the service manager. No other client of the main partner of technology provision was observed. Therefore, I was only able to gain a full picture by interconnecting and contrasting the two nested case studies.

Another limitation refers to empirical generalisations. This type of generalisation is, indeed, out of the scope of case studies (Yin, 2010). As with all qualitative research, this work is related to theoretical generalisations (Flick, 2005). The present ethnographic case studies are theoretically representative cases (Silverman, 2005; Glaser and Strauss, 1967). In other words, the case studies presented here are theoretically interesting as they allow the construction of conceptual models and frameworks as a result of deeper comparative understandings. This does not amount to a generic statistical model of all situations, nor does it represent all possible variations. Instead, the present work endeavours to offer a rich explanation of value co-creation as it evolves in terms of market interactions, management, and knowledge and learning through explaining the settings, surroundings and circumstances of occurrences. The capability of generalisation comes afterwards by means of theoretical analysis.

Ultimately, it is important to highlight that the entire body of fieldwork was conducted in my native language: Portuguese. Welch and Piekkari (2006) indicate that a number of researchers would prefer to use English in interviews even when interviewing compatriots because the report is typically in the English language. In my environment of research, interviewees were not sufficiently fluent. Moreover, I felt more comfortable to write field notes in the same language that was being used in my surroundings, which was my native language. My main concerns referred to the possibility of losing meaning with translations in the excerpts and coding table showing in the thesis (Chapters 6 and 7). Choosing the right words is not easy, the revisions of my supervisor with indications such as “is there a better word?” or “what does it means?” conferred more precision to translations. Despite the translation issues, my advantage was that, as a native of the country of research, I did not have additional problems related to cultural barriers of

interaction and interpretation related to international business research (i.e. Welch and Piekkari, 2006, p. 433).

5.6 Ethical issues and reflexivity

The present research has considered the ethical procedures that must be carried out during field work and data collection. All personnel of the two main organisations under research (Tener and HGF) were asked to consent to their participation and were also informed about the research theme, objectives, procedures of analysis, as well as the nature of the present work as a doctoral thesis and possible publications in scientific journals. As Cohen and Manion (1994) recommend all interviewees were informed about their privacy, anonymity and confidentiality rights. Nonetheless, there were some situations that could not follow these guiding procedures, especially with regards to shadowing. I conducted fieldwork in Tener's client companies in a quasi-covert manner (i.e. Johnson, 2014).

It is important to highlight that quasi-covert research is often the condition for enabling the use of shadowing. As Punch (1986) sums up, it is almost impossible to cover all participants in a large organisation with informed consent. For example, as I followed the IT assistants in HGF (the hospital has 3,000 personnel and performs 16,000 clinical consults every month), many interactions and conversations were conducted, even as we were passing by in the corridors, and in some situations, it was difficult to inform about the research. Moreover, while I was shadowing the attendants and operators of the software for scheduling medical consultancies, as well all personnel of the department, were aware of my presence as a doctoral researcher. Other than that, patients did not know. The memories of the general public being assisted was not informed about my presence by the hospital. In rare moments, I was asked if I was a trainee. In these moments, I informed that my presence was related to academic research.

This difficulty of the present research is described by Lugosi (2006, p. 553):

“Ethnographers will inevitably encounter fragmented communities in which their roles as researchers remain veiled because they have limited opportunities to disclose information about their work.”

As the later author points out, the fundamental dilemma to be faced and well resolved is not between overt and covert research but about the crucial moments and situations where participants' consent is mandatory. I evaluated these key conditions by searching for applying constant reflexive criticism of my actions in order to achieve an ethical research practice.

The application of reflexivity regarding an ethical research practice in the present research followed the construction of two dimensions of ethics in qualitative research: procedural ethics and ethics in practice (i.e. Johnson, 2014; Guillemin and Gillam, 2004). The *procedural ethics* consists of the formal activities of submitting the research design to the approval of an ethics committee. The present research was submitted to the ethical committee of the HGF. The research design and procedures of fieldwork were scrutinised in four meetings with different members of the committee (all with medical background) and staff from the IT and HR departments. As HGF is a public hospital, the Federal Ministry of Health registered the research under the number of protocol 171103/11 (Appendix 2). Nonetheless, the formalities of submitting the research procedures to an ethical committee and the achievement of approval are not sufficient to guarantee ethical procedures during fieldwork (cf. Johnson, 2014). *Ethics in practice* pertains to the everyday occurrences of conducting research in the field from which ethical issues arise. Indeed, ethical issues during fieldwork were unexpected and difficult to deal with. Reflexivity was therefore used, as Guillemin and Gillam (2004) indicated, as a helpful conceptual tool which could “lead to ethical research practice” (p. 273).

The most delicate issue during fieldwork regarded the observation of intense moments of discussion wherein I followed the struggle between participants and managing interaction for eliciting opinions and understandings about these occurrences after these crucial moments. For example, there was a meeting in which one of Tener’s managers was reluctant to have my participation. The manager knew it would be a very tense situation and the client was unhappy with Tener’s services. By that time, I had already experienced many tense situations following Tener’s personnel but this manager, who was one of the partners, did not know that.

This was a crucial moment in the research at Tener because it was essential to explore interactions in a higher hierarchical level on both sides (the company and its clients). I reminded the Tener’s partner that the research was mainly about the encounters of Tener with its customers and the things that were going wrong were more important than well-perceived services. More importantly, I reported other tense moments that had been experienced and argued that if the director did not feel comfortable with these occurrences the entire research would need to be revised. I also reminded the director that he had agreed to my participation in internal and external meetings and was aware

of the focus on difficulties and struggles. I told Tener's manager that if he did not feel comfortable during the meeting he could ask me to leave the room.

Two main reflexive exercises are related to this situation: the purpose of the research and the interpersonal aspects of research (Guillemin and Gillam, 2004). The aim of the present research is to further knowledge on how to co-create value in inter organisational networks. During fieldwork furthering knowledge on this subject demanded a great effort in terms of ethical reflexivity because there was not a way of empirical examination without observing delicate interactional situations. Therefore, critical reflexive criticism was essential to monitor how the conduct of fieldwork could cause any harm to the participants' dignity and privacy.

I experienced situations of irritation and unhappiness wherein people yelled and cried, and in some of these cases I was doing semi-covert field work. Several vital considerations should be highlighted in this regard. Firstly, my presence by no means elicited discussion or struggle. As participants testified this type of situation had happened before and would continue to take place after the research had taken place. Secondly, the interpretations and findings were submitted to the participants. I asked them individually if there was any passage of the narrative that they felt uncomfortable with and explained that if that was the case, the passages would be deleted. There was no request to suppress any passage. This suggests that the narrative could generally express the normal everyday activities and their nature in a way that did not cause any surprise or shock to participants. In fact, some participants mentioned how interesting it was to see their activities and performance written up in the narrative and reconstruct the images of the moment. Thirdly, the participants had a say in where I would go and observe and who could be interviewed. They also helped me by indicating some situations that they anticipated could be valuable to the aim of the research. That also demonstrated their good understanding of the objectives of the present research. In sum, ethical reflexivity grounded the fieldwork and the research practice in a similar way to the recommendation of Christians (2000, p. 145) that participants should have a voice in determining the character of fieldwork.

5.7 Conclusion

This chapter was an outline of philosophical and methodological considerations underpinning the design and conduct of the present research project. The philosophical stance, which is based on the ontological standpoint of dialectical materialism of practice and the epistemology of practice, corresponds to the theoretical positioning and

the research questions derived from the review of the existing knowledge of value co-creation. The evaluation of the current state of the relevant literature conducted in Chapters 2 and 3 allowed the identification of gaps that, once viewed through a fresh theoretical lens, also needed to be tackled from novel philosophical and methodological standpoints. The requirement for capturing transformations that could drive value co-creation has led to dialectics as the primary constituent of object change and to practice as the epistemology of human agency and social conditions for change.

The ontological and epistemological foundations developed in this chapter are consistent with the theoretical positioning and support fieldwork in search for outlining change in the direction of value co-creating market practices. The following chapter presents the findings of the study by addressing the supporting research questions in the following sequence: (1) how do internal contradictions and learning possibilities relate to the integration of resources for value co-creation? (2) how do interactions evolve amongst multiple players with divergent perspectives of value? What is the nature of these interactions? (3) how can value co-creation management allow transformation in the direction of the zone of the proximal development? (4) how does value co-creation knowledge and learning evolve within market interactions? Responding to these questions will lead to a thorough concluding explanation of how service-based networks co-create value.

Chapter 6. The processes and outcomes of service-based networks of business interactions

6.1 Introduction

The purpose of chapter six is: a) to identify the internal contradictions of activity systems and examine how they affect value co-creation; b) to investigate the processes of market interactions in service-based business; and c) to explore and understand the features of managing change in the direction of accomplishing value co-creating service-for-service business relations. The first and second purposes (purposes *a* and *b*) refer to the objective one, i.e. Chapter 1, Section 1.2., The third purpose (purpose *c*) refers to Objective 2 and searches for *identifying and explaining the relevant aspects of management in value co-creation*.

Three main sections of chapter six encompass the majority of data collection of the present research. Section 6.2 refers to fieldwork based on non-participant observations and the interview to the double method (i.e. Nicolini, 2009). Section 6.2 searches for answers for the research question: *how do internal contradictions and learning possibilities relate to the integration of resources for value co-creation?* Section 6.3 concerns the interpretation of further observations in combination with the interview to the double based on Engeström's (2000a; 2000b) analytical models of work transformation. The quest of section 6.3 is to respond the research problem: *how do interactions evolve amongst multiple players with divergent perspectives of value? What is the nature of these interactions?* Finally, section 6.4 involves crucial observations of players transforming activity within a networked perspective and moving in the direction of the zone of proximal development (i.e. Engeström, 1999a). Section 6.4 is also based on developmental history interviews, i.e. Chapter 5, Section 5.4.2c, and searches for answering the question: *how can value co-creation management allow transformation in the direction of the zone of the proximal development?*

Chapter 6 develops understandings of the processes of service-based interactions through capturing the reflections of participants on obstacles and possibilities for co-creating value. Furthermore, this chapter grasps the search for collective resolutions in the terms of co-configurations permeated by fast and decentralised encounters, i.e. knotworking. Ultimately, the management of changes in market interactions involves the perspective of networked relations in the construction of dyadic interactions and alliances for determining new business models.

6.2 Constraints, obstacles and potentialities of resource integration for value co-creation

6.2.1 Internal contradictions – Tener: projects and services department

Figure 11 depicts the internal contradictions related to the components of the general activity system of the project and services department. These inner conflicts were brought to the fore by disturbances and dilemmas occurring in the routine of daily activities.

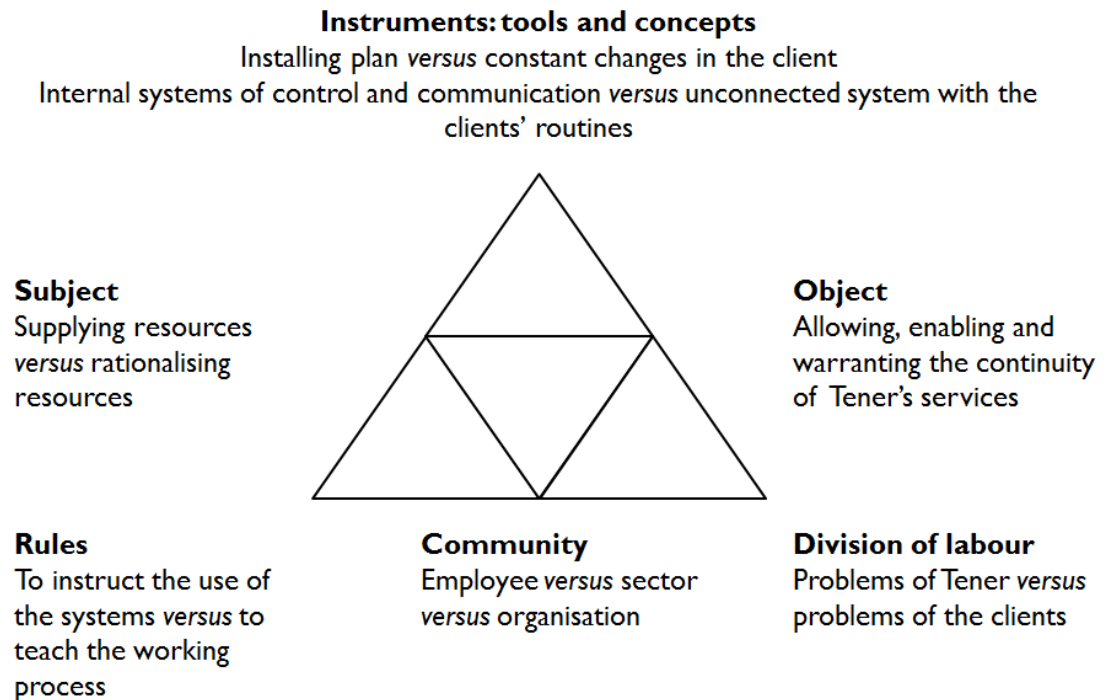


Figure 11 Internal contradictions of the components of the activity system at Tener

Source: interview to the double, shadowing and non-participant observation

a. Supplying resources versus rationalising resources

As the analysts accumulate experiences of working with a number of hospitals and clinics, they acquire knowledge of the workflows and processes inherent to the activities of these organisations. This experience, combined with knowledge about the standards of information flow set by Tener's computational systems, assembles the potential framework of resource integration. However, providing the entire possibility of resources to the client is not well-defined in the practice of the everyday activities of the analysts.

The rule of conduct for the projects and services analysts is to instruct and develop the capacity of using the Naja System. Despite the perceived availability of knowledge concerning work processes of hospitals and clinics, it is not a service that should be

delivered by Tener's project and services analysts. Thus, integrating knowledge resources to clients is conflicted with the available knowledge about working processes in the hospitals and clinics.

b. Installation plan versus constant changes in the client

Project and Services Manager: “[...] where the most serious difficulties reside would be just these eventualities, little things that have happen in the day-to-day [...] any impact is consequent to some attitudes of the client. Then we have to undertake an intervention as a consequence of changing of employees. Sometimes it is about re-instructing [...]”

Excerpt 1 Employees turnover at the client: re-instructing

Source: Interview to the double – 07/02/2011

The installation plan is a meditational tool for transferring, managing and controlling mutual collaboration between Tener, clients and other partners. The intent of this plan is the integration of the necessary resources for the proficient use of the system and devices supplied by Tener. However, constant changes in the structure of the clients (as previously exposed in described by the manager in excerpt 1) ruin the installation plan. Changes in the installation plan of the Naja System signify unproductive time of the analysts. The internal dilemma at Tener is to charge for new hours of instruction or to apply an alternative of using the maintenance contract to give the initial instructions of the installation phase.

c. Internal systems of control and communication versus disconnected system with the clients' routines

Development Manager/ General Manager: “I would like to talk today about, about the part of feedbacks and confirmation [...] of the information. [...] This has to do with all departments with no exception, with no exception of people here. [...] Sometimes we do exactly the same work, same time spent, but because of the lack of feedback, for the eyes of the client it becomes a ... a struggle. It becomes a task that the client needed to be asking for. If we do the same thing but giving the feedback, a job done in the same period of time is viewed as efficient and attends the clients' expectations.”

Projects and Service Analyst 3: “[...] because there are so many things happening that do not reach us. Necessities coming up [...] and things just stuck. Or they communicate to someone that did not come to us. [...] a lot of communication is lost in the middle of the way.”

Excerpt 2 Gap of communication

Source: Non-participant observation (meeting) and interview to the double – 01/08/2011 and 01/03/2011

Excerpt 2 unveils the concerns and tensions occurring due to a perceived necessity of letting the client know what is in the works, as well as the discomfort caused by not

knowing what is occurring at the client organisation. Tener was focusing the perception of the customers' personnel through the mediational concept of "feedback". Internal tensions occurred as this communicational script of "feedback" was perceived by the General Manager as not being used. In addition the continuity of the services provided was hampered by internal communications of the client.

d. Problems of Tener versus problems of the clients

Projects and Services Analyst 1: "It's very complicated there. They stay there waiting for me to get things resolved. I went there Tuesday; they did not manage to access the system [...] then I went on Wednesday; they did access but could not print the receipt. They just kept waiting for me to print it."

Projects and Services Analyst 3: "[...] if I do not pass by, they keep waiting until something happens [...] Then I check and find out that the thing is not working for 15 days!"

Excerpt 3 Who should resolve?

Source: Non-participant observation (meeting) and interview to the double – 11/03/2011 and 01/03/2011

The project and services analysts demonstrate in excerpt 3 their understandings about their role in daily activities at the client. Analyst 1 is complaining about a client in the weekly meeting of the department. Analyst 3 is describing her daily activities in the "interview to the double". As they defined their experience, they demonstrate a concern on having their job done well. However they experience discomfort in perceiving that the beneficiaries of their services are not doing their part. Moreover, they feel that the recipients do not make evident the same concern of having the computational systems and devices always working or installed on time.

f. Employee versus department versus organisation

[Projects and Services Analyst 1] goes back to the Manager to inform that the person from treasury was not available. She also informs that the printer was not installed at the payment department. The Manager answers: "Do you know what this is? This is lack of interest. She knew you were coming this morning and could have done something."

[Projects and Services Analyst 1] goes to the Manager and tells him that data insertion from treasury is out of the schedule. The Manager complains this is happening because the person who is responsible for that does not stop chatting in the hallways. "After all", he says, "she does not have much to insert".

Excerpt 4 Between the manager and the subordinate

Source: shadowing – 11/05/2011 and 18/05/2011

As the project and services analysts move between different departments and different hierarchical positions, they struggle for the availability of employees' time and

provision of resources. The routine is to link the tasks at the lower levels of insertion of data for the Naja System to work with the higher levels focusing on the managerial analysis of performance. In the middle of these two, what happens in the daily activities is the attempt to have the system installed or the problem resolved despite the complaints and dissatisfaction of both sides. The central dilemma of this primary contradiction is related to struggling with different needs, wants and interests and having to integrate the resources available despite the lack of disposition.

g. To instruct the use of the system versus to teach the working process

Projects and Services Analyst 1: “It is complicated to give instructions of the financial module to someone like her. It is possible to teach the routine. That can be done. But is she going to understand?”

[Projects and Services Analyst 2]: [...] ends the support service and complaints that the person he was attending did not have any skills on the use of Naja System. Moreover, she did not have much knowledge of computers. [Projects and Services Analyst 2] also complaint that the person was at the reception of the clinic and was doing other things while trying to follow his instructions.

Projects and Services Analyst 2: “[...] I’m going to help [name of the person] this afternoon but...but she did not evolve from the last time to now, after what I had given her to be done. Understand? So, it is just like this: I’m going to do what I’m supposed to. I always say that the Naja System is a tool that is going to help people to do their job. Now if you don’t know how to do your job, how are you going to have a tool for helping you? [...] If I instruct the procedures in the system they will not understand what they are doing and how it needs to be done. This is why it is not wrong to say that we are process consultants. We do the support and consultancy. The Naja system is a tool that is there to help to work and is going to generate results [...] we only have to deal with people that don’t really know the processes.”

Projects and Services Analyst 1: “[...] what I have done this week...I think it was not supposed for me to do, but I end up getting involved because they were saying it was the system. [...] the follow up that we do there is not only what is paid for us to do it is a lot more than that.”

Excerpt 5 Doing the job: support or consultancy

Source: Non-participant observation (meeting) and shadowing – 21/02/2011; 22/03/2011 and 11/03/2011

The belief of a standardised procedure to be followed and the description of analysts’ job as instructing the client on the routines for data insertion create disturbances and hamper the integration of resources. In their daily work, analysts understand that Tener’s systems cannot/ would not be used if the employees of the client do not absorb these “right procedures”. The “right procedures” regarded to a job description and workflow determined by the software. As a consequence, the analysts mix their speech in reassuring their job description with the challenges they face in their everyday

attempts to integrate resources. When analysts teach the working processes necessary to integrate resources they doubt if it is their job or not.

6.2.2 Potentiality: *Tener's zone of proximal development*

Figure 12 depicts the possible pathways for evolving practices of the projects and services department. The practices can alternatively move between two axes underpinned by the internal contradictions as previously scrutinised. The horizontal axis refers to difficulties related to the internal contradictions of “supplying resources *versus* rationalising resources”, “to instruct the use of the systems *versus* to teach the working process” and “Employee *versus* department *versus* organisation.” These contradictions ground a possible movement to improving the capacity of the clients in integrating resources throughout the processes. The vertical axis relates to main difficulties concerning contradictory relations between “installation plan *versus* constant changes in the client”, “internal systems of control and communication *versus* unconnected system with the clients’ routines”, “problems of Tener *versus* problems of the clients.” The vertical axis indicates the possibility of approaching the organisational interactions between Tener, its clients and other organisations as a single activity system.

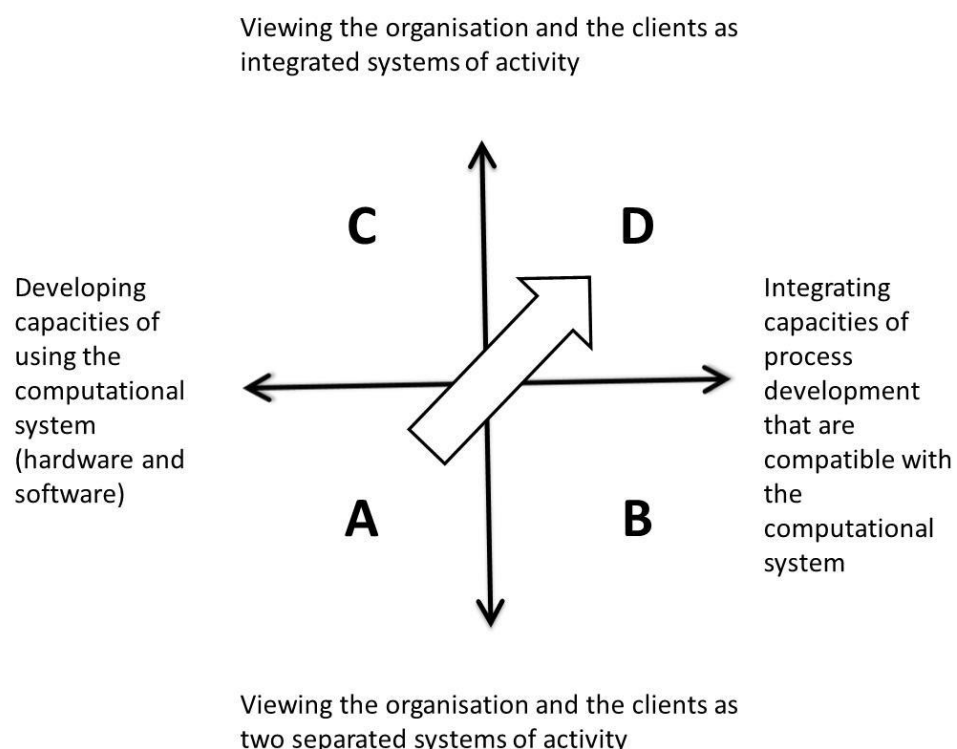


Figure 12 The zone of proximal development of the projects and services department

The “A” zone represents the current state where the focus of the projects and services department at Tener relies on implementing capacities of using the system. This approach assumes supplier and customer as two separated activity systems. In contrast, the proximal developmental zone is referred as “D”. In the “D zone” the integration of resources could enable the view of an activity system resultant from suppliers, customers and other actors’ interactions.

6.2.3 Internal contradictions – HGF: laboratory department

The internal conflicts of the laboratory department of HGF are depicted in Figure 13. The researcher captured the perceptions of personnel concerning former internal conflicts through participants’ descriptions of past activities. These descriptions emerged during observations and interviews, i.e. interview to the double and developmental history. In addition, the researcher captured current conditions through observations of remaining tasks and operations which did not develop to automated and integrated processes, e.g. internal collection of samples and internal reception.

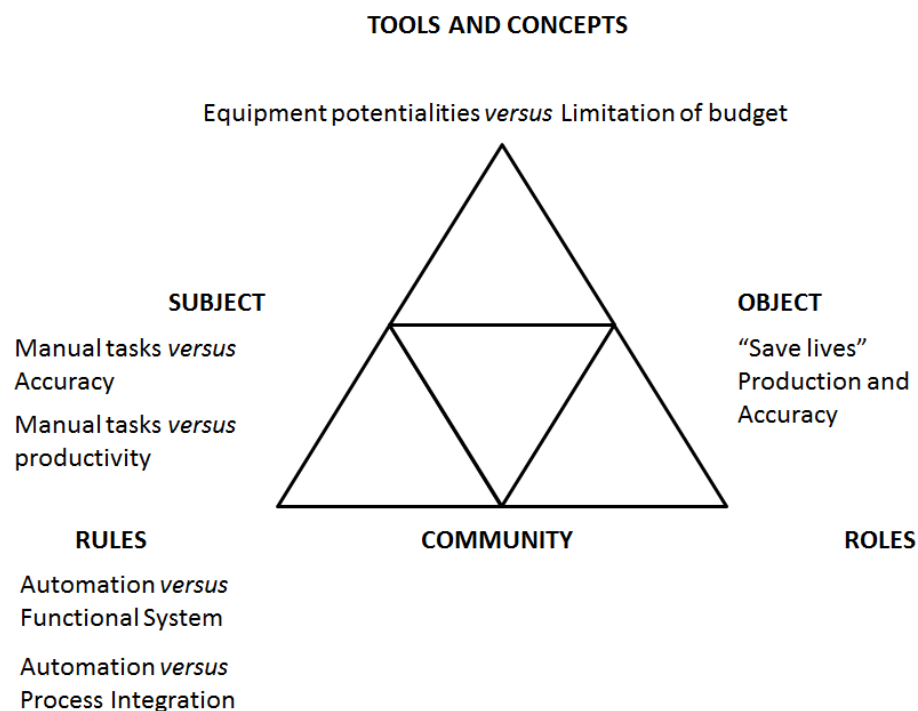


Figure 13 Internal contradictions of the components of the activity system at HGF

Source: interviews, shadowing and non-participant observation

The following examination details internal contradictions that constrained the laboratory to integrate automated resources into the process flow.

a. Manual tasks versus Accuracy

Laboratory Manager: “...that is because it was written by hand and a lot of people forgot, sometimes they forgot to write the name of the patient in the tube, there was a lot of repetition”

“The mistakes that sometimes still happens here, cause the collectors write by hand in the tube then sometimes when it gets here they place the wrong label, homonymous patients, there is a great amount of problems of homonymous patients that we keep saying: ‘the name of the patient must be put with some other identification, the name of the mother or the date of birth’, but there is always a problem of homonymous patients happening.

Excerpt 6 Paper work: manual tasks versus accuracy

Source: interview (developmental history) – 16/04/2012

The routine of the laboratory was based on manual control for producing results of exams. One of the main dilemmas of the laboratory of HGF was to focus on accuracy while conducting manual tasks. However, as it was a manual procedure dealing with a large amount of data, imprecisions and errors were unavoidable. This contradiction indicated a relevant constraint perceived by the subject: manual tasks hampered accuracy. The equipment producing results from samples was precise and accurate. However, the automation of producing results of exams did not provided the same level of precision. The automated resources available did not integrate with the entire functional process of the laboratory. As a consequence, the accuracy in automated results was hindered by manual procedures of identification and control of samples.

b. Manual tasks versus productivity

External reception manager: “Today for example it was a calm day. It was 193 patients with samples collected. Before, it would end at 10 in the morning [it was around 9:00 am]. Sometimes the girls shifted the lunch hour because it could end by lunch time. There was a lot of people and a lot of wasted time.”

“By that time when everything was manual the patient would come to get the exam and we could not find there was a lot of trouble”

Excerpt 7 When everything was manual: manual tasks versus productivity

Source: shadowing – 02/06/2012

The activities in the external reception of the laboratory were integrated by manual tasks. This integration through inserting data, printing and handwriting on the tubes was perceived as unproductive and confusing. The primary contradiction faced by participants derived from the impossibility of integrating the process through automation. This fragmented process caused disturbance as it was understood as “time wasted”.

The researcher could also observe the manual insertion of samples at the internal reception. The tubes come wrapped in papers with information about the sample. The receptionist inserts data losing a long time due to difficulties in finding the patients in the data system.

Internal Reception

[...] the identification is made with nurses writing. She verifies if there is the number of the patient in the paper that wraps the tube. There is no information but the age of the patient. She checks data to make sure that she is labelling the correct patient in the tube. The types of exams are inserted by codes. She knows the great majority of codes. When she is not sure, she consults a table with names and codes of exams.

Excerpt 8 Inserting internal samples: manual tasks versus productivity

Source: shadowing – 02/05/2012

The process of collecting samples internally is not integrated with the current automation of producing results. The contradiction between equipment and computational resources of the laboratory with the manual procedures of internal sample collection hampers the flow of automated processes and, consequently, affects productivity.

c. Equipment potentialities versus limitation of budget

Assistant: “the company [provider of the equipment] paid for the interfacing of graphics in the G26 [name of the equipment] right? This was to facilitate the life of the hospital for it was a colour graphic printed in A4. However, the hospital does not have the means to keep printing our results in A4.

Excerpt 9 No means: Equipment potentialities versus limitation of budget

Source: interview to the double – 16/04/2012

The assistant of the laboratory described an episode wherein the limitations of the hospital hampered the full potentiality for integrating resources with the supplier and partners. In turn, the supplier integrated its equipment to the hospital’s resources available at that moment. This movement of the supplier warranted that the machine producing results of sample examinations could be part of an automated process which was affordable by the client hospital. The dilemma referred to have a technological capacity that could not be implemented in the daily production of results due to the costs involved. The hospital needed its “life facilitated” and that meant the availability of resources which could be compatible with its affordances. Technological and economic issues were important constraints to resource integration in the HGF’s laboratory.

d. Automation versus Functional System

Laboratory Manager: “Here works the insertion of data for the internal patients. For the internal patients we have a team walking with a small suitcase. They go collecting samples in the beds [...] then they collect blood from the patients and bring the tubes with no identification, only wrapped by the solicitation of the physician and it gets here. They are delivered there and there the boys insert the internal patients [inserting data in the computer system and printing bar code labels].”

“But when the laboratory moved to this floor where the technical department is, then once again the reception had to be kept separated, for the sample collection is on the ground floor, and the collection is only for external patients.”

“For instance, one of the motives for taking a long time for collecting, because when it is collected, when the boys, for instance, a collector is collecting inside of a determinate...they go by each floor...in the medical clinic, which is in the second floor, there are many nursing rooms, with many beds, they go on finishing that and only when they finish collecting every sample they come here to deliver the briefcase full.”

Excerpt 10 Collecting internal samples: Automation versus Functional System

Source: developmental history interview – 16/04/2012

In the laboratory there are a set of formal procedures concerning a system of rules for the department to function well. These rules mediate the relation of the personnel with the community of suppliers, physicians and patients. The procedures of collecting samples consist at an important part of the functional system of the laboratory.

However, the manager of the laboratory interprets that the activities of collecting samples from internal patients is slow and thus disturbs production. The integration of automated resources is seen as difficult since collecting samples from internal patients is a function characterized by moving through many places in the hospital. The main dilemma refers to the pace of moving through a variety of places in the hospital. The resources used in the mobility of collecting samples were not automated as in the external reception. Automation was not fully integrated in the functional system of producing results for internal patients. This lack of integration caused a mismatch between the capacity of the equipment and the process of collecting samples.

6.2.4 Potentiality: HGF's zone of proximal development

The clinical laboratory of HGF had its contradictions grounded in the concept of automation. Despite the potentialities provided by the new equipment, the use of novel technology could not initiate capacity improvement related to producing the results of exams. Technology alone was not able to enhance the capacity of the process in spite of the provision of equipment with the capacity of having hundreds of results of exams per hour. The contradiction of having the automation of results production while all the other processes were manual indicated one of the learning possibilities for the

laboratory. This possibility is related to the integration of automation with the functional system of the hospital.

Integrating the functional system with technological appliances was the learning challenge for personnel of the laboratory at HGF. This challenge involved changing functional processes as much as it concerned finding a way to acquire the provision of technology. Since acquisition of technology is a main issue for the potential development of the laboratory, it forms the horizontal axis outlined in the figure 14. The horizontal axis relates to contradictions observed in the concepts of “nonstop production *versus* mal functioning of equipment” and “equipment potentialities *versus* limitation of budget”. In turn, the vertical axis refers to the functional system of the laboratory department. The main contradictions grounding the vertical axis are the “manual tasks *versus* accuracy” and “*versus* productivity”; and the rules related to “automation *versus* functional system” and “*versus* process integration”.

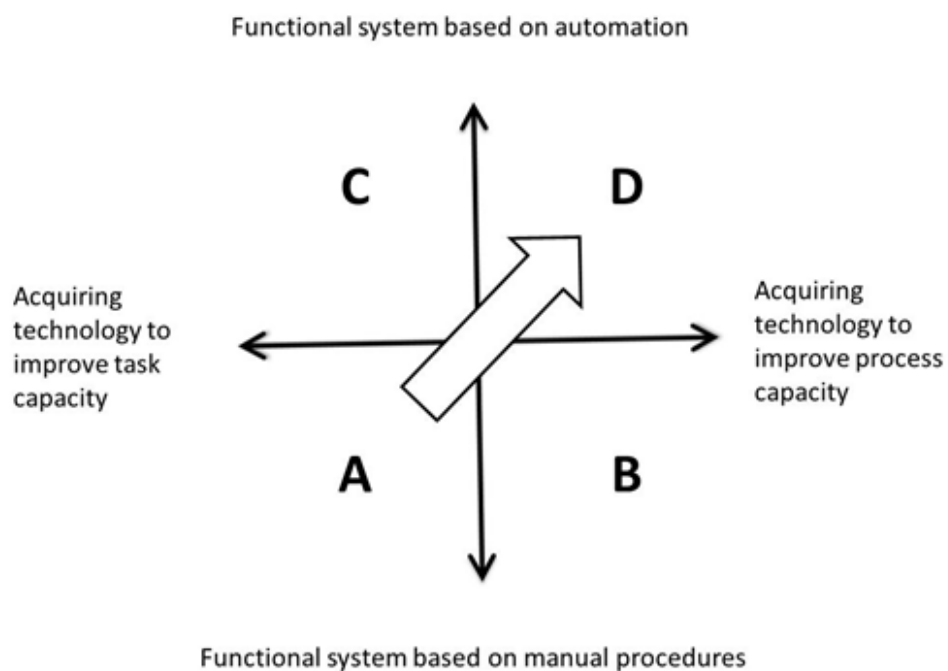


Figure 14 The zone of proximal development of the laboratory

In combination, the concept of automation with the need for novel resources that could integrate automated processes described the former condition of daily practice at HGF’s laboratory. In sum, the zone of proximal development represented the resolution for eliminating bottlenecks in production capacity. These bottlenecks stemmed from the collision of paperwork control, medical procedures and partners roles. The laboratory and its main suppliers of reagents had built partnerships with equipment providers

focusing on high-end equipment for exam analysis. These partnerships did not embrace a perspective of integration with the entire functional processes of the laboratory.

6.2.5 Key findings: how do internal contradictions and learning possibilities relate to the integration of resources for value co-creation?

a. Hindering value co-creation

Internal contradictions come to the fore as dilemmas and struggles permeating daily internal processes. Disturbances in everyday interactions are the indicators of such contradictory relations (Engeström, 2001). In both researched organisations, difficulties and disturbances related to obstructions in resource integration. The research findings indicated that internal contradictions in the internal elements of an activity system block the integration of resources amongst suppliers, clients and partners. Consequently, internal contradictions block value co-creation.

At HGF it was observed that integrating resources was fundamentally concerned with the integration of tools and concepts into the functional system. The integration of technology into processes incorporating the entire functional system is what made resource integration meaningful (cf. Vargo et al., 2008). In effect, the questioning of daily practices (cf. Engeström, 1987; 2000a) was grounded in the search for improving process capacity through integrating resources (cf. Vargo and Lusch 2004, 2008a; Grönroos, 2011). This internal struggle was originated in the suppliers' initial approach regarding the installation of equipment. The routine of the suppliers was to make equipment work and produce results accurately in a perspective of isolated tasks.

The findings at Tener have corroborated this observation. Since the client hospitals and clinics had limited capacities for integrating processes through the computational devices, the simple procedure of an "installation plan" for instructing users was not sufficient. The analysts felt the need for changing and improving processes at the client organisations. According to what was experienced in both the client and the supplier sides, the main challenge is to integrate novel resources into the actual functional system of procedures, tasks and behaviours (cf. Nenonen and Storbacka, 2010; Pels, Möller and Saren, 2009). In other words, the key is to integrate processes that could generate new capacities and capabilities (Gummesson and Mele, 2010).

b. Possibilities for co-creating value

Although internal contradictions related to obstructions to resource integration and value co-creation, the disturbances caused by contradictory relations underpinned the

questioning of participants. Questioning was fundamental to unveiling the contradictions as well as the potentialities (Engeström, 2000c). The research findings indicated that constraints and possibilities for value co-creation are threads of the same rope that constituted the dilemmas of resource integration. This dialectical relation wherein the disturbances represented obstacles and possibilities of development (cf. Miettinen, 2004) for value co-creation brought knowledge and learning issues to the fore.

In Tener's case the capacity to integrate resources concerned the capacity to share knowledge (cf. Vargo and Lusch 2004) with client hospitals and partners. In HGF, knowledge share was also dependant on the capacity of the client to communicate and instruct the suppliers and the partners of the suppliers about its process, needs and context (cf. Gummesson and Mele, 2010). Thus crucial resource integration referred to mutual transfer and acquisition of knowledge between suppliers, customers and partners.

Resource integration was hampered by Tener members' expectation about previous knowledge of the client and Tener's standardised procedures grounded by these expectations. These expectations produced standardised process for the analysts to follow. Thus the analysts faced the challenge of integrating operant resources (i.e. Constantin and Lusch, 1994) while following standardised procedures that constrained knowledge share. Analysts were facing obstacles stemming from the lack of capacity of absorption by the client organisations (i.e. Lusch, Vargo and Malter, 2006; Vainio, 2005; Moran and Goshal, 1996). This constraint was brought to the fore as participants questioned the daily practices and interactions (cf. Engeström, 2000c) with customers. The questioning was to develop customer's capability of using the system in contrast to develop customer's capability in conducting working tasks and activities. The internal contradictions of HGF demonstrated that the client side is focused on its daily processes (cf. Maglio and Spohrer, 2008). Thus, knowledge about using new technological resources had little use in their struggle to improve process capacity. Novel computational appliances needed to enhance the entire functional system.

6.3 The search for value through co-configuration

6.3.1 Modelling resolutions - Tener

Tener's project and services analysts face the challenge of conducting many interactions while still having the internal dilemmas, tensions and disturbances lived internally. The

complexity of interconnected systems of activity makes it impossible to make progress in implementing the ERP without influencing the processes of the client. Even more challenging, the projects and services analysts deal with a diversity of activity systems that are permeated by their own conflicts and instabilities.

A generalised model of the activity system related to hospitals and clinics is depicted in Figure 15. The objective of client hospitals and clinics is saving lives as much as possible. In this sense the focus on an increasing capacity of saving lives is the object of collective attention. However, a multiplicity of elements mediates the approach to the object of activity.

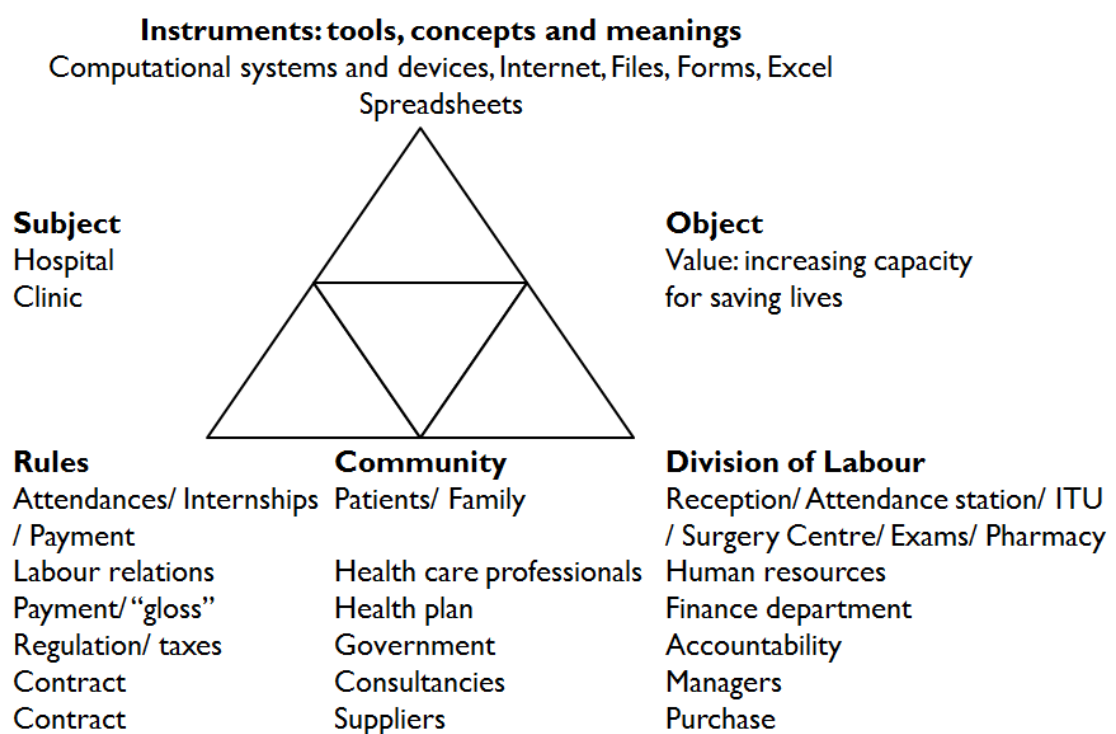


Figure 15 General activity system of a hospital or clinic

Source: non-participant observation

Figure 15 indicates the community involved with hospitals and clinics for mediating the attention and focus of activity as the capacity of saving lives. Tener is one of the multiple components of that community. The community of multiple actors influences the analysts in their routine of customising, adapting and correcting the *modus operandi* of the computational system. This activity is performed by Tener not only in relation to the needs of client hospitals and clinics. It is equally important to be in accordance with the requirements of the community involved.

The following cases examine the on-going problem solving actions and interactions undertaken by project and services analysts due to the network of relationships represented by the mediating community of a hospital's activity system.

a. Case 1 – “H Hospital”

This time the prescription is done right for the nurse standards and she takes the form to the chief-physician. He was there all the time. He was the one who talked to the patients most. He looks at the prescription sheet and asks if it is possible to have another space for signature. He says he would need two fields. One was already there: ‘Assistant Doctor’. The other he asks for is: ‘Supervising Doctor’. He points out that some health care plans do not ask for both signatures but most of them do. [Analyst 1] tells him that it could be done very quickly. She asks the secretary-nurse if she could sit in the chair in the front of the computer. [Analyst 1] goes to a screen of the software where the layout of the document could be changed. She inserts a space for the second signature. While she is doing that, the chief-physician leaves the ITU (intensive treatment unit) and shortly the chief-nurse of the department shows up. She asks about the request of the doctor. [Analyst 1] shows her that she is just about to finish that. She needs to print it twice until she has it in the way she wanted to. The secretary-nurse directs her attention to the doses of the medication. Firstly she does not find it. Then she checks it in the right column of the document. She indicates that everything is right and gives it to the doctor to sign.

Excerpt 11 In the Intensive Treatment Unit (ITU) of “H Hospital”: “Two Signatures”

Source: shadowing – 03/06/2011

The analyst is producing a document in the Naja System which is relevant for the treatment of patients (medications are administered by nurses through the prescriptions of physicians) as well as for the management of material resources (expensive medications are used in the Intensive Treatment Unit - ITU) and for the hospital income (the majority of the revenues of the hospital comes from earnings related to patients that have private health care plans, the health plan usually pays all the expenses of patients). This relevance is reassured in a tensioned moment when the chief-nurse comes, apparently asked by the chief-physician, to warrant that his understandings about the proper layout for prescriptions would be reflected in the form produced through the software. Figure 16 depicts the interacting activity systems permeating this action.

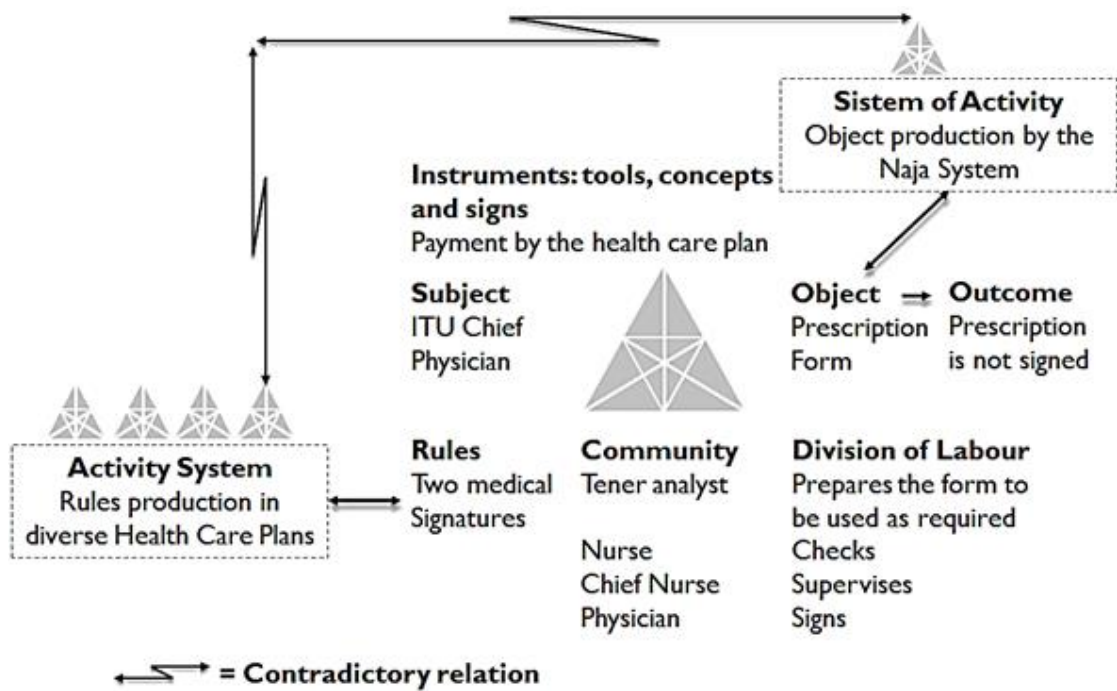


Figure 16 Interacting activity systems: Tener, “H Hospital” and Health Care Plans
 Source: shadowing – 03/06/2011

The activity system of the hospital is mediating the activity system of health plans. The healthcare plans produce rules for paying hospitals. The Naja System from Tener produces automated forms for prescriptions. The prescription function of the ERP is defined in such a way that it should support the treatment of patients, the automated request of medicines to the pharmacy and the posterior payment of the medicines by health plans or patients. Nonetheless, the production of the prescription forms through the Naja System is identified as incompatible with the standards of health care plans. Participants established a contradictory relation between standards for payment in one activity system and standards of documents production in another.

Figure 17 demonstrates that the tensioned moment of interaction between Tener’s analyst and hospital’s staff is due to contradictory relations. From the perception of that contradiction by the chief-physician to the solution of the conflict, a number of fast interactive moments happen. Two main features come to the fore in the shaping of these interactions. Firstly, different perspectives and interests underpin the configuration of prescriptions in a joint process. Staff responsible for supervising the department are focusing in the relations with other players (private health care plans) and the rules for invoicing. The nurse has the content of prescriptions as her focus of attention. The analyst from Tener interacts with all the diverse parties that participate in the co-

configuration of the software. This co-configuration is for the Naja System to produce paper forms of prescriptions in accordance with different interests in the ITU department of the hospital.

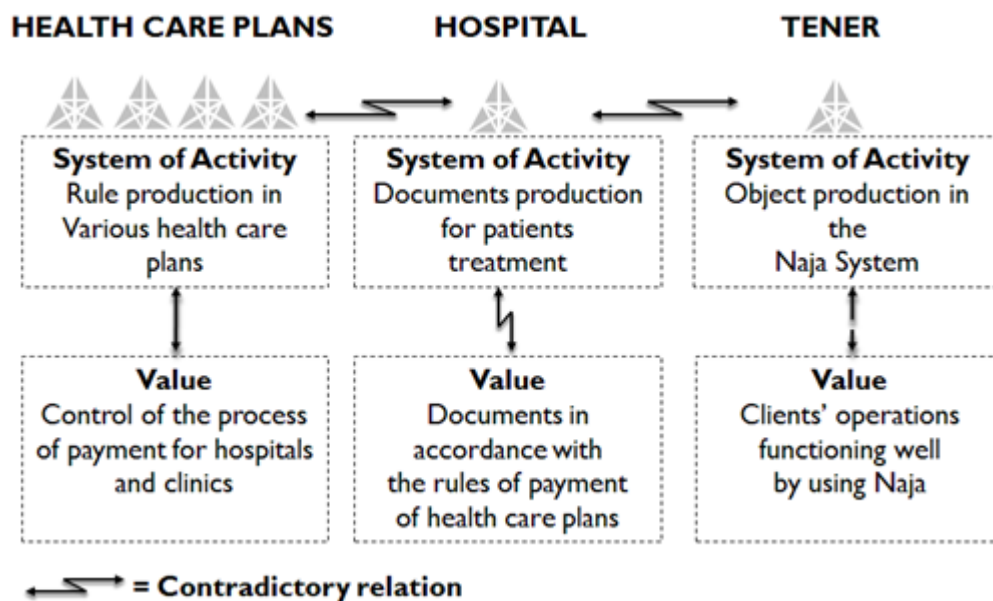


Figure 17 Contradictions on prescription impeding value creation

Source: shadowing – 03/06/2011

The co-production of a new design for the prescriptions forms resolves the contradictions between activity systems. The co-creation of a new layout of the prescription form maintains the notions of value sustained by Tener. Two integrated resources, i.e. the flexibility of the Naja System for creating different arrangements for prescriptions' forms and the knowledge and capability of the analyst, sustain the continuity and responsiveness of Tener's services. Figure 18 illustrates the activity system that resolved the contradiction.

This initial event anticipates different perspectives of value that come to the fore in daily practices and activities. Suppliers, customers and other parties have different rule producing systems which may be contradictory or mismatching. This context of alternating rules initiates the need for knotworking. The occurrence of co-creating a prescription form was grounded by knotworking movements as participants communicate their perspectives and strive for having their needs satisfied in fast multiple interactions, i.e. nurse – analyst, nurse – physician, physician – analyst, physician – nurse/ supervisor, nurse/ supervisor – analyst, analyst – nurse, nurse – physician. This resolution is, however, only a small part of an ongoing relation of

strains, disturbances and debate in the interactions amongst personnel from “H Hospital”, partners and Tener’s analyst.

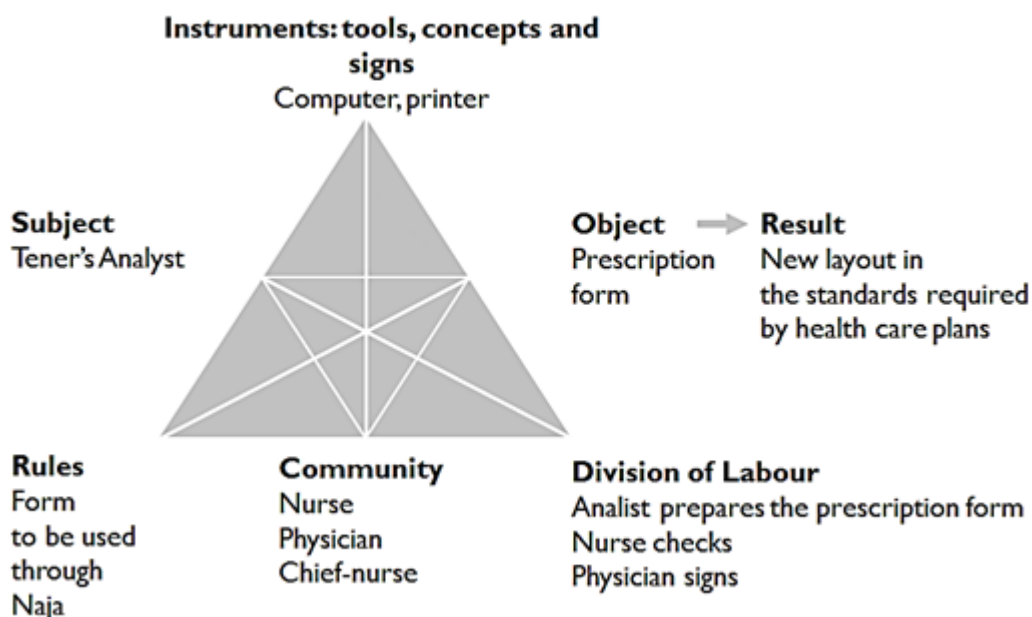


Figure 18 Activity permitting value delivering

Source: shadowing – 03/06/2011

The chief-nurse initiated a comparison with the ‘former computational system’ once again. She says that back then, each inserted medicament was automatically sent to the pharmacy. She explains that it was better because they could have the medication early in the morning for the day prescriptions and, in the afternoon, they could have the medication for the evening. She remembers that this procedure also facilitated operations. By doing in the previous way, there was no mixture of medication of the day prescription with the evening ones in the bench. This bench of medication was behind the administrative cluster. The secretary-nurse agreed.

[Analyst 1] explains that it is just the same now using Naja System. The prescriptions of the day could be inserted in the night before when they are confectioned by the physicians. During the day, what they were doing in that moment would have been done by the night shift. Then by the morning time, they could be just doing some minor requirements to the pharmacy, if that was the case, from the prescription of the night before.

The secretary-nurse notices that the “hard job” of inserting the prescription would be done by the night shift. She immediately supported the idea, smiling and making fun of it: ‘Look “X” [talking to a nurse passing by] the prescriptions can be done by the night shift’ and “X” replies: ‘that’s good because they do not do anything at all besides sleep all night’ [laughs].

The secretary-nurse tells [Analyst 1] that she needs to come in the evening to teach the nurse of the nightshift. The chief-nurse agrees. [Analyst 1] just says ok and turns back to work on the layout of the prescription.

Excerpt 12 At the Intensive Treatment Unit (ITU) of “H Hospital”: “prescriptions can be done by the night shift”

Source: shadowing – 08/06/2011

In the activity related to the prescriptions, the Naja System is a tool mediating the approach for requesting and handling the medications. The chief-nurse assumes that the procedure regarding the use of the software is causing delay in deliveries by the pharmacy. The unwanted result for the ITU operations refers to having the medications of the morning and evening at the same time on the rear balcony (figure 19).

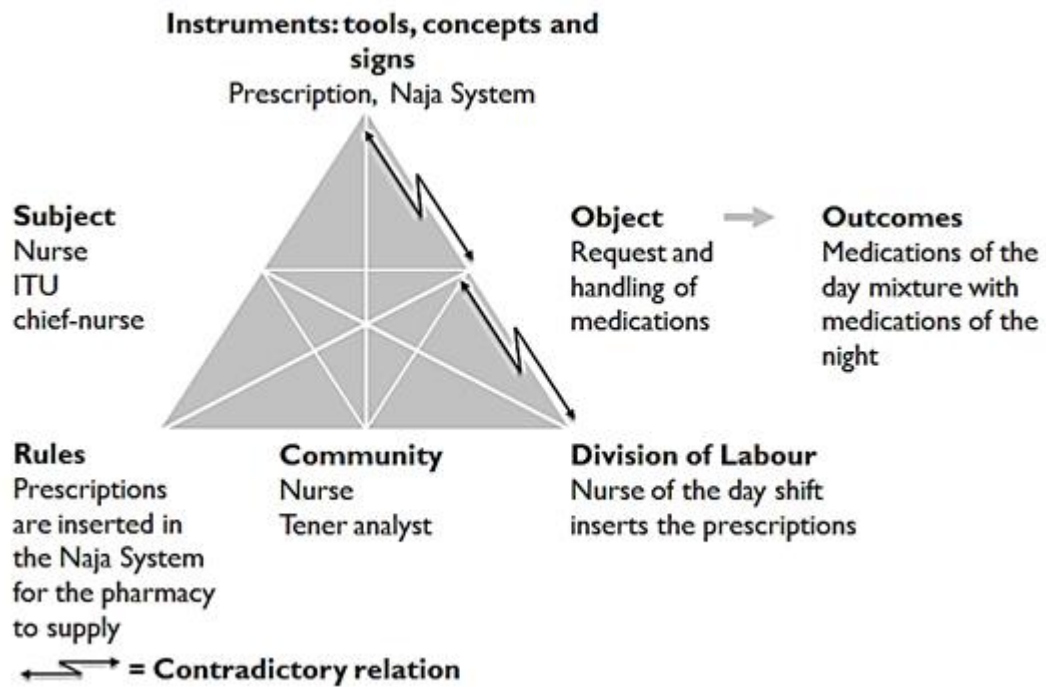


Figure 19 Contradictions in the activity system: prescription and movement of medication

Source: shadowing

As the analyst suggests the use of the software during the night-shift, the process of co-configuration of the resolution takes place at the individual level of actions and operations of the nurses. In the unconscious level of individual's operations, what is observed is an evolving attitude that is infused by personal interests. At the conscious level of actions, a new division of labour is understood to resolve the contradiction and the ERP is assumed to mediate the efficient use of prescriptions for requesting and handling the medication.

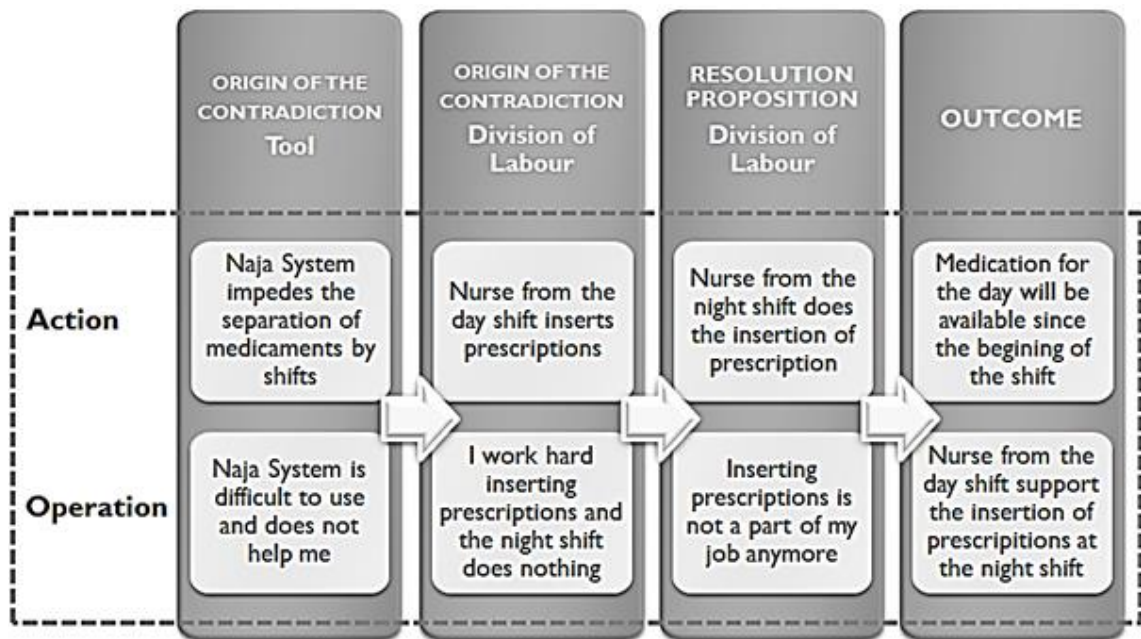


Figure 20 “Prescriptions can be done by the night shift”: partial resolution

Source: shadowing

This interactional moment refers to an approach to value through co-configuration. Actors of the dayshift engaged in rapid interactions with the analyst from Tener. These fast contacts exposed daily problems related to using prescriptions through the Naja System. The conversation, otherwise trivial, resulted in enhancing mutual understandings about how the existent disturbance could be resolved. The resolution of contradictions arose as collaboration led to the integration of the computational resource with the processes. More important, resolution was embraced by participants as they co-configured a procedure satisfying personal and departmental interests. Figure 21 demonstrates the co-creation of value as participants delineated how value could be achieved by the diversity of participants.

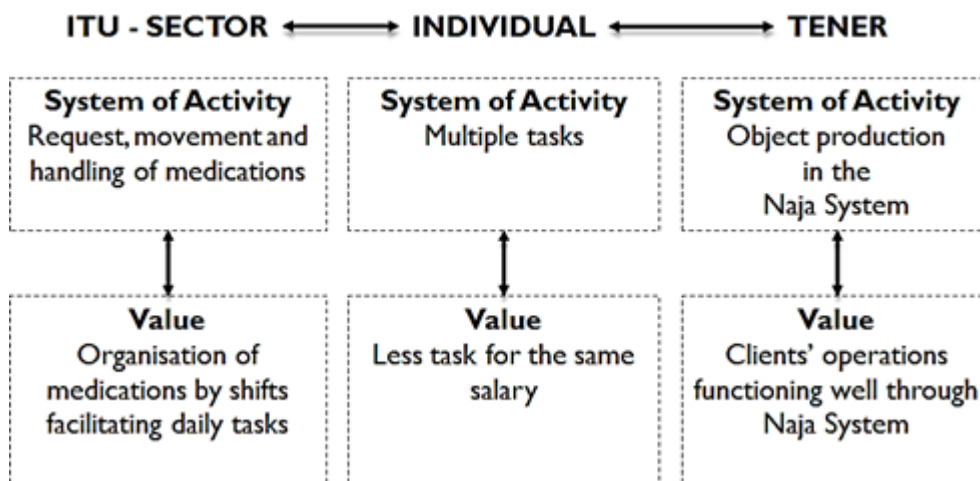


Figure 21 “Prescriptions can be done by the night shift”: a value co-configuration encompassing multiple levels

Source: shadowing

In the sequence of this resolution, the action of inserting prescriptions reaches the broader activity level and requires new determinations. The level of activity involves more challenging resolutions and more difficult learning experiences (excerpt 13).

The external consultant arrives and [Analyst 1] talks to him about the plans for the day. She says that the financial department is in need of things to be done but she also had to teach the ITU (intensive treatment unit) to insert the medical prescriptions. He asks her to follow him to the ground floor. We go there and enter in a small room as narrow as a corridor. At the end of the room is the general manager of the nurses. The topic of the meeting is the insertion of the medical prescriptions in the ITU. They are having a lot of errors in the prescriptions done through the Naja System. The main concern of that is related to the “gloss” from health care plans. In the way the prescriptions had been done, the health care plans would not pay it. The problem was with the quantity of the doses, the name of the medicines and the period of ministering them. The nurses were inputting what the system had previously set as standardised. [Analyst 1] explains that there is an alternative of ‘others’ to customise these things. The nurse manager indicates that the ITU was saying that the problem is with Naja and now [Analyst 1] is saying that the problem is in the process. She adds that it happens all the time: one say it is the software and the other say it is the process. She asks [Analyst 1] why the nurses do it wrong. [Analyst 1] explicates calmly that they were used to do it in such way and it is hard for them to change.

Excerpt 13 At the office of the nurses’ general manager: “the health care plans will not pay!”

Source: shadowing – 22/07/2011

The result of the contradictions in the activity level, i.e. amongst different departments and organisations, is a managerial dilemma. This disturbance was mainly caused by the interference of different perceptions of how the ERP could be used. The main struggle is set by the uncertainty related to the source of tensions: “is it the process or is it the

data system?” The initial answer given by the analyst from Tener was essentially in the direction of change resistance causes. Figure 22 details the shaping of this dilemma and disturbance by means of the related actions and operations which find their contradictory nature in the level of interacting systems of activity.

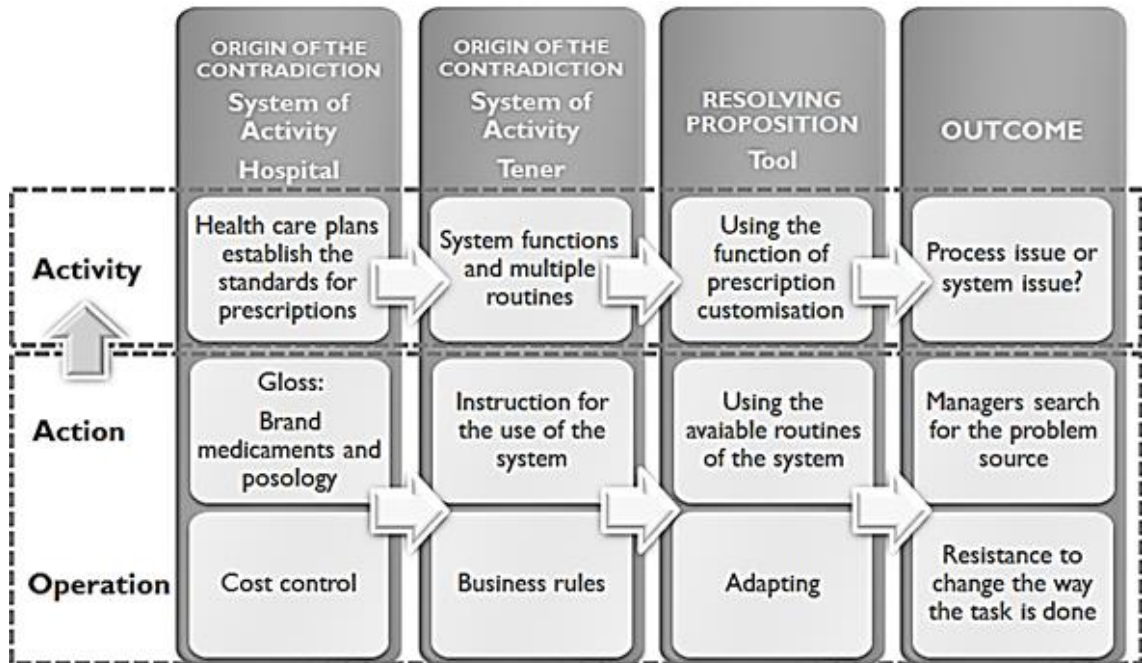


Figure 22 “The health care plans will not pay!”: partial resolution

Source: shadowing

The analyst from Tener searches for resolution of contradictions between the activity systems through customisation. The resource of customisation of the software system is the main approach of the analyst to integrate the three processes. However, contradictions come to the fore in each interactive moment as she navigates amongst the hierarchical levels and partners of the hospital. The analyst went through the operations of prescriptions to the consultant partner and to the manager of the nurses in less than half an hour. This sequence of interactions was an attempt to interconnect personnel’s interpretations about the rules for payment of private health care plans with the necessities of conducting everyday tasks related to prescriptions. The search for resolution required that the interactional moments were able to bring new knowledge and novel information to the fore. According to the analyst standpoint, this emergent knowledge and new understanding would prompt integration of the software with the activity systems involved.

Other difficulties are brought to the fore as the meeting between the consultant partner, the general manager of the nurses and the analyst from the projects and services department continues. The consequences of the prescriptions that were going to be inserted by the night shift (exemplified in excerpt 13) surfaces as disturbances between the activity systems of the intensive treatment unit and the pharmacy.

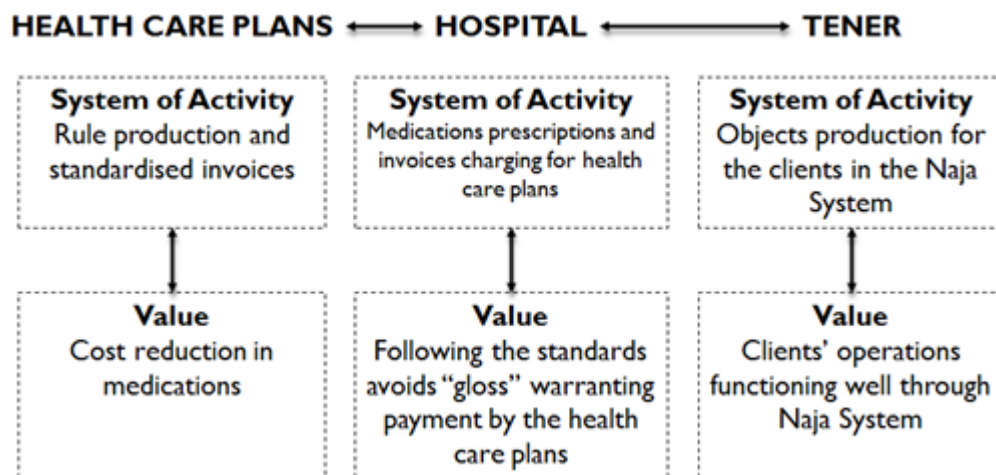


Figure 23 “The health care plans will not pay!”: a value proposition encompassing multiple levels
Source: shadowing

The talking now changes topic to the process of interfacing the prescriptions with the request to the pharmacy. The pharmacy department does not want to attend ITU according to the requirements of the unit. They argued that they do not have enough people to deliver the medication early in the morning as ITU demands. People from pharmacy also said that they can separate the medication but someone from ITU would have to go there to have it. The suggestion that arises was to set a meeting with Tener, ITU and Pharmacy to have a way of procedure sorted out. The management consultant comments that in those meetings the problem vanishes. He remembers that everyone says that it is all right. The nurse manager guarantees that it was not going to happen. In the meeting, they decided, Analyst 1 is going to teach everyone in the same basis so they would all follow the same procedure. It would need to be done at a time when all participants would be present. The consultant manager and the nurse manager discuss a schedule for that. They realise that an appropriate and suitable time for everyone was impossible. A time when no one was working in the hospital does not fit because they do shifts in other hospitals as well. As a result they plan to schedule a time for the key persons to be there.

Excerpt 14 At the office of the nurses’ general manager: “pharmacy does not want to deliver...”
Source: shadowing – 22/07/2011

Excerpt 14 unveils the difficulty of developing a common notion of value in the operational level of tasks. This was especially evident as personnel conducting each task

had its own priorities, interests and perspectives. The broken arrows between the activity systems (figure 24) depict the impossibility for players to reach their perspectives of value.

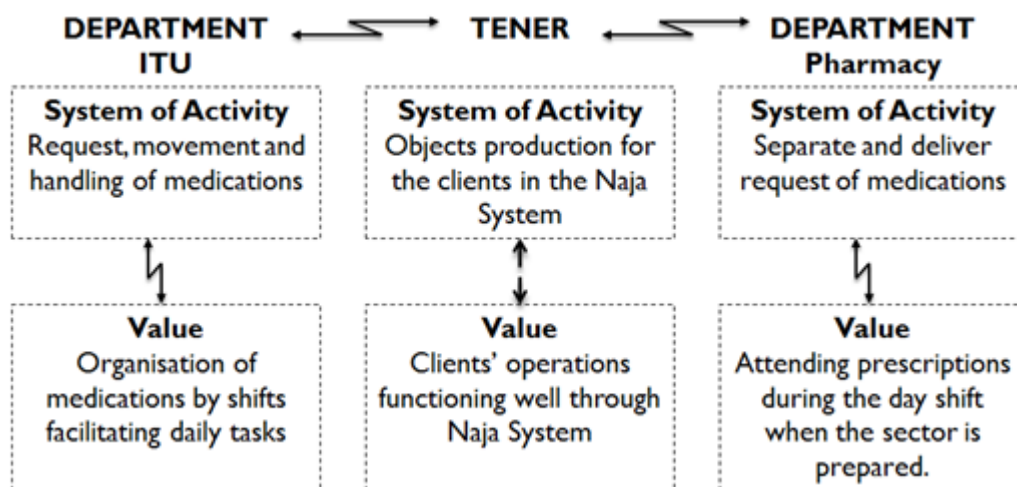


Figure 24 “Pharmacy does not want to deliver...”: contradictions between departments obstructing the co-configuration of value

Source: shadowing

The partial resolution of disturbances found an obstruction in the level of activity (figure 24). The level of activity is where the ITU and the pharmacy departments interact. The level of activity is also where the professional condition of the nurses is brought to the fore (figure 25). This broader condition encompassing the professional conditions of nurses impedes the organisation of a meeting wherein all the actors involved could interact for a resolution.

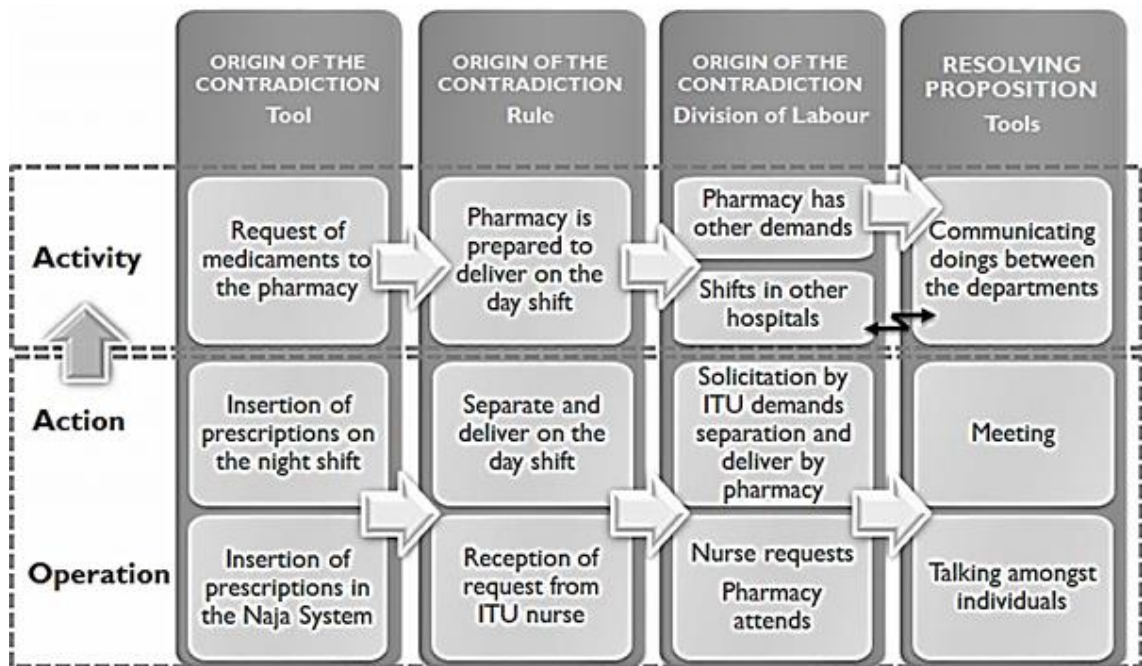


Figure 25 “Pharmacy does not want to deliver...”: partial resolution

Source: shadowing

Participants are not able to co-configure a resolution since there are contradictions in the activity level blocking the solution model. The next section (Section 7.4) describes and examines the application of transformations resolving this main disturbance on the operational level.

b. Case 2 – “C Clinic”

There is a weekly meeting of the projects and services department of Tener that occurs every Friday at 8:00 a.m. In these meetings, the manager of the department revises the activities of the analysts during the week. He also searches for establishing a course of action for the analysts that are dealing with problems of implementing and maintaining the computational systems and devices at the clients’ sites. The manager believes that these meetings represent a moment in which the team share opinions and experiences. As it was observed by the researcher, these meetings encompass collaboration as well as tensioned discussions. Different opinions and divergent perspectives emerge, most of the time, with the participation of the sales representative. He brings standpoints that are based on his post-sale visits and strives to drive the projects and services department to what he claims to be the view of the client.

Excerpt 15 indicates a part of a department’s meeting where the projects and services team discussed about “C Clinic”.

Manager: What about “C Clinic”, what was set depends on a meeting there on the 19th.

Analyst 2: “C Clinic” is, indeed, depending on a meeting there.

Manager: [assistant]! How is that meeting at “C Clinic”?

Analyst 2: As I was here on the help desk I phoned the receptionist and told her that we needed to set a meeting with “Doctor D”, with his partner “Doctor A”. She told me that she would talk to “Doctor D” yesterday.

Assistant: What they have told me is that there they are having some differences between the partners in relation to... difference about... “Am I going to insert in the system or other person is going to do that?”; “I do not do that, I do not want to have that job”. Then another person comes and says: “we can hire someone to insert the data.”

Manager: (smiles) But we are not scheduling for today right?

Commercial: Let me tell you how the system is there. “Doctor A”, according with what we had talked with [Analyst 2], she said this: “we are going to schedule a meeting. I want you to you to join “Doctor D” for you two to SHOW the necessity of having this person”.

Analyst 2: And she did not want to...

Commercial: (touching [Analyst 2] in the shoulders) These were her words or did I add something?

Analyst 2: No I would yet add a detail that you have taken out...

Commercial: Have I?

Analyst 2: She told me that...hum...she did not want any alternative. She wants to hire someone. But she wants Tener to support that.

Commercial: Then the thing of supporting I think that...I do not mind anymore.

Manager: We are going to go there and we are going to say: “look: insert it or hire someone”. That’s it. We are not going to say that they must hire...

Commercial: Of course not.

Manager: We are going to say that it is an option. But why does she want that option of hiring someone?

Commercial: Because...

Manager: Because she hates an ERP system. She wants to demonstrate an option without having the other because the other bothers her.

Analyst 2: I do not want to defend her but I am going to. There is this aspect which is crucial, but she said that there is a great necessity of having one more nurse. When a nurse is on holidays there is a need to have someone else.

Excerpt 15 At the projects and services’ department weekly meeting: “Insert or hire someone”

Source: non-participant observation (meeting) – 11/03/2011

In the discussion, the team explored the general understandings of the circumstances at the client, identified an occurring issue, attempted to understand the underlying motives for the internal dispute at the client, and finally the manager declared the company’s position. Participants defined that the context at the client is a dilemma of determining who is going to insert data. Tener’s personnel find “C Clinic” diverging in different opinions in this matter. The main issue interpreted is that one of the partners wants to hire someone to insert data. This is not only a motive for tension at the clinic but it is also prompting divergence and disturbances at Tener.

The problem goes against the terms of value of the company. The shaping of value by Tener does not predict clients having to hire additional staff that would represent additional costs. This is the main reason for the problem to reach a managerial decision and action. Tener's actors faced an issue happening with the client wherein the traditional division of labour and the rules for installation the ERP were failing in integrating resources. The participants engaged in knotworking with client's players and amongst themselves in order to negotiate relations and transform or maintain the rules. The standpoints indicated that interests in change or maintenance of the activity system were based on personal value interests.

Tener's staff do not share the same opinion. These divergent opinions based on personal interests direct the argumentation of participants. The sales representative is clearly concerned with the commercial consequences of having a client who needed to have extra personnel to implement the system. The projects and service analyst would have his work of implementing the system at the client facilitated by having a person dedicated to inserting data. The analyst brings the perspective of "Doctor A" to the fore. Interestingly, the motive that the analyst provides does not present a direct relation to the software system. What the analyst declares is that the clinic needed one more nurse to cover other nurses' holidays. In sum, while C Clinic's partner uses the system to resolve a problem that she sees as lack of personnel, Tener's analyst uses the partner's perceived problem to facilitate the work of implementing the Naja System. None of them declare the possible underlying interests and perspectives. The analyst and the clinic's partner found underlying and disguised motives for supporting transformation. Finally, as the manager of the department, points out that there is no problem with the ERP, the problem is due to personnel difficulties of the partner related to computer systems. What the manager states is a position for the team to assume that there is no objective problem with the Naja System in terms of its integration to clients' functional systems. The manager referred to the position of the company regarding the clients hiring personnel for inserting data: this is a subjective and localized issue. Figure 26 depicts the opposite perspectives of the sales representative and the analyst.

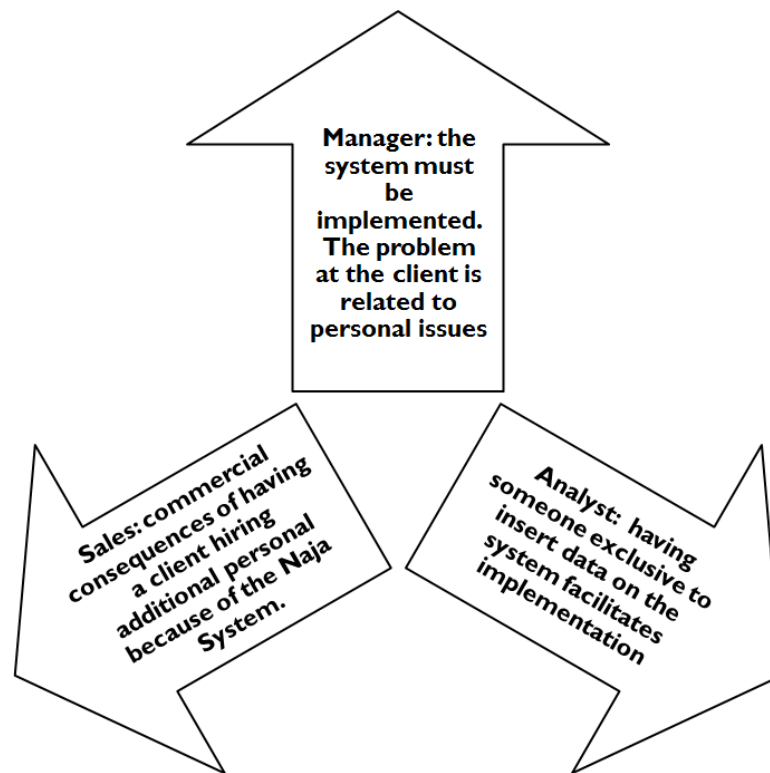


Figure 26 “Insert or hire someone”: internal differences in interests and value stand points

Source: non-participant observation

A few days later, at C Clinic, a meeting involving the partners, their family and a number of personnel from the clinic was set. The manager and the analyst responsible for implementing the Naja System participated. What happened there was not really what had been anticipated in the projects and service meeting. Excerpt 16 illustrates the tone and character of the meeting.

We sit and Dr. D is the first to arrive. He has the Power Point presentation printed out. After the polite greetings, his first words are: ‘what ok/ no means?’ [Analyst 2] replies it meant that the current implementation of Naja System was partly done and partly undone. Mostly the undone part was related to procedures related to the largest health care plan: [Health Plan 1].

The first issue was raised by Dr. A’s husband. He indicates that Naja is not compatible with [Health Plan 1]’s system for receiving invoices for payment. He says the codes are different. [Manager] confirms and replies it is an issue in production by the development department of Tener and it would be resolved soon. Dr. A’s husband also indicates that he is not able to insert invoices from outside the clinic using the Naja System whilst inserting directly in the [Health Plan 1]’s portal could be done from anywhere. [Manager] says it was possible to have remote access through the software and it needed to be done by implementing some computational devices. Finally Dr. A’s husband complains that in the [Health Plan 1]’s site he could insert all invoices and then send it at once, while Naja System required inserting and send it individually.

[Manager] replies that it is just a different way of inserting with no impact on productivity.

Excerpt 16 At the clients’ meeting room: “the codes are different”

Source: non-participant observation (meeting) – 17/03/2011

Discomfort arises as the client perceives that the ERP from Tener has a limited capacity to integrate with the payment system of the most important health care company. In the Tener’s side the discomfort arises as Tener’s representatives perceive that the problem lies with the lack of capacity or interest in conducting the process of integration properly. Before the meeting, at Tener’s office, the manager of the projects and services department confided his concerns in relation to what to say to C Clinic’s partners. Tener’s manager felt he could not say exactly what he thought about the problem because it involved the husband of one of the partners. In spite of this, the “husband” describes the problems with confidence at the meeting. He demonstrates knowledge and experience in the use of Naja System for invoices emission. He points out a number of limitations in working with the ERP system and the health care plan web portal. Ultimately, the contradiction between using the Naja System as an instrument for issuing invoices and the rules of procedure determined by the health care plan is established (figure 27).

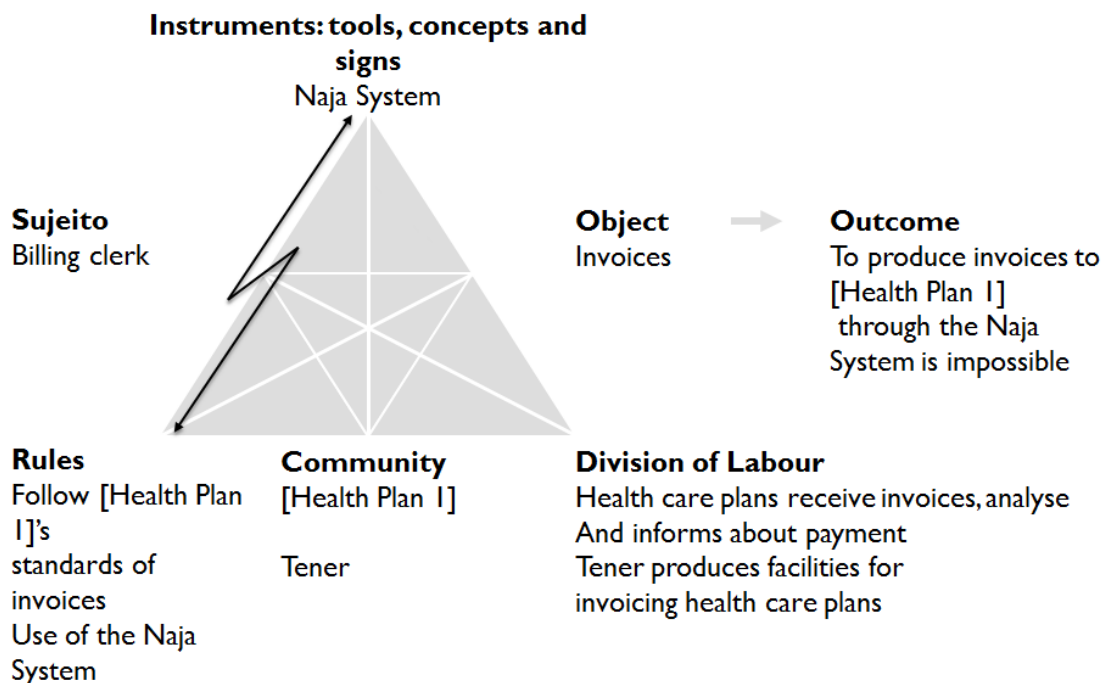


Figure 27 “The codes are different”: activity system of invoices production of the client

Source: non-participant observation

As a contradictory relation emerges between two computational systems in the activity of emitting invoices at “C Clinic”, the perceptions of the person conducting the activity are confronted by the knowledge of Tener’s manager in providing and integrating resources. The efforts of having the co-configuration of the process for integrating the resources available at the Naja System with the private health care was based on the manager’s ability and skills of delivering a persuasive argument.

Figure 28 depicts the contradictory relation between the “as is” situation and the impediments of using Naja System as established by the person from the clinic. It also indicates the dialogical facet of value when it is attempted to be constructed in a rhetoric exercise of the projects and services department manager. The manager from Tener was attempting to be persuasive in his responses to each accused impediment.

The interactions of “C Clinic” with the health care plan are crucial for supporting the integration of resources and processes through the ERP. The majority of the patients of “C Clinic” are associated with the private health care plan with which the Naja System is unable to interconnect. The impossibility of automating invoices would represent a great part of the invoicing processes done out of the Naja System. However, what was depicted to be only a matter of adapting the protocols was unveiled, from another piece of this research, as difficulties coming from multiple interacting systems of activity. More important, the belief of having Tener to solve the problem once the health care company already had its computational system prepared for the integration was far from being the existent state of affairs.

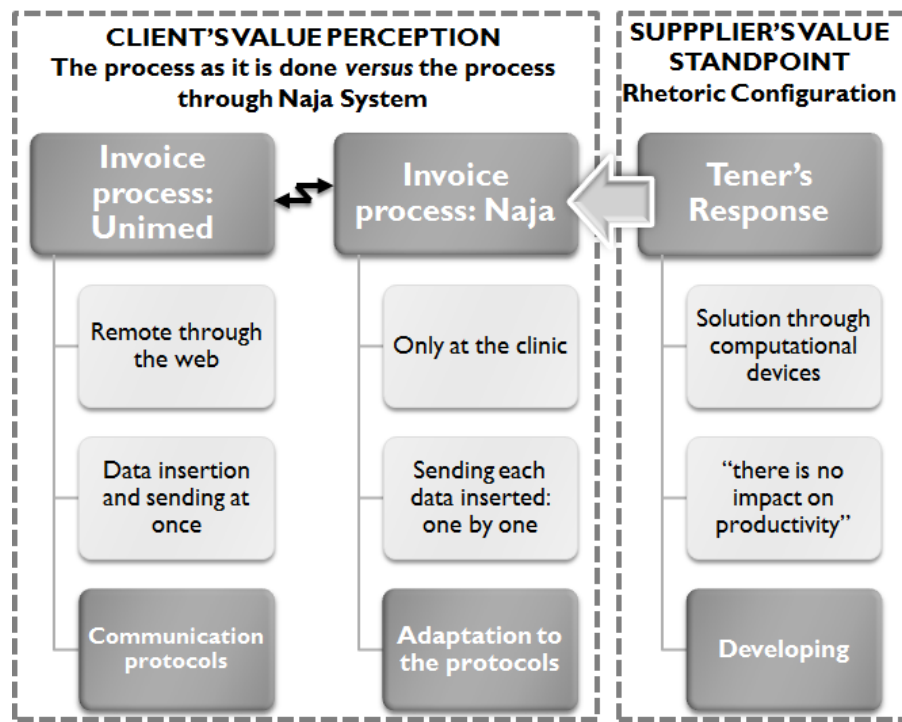


Figure 28 “The codes are different”: value perception and value proposal
 Source: non-participant observation

As the automation project for paying and reporting a statement of the payments by the health care company needs to interact with the computational systems of hospitals and clinics, developing a solution is the responsibility of the development department. Excerpt 17 indicates the narrative of the development analyst involved in this case.

Systems development analyst:

“[...] the information that had come to me here is that it was needed to do that on Naja for the competitors were already doing it with the [health care company]. I could only find some very superficial answers until [one of the partners] put the IT manager of [the health care company] on the field [...] She said: “yes we had released for some...providers, hospitals and clinics right?, but we do not have any feedback if it is working or not.”

She introduced me to a technician [...] with him I could resolve some minor problems related to some files which were missing in their server there. After making these files available the thing kept without functioning [...]

And they outsourced: the development part of them is at another company named [ABC]. It is at UNIFOR (Fortaleza University)

[...] I’ve shown them many times that it was not working then they kept correcting the problems until there was a moment that I sent the file and it came back. [...] When I got the file, inside the file the information was wrong. For you to see how I suffer...

Then it goes what? Three weeks in that play. Then I go and send to, to the analyst who was a woman responsible there. I say: “look there is this information missing inside...” She: “I will verify”. Then she verified and turned to me and said: “yes it is missing...it is wrong...right, this is going to be sent for correction” [...]

“...that is, the integration is on hold, there is no competitor doing this and if someone gets there and do this first it is going to be us. Now things are like that: [one of the

partners] is resolving directly with the IT manager there. [one of the partners] knows her, they are friends or something like that. They are waiting for the corrections right? When it is ready and I receive the file, when I recognise that “this is the file” then I will take a look and define what I am going to use inside the Naja System, that is, it is not simply when it is working mine side is going to be working. When it is working then we can do something here understand?

How it is like today: the invoice comes and then she, I think she enters on the health care company website and sees the invoice statement and puts what has been refused...the objective is that this file comes, it is processed and then informs: “account has received this amount and has refused this amount”. When it is ready the system is going to be automatized and it won't need all those people working on the billing process of H Hospital for instance.

Excerpt 17 Development of compatibility solution with the private healthcare company

Source: Interview to the double – 18/03/2011

The narrative delivered by Tener's development analyst is an evaluative communication of how difficult it is to be him and conduct his job. His story, inserted in his description of what the researcher would need to do to replace him (interview to the double precept), depicts his views on how hard it was to interconnect the threads of a number of interactions to co-configure a desired result. The desired outcome refers to make the Naja System able to interface with the computational system of the most important private health care plan of the market. This is a feature of the product that the development department must provide to face competition. Moreover, this feature is key for prompting the project and service department to integrate the Naja System into the processes of the clients. In his narrative, the development analyst depicts the difficulties of his tasks and builds his character as a determined and tireless problem solver.

The development analyst describes his tasks for solving this problem as successive interactions for checking the performance of interfacing the computational systems. He describes himself as interfacing with two activity systems involving supplier and customer relations. In effect, he depicts a scenario where many actors were demonstrating wrong assumptions about the system for automating invoices and payment. He understood that he was able to clarify and construct the actual state of the interfacing system as ineffective and prompt a pathway for solving the issue. The action of tying knots is infused by the search for integrating resources in actual activities and practices whilst dialoguing and making sense of disparate information and imprecise assumptions. The analyst from the development department inserts himself in the crucial process of knotworking for resolving the initial disturbance (figure 29).

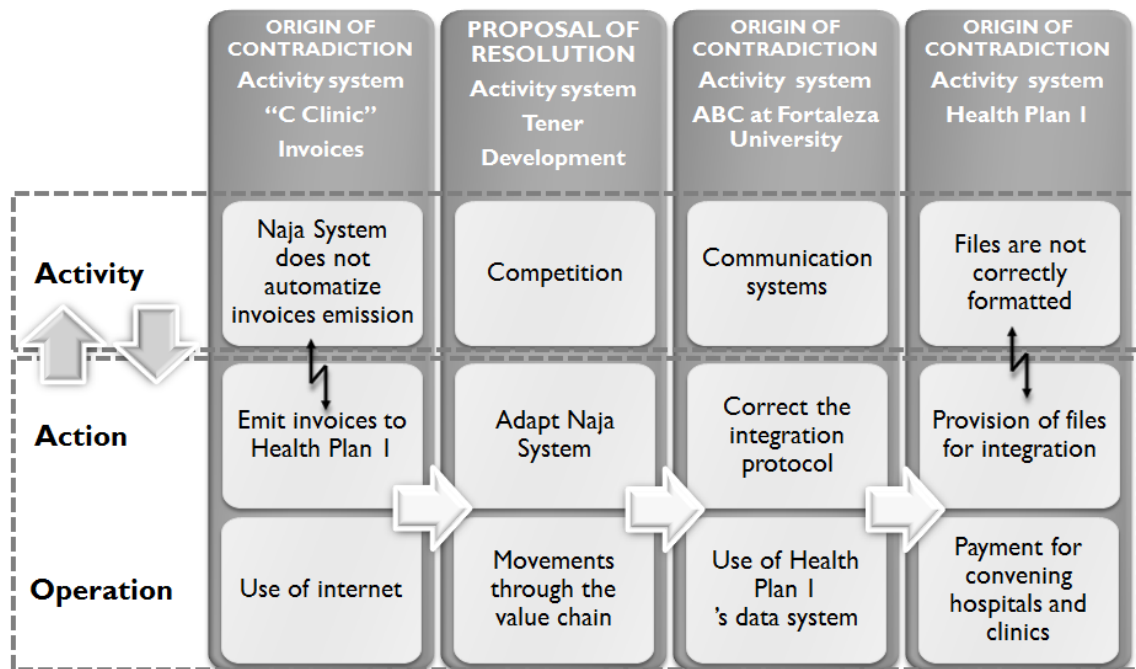


Figure 29 Automatizing the emission of invoices: representing action and activity

Source: interview to the double

For Tener to co-configure a resolution that is capable of creating value for "C Clinic" it moves from the action of adapting the Naja System for the client to the level of activity. In the activity level, the concern turns to competitors and to the interactions with partners of health care plans. Essentially, Tener's activity context for providing completely automatized resources of invoices emission and control involves mediating contradictory interests in terms of the diverse value perspectives between the clinic and the health care plan. The resolving activity that could co-configure value through knotworking encompasses the development of a reliable and efficient tool. This capacity of Naja System depends on the exchange of knowledge resources and learning by a number of players in interconnected systems of activity (figure 30). That was attempted by knotworking as an activity directed to co-configure a resolution through the integration of knowledge resources aiming at learning results. This resolution could finally disclose value to the diversity of players.

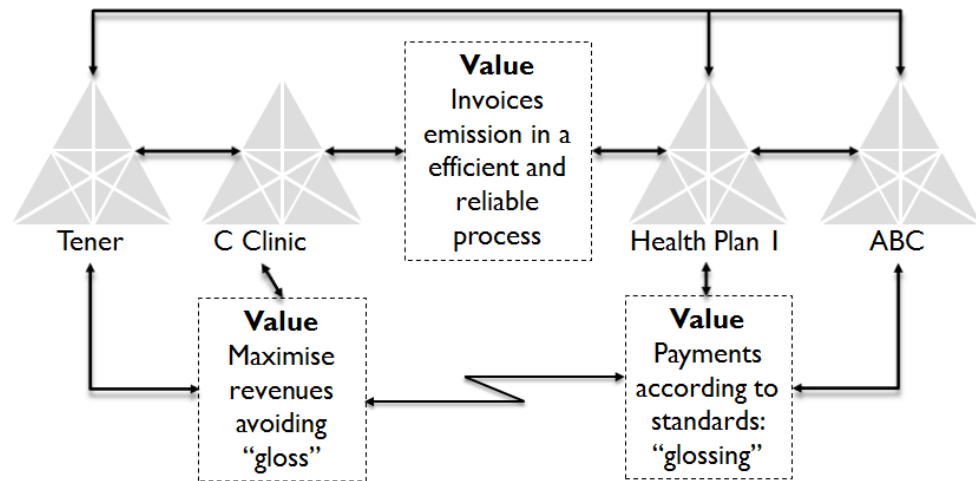


Figure 30 Interacting network for creating value in the emission of invoices: representing an inherent contradiction

Source: interview to the double

6.3.2 Modelling resolutions - HGF

The IT department

Staff of the IT department at HGF consists of the manager, 4 analysts and 7 support technicians. In the vision of the manager these numbers are insufficient for a hospital with more than 3,000 employees. The analysts develop computational solutions, solve software related problems and coordinate the work of technicians. The technicians resolve hardware and software problems. The IT manager depicts his focus as identifying the weaknesses of the computational network, as well as benchmarking technological projects in hospitals with the same characteristics of HGF. He described how difficult it was when he arrived and found an organisation with that size working through 33 data base systems made in Access.

By the time of this research in 2012, the manager depicted the following standards of the computational devices at the hospital (Excerpt 18).

“We are getting close to 500 hundred computers. I think our necessity is 200 hundred more. [...] Today all of our platforms are in Delphi...uh...Delphi, PHP, Oracle. Now we are moving everything to open source software in a gradual fashion. It’s a gradual process. We already have some servers in Linux and we have licenses for servers in Windows but the perspective is to shift them in the future.”

Excerpt 18 The IT Department of HGF

Source: developmental history interview – 14/02/2012

The motive of activity of the IT department is to support the hospital performance in saving as many lives as possible. As the manager stated in excerpt 19 the IT department is perceived to be a means to an end.

“For the IT is not an end, it is a means. It is a way through which the hospital approaches its final object: in our case the patients from the public health care system.”

Excerpt 19 The object of activity of the IT Department

Source: developmental history interview – 14/02/2012

The activity system of the IT department at HGF is depicted as follows.

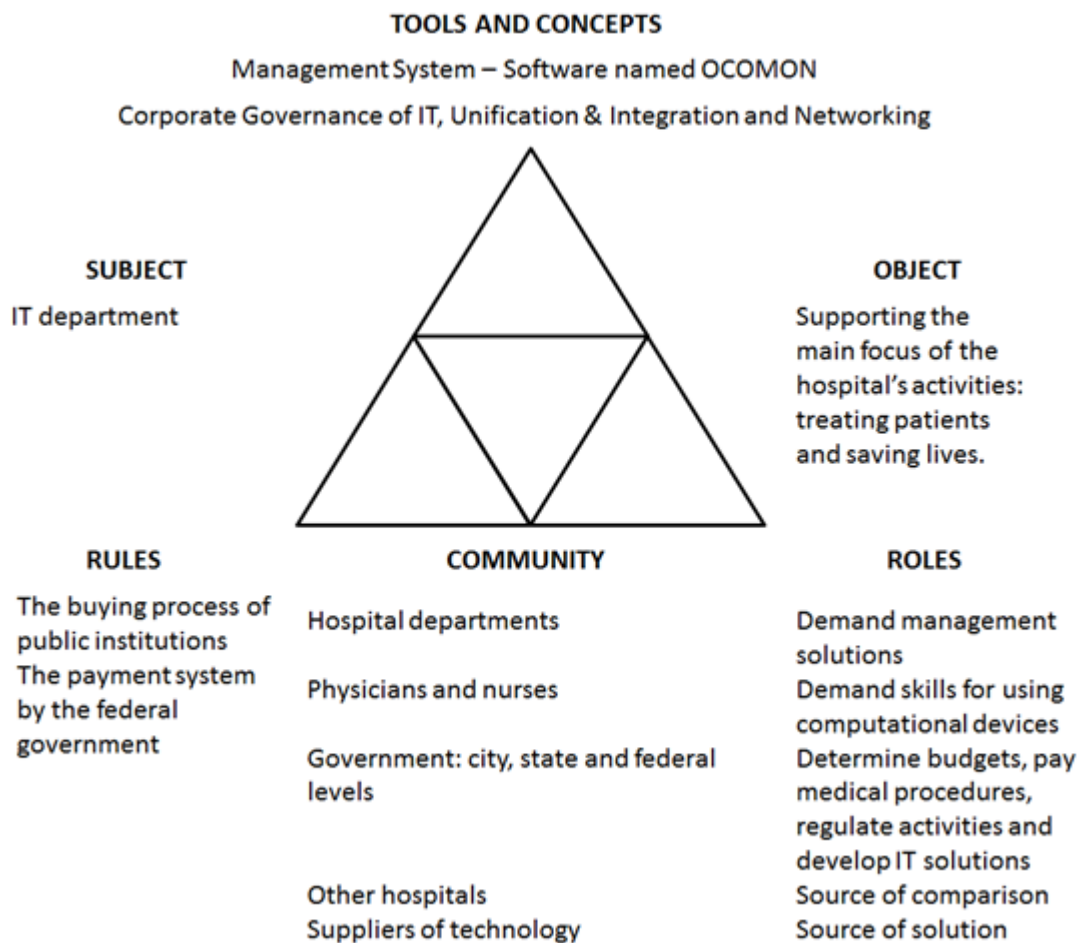


Figure 31 The activity system of the IT department

Source: interviews and observations

It was observed that the software used in the daily work was the main source of difficulties, debate, struggles and time consumption. Thus, main focus of research will rely on the flow of interactions allowing discussion of alternatives to the use of software that could support and integrate the hospital’s activities.

a. Case 1 – GIL: a provisory data base system

GIL is a software system created by DATASUS. DATASUS is the IT division of the Federal Ministry of Healthcare. The name GIL stands for Local Management System (Gerenciamento de Informacoes Locais). The managers of HGF decided to install this software in the customer service and statistics department named SAME. Since SAME is where the first contact with the public happens, this department is responsible for tracing the data base and history of each patient. According to the IT manager, GIL was installed because it was zero cost to the hospital and there was no budget to spend in buying a software system in the market. Nonetheless, GIL was designed for primary treatments in smaller local hospitals called “health posts” in Brazil. GIL was not sufficiently robust to handle the amount of data needed at HGF. By the time of this research, the HGF had 500,000 patients registered in GIL’s database. Excerpt 20 is an observation of working at the customer service.

I observe the same attendant as the day before. He is with a patient and complains that the computer is slow. He needs to consult a diversity of data bases to verify if the patient is registered yet. He does not find the patient in the data base and requests the address for initiating registration. He asks for the telephone number. One IT Technician passes by and the attendant says: “I’m all alone here you see?” Another patient wants to confirm scheduling. He requests for another attendant to verify. He decides to do it and checks in the computer. He keeps saying to the patient that he is verifying while he waits for the computer to process. He asserts once more about the software systems: “My God! This system is so slow!”

Excerpt 20 Using GIL at the SAME department

Source: shadowing – 21/03/2012

Most of the observations related to the problems caused by GIL concern, besides hampering the speed of scheduling, the loss of records of patients and schedules. This later damage produces serious consequences to the medical consults and to the satisfaction of the patients. Since the consults follow the schedule, a missing record means that the patient will not be consulted on that day and time. This type of disturbance often reverberated as far as the ombudsman department. Excerpt 21 describes the knotworking strategies of the SAME Manager to deal with this difficulty.

SAME Manager: “I bring only a few problems of the SAME for the directors. I go to the manager of one [department], of the other [department], I go to the physician, I go I don’t know where...the SAME department has a great partnership with the ombudsman department. Why? Because you know that the service of the ombudsman is to receive patients, as much as personnel, for compliments, complaints, critics and suggestions. So we work together because I work with users as well as the ombudsman does. So we work this partnership to resolve, to give a solution to the problems of the users [...] Only [in the case of] a very uncommon problem that we go to the directors for them to

mediate or give a...now this things keep happening, these problems that we know that hamper the service and the user I bring to the knowledge of the director [...] These IT problems she follows one by one doesn't she? Why? Because the directors need indicators, we would really need a computational system integrating the statistics.

Excerpt 21 Knotworking strategies of the SAME Manager

Source: Interview to the double – 07/03/2012

The narrative of the manager of the SAME department unveils the strategies concerning who and when to start interactions in order to deal with the disturbances. The narrative indicates how important it is to interrelate with the ombudsman. This importance stems from two motives. Firstly, part of the complaints that come to the ombudsman department is initiated at SAME. Secondly, these two departments share activities related to the patients' flow through the functional system of the hospital. In addition to this strategy of close relationship, there is another way of strategizing internal interactions. The intention of interacting with directors is only in the case of exceptional occurrences obstructing process flow.

Apart from the exceptional events, the SAME Manager assumes the everyday disturbances as already known and being followed by her superiors. The role of the superiors in these interactional moments is perceived by the manager as mediational. She assumes that the directors already knew the everyday disturbances and the continuing difficulties faced by the customer service department (SAME). In the perception of the customer service manager the directors could interact with other players and mediate the search for resolutions.

The following excerpt exemplifies a moment where the IT Manager interacts with one of the analysts of the department after having a demand to attend from one of the directors. The director asked for a computational solution for the statistics at the customer service department (SAME). The excerpt 22 describes how people at the hospital interact and plan knotworking activities after the director's mediational act. The following interactive moment refers to a dialogue between the IT Manager and the contracted analyst for GIL.

IT Manager: [...] you were here when [name 1] gave me this material here.

Analyst: Oh...that thing of...

IT Manager: Of the consults and returns at the outpatient clinic.

Analyst: Right.

IT Manager: This information...shouldn't GIL have it?

Analyst: [...] we can pull what has been scheduled...

IT Manager: OK. It is practically the consults and returns per clinic.

Analyst: [...] I can pull what has been scheduled during the entire year.
IT Manager: For example this one here, GIL can do it per physician.
Analyst: It does...
IT Manager: Per area of specialty if that's the case...
Analyst: I don't know if it does per area but it... I think that per physician is better.
IT Manager: [name 2] told me that he uses a spreadsheet that is filled in manually.
Analyst: I can get the total which is all mixed up, but it comes out with a division, but all comes out. I can get by physician and I can get by specialty. It does have this option. There is also a report of schedules.
IT Manager: Let's do this then, let's schedule a quick meeting: you, [name 2] and ...
Analyst: I know... [name 3]
IT Manager: He has done a formula, I have already observed the formula, I have observed that it is complete, it goes month by month and places 10 in January, inserts 10 in the final, places 15 in February puts 25 there...[...] Now would GIL be ready to do it?

Excerpt 22 “Would GIL be ready to do it?”

Source: shadowing – 14/02/2012

The IT Manager and the GIL Analyst have their focus of activity related to provide automated reports through GIL. These reports would consequently be treated by the Statistics Department. Excerpt 22 depicts an interaction set to elicit primary understandings of possible solutions. In order to forward their primary understandings, participants prompt their needs and measure their knowledge about how to extract the potentialities of the tool. After the identification of gaps of knowledge, participants identified personnel using the manual tools to be substituted. The strategy for setting the knotworking activity was, therefore, based upon participants' needs of knowledge in two main movements. Firstly, they identified what they were not sure about, the uncertainties about possible outcomes. Secondly, they identified who had information about what they would need to know. The first movement was an initiative of knotworking by the IT Manager. He needed to check possibilities and make co-configuration happen. As a consequence, he improvised an interaction with the GIL Analyst. The second movement was related to co-configure the tool through localising the users of the actually used instruments. These users were seen as the parameters setters of functionality of the tool to be constructed. Thus they were considered as players in the co-configuration of the instrument.

b. Case 2 – HOSPUB: the free ERP that could integrate the hospital

HOSPUB is an ERP also developed by DATASUS. This software system was specifically created to function in public hospitals. The implementation of HOSPUB was one of the focal points of fieldwork when this research at HGF started. The IT department of the hospital intended to contract the firm of an analyst experienced in

implementing HOSPUB in other hospitals. The following excerpt refers to a part of an encounter between the IT Manager, the SAME Manager and the HOSPUB Analyst. Excerpt 23 below depicts the first meeting of the implementation provider, i.e. HOSPUB analyst, with the focal user in the hospital, i.e. SAME department.

I am following the IT Manager to the SAME department. He told me he needed to talk to the manager of the department about her needs of automating the statistics of the HGF. On our way to SAME he answered a phone call and asked the person to go to SAME so they could talk with the manager of the department. The phone call was from the HOSPUB Analyst that was going to be contracted to implement the ERP at HGF. [...]

HOSPUB Analyst: If they [the departments of the HGF] would like to develop something from this we need to have an agreement. Then we can work together. Otherwise you will generate a tree out of the system and, for example, when a new process comes to HOSPUB you have already changed something and everything will be unstable. This way, working together, as the [name of other hospital] is doing... you can supply you necessities and... at the same time it goes to everyone. [...] I have a...close friendship with personnel from the [hospital of the leading private health care firm]. There is the same thing.

SAME Manager: Right...

HOSPUB Analyst: The problems that we have are the problems that they have. There is report missing, there is this data not matching with that data... Why? This is normal in IT. It was not supposed to be, but it is.

Excerpt 23 HOSPUB First Meeting

Source: non participant observation (meeting) – 29/02/2012

The HOSPUB analyst is searching for a couple of interesting things in his initial talk in the meeting. Firstly he searches for agreement concerning the nature of the implementation of the ERP. The analyst mentions “work together” twice in order to highlight that HOSPUB is a tool that is being constantly co-constructed by its users. More important, it would only work appropriately if the implementation follows a pattern of sharing the changes in the software. In this sense, the analyst attempts to establish that the way of integrating the ERP’s recourses into the processes of the hospital is bound to the co-construction of HOSPUB. Value would need to be co-configured through the joint production of HOSPUB’s incremental features. Secondly, he places expectations at a lower level. In this sense, he uses the example of the reference in good administration and market success in healthcare. The analyst mentions the situation at the hospital of the leading private healthcare firm in the region to argue that problems in the ERP are “normal.” Interestingly enough the HOSPUB Analyst cites the same problems that SAME was facing with GIL.

Excerpt 24 in the following is the reaction of the SAME Manager to what the analyst has anticipated.

SAME Manager: In relation to shared responsibilities what happens? With the program [GIL] it was very exhausting at one point because it was said to the hospital's board of directors that all the problems that generated were...were happening here [at SAME], everything was caused by our personnel.

Excerpt 24 Anticipating complicity

Source: non participant observation (meeting) – 29/02/2012

This assertion brings the same disturbance found in Tener's Case 1 to the fore. In that case, like in this case at HGF, staff questioned whether the origin of the problems were related to the software or the personnel. As the HOSPUB Analyst anticipates the "normal" problems of the software, the SAME manager anticipates that discussion could affect her department. Through previous experiences they are both anticipating the issues of searching for value during the implementation of the ERP. From the supplier perspective the shaping of HOSPUB at the hospital would bring "normal problems" obstructing the value co-creation process. From the client perspective these "normal" impediments could mean internal disturbances and struggle surrounding the appropriate work in her department. As a consequence, the analyst and the manager of the customer service department are both searching for reciprocal commitments. In the case of the analyst, these commitments are an attempt to implement co-construction procedures. In turn, the SAME Manager initiates the shaping of interactions by searching for a commitment of attitudes and behaviours. Ultimately, they were both negotiating rapidly and spontaneously to achieve value according to their standpoints through modelling procedures and behaviours.

Excerpt 25 demonstrates how they continue to look for commitments in the direction of modelling procedures and behaviours in their co-configuration of resolutions that could allow value co-creation.

HOSPUB Analyst: [...] What can be done? After analysing data from statistics that you [the SAME Manager] need, you may request [specific features in the HOSPUB]. I cannot tell you that it will come out today or tomorrow, right? But let's say there's a hospital there [and] they're developing a report in VISUAL HOSPUB... right?! The hospital X here [in Fortaleza] has a reception system which was incorporated into HOSPUB. It already had a system, they just fixed and it was ready. There was running the two [the HOSPUB with the local software].

IT Manager: At hospital X?

HOSPUB Analyst: At hospital X.

IT Manager: But...correct me if I'm wrong. There's the [name of the software] no?

HOSPUB Analyst: But there is access. There is a...a...a...

IT Manager: There is a way to interconnect the two [software systems].

HOSPUB Analyst: Yes. Right? But there are things that... can be done. I'll see with, with, with person A from the hospital X[name]. Just to see how it is now...Right? For all computational system has its small problems, but then it's what I've said, you have to...

Excerpt 25 Anticipating co-configuration

Source: non participant observation (meeting) – 29/02/2012

The attempt now is to understand how the tool can be shaped according to the specific needs of SAME. Participants are modelling the tool in terms of comparing the process needs with available resources. Once again the analyst sets the expectations. In the sequence he endeavours to guide the pattern of collaboration by seeking to determine the procedure. The HOSPUB Analyst proposes that other experiences of co-configuration could be incorporated in the solutions at SAME. Nonetheless, his assertions bring contradictory information to the fore. Participants needed to check their previous knowledge with new information. The IT Manager knew the software at the hospital mentioned by the analyst and it was not HOSPUB. The HOSPUB Analyst has to bridge the contradictory information by explaining the operational mode of the software at the mentioned hospital. Through this small and rapid interaction, participants negotiate procedures and roles as well as check information and create new knowledge. Moreover, they bring external parameters to the fore and prompt common understandings concerning the procedures to implement the tool.

After the meeting at SAME, the IT Manager organised a meeting for the implementation of HOSPUB. In this meeting four directors of the hospital were present. The HOSPUB Analyst was there to explain the ERP and its features. Excerpt 26 refers to the initial interactions in the meeting.

IT Manager: The participation of the directors is important in this meeting so you can define together your team and who does what. So it is important for us that the job descriptions are here defined. So we can gradually move through the modules. What is the initial idea of this implementation of HOSPUB? We initiate at SAME and as we achieve success it is certain that we will move to the image centre and to the scheduling of exams. Right after that we go to the billing department. This is the initial proposal.

Personnel 1: You said that before implementing there is the need to define the tasks.

IT Manager: To define who does what.

Personnel 1: I think this is the first step.

IT Manager: No doubt that we need to find the consensus of who does what in a table sheet of activities and responsibilities. I know how this is hard to [name of the SAME Manager] and the folks here. There is a lack of people in your team. Our team is

overloaded too. So it is crucial that we have this perception and, I don't know, let's find personnel to be a part of the SAME's team. What is the suggestion?

Excerpt 26 “Who does what”

Source: non participant observation (meeting) – 13/03/2012

The purpose of the meeting is to set the process of implementation of the software jointly. The manager interconnects the HOSPUB Analyst with all the departments that he considers to be stakeholders in this process. The analyst is seen as the external expert for conducting the implementation of the ERP. The first proposal concerns the need to establish roles and relations. Ultimately, the IT Manager anticipates the difficulties that he is foreseeing. He mentions the lack of people for conducting the extra work. Nonetheless, the flow of the meeting unveils that the plans of the IT Manager were not consistent enough for the directors. The IT Manager set a meeting following the customary rules, division of labour and power positions. But the directors had another perspective for dealing with the anticipated difficulties. Excerpt 27 demonstrates the standpoint of the directors.

Director 1: First the team needs to know and after that we can decide to implement. It cannot be something “let's implement and after that the team is going to understand” for it's going to be trouble.

Director 2: [interrupting] There must be a plan. You cannot get there and put a software system without a plan.

IT Manager: So that is the proposal: we schedule instruction sections with SAME and then, depending of what happens there, we show the results to you [Director 1] right?

Director 1: Right.

HOSPUB Analyst: Your personnel can also go to a hospital that is running the HOSPUB and see people working there. I think that is the case of seeing the software working there...for one thing is the test and other thing is the real world. You can all go to the [name of the hospital] so you can see.

IT Manager: It would be difficult to gather an entire team to visit.

Director 1: It is easier to explain here.

HOSPUB Analyst: I suggest that so you can see it working there...

IT Manager: We've been there...

SAME Manager: We went to the [name of the hospital] but they have some practices that are totally different from ours.

Director 1: It is the particularity of each institution isn't it?

Excerpt 27 “the particularity of each institution”

Source: nonparticipant observation (meeting) – 13/03/2012

Excerpt 27 depicts an interesting approach for modelling procedures and behaviours towards the co-configuration of activities that could elicit the co-creation of value. The model suggested by the directors attempted to avoid “trouble” through allowing

participation of multiple perspectives of value. The directors predict difficulties and disturbances in implementing the ERP if the multi-layered perspective of value has not taken into consideration. The directors assume the implementation of the software as a multi-voiced system of different standpoints and interests. “The team” needed to build an evaluation of the use of HOSPUB before any kind of decision. The meeting evolves in the direction of formatting new patterns of interaction, which dissolves the traditional process. This new pattern is more likely to allow participation through tying knots related to value possibilities in multiple levels of teamwork.

Excerpt 27 also indicates that participants perceive the idiosyncrasies of co-configuring value while implementing an ERP. The implementation of HOSPUB in a given hospital could not be a trustworthy reference since procedures at HGF are different. The meeting indicates that participants feel the need to initiate a knotworking process for developing their own notions about HOSPUB. This finding suggests that participants may perceive their internal knotworking process as more important than external references of success for co-configuring value.

The activities planned in this meeting did not happen. The implementation of the software was discontinued. The researcher could not grasp the motives for disruption. All that was said by the managers was that “officially” HOSPUB would be installed, but “unofficially” they knew it was an ended project. The facts that this present research captured were related to the perspective of a new software system bought by the Federal Ministry of Healthcare and the problems of the software, which resembled the problems of GIL, brought to the fore by the HOSPUB Analyst. There was no “official” evidence that these indications related to the decision of stopping the implementation of HOSPUB.

c. Case 3 – Laboratory

The main suppliers of the laboratory are reagent sellers. The provision of reagents is crucial for the laboratory. There is a great demand for reagents and reagent suppliers provide equipment conducting exams in the form of lending. This business model is common in this industry. When the supplier of reagents provides the equipment by lending it, the counterpart is the loyalty of the customer, i.e. not purchasing reagents from competitors.

The laboratory initiated modelling a new type of market interaction with its suppliers. This new type of market interaction was in order to solve the main disturbance of

having manual procedures interconnected with automated production of results (Section: Internal contradictions – HGF). In this new model the reagent suppliers would provide the interfacing of results with the computational system of the hospital. The excerpt 28 in the following depicts how the manager of the laboratory interpreted this strategy.

Laboratory Manager: “Here when we make a public bidding, for supplying of reagents, we ask for the lending of equipment from the suppliers when we buy the reagents. We require that the equipment operating the exams of the reagent is lent to the laboratory. With [name of the owner of the laboratorial software firm] we started to give the idea for the suppliers that were going to participate in the public bidding that the interfacing of exams would be a requirement in the contract to make it easier.”

Excerpt 28 Requiring reagent suppliers to provide interface of equipment

Source: developmental history interview – 16/04/2012

The public bidding is the obligatory procedure of public institutions in Brazil when it involves purchasing. The public bidding is formatted by specific laws, which are full of details to be followed. This makes the process of buying slow and bureaucratic. The inclusion of the software that makes the interface between exam equipment and the IT system of the hospital in the provision of chemical reagents “makes it easier” to have the automation accomplished. Otherwise, the laboratory would need to request a public binding and would not have total control in the choice of interfacing software. Consequently, the laboratory of HGF modelled, together with the supplier of the interfacing software, a new format for the public bidding of chemical reagents. This novel way of configuring the public bidding included not only the lending of equipment, but also the provision of interfacing of the equipment with the computational system of the hospital.

The manager of the laboratory envisioned that the interfacing of laboratorial equipment with the computational system could generate the integration of the processes from beginning to end. However, a series of knots needed to be tied for the interfacing to happen. After making an agreement with the partner of the interface software firm, the manager of laboratory involved the IT Department of the hospital. Consequently, the next knotworking movement was to interact with the IT Manager for checking procedures and possibilities for the idea to happen. The IT Manager analysed the need for further interactions and brought the wider activity system of other players involved to the fore. The resolution would involve some government rules prohibiting the purchase of software for individual use in desktops and notebooks. Thus, new ties

would need to be shaped. The manager of the laboratory interconnected with chemical reagent suppliers for resolving the problem of federal government impediments to purchasing this type of software. In effect, there was no dissolution of the contradictory relations between the implementation of automated processes in the laboratory and the federal laws. Resolution emerged through bypassing the structure of the system of activity.

The solution was built through dialogue and partnership between the interface software firm and the Laboratory Manager. Resolution was defined as to include all the constraints of purchasing into the contract with reagent suppliers. In sum, the laboratory, although having the customer role, developed the necessary knotworking interactions. Moreover it was the initiative of the laboratory that advanced a possible solution and initiated the co-configuration of this integrated solution (excerpt 29).

Laboratory Manager: “I was beginning to talk to [name of the IT Manager]. He said: look, the government has this problem of not wanting to purchase software. As a matter of fact the government makes everyone use free software [...]. So we started to see the difficulties. That is, the firms [chemical reagents suppliers] maintained the islands [exam machines with no interconnection with the IT system of the laboratory], but the integration should be the responsibility of the hospital. We started to feel the problem then I said: we are going to do the same thing we do with the equipment, they would participate for us to buy the software for integrating [the processes]. [...] The server and the software were bought by the suppliers.

Excerpt 29 Knotworking the co-configuration of an integrated solution

Source: developmental history interview – 16/04/2012

The co-configuration of this business model had the important participation of the community of suppliers. The network of reagent suppliers had to build in alliance in order to collectively provide the constellation of demands that the client asserted. This demand involved several products including computer software (interface and operational system) and hardware (computer sever and exam equipment) alongside the reagents. All these products were resources made necessary for supporting the automation of results and the integration of the workflow of the laboratory. In addition, the orchestration of the business model also involved the manufacturers of exam equipment. Excerpt 30 in the following describes how laboratorial equipment manufacturers participated in this multi-voiced system that co-configured a novel shape of market interactions surrounding the HGF’s laboratory.

Laboratory Manager: That’s my doing here. I’m responsible for starting the public bidding. I write everything...the reagent that I want, the specifications of the machine, the equipment, for this reason I’m having...I need the continuous presence of the

suppliers. Bringing the news for me [about] new equipment, capacity [...] Like a physician that have visits of sales representatives showing the latest medicines, I receive here people that comes to show...the technology of equipment and that's the way we keep progressing.

Excerpt 30 The multi-voiced system of co-configuration: the presence of equipment producers

Source: developmental history interview – 16/04/2012

In order to increase the capacity of producing results of laboratorial exams and therefore, save more lives, the laboratory of the HGF maintains interactions with equipment manufacturers. In this sense, the sale representatives of equipment participate in the co-configuration of the tools. It was the arrangement of multiple constituents in terms of players, of products/ services components and of procedures that enabled this co-configuration. The daily application of this constellation of tools, procedures and interactions required special attention. Novel market interactions required managing efforts for changing relations and procedures. Section 6.4, related to the application of resolutions continues describing the transformations at HGF's laboratory. The key findings of the present chapter are in the following.

6.3.3 Key findings: how do interactions evolve amongst multiple players with divergent perspectives of value? What is the nature of these interactions?

a. Tener – Case 1: interconnecting value standpoints

The first case study provides initial understandings about the character of market interactions. This first approach was allowed through observing the analyst from Tener in her moves and interrelations with personnel and partners of the client hospital. The analysis of these interactions initiates delineation of what the interactions are about, how interactions evolve and where these interactions happen. This first examination of the market interactions for value co-creation initiates considerations about the nature of those relations.

The supplier side started interactions in the client organisation by seeking the personnel that could put its notion of value into practice. The main objective of interacting was to transfer knowledge (cf. Grönroos, 2008) about what is established as the correct use of the product by the seller company. However, when the integration of knowledge resources (i.e. Madhavaram and Hunt, 2008) is not appropriately completed, there is the need for further interconnections across many hierarchical levels of the organization and across its partners. The changes implemented in the intensive treatment unit (ITU) affected other interacting processes. These further interactions amplify the perspectives

of the discussion as suppliers, clients and other parties perceive the need for broader integrations of resources with the processes (cf. Gummesson and Mele, 2010), i.e. integration amongst multiple activity systems. This initial case in the ITU for example showed further interconnections with the nightshift, the pharmacy and the health care plan. Moreover, the task of integrating knowledge resources becomes even more difficult when incorrect understandings come to the fore.

The fundamental task of the supplier in interacting with the activity system of its client was to transfer and prompt the creation of new knowledge whilst dealing with disturbances. As disturbances were found to be constant in this case, the resolution of contradictions was observed as a fundamental and routinized task of the seller's staff. Mainly, these disturbances concerned incorrect understandings, which spread and caused functional disruptions in the client organization and in its relationships with partners (cf. Engeström, 2000a; 2001). The case showed that a great part of interacting moments was about incorrect use, misunderstandings and diverse perceptions. For example, the chief-nurse had misunderstood the automation of medicine requests; the nurses used the Naja System incorrectly in the insertion of prescriptions; and there was a diversity of perceptions surrounding the use of the software and the processes of data insertion. These three themes emerged as the superficial motives for interactions permeating the co-configuration of resolutions for the co-creation of value. Moreover, the diversity of perceptions, confusions and errors underpinned the need for intensive knotworking.

A deeper scrutiny of the episodes of interaction in this case reveals that the nature of the market interactions is related to the actors engaging in interactions while searching for the co-configuration of resolutions (Engeström, 2002, 2004a) that could prompt the integration of processes with resources (Grönroos, 2011). The case study reveals co-configuration as a practice of making sense of integrating resources into processes in order to co-create value in multiple layers, i.e. individual, departmental, organisational. These multi-layered interactions wherein actors expose their own perspectives on the problem (cf. Engeström, 2001; Blackler's et al., 2000) can give rise to novel understandings with the potentiality for solving dilemmas. For example, the doctor of the ITU exposed the view of interactions with the health care plan; the chief-nurse exposed the view of the unit in interaction with the pharmacy; and the consultant with the manager of nurses exposed the view of multiple interactions between departments and of the hospital with the health care plan.

Ultimately, this first case study showed that the nature of market interactions for the supplier was about tying the interpretations of multiple actors. This movement of the supplier searched for establishing a collective focus of attention in order to give sense to the tasks, actions and activities (cf. Engeström, 2000a, 1999a) - in other words, for integrating knowledge resources (i.e. Grant and Baden-Fuller, 2004) throughout the client organization, the main characteristic of the interactions was knotworking (i.e. Engeström, 2005). Moreover, it was found in this case that these dynamic and rapid interactive moments in search for resolving disturbances and enabling the co-creation of value could arise from deep emotional states of distress and suffering.

The process that characterises market interactions in this case assumes intense, fast and dynamic relations as the service provided originated contradictions that came to the fore as unwanted procedures with undesired outcomes. Actors started to co-configure rules, tools, concepts and the division of labour in multiple fast contacts (Engeström, 2005, 2000a). In each knotworking practice actors perceived the construction or obstruction of the possibilities for integrating resources and co-creating value. Novelty in terms of new processes, new tools, new divisions of labour, or new rules was well received when it involved the perception that it can create value in multiple levels of activity.

Knotworking and co-configuration occurs in multiple layers of activity (i.e. Engeström, 1999c) and in multiple hierarchical levels (i.e. Engeström, 2000a) (Engeström, 2004a) of the client organisation. This first case study demonstrated that it can even go across the customer's partners (cf. Engeström and Toiviainen, 2011; Engeström and Kerosuo, 2007). With regard to the basic level of activity, through dialoguing, participants exposed their personal interests that are constituents of the operational level (cf. Miettinen, 2005; Engeström, 2000a). Discomfort in this level may bring the personal layer of knotworking to the fore. In this layer actors dialogued about their personal feelings and perceptions of value (cf. Miettinen, 2005). The case study indicated that a process layer of knotworking is related to the conscious level of actions wherein actors interconnect for considering the efficiency of procedures and foresee the outcomes. Consequently, the process of searching for value was shaped by multi-layered and rapid interchanges of perspectives, which, in turn, reflected the intertwined levels of unconscious operations, i.e. personal search for value, and conscious actions, i.e. departmental view of processes having value as the object of activity. The case suggested that it is the individual level of operations that mediates the departmental level with the notion of value of the service provider.

As the resolution of contradictions achieves a higher level of activity, actors need to interact across different departments. The participants in the case also constructed views about how external players and conditions grounded their possibilities for actions (cf. Miettinen, Lehenkari, and Tuunainen, 2008). In the co-configuration of a resolution for removing the contradictions, the actors indicated their personal views of the interconnections between the levels of activity. Therefore, knotworking was characterised by multiple fast interactions between numerous actors that initiated the co-configuration of resolutions at the operational level to the action level to the activity level and then back to operations (cf. Engeström, 2005, 2004a, 2000c). The case study indicated this order of progressing interactions. This first case also suggested that broader conflicts may originate in a provisory and palliative solution at the operational level.

b. Tener – Case 2: rhetorical action, coalitions and politics

Co-configuration in the fieldwork with Tener – Case 2 was captured as provisional solutions resulting from rhetoric action and argumentation between participants. A learning process embedded in knotworking practices underpinned co-configuration in this case (cf. Engeström and Toiviainen, 2011; Engeström, 2004a). Participants searched for interacting and developing mutual understandings about their performances. Actors developed co-configuration in order to establish communication, which can translate mutual understandings for a convenient version of the facts that can be communicated. In this sense co-configuration is the resultant communication permeating a resolution that may only represent subjective interests of actors, of their department or of their organization in relation to the network of other players (cf. Macpherson and Jones, 2008). In sum, the research findings of this case study reveal the provisional, idiosyncratic and premeditated nature of co-configuration.

Knotworking was captured in this case study as shaped by concealed motives and disguised justifications. Participants engaged in knotworking as an everyday practice of dialoguing for constructing common sense of value possibilities in terms of potentialities of resource integration, of depicting the contradictory relations and of finding possible resolutions. Knotworking is underlined by the interchange of individual capacities and the sharing of knowledge in the terms of successive encounters in the search for learning (Engeström and Kerosuo, 2007).

The verified process of co-configuration through knotworking consisted of the externalisation of disturbances and, interestingly, political positioning and strategic

action. Political positioning referred to taking sides and arranging coalitions that reinforce personal interests even from different standpoints (cf. Macpherson and Jones, 2008). Moreover, the findings of this second case indicated that knotworking demonstrates imprecise information between actors. Consequently, the underlying task conducted in knotworking is to clarify and to check obscure and imprecise information. Finally, the second case study confirmed the findings of the first: knotworking occurs in multiple levels of activity and in multiple inter-organisational activity systems.

c. HGF – Case 1: orchestrating interactions

In HGF-Case 1, modelling a software tool, i.e. GIL, referred to developing interactions in order to solve the contradictions of an activity system. Resolution was attempted through co-configuring the features of the mediating tool and the requirements of the process (Hemetsberger and Reinhardt, 2009). Interactions involved the IT department, the SAME department, the external GIL analyst and the directors of the hospital.

A key finding in this case was that participants used multiple perspectives of value in the search for prompting co-configuration of the tool in alignment with the process. GIL was the resource that should be integrated in two functional processes: scheduling and statistics. By focusing on the daily interactions affected by the contradictory relations, this research has found that participants had the need to work across departments, hierarchical levels and organizations. In order to resolve disturbances, participants engaged in analysing the community and the respective roles as a strategy for initiating further interactions (cf. Engeström, 2004a). In this strategy, actors considered the multiple perspectives and standpoints that could influence the co-configuration of the tool.

The interactive moments between participants unveiled that there was a strategic movement of selecting and anticipating the progress of further interactions. Actors may select whom to interact with according to the flow of disturbances throughout the functional processes. The findings indicated that anticipating interactions for resolution concerns three main fundamental aspects. Firstly, actors intend to interact in order to build partnerships for dealing with the flow of daily difficulties. Secondly, actors create expectations about the role of other actors and determine the desired content of the encounters according to these expectations. Thirdly, actors also create expectations about performance and knowledge of other actors. The strategy for determining encounters relies on these expectations as well.

d. HGF - Case 2: anticipating difficulties and evaluating value standpoints

The nature of interactions in HGF-Case 2 concerned the combination of rapid and occasional encounters with formal meetings encompassing a great number of stakeholders. In these interactions, participants negotiated procedures and roles, as well as checked information and created new knowledge (cf. Engeström, 2006, 2004b). Negotiations were permeated by efforts to anticipate the difficulties of software implementation. These anticipated difficulties initiated the co-configuration of procedures and behaviours (cf. Engeström, 2004b) that could support value individually and collectively. Negotiation efforts were thus found to be the main strategy for anticipating disturbances related to divergent value standpoints.

Exploration of the character of daily procedures and behaviours was concerned with modelling collaboration and co-work (cf. Hemetsberger and Reinhardt, 2009). The present research captured the co-configuration of standards of conduct as underpinned by commitment of collaboration and promises of partnership. The research findings indicated that participants may attempt to model the pattern of interactions and collaboration based on the sense of “working as team”. This means that flaws, errors and mistakes would be equally shared amongst participants.

The interactions amongst multiple participants followed dialogues based on the value interests of each side. Participants engaged in dialogues for understanding how procedures could be related with resource integration. The main goal was to enhance the processes by the integration of resources. Dialoguing also brought previous experiences to the fore. These previous experiences functioned as parameters for argumentation. As a consequence, dialogue evolved through questioning of information given and verification of arguments. The supplier of HOSPUB implementation also used external parameters for outlining the limitations of resource integration. However, it was observed that participants initiated knotworking activities for developing their own notions (cf. Engeström, 2001) about HOSPUB.

e. HGF - Case 3: modelling a new type of market interaction

The laboratory of HGF initiated modelling new market interactions in order to resolve primary disturbances in its functional system. This value co-creating service-based model was originated by an alliance between the laboratory and the software firm (cf. Engeström, 2004a, 2000a). These two players formed a two party alliance in order to orchestrate the participation of a network of reagent suppliers. Interestingly enough, the

modelling of a resolution required further interactions that took the shape of alliances amongst suppliers and equipment providers.

The interactions in HGF – Case 3 evolved to a constellation of services unified through chemical reagents providers. The unification of services in a single bundle indicated that the network of players may select a type of organisation to play the role of service/resource cluster. It is also important to note the role played by equipment manufacturers in this case study. The performance of sales representatives from laboratorial equipment providers indicated that participants in the co-configuration of resolutions may have the role of forming opinions as experts. More importantly, they can act as catalysts for the envisioning of new possibilities and the creation of new models for co-configuration.

The findings in this case also indicated that actors developed deeper understandings of the wider activity system through knotworking practices. In effect, knotworking movements stemmed from the search for sharing knowledge and learning (Engeström, 2004a). Interactions evolved intertwined with learning as new understandings disclosed the need for further interactions (Nummijoki and Engeström, 2009). The co-configuration of a resolution for disturbances emerged from these intertwined movements of interacting and learning (cf. Engeström and Toivainen, 2011). As a result, the interactions between participants generated a new envisioning of the interconnected activity systems.

6.3.4 Comparing and contrasting the “modelling resolutions” cases

Tener’s case 1 indicated that co-configuration in terms of new tools and procedures can be better accomplished when value is perceived throughout the multiple levels of activity. The same direction was provided in case 1 at HGF where findings confirmed the need for working across departments, hierarchical levels and through other firms/institutions. This multiplicity of interests at stake can lead to what was evidenced in case 2 at Tener. There the research findings indicated the use of political practices of personal support and coalitions amongst participants. Players also defined strategic actions in terms of anticipating and projecting interchanges. Interestingly enough, case 1 at HGF indicated that this political and strategic approach can lead players to proposing “complicity” as a necessary behaviour for partnerships. Finally, HGF’s case 3 exposed that actors can find new solutions that do not necessarily signify ending contradictions but a way to by-pass the existing ones.

Case 1 at Tener has evidenced co-configuration as intertwined by personal and organizational interests. These entangled interests were confirmed in Tener's case 2 wherein participants brought multiple sources of resistance to the fore. In both cases, personal and organizational obstacles hampered the integration of resources into processes. Personal resistance related to diverging perspectives of value and to learning. Participants resisted to transform process and to integrate resources whenever they perceived any damage of personal interests and benefits. Fieldwork also indicated that this perception originated from a series of misunderstandings about the use of the software. These misconceptions reverberated in wider connections of the network and caused disruptions in the service chain. In Tener case 1, as participants were incorrectly using the IT system, these disturbances were perceived as an issue of the software. This indicates that resistance involves a learning problem and it is permeated by confusion and errors. Consequently, fieldwork observed organisational issues related to the absence of a completely integrated solution throughout the service network. Networked resource integration required intensive communication and mutual learning for developing a joined technical solution.

Both cases 1 and 2 at Tener indicated co-configuration as provisional, idiosyncratic and premeditated. The cases at HGF confirmed the provisional, idiosyncratic and premeditated character of co-configuration. However these three cases pointed out to more collaborative dialogues based on departmental and organisational standpoints. Case 1 at HGF specified premeditation by the mapping of multiple perspectives of value. Case 2 at HGF indicated participants co-configuring procedures and behaviours supporting value collectively and individually in a less conflicted manner than Tener's cases.

The cases indicated co-configuration through the multiple interactions of participants. As the case 2 at HGF exposed, the interests of value from each side of the network grounds these multiple ties. In turn, case 1 at Tener complemented this perspective through exposing that suppliers interrelations within a client can relate to searching for making sense of tasks, actions and activities. This sense making effort is according to the notion of value supported by the supplier company. In contrast, case 1 at HGF did not expose participants interacting according to clashing interests. The findings of HGF's case 1 were more related to interactions based on common difficulties, in dialogues for checking common expectations and desired capacities. As these case

studies unveil contrasts and complementarities grounding participants' ties, the character of these interactions was also based in diverging indications.

Case 1 at Tener indicated the search for resolving disturbances through knotworking at multiple levels by the supplier. In turn, HGF's case 1 indicated the engagement of the client in interactions that could solve disturbances. Both cases 1 and 2 at Tener evidenced knotworking as permeated by imprecision and divergent perceptions. In Tener's case 2 participants made use of concealing motives and disguised justifications while searching for resolutions. However, as case 3 at HGF pointed out, participants can create new capacities as they evolve in knowworking and develop new understandings regarding the activity system. In sum, knotworking embeds participants' assumptions that might be incorrect, divergent interests, multiple value standpoints and learning efforts.

6.4 Managing change through market interactions

6.4.1 Approaching the Zone of Proximal Development – Tener

a. Case 1 – “H Hospital”

After talking with the consultant of the hospital and with the manager of the nurses, the analyst of projects and services managed to pay a visit to the “Prescription Room”. The encounter with a nurse responsible for inserting prescriptions is described in Excerpt 31. Excerpt 31 demonstrates that interacting systems of activity with contradictory relations affect not only disturbances in integrating processes and resources. These contradictions and disturbances can affect the behaviour of individuals in terms of their emotional state. The following excerpt points out how wrong understandings in modelling procedures and tools can be generalised in organisational disruptions affecting the behaviour of individuals. It is also an indication of specific outcomes of communication that can rearrange procedures and mediate change through intervention.

We are now at the “Prescription Room”. Like the room of the general manager of nurses next door it is narrow. There are three women writing at the rear bench. By their uniforms, one of them seems to be a physician and the other two, nurses. In a front bench there is the nurse [Analyst 1] is addressing her attention to. She asks how things are going. What follows is a cascade of complaints. The nurse points out a large amount of wrong prescriptions. She says that it is taking such a long time to correct them that she has not been having time for lunch. She complains that she is not paid during her lunch break and she is not having it. Instead she is working for free. She says she had told her boss about it and her eyes get wet in this moment. She finally looks to [Analyst 1]'s eyes, nods and speaks while crying: “things just got worse [Analyst 1], things just got worse...”

[Analyst 1] says that she was there to help and the nurse initiates specifying the problems: “Look the pharmacy does not attend a prescription like that...” The quantities specified were not in accordance with the medication’ packages. Thus she needed to correct it otherwise she could not get the medication. The policy of the hospital was to use “generic” medicines except the ones specified by the doctor. She points out that they were inserting the “brand medicine” because it was what they could find using the software. She also complains that some medication need a package of complements that people are not ordering and she had to add.

[Analyst 1] starts to talk and asks for more details. She then shows the nurse how she could add the complement packages for the medication in the Naja System. They go through all the medicines related to complementary packages and insert this information in the data system. The nurse’s mood changes, she starts to laugh and thanks [Analyst 1] all the time. She asks about the quantities and the doses. [Analyst 1] tells her that it is being taken care of and next week she will have a solution in the system.

Excerpt 31 At the prescription room: “things just got worse”

Source: shadowing – 29/07/2011

The analyst prompted an intervention for changing the procedures of prescriptions. This intervention was made possible through dialoguing with the nurse responsible for inserting and correcting prescriptions made through the software system. In effect, the disturbances of prescriptions were being treated by this nurse that needed to do extra work to cope with the corrections. The nurse from the prescription room was unhappy and frustrated since she had informed her boss and nothing had changed. She continued to be overloaded with work and kept correcting prescriptions during lunchtime. Firstly, Tener’s analyst localised and communicated with staff dealing with the disturbances caused by prescriptions. Secondly, through dialogue, the analyst could understand the actual behaviours of using the Naja System. More importantly, in this sequence of communicating the supplier was able to correct procedures and elucidate the possibilities of using the software system.

Through dialoguing with the analyst, the nurse informed her about procedures being conducted in a number of departments of the hospital. These procedures were in contradiction with other activity systems related to the pharmacy, the producers of medication, the health plans and the policy producing system of the board of directors. The nurse from H Hospital took the perspective of contradictory relationships between the elements of interconnected activity systems. In turn, the analyst from Tener used the Naja system as the mediating tool to accomplish disturbance resolution. Tener’s analyst was calm and thorough in explaining how the Naja System could resolve the difficulties. The supplier applied a perspective that placed Tener and the Naja System as

the source of resolutions. As the analyst instructed how and where to insert data in the software, there was a sentiment of relief and gratitude from the nurse.

As development occurred and participants felt secure about new procedures for using the software system, they felt confident about further resolutions. In this sense, the nurse shaped the future perspective of resolving disturbances related to the prescription insertion of doses and quantities of medication. The analysts shaped the perspective of prioritizing new improvements in the system.

The outcome of communication was the enhancement of integration between the software and the functional processes of the hospital. In order to achieve this end, the analyst of the software and the nurse from prescriptions could take the perspective of contradictory relations. Through dialoguing, they could also make the perspective of possible contributions of the software and apply the possibilities by correcting the insertion of prescriptions. After resolving the disturbance, participants were able to produce the shaping of new perspectives for novel resolutions. In sum, the outcome of communication between supplier and customer in this case was the co-construction of perspectives. The co-creation of value was intertwined in this co-construction as resolutions were simultaneously applied.

b. Case 3 – “CL Clinic”

Staff behaviour at the financial department of “CL Clinic” was different from what had been observed in the same department at “H Hospital”. At “H Hospital”, staff from the finance department were uncomfortable with receiving instructions. Personnel from “H Hospital” regularly expressed how difficult they perceived the use of Naja System to be. In contrast, at the “CL Clinic” staff indicated their willingness to apply the ERP through their daily tasks. It was observed that in “CL Clinic” personnel demonstrated interest and motivation for learning how to use the ERP. Nonetheless, the projects and services analysts had previously pointed out that it had not been like that in the past. He remembered that the person he was instructing in excerpt 32 was almost dismissed due to her lack of interest in learning to use the software. By the time of the observation below she had totally changed.

<p>[Analyst 2] is updating accounts of the clinic with [Financial Assistant 1]. The first spreadsheet had its data inserted in the Naja System and it was correct. The consultant enters in the room. [Analyst 2] comments that the results matched. The consultant congratulates [Financial Assistant 1]. She replies that now, with the system, she could be more certain and secure about the results of the measurement.</p>
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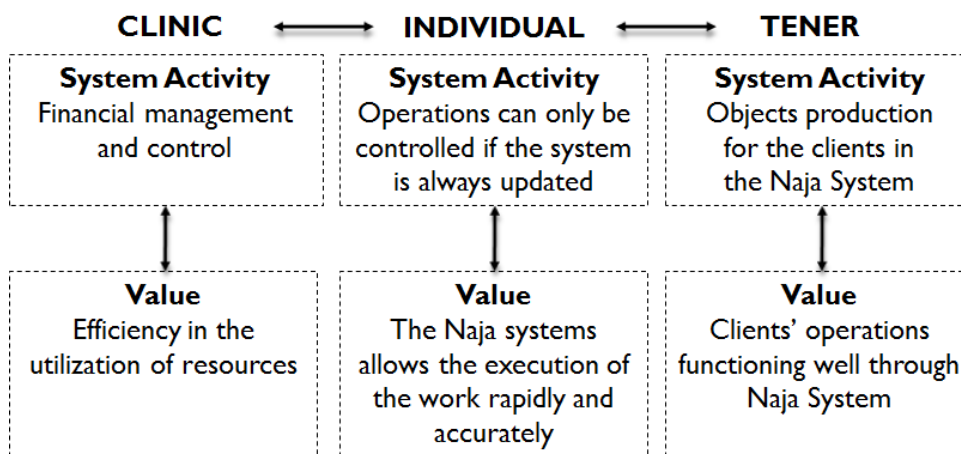
The consultant remembers a crucial moment when the importance of the system was perceived: “Now there is no way to make any mistake. Do you know what happens? The biggest gain is going to be is that it won’t matter if you are today or from here to six months, when you have a doubt you just go back and search (in the system). You won’t need to look for file folders. There won’t be redoing of calculations. We’ve been through this suffering right? The last time we did this report there. I did it three months ago. I was ready when an issue came up and we stayed here until nine in the evening redoing the math, all of them. I’m not talking about a simple calculation. Then I said: let’s stop this! That was the day that it was decided: we stop working with the ERP system or we implement it entirely...I should show the doctors [referring to the owners of the clinic] how happy you are today. Doesn’t it feel good?”

Excerpt 32 At “CL Clinic” financial department: “we stop working with the system or we implement it entirely”

Source: shadowing – 22/03/2011

The description of the consultant is a revealing story of a lived and shared situation transforming the collective view about the Naja System. He represents a circumstance that pushed people from “CL Clinic” to move to the zone of proximal development. Staff of the finance department moved from the standpoint of using parallel spreadsheets to the automation of financial procedures through the ERP. In his representation of that occurrence, the consultant of the clinic explains the moment that initiated the process of transformation. A moment of difficulty and distress prompted the assumption of a novel perspective for the daily practices of the finance department at the clinic. This transformation rearranged processes and behaviours in the direction of integrating the Naja software into the functional organisation of the finances of the clinic. The consultant brought the perspective of benefits and gains of using the Naja System to the fore. The main contributions were regarded as more predictability and accuracy. Through the software, staff at the finance department could have data analysis at hand when requested. In addition, as the Naja System offered the resource of fixing the parameters for calculation and conveying data from the beginning of the process, it could guarantee precision and avoid rework.

The researcher could observe the dedication of staff members to implement the Naja System. The staff’s engagement prompted the analyst from Tener to develop the full implementation of the system. Ultimately, Tener, “CL Clinic” and its consultant were involved in daily collaborations wherein knowledge was being shared for further integration of the software system into the financial process of the clinic. The coordination of multiple value standpoints is now well articulated for integrating the software into the managerial and functional system of the clinic (figure 32).



**Figure 32 “we stop working with the system or we implement it entirely”:
resolution enabling value creation**

Source: shadowing

6.4.2 Key Findings: how can value co-creation management allow transformation in the direction of the zone of the proximal development?

The chapter related to modelling resolutions scrutinised the daily practices for resolving disturbances. The initial course of these resolutions did not successfully place the difficulties into the coordination and articulation of diverse perspectives (i.e. Blackler, Crump, and McDonald, 2000). As a result, participants still had found obstructions in some level of activity, i.e. individual, operational or organisational/ inter-organisational. In contrast, the observation in the prescription room in “H Hospital” and in the financial department in “CL Clinic” represented a movement to the zone of proximal development (i.e. Engeström, 2007a).

In “H Hospital”, the movement to the zone of proximal development did not need to be endeavoured through participation of the entire network of activity systems. Through intertwined activities of communicating and using the tool, i.e. Naja system, each actor representing supplier and customer was able to manage the integration of the resource into the process of prescriptions. The resolution was made possible as supplier and client interconnected by a sequence of movements (table 9). Interestingly, these movements involved profound communication efforts with great emotional charge.

The client demonstrated personal sentiments of sad frustration as the difficulties of using the resource and the complaints about extra work were not resolved. As the supplier listened calmly to all the problems and started to show how the resource could function in accordance with the needs of the client, the client trusted the supplier and learned how to perform data insertion of medication. At the end supplier and client had built an atmosphere of confidence for resolving further difficulties.

The supplier moves	The client moves
Localised the critical point where disturbances were being perceived and treated	Expressed the personal difficulties and suffering related to the extra work perceived to be caused by the resource in use
Engaged in dialogue for understanding the espoused procedures and behaviours for using the resource	Used the depiction of contradictory relations to relate malfunctioning of the resource
Acted upon errors correcting and informing how the resource could be better integrated to the process	Expressed the feeling of having the resolution for the disturbances
Indicated how the proximal resolutions were being treated	Remembered the need of proximal resolutions

Table 9 Supplier and customer moves in dyadic encounter for resource integration

Source: shadowing

In “CL Clinic” the crucial moment of transforming behaviour to the direction of the zone of proximal development did not involve the supplier. Personnel from the financial department, led by a provider of consultancy services to the clinic, experienced a moment of profound distress. This episode triggered the perceptions of possible gains of automating the processes of the financial department through the software. The “CL Clinic” case confirmed two findings observed in “H Hospital”. Firstly, decisive events leading to significant transformations can occur through dyadic relations. Nonetheless, these events did have impact in the entire network. Secondly, main turns in the direction of the zone of proximal development can happen through experiences of suffering and anguish. In both cases, these moments have caused the search for resolutions allowing the realisation of multiple perspectives of value. In addition, combined, the two events in the two sites indicate that there is no control of significant changes (cf. Engeström, 2004a). Transformation occurred with no hierarchical centrality and surfaced through interactions that were detached from managerial control (cf. Blackler, Crump, and McDonald, 2000).

In “H Hospital “, interaction between supplier and customer for applying transformation referred to coordinating diverse perspectives. This diversity of perspectives permeated multiple activity systems (cf. Blackler et al., 2000). In this sense, supplier and customer had to co-configure the making of a perspective wherein the resource could be a source of resolution. In “CL Clinic”, interactions between the consultancy partner and personnel were underlined by the mediating concept of “all or nothing”. Through the

“all or nothing” approach, a novel perspective for interacting and collaborating with Tener to the implementation of the software was taken (cf. Macpherson and Jones, 2008; Engeström, 2007a). Personnel from the finance department and the consultant also co-configured the shaping of novel perspectives referring to the contributions of the software to their daily tasks and control system (cf. Blackler et al., 2000).

In both cases, managing change also came to the fore in the format of prescriptions to use the tool. However, in “H Hospital” the prescriptions to use the Naja system were grounded in key behaviours based on the building of trust through careful listening and engagement. In “CL Clinic” the intervention for using the software came to the fore as personnel were challenged to collaborate in order to achieve the complete implementation of the software. In both cases, the outcome of communication was a significant change in personnel’s behaviour (cf. Rose Andersen and Allen, 2008; Realin, 2007). In “CL Clinic” participants engaged in rearranging the organised activity that was based on spreadsheets (cf. Blackler and Regan, 2009). In contrast, supplier and customer at “H Hospital” engaged in co-constructing multiple perspectives and tasks regarding the prescriptions. These findings indicate that engagement surrounds different objects. It is built upon dialogue, emotional charge and mutual trust.

6.4.3 Approaching the Zone of Proximal Development – HGF

a. Case 3 – Laboratory

The automation of exam results was implemented in the laboratory. However, staff of the laboratory noticed that production of exam results was still below the capacity of equipment. It was noticed that sample collection was a manual process still in need of automation. As internal collection of samples was a complex process to be automated, the main focus was directed to the external reception of the laboratory. As a consequence, staff of the laboratory initiated communication with suppliers. This effort involved suppliers of vials, software implementation and partners providing technology (excerpt 33).

Laboratory Manager: [...] so we have made an acquisition... hum... it is actually a lending contract, with the suppliers of vials of sample collection. This supplier had a machine. It is a robot separating each [kind of] vial according to the type of exam. This robot separates each vial and labels. It prints and sticks in the tube. This is done on the ground floor [reception]. [...] The supplier offered the equipment when we talked about possibilities of production expansion.

Excerpt 33 Reception automation

Source: developmental history interview – 16/04/2012

Ultimately, transformative process of automation had reorganised the operations of reception (excerpt 34).

Reception supervisor: “Before, this here [pointing at a request for exams]... it was written by hand in the tubes. This request here is for 2 tubes. But when it is for 8 tubes? You would need to write, you’d go there [to the sample collection rooms] ... you would need to write in this small space and had it numbered. Today it was such a calm day. We had 193 patients collecting blood today. Before it would end around 10 [am] [it was around 9].”
[...] “Now that equipment over there: it is high-end stuff! The moment that a receptionist presses enter here, in seconds, it is coming out through the robot. [...] Everything is identified and put in the tray. Everything is identified through a bar code. [...] Let’s go there. Print something please, wait for me to get there [asking a receptionist] [we walk towards the equipment]. Can you print now? [asking the receptionist] [the vials fall into a tray labelled with bar codes and written information about the patient] This is the most beautiful thing in the world! See the way it comes out here [showing the label]”

Excerpt 34 Novel operations through automation

Source: shadowing – 02/06/2012

Excerpt 34 identifies the motivation and engagement of personnel using a new resource integrating the processes of sample collection through automation. The implementation of the “robot” in the external reception interconnected a diversity of value perspectives. For the laboratory it was a crucial movement to the zone of proximal development. The automation of collecting samples was an essential resource for enabling integration of the entire functional system. Once the samples were identified through bar coding, they could be tracked all the way to the results production and elaboration of reports. In turn, to the vials supplier, the gains of productivity would mean more demand and increase of sales. For the receptionists, this resource integration meant working less and more accurately.

After the efforts for automating the entire process of the laboratory, the wider activity system encompassing competitors threatened the gains of resource integration. The following excerpt 35 exemplifies the practice of managerial intervention for ensuring process transformation and the integration of resources.

Laboratory Manager: There was this difficulty when several suppliers complained that [name of laboratorial software company providing the interface between results of exams and departmental processes] was expensive. In that time there was this competitor offering lower prices. The equipment providers wanted to shift to this less expensive supplier. Then I said that it would not work for our software system throughout the internal process is from this company. The interface could not work with

different software. We could not work in separated islands as before. [The partner of the software company] perceived this movement for substituting his software. Then he donated the software to the hospital. It is in a legal term of donation that [IT Manager] has it there. It is with [IT Manager] and since then the hospital has X hours of technical support. We make every effort to not exceed this limit otherwise we would need to pay.

Excerpt 35 “We could not work in separated islands as before”

Source: developmental history interview – 16/04/2012

The manager of the laboratory faced undesired networked movements amongst equipment providers. In effect, the suppliers of exam results automation were searching for value according to their standpoint by making an effort to reduce costs. The manager of the laboratory sought to blocking the suppliers’ strategy in order to secure the continuation of resource integration. Due to the threat of losing revenues related to the HGF’s network of services, the software provider transformed the shape of the business relations through donating the software to the laboratory. This continuing alliance between the laboratory and the software provider revealed the need for further investigation about the software firm. The following passage examines the communication strategy of a participant, the software provider (here named *Fiver*) that prompted a strategic coalition with the client in order to tie the network of partners to its services.

a.1 Communications creating and supporting the supplier-customer coalition

The software provider, *Fiver*, was the supplier that assumed the core position for co-configuring a solution that could transform the laboratory processes. More importantly, this firm was capable of prompting the elimination of bottlenecks caused by the “islands”. Besides the technical solution, it was observed through the presentation of firm that there was a communicative underpinning to the firm’s ability to align with the HGF’s laboratory. *Fiver* was the software engineering company that introduced a conceptual framework within which the company and the laboratory could share the same motive of activity: *saving more lives*. In effect, the software provider and the laboratory aligned in the development of market interactions throughout the entire network of partnerships. This alliance was grounded in two features: the technical solution for eliminating the islands and the alignment through saving the lives of the patients as the motive of activity. This passage examines the communication of the software supplier.

The main concept that represents the company's origins and shared beliefs is: “*one sample is one life*”. This concept stands as an instrument for engagement. It is a category of communication that works as a catchphrase for the firm to get along with client hospitals and laboratories. It is structured in four properties. These four properties specify the character and attributes of the instrument for engagement. The character and attributes of “one sample is one life” refer to a set of ideas that prompts the company to *share the motive of activity of the client*. The identified properties are: *shared beliefs*; *anticipation*; *fast implementation* and *focus on the patient*. Excerpt 36 below identifies the communication efforts of the principal manager of the company.

Shared Beliefs

Then Dr. C, the father of P [one of the partners] has a fundamental role. Much of our culture still comes from his time. Because he was a medical scientist, a pathologist, unlike the majority of the laboratories working only for financial gain, Dr. C was a scientist. He used to conduct an exam and test others to see different possibilities because was worried about the health of the patient right? So he passed this to us: that a tube where you have a sample you don't have a sample, you have a life. It must be treated with great responsibility. So the company was born in this context right?

[...] Respecting life, respecting the work that the laboratories do, that is, the diagnosis that, for the life of the people, for the health of the population and it was in this context that the company was born.

Anticipation

[...] the execution of an improvement of a tool that does the electronic monitoring of the data bank without needing to act reactively to the problem. We act before the problem happens. It is there every day, the boys working in the DBA area receive this report from all clients having DBA contracts and they see if there is any 'job' that has presented error and if there is a problem in the data bank to be resolved before it causes any interruption in the lab.

Fast Implementation

Actually we do, our process of execution is very mature we...uh...there are many tasks going forward. It is mature and fast, you'd say: 'How are you going to implement an IT system in a laboratory with this level of complexity that is to work with lives in 90 days?' We implement and people think we're lying. When we say this, I went to São Paulo last year that we implemented on Hospital S in São Paulo and we talked. The person...that is the company that proposed the closest time frame to implement proposed a term of one year to implement the system in that laboratory. We said 'no, it is done in 90 days'

Focus on the Patient

[...] in the belief that we're doing the best for us to overcome ourselves. It is not to overcome anybody else but it is to overcome ourselves and to do something that could really bring a benefit for the users, a benefit for other people.

Excerpt 36 Sharing the motive of activity of the client

Source: developmental history interview – 05/07/2012

The properties of the communication in Excerpt 36 concern an underlying theme: patients need urgency (figure 33). This underlying theme surrounding the attributes

communicated by the self-presentation of the software company is in accordance with the communication about necessities of the HGF. As a consequence, the communication related to “one sample is one life”, grounded by the dimension of “patients need urgency”, functions as a getting along instrument strengthen relationship ties with HGF.

The other category of communication is the idea that what is done *is not just about technology* (excerpt 37). To go beyond technology introduces another concept mediating relationships with clients. This category signifies that business is about the *provision of services that will improve processes*. Two properties construct the meaning of process improvement: the notions that processes and technology are inseparable and that services are accomplished by means of networking activity delineate the supplier’s idea of service. By communicating the view of *processes within technology* and *services through a network* the software provider brings a *networked process view* to the fore. It is the perspective of networking that grounds the possibilities for process improvement. This view develops the *notion of value* interconnected with processes, technology and networked partnerships.

Processes within Technology

“[...] then there is the part of consultancy because we work with the part of consultancy. We go to the laboratory not to implement a tool; we go to the laboratory to implement a new way of doing things. So we get there and analyse the processes, the bottlenecks, see where we can improve: ‘oh there is the surgery centre that has to release [results need to be delivered] up to one o’clock, so let’s put up a red flag to alert the bench that I would have to do those samples...’ In the end we’re going to analyse process, process. That’s why our team has pharmaceuticals, have people from the inside area of the laboratory, have people knowing about technology...”

Services through a Network

“The laboratory works with the intermediaries like enterprises that have equipment that pay the IT system for the laboratory [...] the process improves the routine is transformed for better, the routine gets better than using only the equipment.”

Excerpt 37 Networked process view

Source: developmental history interview – 05/07/2012

The category of communication related to a *different business model* was brought to the fore through the concept of *leveraging demand for all partners*. The subcategories of getting along and setting the idea of value underpin the communication of a different business model. Three main properties define the meaning of leveraging demand for all partners: *heterogeneity; integration; and loyalty through networking for services* (excerpt 38).

Heterogeneity

“I started to participate in this process of the company. I’m not from the technological area I’m from management. That girl that came over here now is not from technology either. She is a pharmaceutical and biochemical. So the company has this very heterogeneous part for us to deliver the best possible service to our clients.”

“That’s why our team has pharmaceuticals, have people from the inside area of the laboratory, have people knowing about technology...”

Integration

“...when we went to do the project for them in the project we had already inserted a budget for developing the integration. So we got into the laboratory [for implementation] already integrated with the IT system of the hospital. Then we made integration through the web service, there it works with a web service integrator. There the information of patients and exams solicitations is done by the physicians in the IT system of the hospital.”

Loyalty through Networking for Services

“...they have the interest in putting [the system of the company] and they have the very loyalty of the client when they offer a service with quality [...] they want to get inside that environment but with a difference. All the equipment, from the others, they are similar, the packages, the quality of equipment today is very similar. Then the differentiating factor is the added service.”

Excerpt 38 Leveraging demand for all partners

Source: developmental history interview – 05/07/2012

Heterogeneity is an attribute involving the idea that the suppliers in the industry of medical laboratories need to have personnel with different backgrounds and experiences. This requisite is deemed as necessary to interconnect different perspectives and resources. Integration, in turn, is the key word related to process flow and integration of activities. It is also believed that differentiation from competitors is mandatory. There is the notion that equipment and material providers are only able to distinguish themselves if they are able to bundle services that integrate the processes. Consequently, the fundamental dimension bounding the supplier’s communication underlies the idea of achieving value through networking.

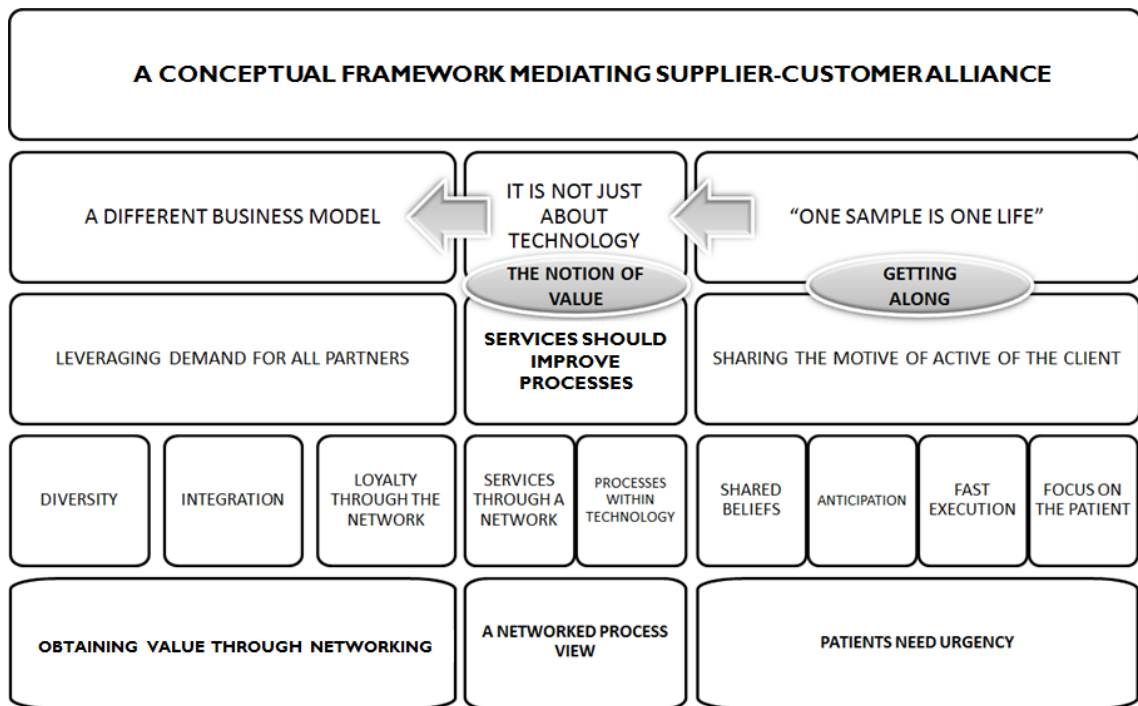


Figure 33 A conceptual framework mediating supplier-customer alliance

Source: i developmental history interview

6.4.4 Key Findings: how can value co-creation management allow transformation in the direction of the zone of proximal development?

In the laboratory, the search for increasing exam results production translated the communication of “saving more lives” into practice. The rearrangement of market relations from product centred to service centred interactions was the pathway for increasing production and accuracy. This transformation of market interactions signified that reagent and vial providers would support the organised activity (i.e. Prenkert, 2006; Jarzabkowski, 2003) of the customer. Suppliers participated with the provision of equipment and software for automating reception, collection of samples, examination and report production.

Within this process, the research findings captured value co-creation management as a strategy for intervention and articulation of multiple perspectives. The transformation of processes through management interventions occurred through putting diverse value standpoints together. This included the strategy of modelling resolutions through co-configuration (Section: Modelling resolutions: HGF/ Case 3 – Laboratory) (Engeström and Toiviainen, 2011). Management in value co-creation was found as managing perspectives through taking multiple standpoints of a diversity of players (cf. Blackler et al., 2000). Value co-creation management was also related to delineating the contribution for each stakeholder. Finally, value co-creation management was captured

as setting the priorities through shaping the perspective of automating processes for increasing production.

In addition to these findings, the present chapter captured the need for mapping the processes of the focal organization (cf. Payne et al., 2008) in search for bottlenecks, which required transformation. This finding indicates that in inter-organisational services, the achievement of value could demand transformation of the entire functional system. The laboratory and its network of suppliers and partners only obtained the expected gains when the reception integrated with the process flow through automation. After the implementation of fully automated processes, the networked feature of rearranging organised activity (Blackler and Regan, 2009) disclosed contradictions between activity systems (Engeström and Kerosuo, 2007; Toiviainen, 2007). These contradictions surfaced as reagent suppliers initiated a coalition in the quest for reducing cost through changing the software provider. The formation of this alliance represented a collective strategy of communicating equivalent value interests (cf. Jarzabkowski, 2003). Moreover, the alliance amongst reagent suppliers disclosed the complex arrangement of heterogeneous perspectives of value as a source of instability in the configuration of interrelated activity systems.

The research findings suggest that managing value co-creation involves the maintenance of value gains obtained through transformations of market interactions. This preservation of value gains for the laboratory represented an important move to strengthen the transformations achieved. In addition it represented the reinforcement of the ties between laboratory and software provider. It was observed that the strong alliance between these two players (laboratory and software firm) was based not only in the event of eliminating the obstructions of automation in the process flow. There was a communication strategy of presenting the company and constructing its identity to the community, i.e. the articulation and sharing of perspectives (Blackler et al., 2000). The findings suggest that the conceptual framework of the software supplier is an instrument for mediating market interactions. The supplier's conceptual framework formed an identity, which can function as a strategy for enhancing communication, build affinity and form alliances (cf. Payne et al., 2008; Vargo 2008; Prahalad and Ramaswasmy, 2004). The conceptual framework improves communication once it affords the sharing of the motive of activity between players. Communication involves articulating a set of attributes that support not only sharing the motive of activity (Engeström, 2000a) with

the client, it also allows the interconnection of organising perspectives for co-creating value (Payne et al., 2008).

The research indicated that the networked transformations of market interactions and change of organising activities of the client organisation relate to managing the construction of community perspective. It was observed that the software firm managed to communicate its contributions, i.e. perspective making (Blackler et al. 2000) whilst building the notion of value as constructed through process improvement and multiple partnerships. The software company believed that its personnel heterogeneity was the key for communicating with a wide range of backgrounds in the business network of services. The software supplier highlighted that value co-creation management concerns envisioning desired outcomes for the networked partners, i.e. perspective shaping (Blackler et al. 2000). This imagination of the future involves setting importance and priorities for the network. Finally, the provider's account for competitiveness coming from the capability of bundling services through a network indicates the perspective taking feature of managing market interactions (cf. Blackler et al., 2000). The software supplier participant took the perspective that value could only be achieved through networking.

6.5 Conclusion

Internal contradictions hindered resource integration and the co-creation of value. Collaboration was difficult to be collectively achieved, as there were different perspectives of value. The interests for resource integration are different throughout the hierarchical levels of the customer organisation. In this sense resource integration comprises different organisational levels with different interests. Personal, departmental and organisational interests can be in mutual contradiction. On the client side, these contradictions were reflected in the difficulties of personnel from the operational level to find a meaningful use of novel resources. These contradictory perspectives of value hampered the co-creation of improved capabilities as they blocked resource integration.

The depiction of the zone of proximal development in both Tener and HGF cases demonstrated the potentialities that internal contradictions can surface. Internal contradictions can show alternatives for the development, enhancement and facilitation of resource integration and value co-creation. In the HGF case, the importance of improving the capacity of the process was crucial to translate value co-creation into daily interactions. In turn, the crucial development for Tener referred to the integration

of the activity systems of the company with the clients through sharing process capability.

Knotworking movements emerged as the analyst from Tener searched for interconnecting value standpoints, i.e. Tener – Case 1. Knotworking was a movement of navigation between different hierarchical levels of the client organization in search for tying knots and resolving disturbances - not only at the task level but also in the entire functional system of the organization, including partners. This was a necessary movement as value was found in contradictory relations between the supplier and the client's personnel, department and organization.

The findings related to observations of rhetorical action, coalitions and politics, i.e. Tener – Case 2, resume co-configuration through the process of knotworking as permeated by multiple sources of resistance and obstacles. Participants brought their own interests to the fore while analysing and evaluating mutual process and technical capacities of the software with incorrect assumptions. More specifically, the introduction of new mediating instruments for activity, combined with new mediating roles between personnel involved in the application of this new instrument and the networked community, initiated participants' considerations about their personal notions of value. In this sense, the main challenge is to co-configure resolutions putting divergent notions of value into interconnected practices. The interactions of knotworking characterized this search for value as a co-configuration activity often founded in imprecise information, wrong assumptions, diverse interests and value perspectives, knowledge sharing and learning efforts. The co-configuration of value was therefore a knotworking process wherein actors searched for knowledge resources aiming at learning results. The learning results are made tangible by the development of tools that can prompt the mediation of value.

Orchestrating interactions, i.e. HGF - Case 1, allowed the view of knotworking as an interactive process for solving disturbances through the co-configuration of a tool. However, the case suggested that knotworking can translate the nature of interactions as more orchestrated than improvised. This orchestration is underlined by the definition of gaps between the needs of the process and the potentialities of the tool. It was identified that participants probed the actual capabilities and, consequently, evaluated their learning needs. Throughout this process, the needs of the client functioned as

parameters. Consequently, planning the participation of the client was a constant concern of actors initiating co-configuration activities.

Co-configuration through knotworking also relates to anticipation of difficulties and the evaluation of standpoints, i.e. HGF – Case 2. In this sense, despite the occasional or formal shape of encounters, interactions amongst participants related to negotiations that could support and allow the evaluation of multiple perspectives of value. The character of regular encounters referred to model collaboration and co-work. This character of dialoguing placed the content of knotworking as based on checking and bridging information of each actor. Often, participants brought external parameters to the fore in terms of establishing the standards of instruments, relations and roles. This finding suggests that participants may perceive their localised knotworking process as more important than acquiring external references of success as, for example, the indications of other customers.

As players knotwork, they can model new types of market interactions, i.e. HGF – Case 3. The findings indicated that a primary disturbance in the functional system of an organisation could prompt the search for new models of market interactions. This search for new models was comprised of alliancing and orchestration of other players' participation. In the case studied, the chemical reagent providers unified a bundle of integrated services shaping a novel pattern of business. In addition, the participation of experts functioned as a catalyst for envisioning potentialities of co-configuration. In this sense, players developed their understandings of the network of activity systems through knotworking.

The findings indicated how participants managed to effectively transform processes, behaviours and market interactions, i.e. Tener – H Hospital and CL Clinic cases and HGF – Laboratory case. In the H Hospital and CL Clinic case, the dyadic relationship established between supplier and client was able to depict, articulate and interconnect functional relations between diverse systems of activity. In these latter cases, the participants approach to the zone of proximal development was decentred and emergent. In both cases, there was no control in resolutions. However, it is important to note that in the H Hospital case it was necessary to take the perspective of multiple relations between several activity systems. The engagement of participants in this construction of a common perspective is based upon dialogue, emotional charge and mutual trust.

Ultimately, change referred to the transformation of attitudes from resistance to collaboration for implementing and using the software system.

These transformations related to learning as critical occurrences of breaking resistance of using cultural tools, instruments and of applying crystallised roles into developmental movements, which translate the envisioning and usage of new concepts, roles and relations. In the case study of the HGF laboratory, market interactions engendered process transformation in the client organisation, i.e. the laboratory itself. The change of processes related to efforts of communicating and coordinating interventions, which concerned diverse perspectives within market interactions. Consequently, value co-creation regarded the rearrangement of organised activity in two senses: in the functional system of the focal organisation, i.e. the customer, and in the roles and relations amongst the network of players. Ultimately, management was captured in this case study as shaping alliances and coalitions in order to intervene in the features and patterns of market interactions.

Chapter 7. Knowledge and learning in the practice of value co-creation

7.1 Introduction

This study has empirically examined value co-creation in the previous chapter. Chapter 6 represented and analysed participants' sayings and activities in relation to: (1) the questioning of obstacles and analysis of possibilities (Section 6.2); (2) the co-configuration of resolutions (Section 6.3); and (3) the initiation of crucial transformations as participants approach the zone of proximal development (Section 6.4). Value has been acknowledged as collectively shaped by means of specific practices, i.e. interactions of multiple players. Through interactions, players questioned practices, envisioned potentialities, co-configured resolutions and approached the zone of proximal development.

This chapter draws on previously presented data and specifies the findings related to the character of knowledge and learning in value co-creating practice. The present research identifies the co-construction of value as a primary practice related to knowing value co-creation. In the present study, learning refers to actions and behaviours representing changing approaches to the object of attention (cf Vygotsky, 1978). Expansive learning refers to movements of transformation in the direction of the zone of proximal development (cf. Engeström, 1987). The findings reported in the present chapter regard Objective 3: *To ascertain the relevant changing features of knowledge and explain the learning path for co-creating value.* Chapter 7 searches for answering the question: *how does knowledge and learning evolve within value co-creating market interactions?*

The research reveals that value co-creation learning evolves along the dimensions that grounded possible movements of participants in the two cases, i.e. Tener - H Hospital and HGF - Laboratory. The dimension representing development and expansive learning for Tener refers to viewing client organisations as integrated activity systems and developing capacities of process development (Figure 12, p 114). In turn, for HGF the dimensions representing expansive learning concerned the automation of the entire functional system and the acquisition of technology for improving processes (Figure 14, p. 119). These dimensions stem from the participants' reflections upon difficulties, disturbances and dilemmas lived in daily market interactions (Chapter 6). In relation to knowledge, the findings reveal that the practices for co-creating value involve: a) a shared motive of activity; b) actions of translation and negotiation; and c) multi-voiced activity systems.

7.2 Key findings: How does knowledge and learning evolve within value co-creating market interactions?

7.2.1 Value knowledge

The research identified contrasting communications pertaining to value with consequent diverse systemic results. In Tener, communication was found to underline the importance of the company and rules in shaping value perceptions. Tener cultivated value in terms of customers' perceptions (cf. Lepak, Smith, and Taylor, 2007; Bowman and Ambrosini, 2000) about the importance of the continuity of the computational equipment provided by the company. In contrast, the software provider of the HGF Laboratory, i.e. Fiver, shared the same object of activity, i.e. establishing a communal motive (Engeström, 1999a), with the laboratory at HGF. For the laboratory and its software supplier value was translated into the capacity of saving lives. Consequently, all tasks, activities or market interactions which supported increasing the capacity of saving lives resulted in practices of value creation.

The value definition from Tener resulted in difficulties in co-creating value within daily tasks and interactions. The research findings indicate that value co-creation knowledge based on communications shaping perceptions (cf. Payne et al., 2008; Prahalad and Ramaswamy, 2004) encountered many obstacles related to multiple standpoints and interacting activity systems. This is because Tener's analysts were always focused on instructing procedures and maintaining the on-going provision of services (cf. Payne et al., 2008). Therefore, Tener was not able to co-configure resolutions at the level of interacting activity systems (cf. Engeström and Kerusuo, 2007) through negotiations amongst decision makers (in this sense, Tener – Case 2 is the strongest indication). However, as indicated in Tener cases 1 and 3, at the lower level of task performance (cf. Engeström, 2004a, 2004b) participants were able to overcome difficulties and integrate resources in such a way that multiple standpoints of value were at least temporarily satisfied.

The value delineation of the HGF laboratory and its software supplier resulted in the shared envisioning of a new business model. The HGF case study disclosed an interesting feature of value co-creation knowledge with regard to the understanding of customer initiatives. In this sense, the communications of the laboratory and the interfacing software provider suggests that value co-creation knowledge as seen from the supplier perspective refers to developing a shared notion of value. This means that value co-creation knowledge involves more than developing communications

supporting value delineation (cf. Payne et al., 2008; Prahalad and Ramaswamy, 2004). Nonetheless, communication was not the only way in which value co-creation knowledge delineated value and supported the sharing of the motive of activity. Value co-creation knowledge embedded daily routines and interactions in terms of translation and negotiation within multi-voiced activity systems (cf. Engeström, 2001).

The section related to co-configuring resolutions (Section 7.3) exemplified *actions of translation and negotiation*. Actions of translation regarded behaviours, tasks and actions (Engeström, 2001) conducted in support of standpoints of value. Although the instance of translation is concerned with the multiple levels of perspectives on value, i.e. individual, departmental, organisational/ inter-organisational, the transformative features of value co-creating interactions were observed through actions of negotiation through knotworking (Engeström, 2004a). The research findings examined in Section 7.4 highlight the fact that knowing value co-creation constitutes the grounds for co-configuring resolutions through translating and negotiating diverse value standpoints. The systemic effects of each situated instance of translating and negotiating unveil interesting indications for knowing value co-creation (table 10).

Source	Translation and negotiation practice	Positive consequences	Negative consequences
Tener Case 1 – “H Hospital”	Instructing performances and adapting instruments	Possibility of systemic resolutions allowing value co-creation	Disturbances in the wider systems of activity
Tener Case 2 – “C Clinic”	Rhetorical argumentation and political action	Disclosure of subjective interests in divergent value standpoints	Lack of practical means for resolving disturbances
HGF Case 1 – “GIL”	Strategizing participation and orchestrating interactions	Depiction of diverse participants and their respective roles in multiple activity systems	Primary difficulties remain unsolved
HGF Case 2 – “HOSPUB”	Anticipating difficulties and evaluating value standpoints	Envisioning of procedures and behaviours that could support value individually and collectively	Insufficient depiction of possibilities as participants rely on own experiences
HGF Case 3 – Laboratory	Declaring business models and alliancing with strategic partners	Possibility of systemic resolutions allowing value co-creation	Creation of antagonism

Table 10 Consequences of translation and negotiation

Table 10 represents a deeper scrutiny of the translation and negotiation grounding knowledge in value co-creation practice. The identification of diverse micro behaviours embedded in translation and negotiation helps reveal the systemic consequences of these micro practices (cf. Engeström, 2000a, 2001). According to the general picture emerging from table 10, value co-creation knowledge cannot be assumed to reside in specific capabilities or technical content (e.g. Morgan et al., 2003; Jaworski and Kholi, 1993). Knowing value co-creation is a situated practice (cf. Bjorkeng, Clegg, and Pitsis, 2009) with systemic consequences (cf. Blackler and Regan, 2009). The indication of these systemic consequences suggests that two practices related to translation and negotiation underlie value co-creation:

1. Instructing performances and adapting instruments
2. Declaring business models and alliancing with strategic partners

These two tasks encompass situated actions in the operational level and in the organisational level. Thus, research findings suggest that knowing in the practice of value co-creation refers to top-down (i.e. declaring business models and alliancing with strategic partners) and bottom-up (i.e. instructing performances and adapting instruments) models of translation and negotiation. Nonetheless, it is important to note that other micro practices indicated in table 10 presented different types of positive consequences. Moreover, all practices of translation and negotiation also presented negative consequences.

Translation and negotiation occurred within *multi-voiced activity systems* (Engeström, 2001). In this sense, this research identified knowing value co-creation also in relation to engagement in multiple conversations. Tener Case 2 – “C Clinic” exemplifies the navigation of a participant in diverse activity systems. Figure 34 depicts the movements and character of interacting in a multi-voiced activity systems according to excerpt 17.

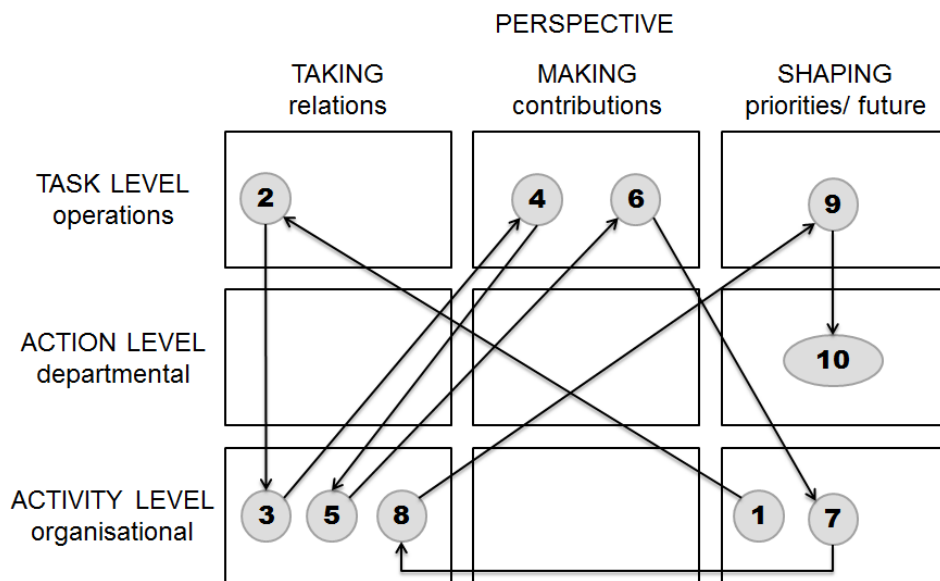


Figure 34 Multi-voiced activity systems forming the object: Tener Case 2 - “C Clinic”

Source: Excerpt 17 Development of compatibility solution with the health care plan

Each numbered movement is a translation or negotiation practice described in box 1.

- 1 – Translating the continuity of the services into the context of market competition. The voice of the client clinic is the input for initiating the search for transformation.
- 2 – Negotiating information sharing at the operational level. The voice of the health plan partner is a requirement for transformation.
- 3 – Negotiating the obstruction of information at the operational level. The voice of higher hierarchical levels (firm and partner) enables information sharing.
- 4 – Translating the features of the software in order to solve minor problems. The voice of the health plan partner at the operational level improves understandings about the automation software.
- 5 – Translating the network of services and partnerships. The voice of the health plan partner at the operational level indicates the necessity for further and broader interactions.
- 6 – Translating the types of difficulties of the software for correction. The voice of a networked partner (invoice automation software firm) gives deeper information for testing and implementing the software.
- 7 – Translating the practice of invoices automation between the health plan and the clinics. The voices of the health care plan and the invoice automation software firm function as an adjustment of understandings about the shaping of competition at that time.
- 8 – Negotiating the resolutions for invoice automation. The voice of higher hierarchical levels (firm and partner) determines novel resolutions.
- 9 – Translating the next steps for enabling the implementation of automated invoices in the Naja System. The understanding of the difficulties of implementing the integration enables setting task priorities according to a more accurate interpretation of the context.
- 10 – Translating the efficiency gains at the departmental level of the client organisation. Participant is able to envision the results of transformation.

Box 1 Navigating in a multi-voiced activity system

Source: Excerpt 17 Development of compatibility solution with the health care plan

Figure 34 and box 1 disclose how the engagement in multiple conversations elucidates primary assumptions and discloses more robust perceptions of possible resolutions. These interactions underpin knowing value co-creation as translating and negotiating through moving amongst the levels of activity (cf. Engeström, 2000a) whilst approaching diverse perspectives (cf. Blackler et al., 2000). The development analyst from Tener initiated the quest for resolving a problem of resource integration with an inaccurate perception of the state of development of the software coming from the market. Through translating and negotiating diverse perspectives at multiple levels of activity, it was possible to represent the actual state of problems, the route of interactions towards a solution and to envision the consequences of resolving the difficulties.

Figure 35 depicts the movements of translation and negotiation of Tener’s projects and service analyst 1 in the prescription room of the “H Hospital”. This example differs from the former “C Clinic” case. In the prescription room of “H Hospital”, there was

indication of navigation between activity levels and of the diversity of perspectives involved. However, the practices of moving through perspectives and activity levels were conducted through analysing, interpreting and depicting multiple standpoints. The analyst 1 and the nurse responsible for prescriptions constructed the network of rules, roles and instruments of interconnected activity systems in their dyadic relation of translating and negotiating.

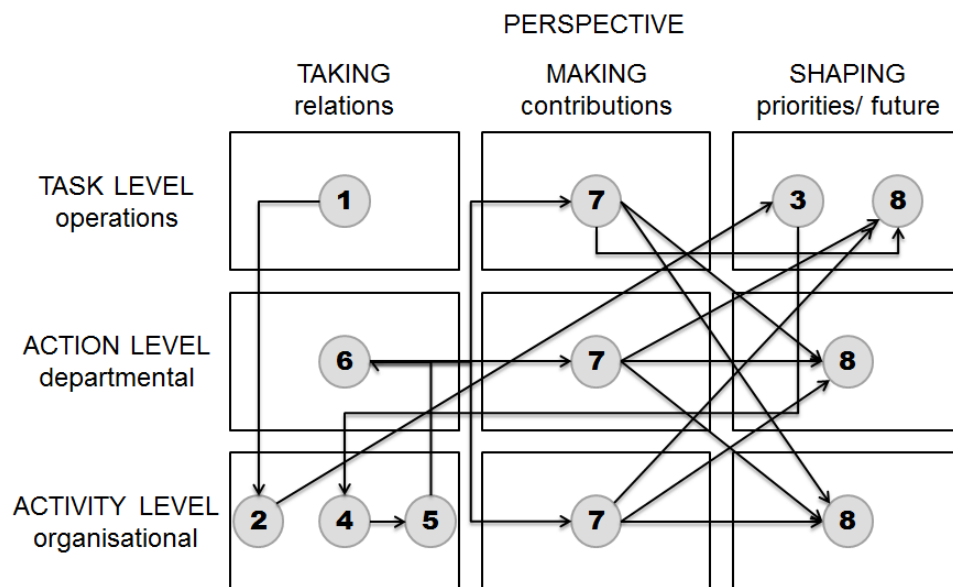


Figure 35 Multi-voiced activity systems forming the object: Tener Case 1 - “H Hospital”

As in the previous analysis, each numbered movement is a translation or negotiation practice described in the Box 2 below.

- 1 – Translating the firm’s shared notion of value through preserving the use of the software in the client operations. The analyst initiates the search for resolving disturbances.
- 2 – Translating difficulties between departmental procedures regarding prescriptions. Translation embedded in emotional distress. The client is depicting difficulties within procedures due to the format of prescription in the software system.
- 3 – Negotiating a compromise between the two parties. The analyst is ensuring that the client will have all the necessary support.
- 4 – Translating the pharmacy rules. The pharmacy, in turn, is translating the rules of medicament producers. The client is depicting the multiple relations within the flow of prescriptions. The flow of prescription goes through a rule producing system between systems of activity.
- 5 – Translating the voice of hospital policy makers regarding cost reduction. The client is determining further rule producing systems which obstruct the flow of prescriptions as the software system is being used.
- 6 – Translating departmental difficulties in inserting prescriptions. The client is indicating difficulties in following procedures.

7 – Translating the shared concept of readiness to the practice of interactions with the client hospital. The analyst is supporting the use of the software system with efficiency by the client organisation.

8 – Negotiating the need of further adjustment. The client is setting priorities. The analyst is establishing expectations for resolutions.

Box 2 Navigating in a multi-voiced activity system

Source: Excerpt 37 At the prescription room: “things just got worse”

The analysis of “H Hospital” case confirms that knowing value co-creation involves multi-voiced systems of activity wherein translation and negotiation occur. Nonetheless, these two cases unveiled different approaches of translating and negotiating. The “C Clinic” case refers to an emphasis on translation and negotiation while moving between levels. The “H Hospital” case relates to translation and negotiation while analysing, interpreting and depicting difficulties in multiple activity levels. The part of “H Hospital” case examined here refers to a crucial moment of translation and negotiation wherein both participants had navigated throughout the levels of activity.

These findings suggest that translation and negotiation within multi-voiced activity systems regards crossing, interpreting, analysing and depicting diverse perspectives simultaneously at multiple activity levels. The two cases represented improved pathways for facilitating resource integration and prompting value co-creation. This is an indication that value co-creation requires knowing how to navigate through operational, departmental and organisational levels of activity (cf. Engeström, Engeström, and Karkkainen, 1995) whilst forming the multiple perspectives of relationships, contributions and priorities for the future (cf. Blackler et al., 2000). The movements of navigation are situated. The shaping of perspectives is also situated. However, according to box 1 and box 2 there are systemic consequences as the movements between levels progress and multiple perspectives take form (Figure 36).

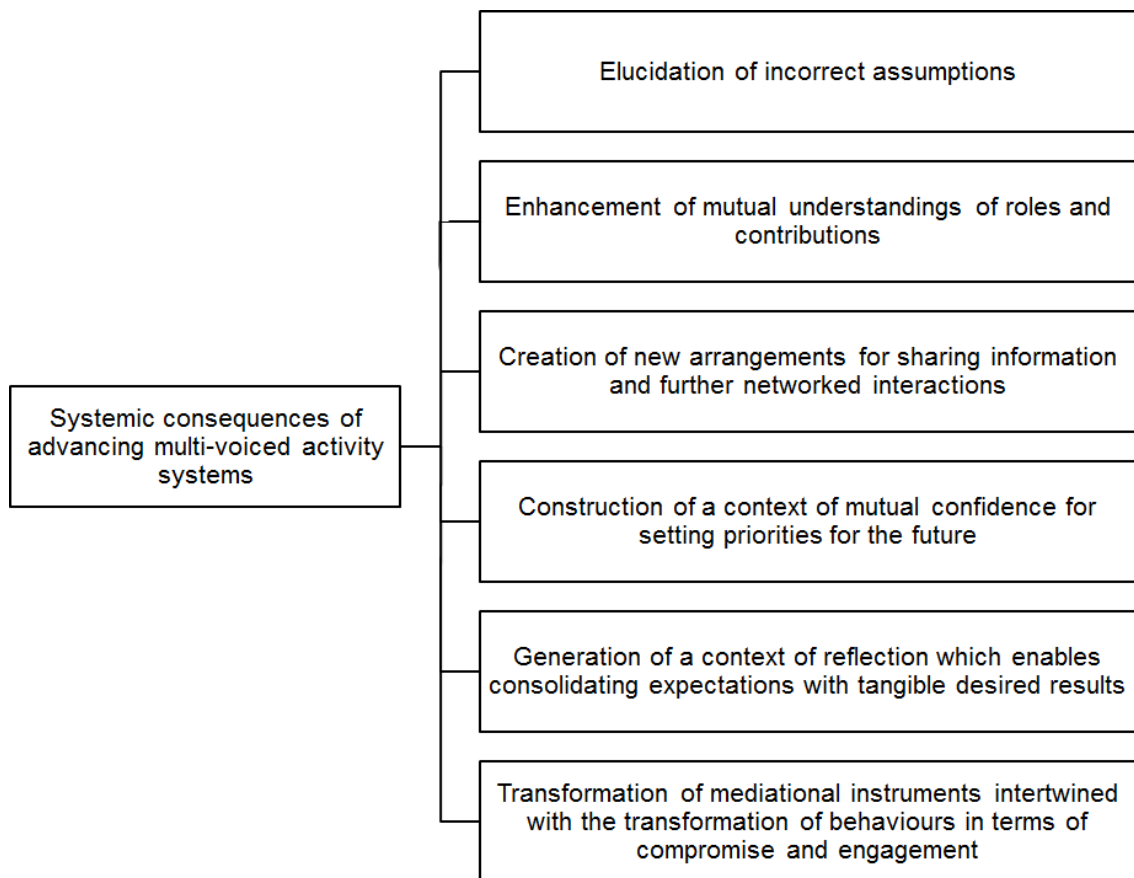


Figure 36 Systemic Consequences of advancing multi-voiced activity systems

Source: Box 1 and Box 1

This section has presented the evolving features of knowledge that can allow value co-creation. The process of changing practices is the focus of the following section.

7.2.2 Value co-creation learning

a. Tener Case – H Hospital

The directions of development in relation to the axes of figure 37 depict the learning paths observed in the practice of Tener’s Analyst 1. These movements relate to interactional activities concerning the implementation of the software system in “H Hospital”. Figure 37 depicts the alternatives of movements and transformations related to approaching or distancing value co-creation in practice. The D Zone (upper right-hand field) is where learning would expand to in order to eliminate obstacles and allow value co-creation (Chapter 6).

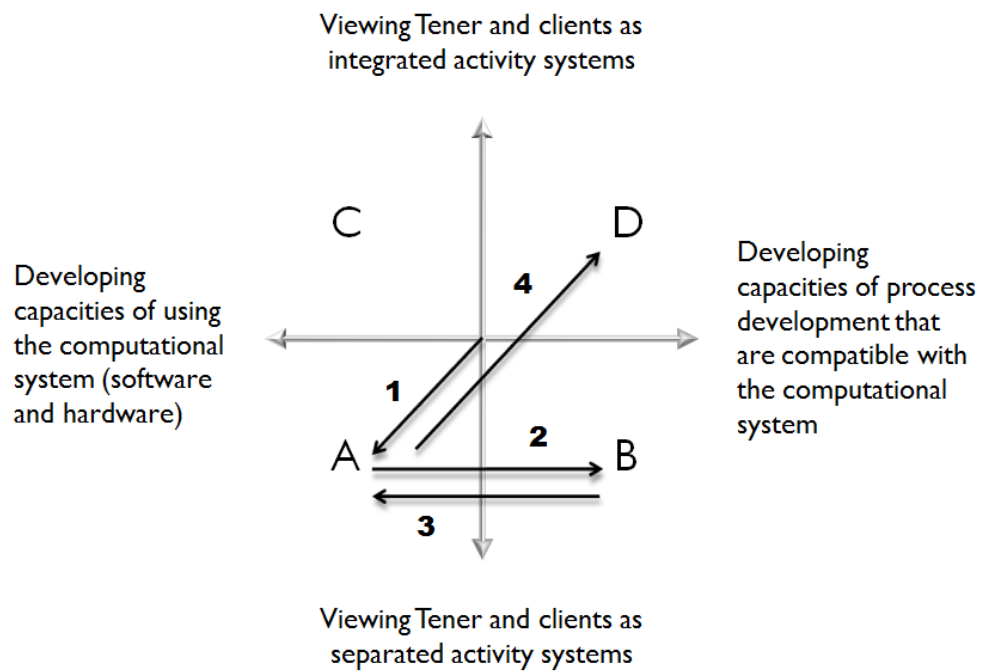


Figure 37 Learning to co-create value: Tener “H Hospital” case

Source: Tener - H Hospital case

In Tener H Hospital case, the learning movements were not linear. Learning occurred in diverse directions in each interactive moment (cf. Blackler and Regan, 2009). The research findings indicate that learning involves participants’ reflection on their current norms and practices and the difficulties found in advancing these routines (cf. Engeström, 2000c). The initial practice observed (Section 6.2.1) underlined interactions based on the use of the software system (Arrow 1). At that moment, difficulties in the functional system of the client organisation were perceived by Tener’s analyst as stemming from a lack of integrated procedures. It was also understood by Analyst 1 that the software was an instrument that could resolve these organisational problems of the client’s. Nonetheless, her job description was to train client personnel in using the software system. This internal contradictory relation obstructed the daily practices of implementing the software.

In Arrow 2 value co-creation learning was observed in daily interactions with the client personnel. It was in the course of daily interactions that difficulties emerged and resolutions required more than technical instructions. Arrow 2 represents the moment when Analyst 1 interacts with personnel of the hospital in order to integrate processes (Section 6.3.1.a). Analyst 1 explained how using the software combined with changing the hour of inserting prescriptions could help the ITU department to have pharmacy

material early in the morning. This practice was a development because it advanced a perspective that could enhance the client's process capacity. This movement also integrated with the use of Tener's provision of resources. Nonetheless, it was observed that modelling solutions in the operational (task) or action (departmental) level was not sufficient for resolving broader contradictory relations in activity systems (cf. Toiviainen, 2007). As participants did not embrace the wider perspective of interacting activity systems, further contradictions came to the fore and blocked resource integration.

The interaction of the projects and services analyst with the consultancy representative and the nurse manager suggested a discontinuity of expansion (Arrow 3) (Excerpt 13 At the office of the nurses' general manager). This discontinuity was due to a movement back to the A Zone. This finding suggested that value co-creation learning regards irregular flows of transformation and continuity (cf. Jarzabkowski, 2003). Each market interaction is a situated learning moment that may represent the consolidation of present actions or the change of behaviours in the direction of more significant transformations (cf. Toiviainen, 2007). Participants co-configured the idea that the difficulty resided in personnel's lack of knowledge in using the software. Moreover, there was no discussion with regard to interconnecting systems. The analyst indicated customisation as a feature of the software. Customisation was disclosed as a capacity for personnel development. Without integrating this capacity into the process flow of interconnected systems, this interaction cannot be considered expansive. Instead it is a discontinuity and an apparent regression to the initial state of knowledge.

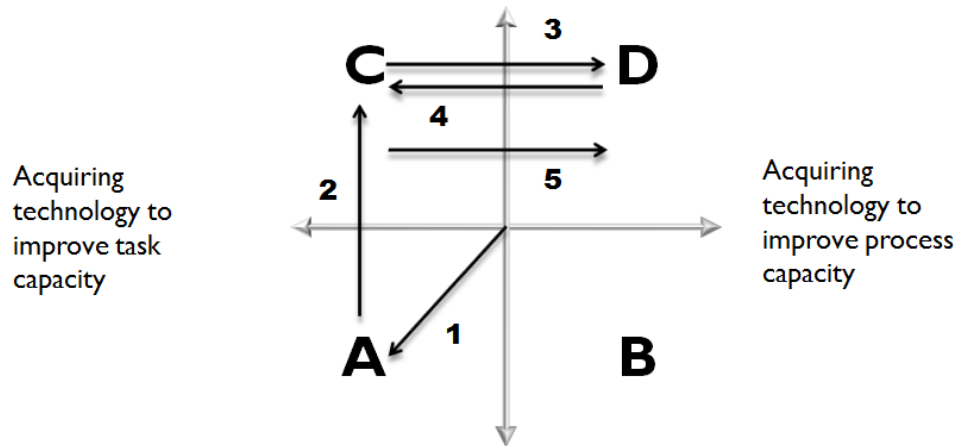
The expansive learning movement in H Hospital (Arrow 4) emerged in an interaction at the task level (Section 6.4.1.a). This relevant movement indicated that value co-creation learning can involve moments of emotional release affecting behaviours that prompt transformations in the direction of co-creating value. Value co-creation learning thus refers to interactive moments wherein participants allow the depiction and transformation of interconnected activity systems (cf. Daniels and Warmington, 2007; Toiviainen, 2007). Such depictions concern contradictions, roles, rules and instruments mediating participants' approach to value co-creation. In Arrow 4 Analyst 1 and the nurse responsible for inserting prescriptions into the system advanced the depiction of interconnecting systems of activity, as well as the rules and roles affecting the integration of the ERP (Excerpt 31). This interaction aimed at the integration of the ERP in the process flow and still had the perspective of multiple systems of activity.

Participants shared knowledge of community *rules*, *roles* of players and software applications (*tools*) (cf. Engenström, 2000c). This engagement stemmed from an initial moment of vocalisation regarding the difficulties and suffering that the prescriptions nurse was going through, i.e. a critical moments of interactive struggle (Engeström, 1987).

b. HGF Case – Laboratory

Developmental movements in the laboratory occurred amongst the dimensions of automation of the functional system and process capacity improvement (figure 38). These dimensions represented alternative moves for a network of players regarding the laboratory, the software company, the reagent suppliers, the material suppliers and the equipment for exams results fabricators. The findings related to the HGF Case – Laboratory indicated the networked character of value co-creation learning. A collective change and transformation of behaviours of the community of market players surrounding the laboratory was observed in the course of fieldwork. In this case the integration of resources and value co-creation could only be allowed through participation of all these players. According to the difficulties examined in the section “Internal contradictions –HGF: laboratory department” (Section 6.2.3) potential resolutions prompting value co-creation refer to the D Zone. The arrows in figure 38 represent individual or collective moves which evolved toward or departed from the area of proximal development, i.e. D.

Functional system based on automation



Functional system based on manual procedures

Figure 38 Learning to co-create value: HGF “Laboratory” case

Source: HGF – laboratory case

Arrow 1 indicates more of an initial state and reflexive movement from staff of the laboratory than an interactive learning moment. This main dilemma reflected the great amount of manual procedures combined with application of automation in isolated tasks, i.e. exams results production (Excerpt 17 When everything was manual: manual tasks versus productivity). The next learning movement (Arrow 2) points out that value co-creation learning is about changing market interactions. In this learning movement, interactions were initiated with a novel shared concept that mediated market participants’ approach to value. Shared conceptual instruments exerted the necessary facilitation for the collective approach to transformations (cf. Engeström, 1999c). The collective thinking prompted the conscientious movement to novel resolutions (cf. Engeström and Sanino, 2010). Arrow 2 indicates a collective movement represented by a shared communication that brought about the vision of automating processes (Excerpt 28 Requiring reagent suppliers to provide interface of equipment). It was an expansive learning movement as the laboratory and reagent suppliers initiated a model of automation that overcame the hospital’s limitations. This resolution helped to some extent to solve production capacity problems. However, the capacity and accuracy of the entire process remained as difficulties.

The following expansive practice deals with integrating the resources of the entire process through interfacing exams equipment and software system. Participants may not depict the entire framework of interconnecting activity systems. However, any remaining disturbances can bring about the necessity of further transformations. The conceptual instruments can stabilise and function as a catalyst for change (Engeström, 1987) and be applied as mediational tools for shaping novel types of interactions (cf. Miettinen, 1999). Arrow 3 represents the use of the concept of having contracts with reagents and vials suppliers as instruments for acquiring automation (Excerpt 29 Knotworking the co-configuration of an integrated solution; Excerpt 33 Reception automation). It was a movement to the zone of proximal development, i.e. D Zone, because this resolution prompted improvement of the entire functional system of the laboratory through automation.

This practice solved the internal contradictions of the laboratory and allowed value co-creation as it increased demand for suppliers and partners. The resolution received the support and some degree of affection from the personnel of the laboratory. Nonetheless, a new object of attention emerged on the part of reagent suppliers: cost reduction. Arrow 4 refers to a suppliers' movement that jeopardised the benefits of interfacing equipment with software (Excerpt 35 "We could not work in separated islands as before"). In this sense, value co-creation learning involves the change of focus of attention. Value does not stabilise as players may find new standpoints for changing the object of collective attention.

The dynamics of the market and the complex formation of shared notions of value between multiple players required the emergence of novel conceptual tools. These novel instruments of mediation could enable the stabilisation of value co-creation. The emergence of cost reduction for the reagent suppliers required novel resolutions, which were mediated by the concept of donation. The learning movement regarding Arrow 5 suggests that development of new instruments may occur through the formation of coalitions. Arrow 5 represents this movement of creating a new concept for market interactions wherein the movements of a community of players were blocked by value based coalitions (Section 6.4.3). In this sense the alliance between laboratory and software supplier reinforce value standpoints of a group of players. The coalition through donation was the last expansive learning movement observed in the course of data collection. This does not mean that there would be no further movements between the dimensions in Figure 38.

c. Comparing and contrasting the “learning movements” cases

Table 11 describes and compares the evolving movements of learning in the two cases analysed in this section.

Learning Movements – “Tener: H hospital”	Learning Movements – “HGF: Laboratory”
Reflection upon norms, communications, difficulties in daily practice and existing approach to value.	Reflection upon difficulties in daily activity and process capacity.
Perception of underlying potentialities for value co-creation.	Perception of potential transformations in market interactions for value co-creation.
Resolution upon tasks and actions for integrating resources and improving process capacity in immediate levels of activity i.e. localized solutions.	Resolution upon tasks and actions for integrating resources and improving process capacity in immediate levels of activity i.e. localized solutions.
Reversion to existing notions and practices that may represent regression in the direction of continuity instead of transformation.	Consolidation of novel concepts and practices advancing resolutions for the complete integration of resources and processes.
Emotional release related to difficulties and suffering perceived as stemming from attempts at transformation.	Emotional affection for novel practices which resolved disturbances.
Reflection upon the entire system of interconnected activities through sharing knowledge of roles, rules and instruments.	Reversion to former concepts based on novel value standpoints representing interests of specific categories of players.
Implementation of new procedures allowing value co-creation.	Consolidation of value interests of a specific category of players through implementation of new concepts and instruments by means of coalitions.
Emotional bond based upon relief and confidence.	

Table 11 Learning movements

Source: Cases Tener: H hospital and HGF: Laboratory

There is no linear movement found in the cases. Nor do the elements configure a direct sequence. Figure 39 depicts seven interconnected movements of value co-creation learning as pointed out in Table 11. These learning elements are shown here as constituents of actors’ movements in the direction of value co-creation. Whilst figure 37 and figure 38 depict movements amongst possibilities for learning as recognised by participants, Figure 39 describes the content and character of possible learning movements.

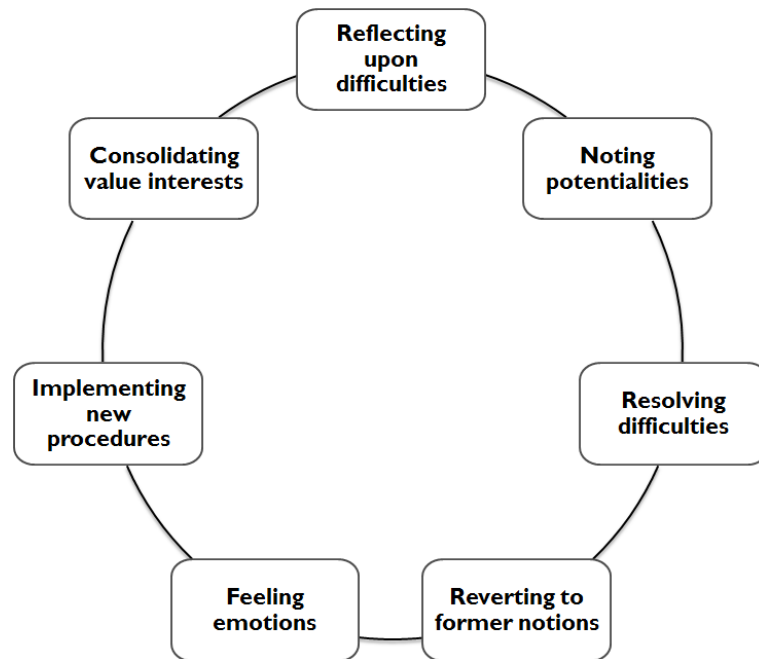


Figure 39 Learning movements in value co-creation

It was observed that these elements relate to individual and collective movements. The Tener – “H Hospital” case unveiled the individual journey of the analyst and her interactions while developing a resolution that could allow value co-creation. The HGF – Laboratory case disclosed the collective movements of networked players for prompting the co-creation of value. In relation to the emotional features, the “H Hospital” case indicated suffering with difficulties, distress, relief and confidence in market interactions. In turn, the Laboratory case pointed out the feeling of affection for instruments mediating the resolution of difficulties. It was observed that the HGF Laboratory consolidated value co-creation learning movements on two occasions. Firstly, consolidation was brought to the fore through using applied concepts regarding novel ways of market interactions in further departmental resolutions of resource integration. Secondly, consolidation occurred by means of alliances for intervening in networked movements that consisted in a threat for value co-creation. The “H Hospital” case did not experience consolidation as a learning element in the direction of value co-creation. In effect, the crucial encounter in the prescription room represented an initial movement towards co-creating value.

7.3 Conclusion

This chapter has pointed out the systemic consequences of practice related to the features of value co-creation knowledge. In this sense, actions of translation and negotiation were observed in contrasting practices generating different systemic

consequences in terms of processes and structures of market interactions. Interestingly, the identification of more precise movements of translation and negotiation in a detailed analysis of moments of application of multi-voiced activity systems unveiled that when multiple voices are brought to the fore participants prompt transformations which can lead to value co-creation. In this sense, the fundamental production of communication, which supported delineating the motive of collective activity, was found to be a relevant feature of value co-creation knowledge. This research shows that knowing value co-creation refers to the ability of supporting a shared motive of activity with the customer organisation through communication that brings a common idea of value to the fore.

The present research observed value co-creation learning as evolving through participants' movements amongst the possibilities of learning. Each movement represented transformations approximating or moving away from the zone of proximal development. There were seven elements concerning value co-creation learning and the movements in the dimensional area of learning (figure 39). These movements suggest the foundations for learning in the direction of value co-creation.

Throughout the sections of this chapter, it has been demonstrated that value is an object that is by no means fully completed. It is unlikely that the co-configuration of resolutions and managerial intervention would advance the stabilisation of value in multiple perspectives. Contradictions in market interactions emerge and need to be solved continuously.

Chapter 8. Discussion and Conclusion

8.1 Introduction

The previous chapters presented the findings of six case studies nested in two main cases, i.e. Tener: H Hospital, C Clinic and CL Clinic; and HGF: GIL, HOSPUB and Laboratory, for examining the practice of value co-creation. The findings observed difficulties and possibilities of resource integration by means of identifying internal contradictions. Investigation upon the character of market interactions captured fast and dispersed negotiations in the search for co-configuring solutions to disturbances and dilemmas. The analysis revealed management for co-creating value as intervening in perspectives whilst interacting in dyads and forming alliances for influencing networked relations. Finally, Chapter 7 indicated that knowing and learning for co-creating value is best understood as movements of engaging in multi-voiced systems of activity.

The first part of this chapter (section 8.2), discusses the research findings in relation to the conceptual framework developed in Chapter 4 and prior understandings of value co-creation, i.e. Chapters 2 and 3. The discussion addresses each research question in relation to the main themes of the research findings (table 12) and the conceptual advancements proposed in the framework of Chapter 4.

The discussion in Section 8.2 uses the conceptual framework of Chapter 4 in order to generate novel understandings complementing, extending or creating new perspectives for seeing value co-creation within service networks. Ultimately, the five themes discussed in Section 8.2 ground a novel understanding of value co-creation as a dialectical system. Section 8.2.4 draws on the ontological and epistemological premises of Chapter 5 for supporting discussion related to the main question of how service-based networks co-create value. The remainder of the chapter delineates the contributions, reflects upon the achievement of research objectives and indicates possibilities for future research.

Research question	Research theme	Conceptual proposition
1) How do internal contradictions and learning possibilities relate to the integration of resources for value co-creation?	Questioning resource integration processes – Section 8.2.2.a	The process of development through questioning initiates and allows resource integration
2) How do interactions evolve amongst multiple players with divergent perspectives of value? What is the nature of these interactions?	Knotworking value – Section 8.2.2.b	Co-configuration through knotworking represents the interactional features of value co-creation
3) How can value co-creation management allow transformation in the direction of the zone of the proximal development?	Managing change – Section 8.2.2.c	The articulation of diverse perspectives within participation in distributed collective activity
4) How does knowledge and learning evolve within value co-creating market interactions?	Value co-creation as practice – Section 8.2.3	Knowledge and learning intertwine in multi-voiced activity systems as the envisioning of potentialities occurs through everyday practices and collective activity
How do service-based networks co-create value?	Value co-creation as a dialectical system	Dynamic transformations of practices simultaneously unfold value co-creation. Value-in-practice is an idea under continuous construction within which actors resolve the contradictions that hamper mutually benefiting market interaction

Table 12 Research questions, themes emerging from the findings and conceptual propositions

8.2 Value co-creation in service-based networks of business-to-business relations

The conceptual framework of Chapter 4 and the ontological and epistemological foundations provided in Chapter 5 raised the idea of value co-creation as emerging through changing practices. The research showed that service-based networks co-create value through a dialectical system of practice. In this dialectical system, players conduct

activities related to driving collective attention, questioning daily practices, knotworking value and managing change. As practices, these components intertwine through dynamic transformations based on knowing and learning within activity. As embedded in a dialectical system, service-based networks confront contradictory relations as inner potentialities for significant transformations. *Value co-creation is a dialectical practice of resolving the contradictions that hamper mutually benefiting market interaction.* In this sense, the main aim of this present section is to specify and elucidate the significance of studying the co-creation of value as it is accomplished in a dialectical system of practice.

8.2.1 Value co-creation as activity

Co-creation of value in the context of service-based market interactions is an activity aimed at achieving mutual benefits. Nonetheless, value is difficult to articulate collectively. The diversity of focus of attention and internal contradictions increase tensions and difficulties in interconnecting activities (Engeström, 2004b, p. 161). Both the H Hospital and the C Clinic case highlighted that situated and diverging individual standpoints need to be reconciled to enable value co-creation.

a. Questioning resource integration processes

The findings indicated that actors question their daily tasks within the flow of disturbances and difficulties. The source of difficulties and disturbances is related to what is known in activity theory as ‘the primary contradiction’ (Section 5.2.2). Primary contradictions relate to contradictory relations of use value and exchange value (Engeström, 2005, p. 185). In the Tener case study, a primary contradiction emerged as the analysts needed to enable value in terms of integrating resources into functional processes of the client organisations, i.e. use value. Yet analysts had to prompt value through limiting the resources available as determined by the company, i.e. exchange value. The main tension caused by this dilemma relates to analysts confronting in their daily work multiple interests and needs causing a lack of disposition for integrating resources by the personnel from the client organisation. In the HGF case study, the primary contradiction emerged as the laboratory required integration of resources allowing functional process integration, i.e. use value. Still, the approach of a community of suppliers and partners related to the application of localised technologies, i.e. exchange value. The significant disturbance of this contradiction referred to the perception of the unproductivity of fragmented processes since automation was not integrating resources according to the laboratory’s value standpoint.

In the context of these primary contradictions, actors question the practice of resource integration and its outcomes. Through conflicts and tensions in their daily interactions, actors face the inherent contradictions of value co-creation within service systems (Section 4.3.2.). The present study observed actors reflecting upon tensions and contradictions, as well as questioning daily practices, which, in turn, created novel potentialities of integrating resources and possibilities for co-creating value. In other words, questioning unveiled situated learning paths.

The research identified the learning path to the zone of proximal development (i.e. Engeström, 1987; 2001; 2005) at Tener. For Tener, the learning path signified a way out of routines and communications supporting the idea of implementing the IT system through instructing the use of the ERP and related hardware. There was a need to understand the client's activities as integrated with the processes of Tener. The move to the zone of proximal development concerned the integration of process capacities instead of instructing the use of IT systems (Section 7.2.2). This means that resolving the primary contradiction, i.e. integrating processes (use value) instead of instructing the use of the IT systems (exchange value), would require activities for transforming the processes of client organisations. In turn, the zone of proximal development of HGF Laboratory concerned a learning path wherein the automation of processes (exchange value) could positively affect the capacity of the entire functional system (use value). The learning challenge of the laboratory represented a move from the acquisition of technology to the acquisition of process integration for the entire functional system (Section 7.4). Ultimately, these observations captured change possibilities in the direction of value co-creation.

The main force grounding resource integration is not the network of service provision by itself as Vargo and Lusch (2011) indicated. The findings indicated that resource integration stems, fundamentally, from *questioning* daily operations and activities. Questioning difficulties in resource integration and reflecting upon primary contradictions are the fundamental processes initiating learning throughout the service-based network. In the cases investigated, actors reflected upon the respective outcomes of operations and activities for resource integration.

The HGF laboratory grounded the transformational movements for integrating resources in learning within networked collaboration. The H Hospital case showed that actors engage in daily activities and interactions wherein participants question activities and

outcomes. In this sense, the findings indicated that actors engage in transformations in the direction of value co-creation by means of detecting tensions and contradictions. This engagement evolves through a specific characterisation of market interactions: *knotworking* (cf. Engeström, 2000a). The next subsection discusses the nature of service-based market interactions within multiple and divergent interests.

b. Knotworking value

Present research revealed that value co-creation is accomplished through process improvements throughout the functional system of interacting organisations. The HGF Laboratory required process integration in the entire system of activities in order to “save more lives”. The H Hospital demanded resolution of a diversity of internal and external contradictory relations in the implementation of the Naja System. In this latter case study, collective resolutions for localised contradictions affected other activity systems creating further contradictions. These findings are consistent with the view that multiple systems of activity must interconnect in order to produce services (i.e. Engeström et al., 2007; Engeström, 2000a). However, as previously mentioned, the search for improving process capacity finds difficulties as actors have different value perspectives as their focus of attention.

The findings from the fieldwork (Section 7.3) showed that actors attempt to overcome these difficulties and resolve disturbances through fast, distributed, situated and improvised encounters, i.e. knotworking (cf. Engeström, 2000). Knotworking is the fundamental activity for enabling the co-configuration of resolutions. Co-configuration refers to collective problem solving endeavours that evolve through knotworking movements (Engeström, 2004). The findings indicated that knotworking movements relate to actors’ navigation in multiple sites. Section 7.3 demonstrated the relevant movements of the analysts from Tener in the H Hospital and C Clinic cases amongst multiple interconnected activity systems as a knotworking effort of navigating in multiple sites. The service-based networks involved a vast array of other players, i.e. healthcare companies, pharmaceutical and chemical industry, consultancy firms, equipment providers, government. The participants were challenged to cope with the interactions of this diversity of players. While co-configuring resolutions, they needed to navigate through these multiple sites.

Fieldwork confirmed the proposition of Section 4.3.2., i.e. the interactional features of value co-creation concern the search for co-configuring resolutions through the continuous movements of knotworking. Knotworking grounded the co-configuration of

novel forms of resource integration that, in turn, represented new forms of using products and services and new market interactions arrangements. For example, participants in the H Hospital co-configured different ways of using the IT systems and of interconnecting networked processes. The ways the Naja System was used to insert data changed as actors, through knotworking, enhanced understandings of how to interconnect the use of the system with the integration of networked processes. Ultimately, the co-creation activity consisted of continuous transformation by means of multiple market interactions. This is consistent with the conceptual framework proposed in Chapter 4 concerning the perspective of collective resolutions in search for co-creating value. These collective resolutions stem from fast encounters that enable the envisioning of interconnecting activities.

Departing from the prior understandings of learning in the value co-creation literature (Section 3.3.1) findings observed that learning occurred within co-configuration. Instead of relying solely on internal vertical movements of adaptation and transformation (cf. Slater and Naver, 1995; Day, 1994), actors also learn through knotworking movements across boundaries, i.e. developmental transformations through horizontal movements (Engeström, 2007a; 2007b; 2004a; 2004b; 2000a). New capacities of co-configuring resolutions for co-creating value arose as knotworking evolved. The findings demonstrated that, as actors navigate in multiple sites and co-configure resolutions, they initiate the bonding of “multiple loosely interconnected activity systems” (Engeström, 2004a, p. 11). The entire case of H Hospital (Section 6.3.1.a), showed the efforts of the analyst from Tener in this direction. For example, as the analyst accomplished the co-configuration of internal resolutions in the activity system of the Intensive Treatment Unit (ITU), i.e. vertical integration within the activity system, further contradictions emerged in the pharmacy and in the prescription room. Consequently, through knotworking, the analyst needed to co-configure new resolutions that enabled the interconnection of these activity systems, i.e. horizontal integration between activity systems. In this sense, value co-creation refers to tying operations, personnel and resources vertically *and* horizontally while navigating in multiple sites.

The efforts of the analyst in the C Clinic case (Section 6.3.1.b) for integrating the payment systems also exemplified increasing capacities as interactions evolved. Through navigating and knotworking in multiple sites, the analyst uncovered the state of development of the software for integrating the Naja System with the healthcare plan. The performance of the analyst referred to tie loose knots and to co-configure

resolutions for the interconnection of activity systems. Thus, findings resonate with the conceptual framework developed in Chapter 4: the character of market interactions for co-creating value relates to activity fields (cf. Engeström and Kerusuo, 2007) and landscapes of learning (cf. Engeström, 2004a, 2002) wherein actors learn through constructing social spaces by tying knots and crossing boundaries between interacting activity systems.

Resolutions emerge from fast encounters with no particular centre. The HGF Case 1 – GIL (Section 6.3.2.), demonstrated that difficulties and disturbances guide actors to determine further interactions across departments and organisations. This means that interactions take place according to the locus of contradictory relations. Consequently, market interactions for co-creating value are distributed throughout the interconnection of multiple activity systems. Resonating with the perspective of improvising market interactions for co-creating value proposed in Section 4.3.3, the HGF – GIL case indicated that actors improvise interactions as they envision the flow of disturbances in the integration of functional processes.

The HGF Case 2 – HOSPUB (Section 6.3.2.b) also confirmed the perspective of distributed and improvised interactions for co-creating value. Nonetheless, the HOSPUB case showed that formal meetings could function as moments for negotiating divergent value standpoints and anticipating disturbances. While this finding is consistent with the view of participants engaging in collective efforts of change (Section 4.3.3) it complements the original propositions of the conceptual framework in Chapter 4 by means of adding that formal and regular meetings, as Tener also developed (Section 6.3.1) support further knotworking activities. Consequently, the character of interactions for co-creating value relates to the co-configuration of resolutions through knotworking and is supported by formal meetings.

These key findings stand in contrast with existing propositions of fixed roles and stable context currently associated with the concept of experiencing value co-creation (i.e. Prahalad and Ramaswamy, 2004; Ramaswamy, 2008). As was anticipated on the basis of the conceptual framework developed in Chapter 4, research showed that players co-configure resolutions for co-creating value in interactions with no fixed roles. Departing from prior assumptions that suppliers initiate the development of value propositions to a web of stakeholders (cf. Ballantyne, Frow, Varey, and Payne, 2011; Frow and Payne,

2011), the HGF Laboratory case (Section 6.3.2.c) showed that the customer could take initiative and propose a new business model to a network of suppliers.

All cases demonstrated that players engage in co-configuring resolutions through mutual transformations with no particular role in co-creating value. In this sense, suppliers, customers and other stakeholders are, indistinctively, “multiple collaborating producers that need to operate in networks within or between organizations” (Engeström, 2007a, p. 24). Actors engage in multiple interactions in the search for resolving difficulties related to individual and organisational value standpoints. For example, in the H Hospital case (Section 6.3.1.a) the analyst from Tener and the nurses, managers and other partners of the H Hospital engaged in interactions with the perspective of facilitating their job and enabling the efficient flow of the services amongst multiple interrelations. In sum, the notion of knotworking value balances the role dimension of value co-creation.

The next section continues the discussion of the activity of co-creating value through another relevant theme: managing change.

c. Managing change

Due to divergence and contradictions in and between systems, value co-creation is an unstable, constantly changing activity. For example, the implementation of the IT system HOSPUB (HGF case) (Section 7.3.2.b) was ultimately blocked due to intricate and far-reaching relations between the hospital and federal government. The HOSPUB case showed how the wide interconnection of activity systems could destabilise value co-creation efforts. Despite the internal struggle at the HGF hospital, the HOSPUB project had its end coming for uncertain reasons. The motives were possibly located in activity systems out of the researcher reach at that moment. Collective resolutions in value co-creation, i.e. co-configuration of value (Section 4.3.3), influence a complex system of contradictory relations. Resolutions prompt transformations that, often, actors do not predict. Tener - H Hospital is a case that exemplified a sequence of unforeseen consequences for collective resolutions. This is why, in alignment with the conceptual framework of Chapter 4 (Section 4.3.4), successful co-configuration requires continued dialogue and intervention in multi-voiced (cf. Engeström, 1995) and networked systems of activity (cf. Engeström, 2001).

The findings related to the activity of managing change support the conceptual propositions of Section 4.3.4 in two main senses. Firstly, consistent with the indication

of the need of managerial perspectives encompassing broader interconnections between activities, fieldwork observed that relevant transformations in the direction of co-creating value concern more than a limited community. Crucial change affects a diversity of interconnected organisations (cf. Engeström, 2004b, p. 161). Secondly, findings resonated with the proposition of co-creating value as a distributed and emergent practice. Research indicated that change takes place through transforming interactions between actors; the community and their respective activity (cf. Engeström, 2000c). Tener – Case 1 “H Hospital” (Section 7.4.1.a) exemplified managing change in networked and distributed activity.

Research findings departed from current models of managing value co-creation and indicated that dyadic interactions are beyond supplier-customer encounters performing dialogue, access, risk-benefit and transparency (DART model – Section 3.2.2) and require more than mapping static processes of exchange (MEP model – Section 3.2.2). Fieldwork observed that interactions between supplier and customer needed to approach the conflicting interests and construct multiple perspectives within a network of interconnected systems as exemplified by the cases mentioned earlier in this section. This observation aligns with the propositions of managing change for co-creating value developed in Section 4.3.4 wherein task oriented groups organise collective understandings and interconnect otherwise contradictory activities.

The view of organising activity in value co-creation is consistent with the epistemological foundation of approaching value co-creation through moving levels of analysis (Section 5.2.2). This approach advances value co-creation as an organising activity that is prompted by the search for resolving tasks within dyadic relations and moves to broader understandings of networked activity systems. This discussion is relevant for contributing to a view of managing value co-creation as intertwining dyadic interactions shaping localised operations for integrating resources and networked perspectives of multiple processes and interests. The following examples and discussion will show that the dyadic resolution of tasks and the networked perspective of articulating multiple interest are integral parts of managing change for co-creating value.

The H Hospital case showed that significant transformations occurred as actors intervened in localised processes with wider understandings of interconnected systems. The encounter of the analyst with the nurse responsible for prescriptions (excerpt 31)

demonstrated that key intervention in order to enable value co-creation requires understanding and acting upon integrated service systems with divergent value standpoints. The main effort of Tener's analyst referred to making the Naja System work for the entire web of interconnected organisations whilst attending to the diversity of their interests. This network included pharmaceutical products suppliers interested in selling bundles of medicines and medical appliances in packages, internal departments and rules of the hospital with the perspective of departmental processes and cost reduction, and the healthcare plans controlling and regulating payment processes to hospitals.

Besides the development of the necessary understandings for intervening in service-based and networked interactions, the encounter of the analyst and the nurse at the prescription room also confirmed that value co-creation does not/ cannot rely on managerial control (Section 4.3.4). The key resolution enabling mutual benefits for a network of players emerged within this improvised encounter, with no central control by the managers of the supplier or the client organisation. Ultimately, transformations evolved from following procedures having value as the object of collective attention (Section 8.2.1) to questioning and developing alternative contexts (Section 8.2.2.a) whilst interacting with the community involved (Section 8.2.2.b) and to finally intervening through transformations enabling the co-creation of value in the broader network of interconnected services. These observations concerning the H Hospital indicate that key efforts of managing value co-creation concerned working with complex transformations whilst supporting learning (Section 4.3.4). Fieldwork at the H Hospital revealed the difficulties of changing procedures, of integrating process and of implementing new tools and concepts.

The HGF Laboratory case was consistent with these findings and demonstrated the transformation of market interactions as intertwined with changes in the process flow of the department. In order to integrate services for the entire functional system, the Laboratory needed to change the character of market interactions. This changing effort comprised new forms of product and equipment provision that needed to change focus to the service of producing exam results. In addition, the Laboratory modified internal procedures and integrated new resources within the flow of procedures. The software enabling integration between equipment producing exam results and the process of controlling the origin and delivery of exams was key for prompting value co-creation. In the HGF Laboratory, actors performed the exploration of possibilities for co-creating

value through envisioning and managing novel contexts of interactions between tasks, individuals and tools.

The conceptual proposition regarding value co-creation as managing change in the theoretical framework of Chapter 4 anticipated managing value co-creation as an organising networked activity. Section 4.3.4 applied the fundamental tenets of perspective shaping, perspective taking and perspective making (i.e. Boland and Tenkasi, 1995) for articulating multiple divergent interests within the transformation of networked activity (cf. Blackler et al., 2000). Research findings showed that, in order to construct mutually beneficial market relations, players manage multiple perspectives through shaping future interactions, taking authority and influencing relationships, and making present arrangements of roles and contributions.

The fieldwork observations aligned with the theoretical propositions of the thesis in relation to the *perspective shaping* tenet. The H Hospital and CL Clininc cases from Tener and the Laboratory case from HGF exemplify the shaping of perspectives for articulating interests and organising interconnected activities. The findings identified players idealising new market interactions, projecting the use of new resources and formatting a new business model for a network of suppliers and partners (Section 7.4.3.a) HGF Laboratory case. At the H Hospital (Section 7.4.1.a) the analyst from Tener and the nurse responsible for controlling prescriptions managed the particular interests of multiple players by shaping and adapting the features of the Naja System. In turn, the consultant at the CL Clinic, Section 7.4.1.b, identified the possibilities of enhancing the production of managerial reports through the Naja System and consequently established new priorities. These findings confirm that managing value co-creation relates to constructing new possibilities, to applying new resources and to establishing priorities shaping the perspective of interconnected actors.

Regarding the concept of *perspective taking*, the HGF Laboratory encountered ways of influencing the relationship with the community of suppliers by establishing the opportunity of increasing business and by alliancing with the software provider (Section 6.4.3.a). In the HGF Laboratory case, the software supplier and the laboratory shared common standpoints through communicating a business model that influenced other organisations in the direction of their notion of value, i.e. saving more lives through improving processes. Section 6.4.4 showed that the perspectives of the client organisation, i.e. the laboratory, and the software supplier were in accordance with one

another. This mutual understanding allowed them to achieve the desired outcomes and manage value co-creation.

Finally, the fieldwork observed organising efforts within the network of diverse interests through the concept of *perspective making*. The encounter of the analyst from Tener with the nurse responsible for prescriptions (Section 6.4.1.a), exemplified how actors alternated contributions for enabling the integration of processes throughout the web of activity systems. The nurse described the process requirements and the analyst explained how the software system could integrate the processes. In this encounter, actors also set the priorities for future developments (*perspective shaping*). While actors searched for establishing mutual benefits to a network of players, they engaged in communicating contributions (*perspective making*) and priorities (*perspective taking*) in line with the concept as proposed in Chapter 4. The HGF Laboratory case confirmed that managing change for co-creating value concerns articulating multiple contributions and priorities. As the laboratory set the priorities regarding a new business models for integrating automation in its entire functional system, the software provider of the HGF Laboratory (Section 6.4.3.a.1), determined its contribution by focusing on service system through stating that its “[business] is not about technology”.

These observations resonate with the proposition that managing change relates to communicating about and representing the past, present and future (cf. Boal and Shultz, 2007) through perspective taking, perspective making and perspective shaping (cf. Blackler et al., 2000). More important, the empirical findings confirm the relevant application of this framework for enhancing our current understandings of managing value co-creation and advances a fresh approach for organising service-based networks. Managing value co-creation therefore refers to organising network activity in the direction of changes enabling mutually benefiting services through articulating multiple perspectives. In addition, the research indicates that the articulation of networked perspectives encompasses the flow of dyadic interactions and the construction of alliances. Through intertwining dyadic interactions and the formation of alliances, the supplier and customer advanced the perspective of networking possibilities and potentialities. In this sense, value co-creation related to an organising activity of articulating diverse perspectives in order to enable mutual benefits to a web of players and, yet, integrating resources in each task, operation or process. This effort, involves development in terms of knowing and learning. The next section discusses the

perspective of value co-creation as a dynamic and integral constitution of knowing, learning and practice.

8.2.2 Value co-creation as practice

This study has found that value co-creation in the service-based business interactions is a fluid, complex, decentred, distributed and dynamic form of organising. In this sense, value co-creation relates to improvised forms of integrating resources as embedded in daily tasks and routinized operations. Co-creating value is also the production and reproduction of shared understandings intertwined with material relations. However, value co-creation is about people and processes as well as networks and structures. This means that, in spite of the contradictory relations and the consequent struggles that contradictions originate, cultural structures of conceptual tools and instruments in use, as well as existing roles and relations, constitute relevant sources of resistance in the direction of reversing to prior means of activity.

Co-creating value results from the mutual constitution of situated action and social beliefs. In the cases researched, this mutual constitution occurred through the activities of questioning daily practices, knotworking value and managing change. In sum, value co-creation occurs in a field of practice wherein “knowledge, meaning, human activity, science, power, language, social institutions, and historical transformation” (Schatzki 2001, p. 2) take place. The research showed that interactions of service-based and networked business relations concerns routines of navigating in the practice field, of producing and reproducing tools, instruments and concepts, of searching for resolving difficulties, dilemmas and disturbances, and of describing, understanding and developing roles, rules and community involvement.

As a field of practice, value co-creation is a domain of the marketplace wherein the organisation of players and the rules played support practices of co-configuring mutually beneficial interactions. However, as this domain of rules and roles permeates a dialectical system, this organisation is not/ cannot be enduring or stable; neither are there fixed roles and relations. In addition, the C Clinic case and the Laboratory case demonstrated that within the co-configuration of mutually benefiting service-based relations coexist unequal partnerships and manipulative coalitions. The diverging nature of individual interests and the inherent contradictions that permeate activity make value co-creation an ever changing and provisory phenomenon. Paradoxically, capturing

value co-creation requires an understanding of the enduring and bounded activity systems wherein collaboration and struggle occur.

Value co-creation is a knowledgeable performance that takes place within ongoing action. The movements of participants and the interactional moments described in the research indicated that knowing to co-create value refers to accomplishing situated performances in the practice of daily market interactions. This means that value co-creation is about knowing to produce continuously the dynamic interactions necessary to co-configure resolutions. In other words, knowing to co-create value concerns knowing to navigate in and between activity systems whilst tying knots and interconnecting otherwise contradictory relations and activities. In turn, the co-configuration of resolutions regards conveying mutual benefits to a community of interrelated players. Knowing for value co-creation in practice concerns the distribution and redistribution of tasks and tools as well as roles and rules in such way that allows mutually benefiting relations. Ultimately, knowing to navigate in multiple sites and to translate and negotiate diverse value standpoints is crucial to prompting value co-creation.

Learning intertwines with knowing and underpins change (Gherardi and Nicolini, 2000). Fieldwork demonstrated that, knowing to navigate amongst multiple sites interweaves with learning to locate people, competencies and disturbances. The C Clinic (Tener) is an exemplar case of the interplay of knowing and learning while navigating amongst multiple sites (Section 6.3.1.b). In this case study, the analyst from Tener had prior misconceived inputs about the resources to be integrated, i.e. the Naja System with the healthcare plan payment system. While moving amongst diverse partners, the analyst developed new understandings of the requirements and challenges for integrating the specific resources. The Tener analyst learned about who the key partners were, what difficulties existed, and initiated a collective learning of the necessary competencies for resource integration.

The observation of specific learning movements in Chapter 8 aligned with prior research indicating vertical movements across individual and collective levels of activity (cf. Engeström, 2000a), and horizontal movements between systems of activity, (cf. Engeström, 2000a). As the H Hospital and the CL Clinic cases showed (Section 6.4.1) vertical movements within activity systems consisted of continuous performances of knowing and learning how to integrate resources in situated interactions. In turn, the

HGF Laboratory case (Section 6.4.3) demonstrated that horizontal movements between activity systems allow the transformation of interconnected functional systems. All cases indicated the combination of vertical and horizontal learning movements with more emphasis on one or the other.

The study departs from prior propositions in value co-creation theory viewing knowledge as skills (cf. Paulin and Ferguson, 2010) and learning as static capabilities of transformation (cf. Ramaswamy, 2008). The indication of knowledge and learning as practical elements of co-creating value in Section 4.3.5 prompted investigation of the dynamic processes for transformations. The present research indicated reflecting, identifying, resolving, reverting, feeling, implementing and consolidating as a knowing and learning process of translating practices that lead to value co-creation. *Reflecting* refers to questioning, criticising or rejecting common practices and understandings (cf. Engeström and Sanino, 2010; Engeström, 2001). *Identifying* relates to analysing “systemic relations” that involve the search for understandings of evolving problems and potentialities for change (Engeström and Sanino, 2010, p.7). In addition, the fieldwork revealed that actors also analyse the *locus* of disturbances (i.e. function, department, organisation) for engaging in further interactions. *Resolving* concerns the dissolution of contradictory relations in and between interconnected activity systems (Engeström, 1996). In *reverting* practices, actors can regress to former concepts and reintroduce well-known practices in a movement of resistance grounded on the perception of diverging interests (e.g. Groleau, Demers, Lalancette, and Barros, 2012). *Implementing* refers to the application of new procedures related to novel models representing the use of conceptual improvements in practice (i.e. Engeström and Sanino, 2010; Engeström, 2001). *Consolidation* is a movement of stabilising the implementation of novel patterns of activity (Holt, 2008; Blackler et al. 1999).

Actors used the manifestation of their emotions and *feelings* while interacting and learning. This finding aligns with Vygotsky’s (1978) theory evidencing that “emotion [...] is integral to action” (Roth, 2007, p. 43). Actors engage in the workplace through actions and emotions as an integral element of activity (Roth, 2007). In this sense, emotions are constituents of the practice of value co-creation. Despite prior acknowledgement of “thinking, feeling and doing as an integral part [of customers] in value co-creation” (Payne et al., 2008, p. 87), this present research contributes to a novel understanding of the role of emotions for co-creating value. Emotions permeate interactions, activity and learning related to value co-creation. The findings indicate the

presence of feelings related to suffering, passion, relief and confidence. Participants expressed feelings as they engaged in interactions, obtained responses from other actors and sought to drive the outcomes of market interactions. The practice for value co-creation refers to ideal forms, aspirations and motivations or desires (Dakers, 2011) that can be directed by emotions and feelings (Kaptelinin and Nardi, 2006, p. 66).

The next section explains how driving collective attention, questioning resource integration, knotworking value and managing change integrate in a dialectical system and bind through knowing and learning in practice.

8.2.3 Value co-creation as a dialectical system: value-in-practice

a. Value-in-practice

Chapter 4 introduced a conceptual framework in order to build a new theoretical perspective on value co-creation. The proposition of *value-in-practice* allowed further understandings of the contextual nature of value in co-creation. These conceptual advancements related to the changing nature and tensioned features of contextualised and situated value. The concept of value-in-practice grounds a fresh perspective concerning the constitution and reconstitution of value within the flow of interactions and tensions. Thus, through introducing the concept of value-in-practice, the framework of Chapter 4 established new foundations related to contradictory relations, cultural grounds and on-going transformations for the current view of the circumstantial character of value. These foundations encompass to the dynamics of interacting with diverse points of view whilst seeking to determine the focus of attention and motive of collective activity, i.e. the object of activity.

Prior studies related to the concept of value-in-context (Section 2.2.2), placed the transformational character of value as embedded in the acquisition of capabilities. Fieldwork observations departed from this previous idea and captured the changing nature of value as actors strived to share a collective notion of provision and acquisition of benefits whilst acknowledging a diversity of individual perspectives. The studied cases indicated that this interplay of individual and collective standpoints underpins changes through the search for delineating value.

The fieldwork demonstrated that actors make every effort to draw other actors' attention to their desired notion of value. It was also observed that the formation of a collective notion of value arises from the interpretation of diverse perspectives. Because of the differences in perspectives, interaction and interpretation occurred while actors

attempted to drive the collective focus of attention. As the conceptual framework in Chapter 4 proposed, the focus of practice in co-creating value is potentially conflicting. Routines of communication embed power relations and political action (Macpherson and Jones, 2008). The determination of actors to influence and regulate collective attention originates political action of deceiving, misguiding and alliancing.

For example, in the C Clinic case, the analyst and one of the partners constructed an alliance based on personal interests that they had in common. These actors disguised their personal interests while advocating the need of hiring personnel for inserting data. The partner did not want to use the ERP in her daily tasks while the analyst did not want any delay in installation the software system. They consequently shared the resolution of hiring someone to perform the data insertion task, despite the undesirable consequences for their companies.

In order to capture more fully the fluidity of value in the practice of service-based business interactions, it is important to discuss the findings of the present research in contrast to the view of stable networked relations. Fieldwork identified evolving practices and changing patterns of market interactions as grounding value within a co-creation context. This indication represents a departure from the mainstream ideas related to static social structures (e.g. Edvardsson et al., 2011; Vargo, 2009; Williamson, 2000; North, 1992, p. 9; Granovetter, 1985) shaping market interactions (Section 2.2.2).

All of the existing standpoints related to social structure in value co-creation theory are based on the problematic understanding of value as shaped in the context of stabilised market arrangements, i.e. the notion of value-in-context (cf. Gummesson and Mele, 2010; Vargo, Maglio and Akaka, 2008). Chapter 4 proposed that value delineation is a fluid and transient phenomenon (Section 4.3.1). Resonating with this proposition, findings indicated that value is an idea under continuous construction within which actors collectively interact through fast movements in order to resolve contradictory relations. However, it is equally important to note that the journey to the accomplishment of value co-creating interactions concerns a great amount of resistance and possible reversions. This is because the structure of relations, shared beliefs and existing value arrangements involving benefits and interests tend to block the perceptions for new conceptualising tools, instruments and novel relationships that ground the potentialities for co-creation.

b. The dialectical system

The fieldwork showed that value co-creation is a collective activity embedding artefacts, roles, rules and a mediating community. Value co-creation was an integral function of these mediational elements. In consonance with the proposition of seeing value as an object of activity (i.e. Engeström, 1999; Miettinen, 1999) as indicated in the conceptual framework in Chapter 4, this research captured the object of activity, i.e. value, as emerging through individual operations, group actions and collective activity. Therefore, the nature of value, as fieldwork demonstrated, relates to the intertwined combination of individual perceptions, interactive experiences and cultural tools and concepts.

Value co-creation is the result of a collective practice involving interacting activity systems. This understanding departs from previous research approaching ways of co-creating value through adapting patterns of collaboration in platforms of engagement (e.g. Ramaswamy and Gouillart, 2010). As findings indicated, value co-creation is about transformations occurring through learning as an integral part of practice and of knowing in action (cf. Orlikowski, 2002; Gherardi, 2001; Lave, 1993). Instead of adapting patterns, present research captured significant transformations stemming from conflict and collaboration within multiple inter-organisational interactions (Engeström and Kerosuo, 2007). Contradictory relations in a dialectical system are fundamental factors originating change in subjective, interactive and collective practices and understandings.

As a dialectical system, value co-creation embeds the social context of roles, rules and relations (Section 5.2.1). A dialectical system of practice grasps the material world producing and reproducing social interactions (Roth and Lee, 2007; Miettinen, 2004; Stetsenko and Arieivitch, 2004). In this study, the social interactions, mostly concerning market interactions, involved the use of IT systems and equipment. At the same time that these material instruments potentially allowed value co-creation, they caused disruptions in interactions that hampered operational integration. With the use of new material tools, new concepts and new interactional patterns needed to emerge. In the cases studied, value co-creation could only emerge through intertwining the transformation of social interactions, in terms of processes and relations, with the implementation of a novel material environment. This means that value co-creation is beyond integrating exchange processes (cf. Payne et al., 2008), enhancing customers' processes (cf. Gummesson and Mele, 2010) or the creation of platforms for engaging

customers (cf. Prahalad and Ramaswamy, 2004). Value co-creation is the result of the on-going constitution and reconstitution of market interactions intertwined with the use of tools and concepts.

Dialectical relations entail inherent contradictions in activity systems (Miettinen, 2004). Value co-creation, as a dialectical system of activity, is inherently contradictory. The research revealed that value co-creating activities within market interactions embed contradictory elements, i.e. communicating-doing; constraint-possibility; divergence-collaboration; dyad-network; horizontal-vertical movements. Thus, value co-creation results from the dynamic interaction of these components as integral parts of each practice. Jointly, the contradictory components allow understanding of their mutual effect on practices underpinning value co-creation (table 13).

Contradictory element	Practice	Contradictory element
<i>Constraints</i> in resource integration allow envisioning possibilities	Questioning daily practices	<i>Possibilities</i> allow perception of further constraints
<i>Divergent</i> perspectives underpin struggles in rapid and decentred interactions	Knotworking value	<i>Collaboration</i> underpin mutual support and fast moving negotiations
<i>Dyadic</i> interactions shaping localised operations	Managing change	<i>Networked</i> perspectives of multiple processes and interests
<i>Vertical movements</i> of translation and negotiation within localised processes and operations	Knowing and Learning	<i>Horizontal movements</i> of translating and negotiating amongst interacting activity systems of different players

Table 13 The dialectical system of value co-creation

Table 13 resumes previous discussions presented in this section. Value co-creation is resultant of routines and communication, which translate interests and desires for driving collective attention. Internal contradictions in the activity systems of players hamper resource integration. Developmental possibilities for integrating resources emerge from questioning and reflecting upon these contradictions. Interactions evolve through knotworking and go forward by articulating diverging perspectives and by collaboration for co-configuring resolutions representing this diversity of interests at stake. Value co-creation management initiates transformations through intervening in the taking, making and shaping of networked perspectives and interests. Ultimately, these features individually and as a system constitute the attributes of practice for

allowing and enabling value co-creation. The indications of the knowing character of these attributes and the learning path through vertical and horizontal movements within which players go by unveiled the value co-creation field of practice.

The practice of questioning daily practices contributes a fresh view of internal contradictions hampering meaningful resource integration and originating questioning of participants about daily practices, which, in turn, lead to novel possibilities of development. The practice of knotworking value develops novel understandings of market interactions as evolving through the co-configuration of resolutions, which is based on multiple and rapid negotiations embedded in political action and alliances wherein diverging personal interests intertwine with organisational collaboration. The practice of managing change refers to a new proposition for viewing value co-creation management as initiating transformations toward the zone of proximal development through communicating and coordinating managerial interventions in terms of perspective taking, making and shaping. Significant change of market interactions can occur through dyadic relations with no control as well as through networked interactions forming alliances and coalition. Finally, the framework indicates a fresh understanding of knowing and learning as central aspects with especially great power to transform the four enabling features for value co-creation into mutually dependant practices. Knowledge and learning permeate and bind the entire process of value co-creation. In sum, the practices and the respective contradictory relations contribute to a fresh understanding of value co-creation as changing interactions grounded in multiple interests and energised by disturbances, dilemmas and tensions of inherently contradictory service-based networks (figure 40).

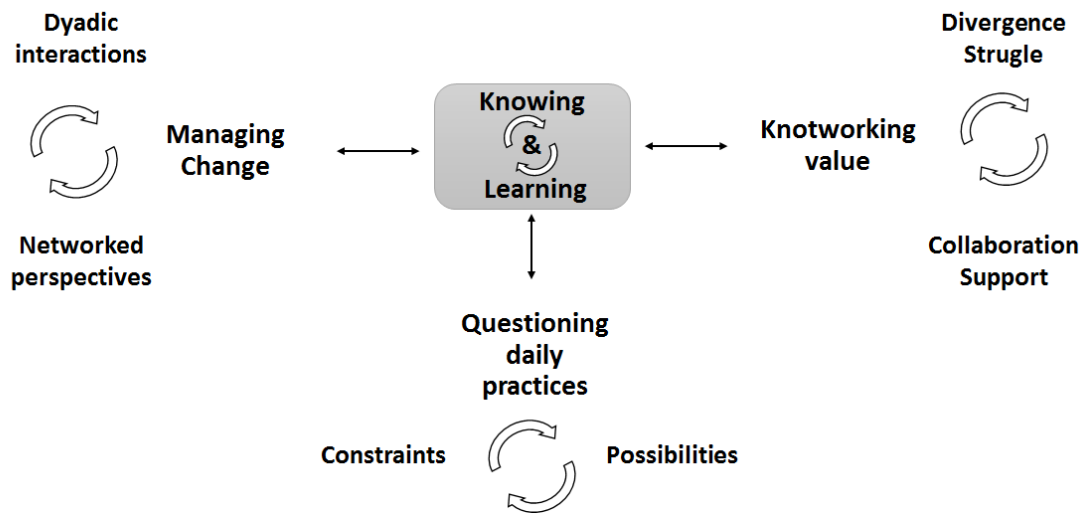


Figure 40 Value co-creation as a dialectical system of practice

The dialectical nature of value co-creation determines the continuously changing patterns of market interactions. In turn, mutually influencing character of value co-creating practices stems from its systemic formation. A dialectical system concerns the interplay of mutually influencing elements (Van de Ven and Poole, 1995; Orlikowski, 1992). The practices in figure 40 are in mutual influence. This means that actions in one practice have systemic consequences for the others. For example, the interplay of managing change while knotworking value. In H Hospital, the analyst from Tener navigated through a diversity of departments in trying to resolve the encountered disturbances, i.e. she was knotworking. These movements of negotiation in rapid and decentred interactions (Engeström, 2004; 2000) permeated the diverging perspectives and interests. The main effort of the analyst concerned shaping localised operations through bringing networked perspectives of multiple processes and interests into dyadic interactions. These localised operations regarded knotworking value whilst changing daily tasks and processes. In turn, the activity of knotworking value underpinned the management of changes that had consequences in the integration of the network of activity systems. Ultimately, the H Hospital case demonstrates that knotworking value and managing change are two inseparable mutually influencing activities.

The advancements of understanding value co-creation as a dialectical practice disclose further developments in value co-creation theory that have been, thus far, overlooked or underexplored. Current theory regards change in the direction of co-creating value as a process of mutual transformation through communication for engaging customers

(Prahalad and Ramaswamy, 2004) and through creating patterns and metrics of networked alignments and exchanges ((Nenonen and Storbacka, 2010; Payne et al., 2008). Despite acknowledging the complexity of networked services (e.g. Gummesson, 2006) and the influence of a diversity of interests (e.g. Gummesson and Mele, 2010), contemporary frameworks do not advance managing change beyond the problematic paradox of controlling and collaborating, which does not explain how to control collaboration in the context of diverse value standpoints.

Through the dialectical-practice view of value co-creation, the study prompts the perspective of the fluid, decentred and emergent form of organising that characterises management and market interactions in service-based networks. Consequently, the dialectical system of practice approaches the origin of change through localising the on-going flow of transformations as stemming from the inherent contradictory relations of activity systems. More importantly, the framework advancing value co-creation as a dialectical system of practice addresses the crucial issue of the diversity of interests through the practices of knotworking and organising networked activity. The practice of managing change approaches the divergent interests embedded in service systems through shaping localised operations and articulating networked perspectives of multiple processes and interests.

Ultimately, viewing value co-creation as a dialectical practice advances the key role of knowledge and learning for co-creating value. Departing from prior understandings of knowledge and learning relying on skills and experiences (e.g. Paulin and Ferguson, 2010), the framework of a dialectical-practical system assumes knowing and learning value co-creation as tying the practices (figure 40) as difficulties and resolutions flow within departmental, organisational and market interactions. In effect, knowing and learning are the conduits for management to enable value co-creation as an integral part of the constitution and reconstitution of market interactions.

8.3 Contributions and Limitations of the Study

8.3.1 Contributions to value and value co-creation studies

Value co-creation is at the centre of current studies approaching market interactions as a service-based activity. The dynamic and complex nature of the market originated the need to investigate the co-creation of value as contextual (Vargo and Lusch, 2004; 2008), based on resource integration (Grönroos, 2011; 2008) and performed through suppliers' facilitation (Payne and Frow, 2011) and customers' experiences (Prahalad

and Ramaswamy, 2004; Ramaswamy, 2008). This present study approached and researched value co-creation in relation to practice and change. Findings indicate that value co-creation in networked service-based interactions concerns daily operations and communication, reflections upon difficulties and potentialities, and multiple fast and distributed negotiations. These indications provide additional understandings to current notions of the conceptual, i.e. value-in-context, procedural, i.e. resource integration, and interactional roles, i.e. facilitating and experiencing, dimensions of value.

Value-in-practice

The perspective of value-in-context grounds the situational and circumstantial features of the value concept. In co-creation, value cannot be grasped in isolation to its environment (Frow and Payne, 2011). The present study identifies the dynamic nature of value in the context of co-creation.

Previous studies emphasised the structures of fixed transactions in the market (e.g. Edvardsson, Tronvoll, and Gruber, 2011; Vargo, 2009) making it difficult to approach value co-creation as a transformative practice. The contribution of seeing value-in-practice relies on the explanation of evolving notions of value in the direction of co-creating value. Value is contextual to the practice of expanding resource integration, co-configuring through knotworking and managing the integration of functional systems through multiple levels of activity and relationships.

Expanding resource integration

Resource integration exerts a central role in co-creating value. Through integrating resources, players allow mutual benefiting interactions (Gummesson and Mele, 2010; Vargo, 2009). Current literature indicates that resource integration concerns collaboration and mutual support for combining and assimilating key operant resources, i.e. knowledge, skills and capabilities (Grönroos, 2011; Vargo et al., 2008; Lusch and Vargo, 2006). Present work explores the difficulties for resource integration showing that tensions, disturbances and dilemmas are also crucial elements for co-creating value. The approach to these elements prompt observation to the questioning of daily practices surrounding resource integration.

The investigation related to Tener and HGF Laboratory cases showed that systems of activity present internal contradictions. While performing daily tasks, these contradictions surfaced in operational difficulties for integrating resources. As actors questioned routine and concepts blocking resource integration, they idealised

potentialities for new processes and novel market interactions arrangements. This study contributes to current tenets related to resource integration through advancing the understanding of complications permeating value co-creation. Ultimately, the present work identifies that co-creating value is initiated through overcoming contradictions blocking resource integration by means of questioning daily practices and initiating reflection on potentialities.

Co-configuration through knotworking

Value co-creation theory proposes that value results from fixed roles and relations in the market. Current works on value co-creation place value as a customer experience (Prahalad and Ramaswamy, 2004) wherein the supplier facilitates the creation of value by the customer (Grönroos, 2011). This present work contributes with a dynamic view of alternating roles and changing relationships for co-creating value. The findings of the present research point out that suppliers and customers facilitate and experience value together. In contrast to current propositions, the fieldwork reveals that the customer is not the exclusive creator of value through experiences. Suppliers are not the only source of facilitation either. In the investigation of all cases, the fast moving interactions alternated roles of facilitation. In turn, value could only be collectively experienced.

The HGF Laboratory exemplifies a client organisation facilitating resource integration. The facilitation occurred through initiating a new value perspective and through searching for changing processes and patterns of market interaction. Another example of value facilitation from other players refers to the role performed by the consultancy in the case of CL Clinic. In fact, the consultant made the crucial decision of implementing the Naja System in its full. This decision happened when the consultant and the personnel from the clinic went, *together*, through a negative experience of using parallel instruments of analysis and control. As a final example, the C Clinic case demonstrated that for co-creating value in the payment system there was the need for a collective facilitation of resource integration. The facilitation that included the client with clearer resolutions upon internal responsibilities and the healthcare plan for making the system available. In addition, the partner of the healthcare plan needed to resolve technical issues of communication protocols. The supplier of the IT system, Tener, needed to include the automated communication in the Naja software. The ultimate experience of value in the co-creation of this integrating resource would only be achievable through a collective and integral experience amongst all players.

In indicating that value is constructed, facilitated and experienced collectively, the present study contributes to a novel perspective for understanding value co-creation as a co-configuring practice. As such, value co-creation theory can advance the dynamic movements of collective resolutions prompting the development of new tools and concepts. In this sense, the present work contributes to approaching the mediating instruments regarding the material relations for integrating resources as knotworking. These movements of knotworking concern, as research showed, rapid, decentred and distributed interactions of individual and collective translation and negotiation with no fixed role. Thus, co-configuration through knotworking initiates a novel proposition for understandings of suppliers and customers roles. Present study advocates that this new approach is more appropriate to the contemporary view of value co-creation as a dynamic interplay of suppliers, customers and other partners.

8.3.2 Contributions to management research

This research approaches daily difficulties and conflicts in service-based market interactions. The study demonstrates that managing value co-creation in service-based market interactions regards articulation of multiple divergent interests at the same time as resolving contradictory relations. This acknowledgement of conflict and disturbances provides an alternative perspective to current problem-free approaches to value co-creation. Consequently, this research surfaces novel theoretical understandings for aligning interests and resolving difficulties in resource integrations. Firstly, managing co-creation is beyond open communication as indicated in the DART model (Prahalad and Ramaswamy, 2004). The research showed that managing value co-creation involves articulating and translating diverging interests into collectively shared benefits. All cases demonstrated that the challenge is to translate and articulate multiple standpoints within a context of misgiving information, disguised interpretations, coalitions and struggle.

The present study contributes to exploring value co-creation management in this way through indicating the interplay of distributed dyadic interactions resolving daily difficulties for resource integration with networked alliances articulating individual and collective interests. This novel perspective provides important directions for exploring bottom-up and top-down mechanisms for co-creating value through change. Fieldwork observations indicated that managing change regards not only transforming processes and operations, but also integrating functional systems as a whole. The cases demonstrated that changing localised processes causes further difficulties in other

activity systems. The H Hospital case showed that effective operational transformations must envision the entire systems of interconnection of activities. The HGF Laboratory case demonstrated that alliancing articulates mutual benefits and stabilises transformations.

This study complements current views on managing value co-creation through a process of organising and networking. The research captured the construction of mutual perspectives as performances of translating and negotiating multiple interests. The Tener analyst in the H Hospital performed translation and negotiation through negotiating new processes at the operational level that could translate further needs for interconnecting the network of activity systems. The fieldwork also revealed the determination of participants' contributions and support for constructing the perspective of mutual benefits. The HGF Laboratory constructed an alliance with the supplier that contributed to the integration of processes and shared the perspective of a new business model that could leverage production capacity, i.e. the software firm. The other suppliers, needed to accept integration with the software and contribute to integrate the entire functional system of the laboratory. The following section refers to the knowing and learning elements that permeate management and changing market interactions.

8.3.3 Contributions to knowledge and learning perspectives in value co-creation

This study contributes to a view of knowing and learning within the transformations prompting value co-creation. The research showed that service-based market interactions are always changing. This indication allowed a perspective of value co-creation as an evolving practice in an intrinsic relation with knowing and learning. Consequently, actors know, do and learn as interactions evolve. Findings demonstrated actors in simultaneous actions of knowing to navigate and interact in multiple sites and of learning to direct further movements and interactions within the emergence of further difficulties. The movements of the analysts of Tener in the H Hospital and C Clinic exemplified the practice of value co-creation in these terms. In this sense, the research unveiled the dynamic process of vertical and horizontal movements within and between activity systems.

A key contribution of this present study lies in reconciling knowledge and learning with the dynamic practice of value co-creation. Value co-creation is a continuously changing practice involving the production and reproduction of contradictory elements in a dialectical system (figure 40). Thus knowing and learning in the practice of value co-

creation entails knowing and learning as transformations evolve. Alongside this fresh understanding, present research provides novel explanations of how value co-creation practice evolves as an integral part of knowing and learning. In this respect, the main contribution lies in enabling understanding of the complex movements of actors within which they produce new understandings, practices and capabilities. Difficulties and disturbances guide actors' moves, while knowing and learning where to go, what to do and how to resolve difficulties occur as an integral part of this movement.

8.3.4 Methodological contributions

The present research applied ontological and epistemological foundations that signified novel ways of approaching value co-creation. The grounds of an ontology based on the dialectical materialism of practice allowed fresh understandings of the changing nature of co-creating value. As a result, it was possible to capture the continuous transformation of service-based interactions as grounded in practices that are fundamentally contradictory (table 13). In addition, the epistemological grounds of developmental work research allowed the development of understandings of the contradictory relations that permeate service-based interactions. These contradictions related to divergent processes and value standpoints within and between activity systems. Thus, the use of developmental work research enabled fresh understandings related to contradictions in multiple analytical levels, i.e. tasks, actions and activity. Moreover, the "interview to the double" method allowed uncovering the normative aspects surrounding practices. In this sense, the "interview to the double" enabled grasping the the formation of value as a collective notion. In sum, the use of a fresh methodological approach for researching value co-creation allowed novel insights and contributed to new understandings concerning the co-creation of value.

8.3.5 Contributions to practice

Value co-creation is a transformational approach. Nonetheless, practitioners have scarce indications of how to manage these transformations and transpose difficulties for changing processes and market interactions. This work provides a model for managing mutual process transformation, interconnecting functional systems and transforming networked service-for-service business relations. The model concerns aspects related to daily difficulties, process integration and management, and knowing and learning value co-creation. Figure 41 shows these aspects in terms of key practices. Figure 41 is a normative model similar to a roadmap for value co-creation. However, the illustration demonstrates that value co-creation is not about a linear process or a closed loop route.

Value co-creation is an inter-related and all-embracing practice of interacting in the market.

Ultimately, players can only achieve value co-creation collectively. To do so, suppliers, customer and partners essentially act on the grounds indicated in Figure 41. Above all the contribution of this model relies on the recognition of the central role of the practice of co-creating value as knowing and learning. This acknowledgement unveils that value co-creation stems from acting upon continuous novelty. It takes knowing to translate and negotiate diverging individual and collective interests. Value co-creation is also a practice requiring knowing to overcome situated difficulties whilst navigating and exploring multiple sites of a diversity of players. This navigation underpins interactions for learning immediate and broad contradictions, as well as the respective possibilities and resolutions. It takes knowing and learning value co-creation in practice to identify further disturbances, resolve underlying contradictions and allow significant transformations in functional processes and market interactions.

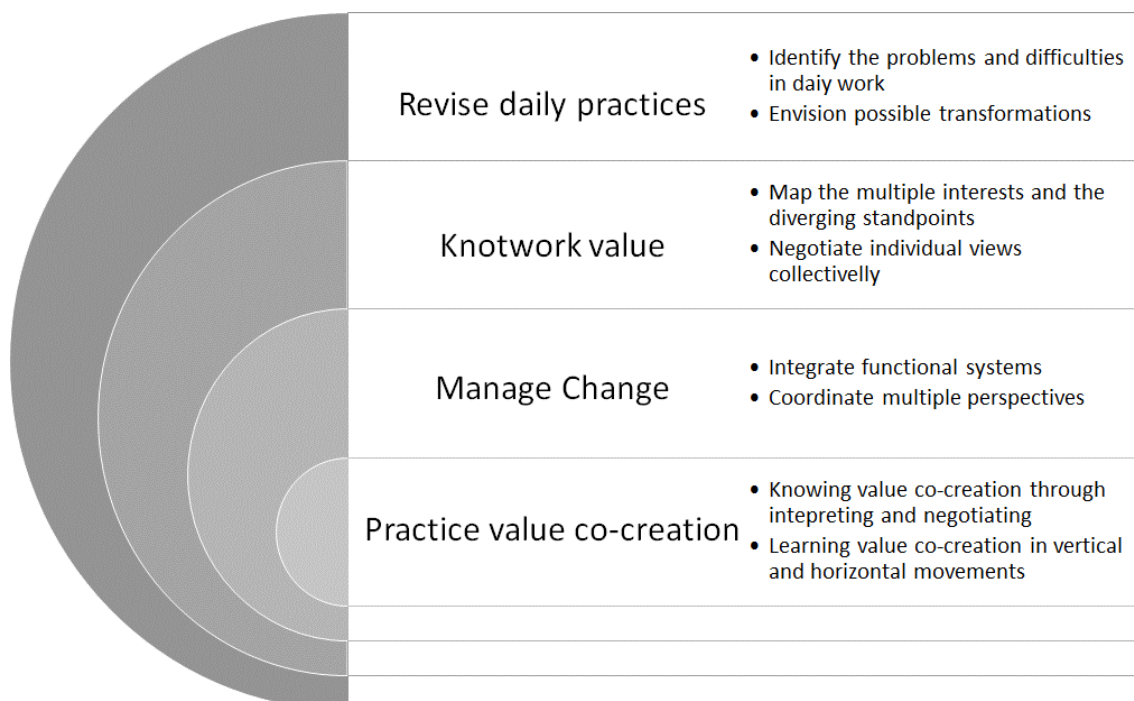


Figure 41 Value co-creation in practice

Here are the contributions of each practice that intertwine as integral elements of knowing and learning in the model. These contributions can be reflected in strategies and policies for supporting value co-creation.

- *Processes and structures.* The main contribution of this study with regard to strategies related to organisational and inter-organisational processes and structures relates to dealing with problems. In co-creating value players should search and find difficulties and disturbances, not ignore them. More important, players must translate individual and localised difficulties in collective reflection. Thus, the strategy is to identify and reflect upon difficulties in daily work and routinized processes in market interactions. To do that, players can structure regular internal meetings prompting discussion and reflection upon difficulties; seek out the locations with the most difficult problems; interact in multiple sites and envision alternative processes and relations.
- *Network.* Which actors to interact with for each distinct disturbance is amongst the most important decisions in co-creating value. A service-based network can have different situated disturbances for distinct conflicting interests. Ultimately, the co-creation of value occurs in these multiple locations and interactions. It is in this diffused and scattered distribution of routines where actors attempt to integrate resources that key interactions for co-creating value take place. This is also, where critical negotiations and interpretations occur. These situated negotiations must support value co-creation in the sense of envisioning mutual benefits. Otherwise, players will rely on individual standpoints and interests. Finally, there are no fixed roles or pathways amongst suppliers, customers and other partners. Actors at all levels must move and engage in multiple, dynamic and distributed interactions.
- *Management.* Value co-creation involves coordinating multiple and separated processes, translating diverging interests into collective perspectives and creating tools for supporting the integration of these processes and interests. Coordinating value co-creation does not and cannot ensure stabilisation. Value is a dynamic entity in continuous formation. While co-creation can achieve mutually benefiting processes and market relations, it involves changing elements and concerns alternative possibilities for uneven value distribution. The co-creation of value requires full integration of functional systems that are always changing. Participation of multiple players entails the constant

emergence of individual perspectives colliding with collective standpoints. Managing value co-creation relates to this constant search for integration of diverse processes and perspectives. Two main strategies arise from this insight. Firstly, managers must let the operational level conduct situated co-creation amongst immediate disturbances and support the envisioning of broader interconnections. Secondly, managers need also to construct alliances that can ensure value co-creating market interactions. These alliances should block individual attempts at value exploitation.

- *Capabilities.* To co-create value an organisation needs capable partners in terms of resource integration. Each player has a vital role in engaging in interactions and, consequently, in making its internal systems a better environment for co-creating value. In order to conduct transformations towards value co-creation, players must recognise the need to envision potentialities and grasp the pathway to achieving them. In order to do that practitioners need to take daily dilemmas seriously, seek out contributions from multiple perspectives and source resolutions from multiple partnerships. Practitioners need also to be aware of the emotional implications of change in market interactions. Emotional signs of distress can indicate that disturbances have affected people to a point where they have started feeling the need to engage in resolutions. In these extreme moments of distress, actors eliminate resistance to transformation and search for creating mutual confidence and collaboration. Feelings of enthusiasm and passion for implemented processes and tools also indicate a moment of stabilisation and perceived success in resource integration.

In sum, the contribution of this work to practitioners refers to indicating that value co-creation is not bounded to experiences. Value co-creation is beyond dialogue and interaction. Value co-creation is a continuous practice. Therefore, it is a continuous mutual transformation of people, things and activity.

8.3.6 Research limitations

The research combined interviews as a groundwork for entering in the field with observations of daily practices. This initial method functioned as an introductory approach to localise and grasp the object of further investigation: difficulties and disturbances. The second step of fieldwork focused on real-time interactions for resolving difficulties. As it unfolded, the fieldwork followed some disturbances and mostly relied on the evolving interactions as they happened, e.g. H Hospital – Tener

Case; GIL and HOSPUB – HGF Case. Consequently, it was possible to witness the progress of interactive moments for resolving difficulties. However, in some cases, the observation of evolving interactions meant that it was necessary to capture key past events through stories told in these interactions and through further interviewing, e.g. C Clinic and CL Clinic – Tener Case; Laboratoy – HGF Case. In these latter cases, crucial moments had happened before fieldwork. The analysis used the triangulation of data sources through interviewing key participants in the stories as a strategy to warrant trustworthiness and accuracy (cf. Stake, 2000; Johnson, 1997; Mathison, 1988). In effect, this strategy was crucial to revealing that service-based and networked interactions concern misgiving information and disguising intentions.

As Bryman and Bell (2011, p. 496) indicate, the use of interviews in the course of fieldwork disrupts the natural flow of events and deviates from original contexts. The use of interviews to complete understandings about events not witnessed by the researcher is, thus, a limitation of the present work. For capturing a more natural flow of events, the observations would need to proceed for a longer period of time. The interviews, however, helped to reconstruct important occasions that explained the state of affairs in the fieldwork sites at the time of conducting the research. Thus, the fieldwork captured the case studies in real motion without losing sight of past key events and future potentialities. The Tener - H Hospital case comprised observations of flowing interactions upon difficulties and resolutions that did not characterised a relatively stabilised practice of value co-creation. The Tener – C Clinic case needed to rely on complementary interview for constructing the entire evolution and critical state of events. Tener – CL Clinic and HGF - Laboratory cases captured the stable (at that point in time) condition of succeeding in resource integration. The participants were observed talking about and describing the previous conditions and the key transformational moments, which prompted the need to conduct complementary interviews. The cases of GIL and HOSPUB in HGF yielded observations that needed complementary interviews allowing the reconstruction of events wherein the research was not only limited in terms of temporal occurrences but also in terms of spatial restrictions. Since HGF integrated the federal system of healthcare under the administration of local state government, some key decisions involved higher hierarchical levels of the system localised in Rio de Janeiro and Brasilia. The character and directions of decisions relating to GIL and HOSPUB software systems remained

obscure. Nevertheless, the research captured the nature and flow of transformations in market interactions and explained how business networks co-create value.

8.4 Reflection on research objectives

8.4.1 Objective 1: To examine the key aspects underpinning the character of value in value co-creation

Prior examination of the existing literature of value in contrasting contexts of creation and co-creation identified three key aspects: concept, role and process. The first chapter of the literature review (Chapter 2) examined these aspects as integral dimensions shaping the extant body of knowledge related to value. Chapter 3 identified current gaps in the literature related to change, learning and conflict issues in co-creating value. The final part of the literature review (Chapter 4) analysed the gaps through activity theory. This analysis generated complementary propositions for enriching current understandings of key aspects of value in co-creation. Ultimately, the propositions informed the empirical investigation with the following outcomes.

a. The process of value co-creation: what grounds the search for value co-creation

The literature review (Chapter 2) highlighted resource integration as the key process of value in co-creation. Chapter 4 suggested theoretical possibilities for initiating effective resource integration. The main proposition referred to expansive learning grounding the process of integrating resources. In this sense, the theoretical construction of the study indicated that mutual assimilation of operant resources, i.e. knowledge and skills, could stem from daily disturbances. Within the scope of expansive learning resource integration could be initiated through reflections upon internal contradictions. The examination of the case studies identified internal contradictions as relating to daily difficulties, disturbances and dilemmas. The findings observed that these disturbances concerned operational impediments for performing resource integration. More important, the research detected participants questioning daily practices and initiating a learning process. The cases showed that questioning refers to considering possibilities while facing contradictory relations between the idealised notion of value and the current difficulties for putting the notion of value into practice. In sum, this research confirmed that the questioning of operational routines prompts a learning movement in the direction of resource integration.

b. The role of players in value co-creation: how players seek value co-creation

As Chapter 4 also examined the role of players in co-creating value in terms of activity theory, the study proposed that the interactional aspects of value related to co-configuring value through knotworking. The research indicated that interactions were more or less improvised or orchestrated. These localised interactions of fast moving encounters resulted in significant co-configuration of resolutions. This finding pointed to the fact that multiple service-based market relationships evolve with no operational centrality. There was no holding centre in value co-creating interactions. Moreover, participation and engagement encompassed dynamic role changes. Ultimately, the analysis of the findings could specify only one fixed role of suppliers, customers and other partners in service-based business: co-configuration through knotworking.

8.4.2 Objective 2: To identify and explain the relevant aspects of management in value co-creation

Three main aspects of managing value co-creation emerged from the theoretical analysis of chapters 3 and 4. Firstly, the activity theory perspective on managing value co-creation revealed the need for coordination through articulation of a diversity of value standpoints. Secondly, the literature review contrasted current views with activity theory tenets and suggested a shift of emphasis away from control and to decentred and distributed aspects of co-creating value. Thirdly, the study proposed that the lens of activity theory could reveal the collective search for resolving disturbance as the normative aspect of value in co-creation.

The research explained that the articulation of diverse perspectives occurs through two main practices: dialoguing and navigating. The practice of navigating was crucial for allowing the significant interactions for resolving difficulties and transforming processes. Dialoguing referred to the means of translating interests and intentions and negotiating novel patterns of activity and market interactions. In this sense, a significant aspect of value co-creation management related to coordinating distributed collaboration through navigation and dialogue. The study verified that value co-creation management entails control of behaviours for engaging in negotiations and contributing to constructing mutually beneficial relations. The ability to participate in the network and the capacity for constructing alliances stemmed from the capability of resolving difficulties with unique resources. Thus, contrasting with the prior theoretical proposition, this research verified possibilities of controlling norms and behaviours in market interactions. Yet, there was no centrality of control. Some of the key encounters were identified as relating to dyadic and peripheral interactions with no central control.

Another relevant insight emerging from the present work explains managing value co-creation as organisational change. Value co-creation management involved the development of resolutions comprising the entire network of functional processes. The networks concerned the interconnecting systems of activity. This means that removing localised difficulties for resource integration was not sufficient. Managing change in the direction of value co-creation entailed integral transformations of interrelated processes.

8.4.3 Objective 3: To ascertain the relevant features of knowledge and explain the learning path for co-creating value

a. Knowing value co-creation

The literature review in Chapter 4 verified that current views of value co-creation knowledge focus on the aspects of skills and competencies. These approaches emphasise value co-creation as an expertise for interacting in the market and integrating resources. In contrast, the practice lens of activity theory surfaced an alternative approach to understanding knowing value co-creation. The study indicated that standpoint of activity theory could advance knowing value co-creation as producing transformations in distributed activity systems. The research specified the key features of knowledge as relating to the dynamic on-going practices of knowing to produce market interactions. The production of market interactions embedded translation and negotiation of diverging standpoints in networked relations. Thus, knowing for value co-creation involved the practice of dialoguing, producing customising tools and alliancing. Dialoguing underpinned the coordination of perspectives. Producing customising tools grounded the operational changes for integrating resources. Alliances allowed sharing understandings for transforming market patterns. Ultimately, value co-creation knowing intertwined with learning and practice in contrast with static capacities and technical knowledge.

b. Value co-creation learning

As Chapter 4 demonstrated, current literature explains value co-creation learning as a capability of managing market interactions and controlling the improvement of processes. The lens of activity theory disclosed learning as conscious transformations in the direction of potentialities of co-creating value. The research specified that significant transformations relate to resolutions allowing the integral connection of functional processes. The fieldwork showed that learning within market interactions aimed at significant transformations required vertical and horizontal movements.

Vertical interaction movements related to learning to integrate resource in the operational level. Horizontal interactions linked learning to networking resolutions throughout multiple functional systems. The study indicated that while navigating in vertical and horizontal interactions, players noticed novel possibilities in terms of alternative process and new market conditions. The learning journey within market interactions involved the collective movement of searching for the envisioned potentialities. Learning evolved in movements of practicing and knowing to reflect upon difficulties, identifying potentialities, resolving disturbances, reverting to prior conditions, feeling the emotional situation, implementing resolutions and consolidating novel conditions.

8.4.4 Main objective: To develop a comprehensive understanding of the nature of value co-creation in service-based business networks

The thesis develops an original and comprehensive understanding of value of co-creation. Value co-creation arises from a dialectical system of practice. This dialectical system concerns practices related to questioning daily practices, knotworking value and managing change. The dialectical nature of co-creating value derives from the contradictory elements shaping each practice. In this sense, questioning daily practices involves constrains and possibilities; knotworking value embeds struggle and collaboration; and managing change entails bottom-up and top-down measures. Finally, as the thesis characterised value co-creation as practice, it revealed the interplay of knowing and learning in action. The study observed that actors neither knew nor learned value co-creation in advance. Knowing and learning value co-creation developed within activity and therefore must be researched at the level of practices.

8.5 Final conclusion and future research

The essence of value co-creation is allowing mutually beneficial market interactions. Yet prompting market interactions that enable mutual benefits for a complex network of players is challenging and problematic. Current theory identifies relevant issues of customers' experiences, encounter processes and resource integration for enabling value co-creation. However, service-based businesses form multifaceted systems of diverging interests. Thus, the crucial concern refers to explaining how service-based networks can produce mutually benefiting interactions in a complex scenario of multiple departing perspectives of value.

This research explains that in the search for value co-creation, diverging interests do not occur only in business interactions. Rather, divergence in value standpoints stems from daily tasks and interactions in internal organisational departments. These routinized interfaces and operations embed individual perspectives. Particular standpoints of value within daily tasks underpin further divergences between customers, suppliers and partners. Players in service-based business interactions interconnect through operational routines that reflect the individualised perspectives. Ultimately, diverging value standpoints permeate service-based business interactions having their roots in internal struggles in each organisation.

Value co-creation in this context depends on the practices showed in the diagram in Figure 40. The diagram indicates that knowing and learning are central elements determining the combined strength of these practices. In addition, the strength of the practices depends on the collective participation and engagement of all players. This means that value co-creation is, indeed, a collective production. Suppliers do not facilitate value alone. Customers are not the only creators of value. Value co-creation stems from the engagement of suppliers, customers and other partners.

These propositions relate to a new theoretical perspective and indicate new practical tools for co-creating value. The main contribution to theory concerns explaining multiple market interactions in the direction of value co-creation. The study unveiled value co-creation as a simultaneous outcome of resolving difficulties in daily interactions and of transforming market interactions through novel tools, concepts, rules and roles. Value co-creation results from inter-organisational change and routine transformations. Value co-creation concerns the intertwined transformation of contradictory social interactions and of the material world producing and reproducing these complex relations. The key contribution to practice is the indication of how to overcome difficulties and act upon the formation of mutually benefiting market relations. In the practical sense, the present research shows how value co-creation works. In the theoretical perspective, the research is important because it indicates why these propositions of value co-creation work in terms of the interplay of micro behaviours, i.e. daily interactions, and macro social structures, i.e. cultural instruments and relational rules and roles. Ultimately, for both practitioners and academics questioning how to co-create value the answer from this study is, “find and resolve contradictions”.

Challenges for further research concern advanced issues of practice and change. The present study focused on the initial construction of a general model. This model is expressed in propositions that need further confirmation, development and refinement. The present research highlighted matters related to value co-creation and activity theory in terms of situated doing, knowing and learning and the transformations along these practices that open up questions for further research. Future research could concentrate on the discursive practices and the normative facet of value co-creation. In this regard, future research could investigate what the normative aspects of value co-creation are and how actors construct norms of behaviour and idealise best practices for co-creating value. Future studies could also undertake scrutiny of the barriers and potentialities for value co-creation and study the formation of the zone of proximal development.

Research questions related to what the key barriers for co-creating value are and how actors envision new potentialities could provide further explanations about the nature and role of contradictions in value co-creation. In addition, future work on the nature and role of actors' movements of negotiation for co-creating value could add deeper insights about the transition of vertical and horizontal movements. More research about the managerial aspects for transforming market interactions can advance value co-creation as a process management function. This strand of research could add new understandings to current knowledge of resource integration. Finally, interesting issues regarding emotions and power relations need further examination as well.

The aspects of emotion and power have been permeating activity theory and value co-creation studies without a specific focus of attention. In relation to activity theory, future research could focus on scrutinising the role of emotions in significant transformations. Activity theory could also benefit from research on the nature of power and its consequences for shaping interacting activity systems. Regarding value co-creation theory, further research related to power issues could investigate unbalanced forms of value distribution and specific power configurations that enable or hamper value co-creation. The role of emotions in resource integration and changing processes is another interesting pathway for future research. As the present work concentrates on the development of a comprehensive general understanding of value co-creation, the relevant issues of power and emotions captured here require research attention specifically dedicated to these themes. This means that detailed research on the topics of emotions and power could add insights regarding these elements and their particular effects in the dialectical system of practice model for co-creating value.

Today's market demands continuous change. Value co-creation is a continuous change process. For practitioners, managing the changing market is key. For academicians, grasping the underlying causes of continuous transformations and identifying what works and why is crucial. Most importantly, value co-creation challenges the current understanding of the production and reproduction of complex interactions. This research showed that players' ability to produce value co-creating interactions depends primarily on the capacity of knowing and learning in practice. Value co-creation is an always-in-motion journey with no fixed path.

Appendices

Appendix 1

Fieldwork

<i>Date</i>	<i>Local</i>	<i>Participant</i>	<i>Method</i>	<i>Focus</i>	<i>Length</i>
07/02/2011	Tener	Project and Services Manager/ Partner	Interview to the double	Norms of practice	1 hour 4 minutes
08/02/2011	Tener	Project and Services Assistant	Interview to the double	Norms of practice	1 hour 3 minutes
10/02/2011	Tener	Project and Services Assistant	Shadowing	Daily practice and interactions	4 hours
15/02/2011	Tener	Project and Services Assistant	Shadowing	Daily practice and interactions	3 hours
15/02/2011	Tener	Marketing analyst 1	Interview to the double	Norms of practice	48 minutes
16/02/2011	Tener	Marketing analyst 2	Interview to the double	Norms of practice	1 hour 8 minutes
17/02/2011	Tener	Project and Services Assistant	Shadowing	Daily practice and interactions	4 hours
21/02/2011	Tener	Sales representative	Interview to the double	Norms of practice	59 minutes
21/02/2011	Tener	Project and Services Support	Shadowing	Daily practice and interactions	3 hours
22/02/2011	Tener	Commercial and Administrative Manager/ Partner	Interview to the double	Norms of practice	1 hour 8 minutes
28/02/2011	Tener	Administrative supervisor	Interview to the double	Norms of practice	1 hour 6 minutes
01/03/2011	Tener	Project and Service Analyst 3	Interview to the double	Norms of practice	1 hour 8 minutes
03/03/2011	Tener	Project and Services Manager	Interview	Developmental history of the firm	37 minutes
10/03/2011	Tener and clinics	Sales representative	Shadowing	Critical moments of struggle and transformation	8 hours
11/03/2011	Tener: meeting	Project and Services Manager/ Analysts/ Support/ Assistant	Non participant observation	Critical moments of struggle and transformation	50 minutes
14/03/2011	Tener	Project and Services Assistant	Shadowing	Daily practice and interactions	3 hours
15/03/2011	Tener	Project and Services Support	Shadowing	Daily practice and interactions	4 hours
17/03/2011	C-Clinic: meeting	Project and services analyst 2/ manager and staff from C	Non participant observation	Critical moments of struggle and transformation	4 hours

		Clinic			
18/03/2011	Tener	Development Analyst	Interview to the double	Norms of practice	58 minutes
22/03/2011	CL-Clinic	Project and Services Analyst 2	Shadowing	Critical moments of struggle and transformation	4 hours
24/03/2011	CL-Clinic	Project and Services Analyst 2	Shadowing	Critical moments of struggle and transformation	4 hours
29/03/2011	CL-Clinic	Project and services analyst 2/	Shadowing	Critical moments of struggle and transformation	4 hours
31/03/2011	HP-Hospital ¹	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
05/04/2011	HP-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	8 hours
07/04/2011	HP-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
12/04/2011	HP-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	8 hours
14/04/2011	HP-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
04/05/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	8 hours
11/05/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
13/05/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
18/05/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
20/05/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
03/06/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
08/06/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and	4 hours

				transformation	
15/06/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
17/06/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
22/07/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
27/07/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
29/07/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
01/08/2011	Tener: company meeting	Staff	Non participant observation	Critical moments of struggle and transformation	54 minutes
03/08/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
05/08/2011	H-Hospital	Project and Services Analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours

¹ HP-Hospital was not included in the present study

HGF

<i>Date</i>	<i>Local</i>	<i>Participant</i>	<i>Method</i>	<i>Focus</i>	<i>Length</i>
17/01/2012	HGF - IT	IT Manager	Interview to the double	Norms of practice	59 minutes
23/01/2012	HGF – IT	IT Analyst 1	Interview to the double	Norms of practice	58 minutes
23/01/2012	HGF – IT	IT Analyst 2	Interview to the double	Norms of practice	1 hour 14 minutes
26/01/2012	HGF – IT	IT Technician 1	Interview to the double	Norms of practice	48 minutes
26/01/2012	HGF	IT Technician 1	Shadowing	Daily practice and interactions	3 hours
31/01/2012	HGF	IT Technician 2	Interview to the double	Norms of practice	38 minutes
31/01/2012	HGF	IT Technician 2	Shadowing	Daily practice and interactions	3 hours
06/02/2012	HGF	IT Technician 3	Shadowing	Daily practice and interactions	4 hours
07/02/2012	HGF	IT Technician 4	Shadowing	Daily practice and	4 hours

				interactions	
08/02/2012	HGF	IT Technician 1	Shadowing	Daily practice and interactions	4 hours
09/02/2012	HGF	IT Technician 5	Shadowing	Daily practice and interactions	4 hours
10/02/2012	HGF	IT Technician 6	Shadowing	Daily practice and interactions	4 hours
13/02/2012	HGF	IT Technician 3	Shadowing	Daily practice and interactions	4 hours
14/02/2012	HGF – IT	IT Manager	Interview	Developmental history of the sector	1 hour 44 minutes
14/02/2012	HGF – IT	IT Manager	Shadowing	Critical moments of struggle and transformation	2 hours
26/02/2012	HGF – IT	IT analyst 1	Shadowing	Critical moments of struggle and transformation	4 hours
29/02/2012	HGF – IT	IT analyst 2	Shadowing	Critical moments of struggle and transformation	4 hours
29/02/2012	HGF – SAME: meeting (HOSPUB)	IT Manager / SAME Manager/ HOSPUB analyst	Non participant observation	Critical moments of struggle and transformation	53 minutes
05/03/2012	HGF – IT: meeting	IT staff	Non participant observation	Critical moments of struggle and transformation	1 hour 26 minutes
07/03/2012	HGF - SAME	SAME Manager	Interview	Developmental history of the sector/ Interview to the double	1 hour 31 minutes
12/03/2012	HGF – SAME	SAME assistants	Shadowing	Critical moments of struggle and transformation	4 hours
13/03/2012	HGF – SAME	IT Manager/ HOSPUB analyst/ HGF Directors and staff	Non participant observation	Critical moments of struggle and transformation	1 hour 37 minutes
14/03/2012	HGF – SAME	SAME assistants	Shadowing	Critical moments of struggle and transformation	4 hours
19/03/2012	HGF – SAME	SAME assistants	Shadowing	Critical moments of struggle and transformation	4 hours
21/03/2012	HGF – SAME	SAME assistants	Shadowing	Critical moments of	4 hours

				struggle and transformation	
26/03/2012	HGF – SAME	SAME assistants	Shadowing	Critical moments of struggle and transformation	4 hours
28/03/2012	HGF – SAME	SAME assistants	Shadowing	Critical moments of struggle and transformation	4 hours
02/04/2012	HGF – SAME	SAME assistants	Shadowing	Critical moments of struggle and transformation	4 hours
04/04/2012	HGF – IT	IT analyst/ SAME assistants	Non participant observation	Critical moments of struggle and transformation	4 hours
09/04/2012	HGF – Auditorium: meeting	HGF staff	Non participant observation	Understand the possible practical consequences of the previous HOSPUB meeting	1 hour 46 minutes
11/04/2012	HGF – Same	SAME Manager	Interview	Understand the possible practical consequences of the previous meeting (09/04)	18 minutes
16/04/2012	HGF – laboratory	Laboratory Manager	Developmental history	Historical development	54 minutes
16/04/2012	HGF – laboratory	Laboratory Assistant	Interview to the double	Norms of practice	1 hour 14 minutes
23/04/2012	HGF – laboratory: internal reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
25/04/2012	HGF – laboratory: internal reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
30/04/2012	HGF – laboratory: internal reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
02/05/2012	HGF – laboratory: internal reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
07/05/2012	HGF – laboratory: internal reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
09/05/2012	HGF – laboratory: internal reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
14/05/2012	HGF – laboratory:	Laboratory Assistant	Shadowing	Critical moments of	4 hours

	internal reception			struggle and transformation	
16/05/2012	HGF – laboratory: internal reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
23/05/2012	HGF – laboratory: facilities of exams production	Laboratory technician and pharmacist	Shadowing	Critical moments of struggle and transformation	4 hours
30/05/2012	HGF – laboratory: facilities of exams production	Laboratory technician and pharmacist	Shadowing	Critical moments of struggle and transformation	4 hours
06/06/2012	HGF – laboratory: facilities of exams production	Laboratory technician and pharmacist	Shadowing	Critical moments of struggle and transformation	4 hours
14/06/2012	HGF – laboratory: facilities of exams production	Laboratory technician and pharmacist	Shadowing	Critical moments of struggle and transformation	4 hours
15/06/2012	HGF – laboratory: facilities of exams production	Laboratory technician and pharmacist	Shadowing	Critical moments of struggle and transformation	4 hours
18/06/2012	HGF – laboratory: facilities of exams production	Laboratory technician and pharmacist	Shadowing	Critical moments of struggle and transformation	4 hours
20/06/2012	HGF – laboratory: facilities of exams production	Laboratory technician and pharmacist	Shadowing	Critical moments of struggle and transformation	4 hours
25/06/2012	HGF – laboratory: facilities of exams production	Laboratory technician and pharmacist	Shadowing	Critical moments of struggle and transformation	4 hours
27/06/2012	HGF – laboratory: facilities of exams production	Laboratory technician and pharmacist	Shadowing	Critical moments of struggle and transformation	4 hours
02/06/2012	HGF – laboratory: external reception	Supervisor	Shadowing	Critical moments of struggle and transformation	4 hours
03/07/2012	HGF – laboratory: external reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
04/07/2012	HGF – laboratory: external	Laboratory Assistant	Shadowing	Critical moments of struggle and	4 hours

	reception			transformation	
05/07/2012	Fiver – software provider of the laboratory	Manager	Developmental History Interview	Historical development	1 hour 11 minutes
09/07/2012	HGF – laboratory: external reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
13/07/2012	HGF – laboratory: external reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
16/07/2012	HGF – laboratory: external reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
18/07/2012	HGF – laboratory: external reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
19/07/2012	HGF – laboratory: external reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
23/07/2012	HGF – laboratory: external reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours
25/07/2012	HGF – laboratory: external reception	Laboratory Assistant	Shadowing	Critical moments of struggle and transformation	4 hours

Appendix 2

Analytical Terminology

The terminology follows Strauss and Corbin (1990, pp. 61, 96 and 116).

Coding Structure

Phenomena: central idea in the data

Categories: concepts standing for *phenomena*.

Concept: label representing significant occurrence in the data.

Properties: characteristic or attribute giving meaning to *categories*.

Dimensions: range of variation wherein the properties of a category vary.

Sub-categories: clarify and specify a category.

Coding System

Open coding: identification of concepts, properties and dimensions.

Axial coding: relation of categories with sub-categories linking categories to dimensions and properties.

Coding Tables

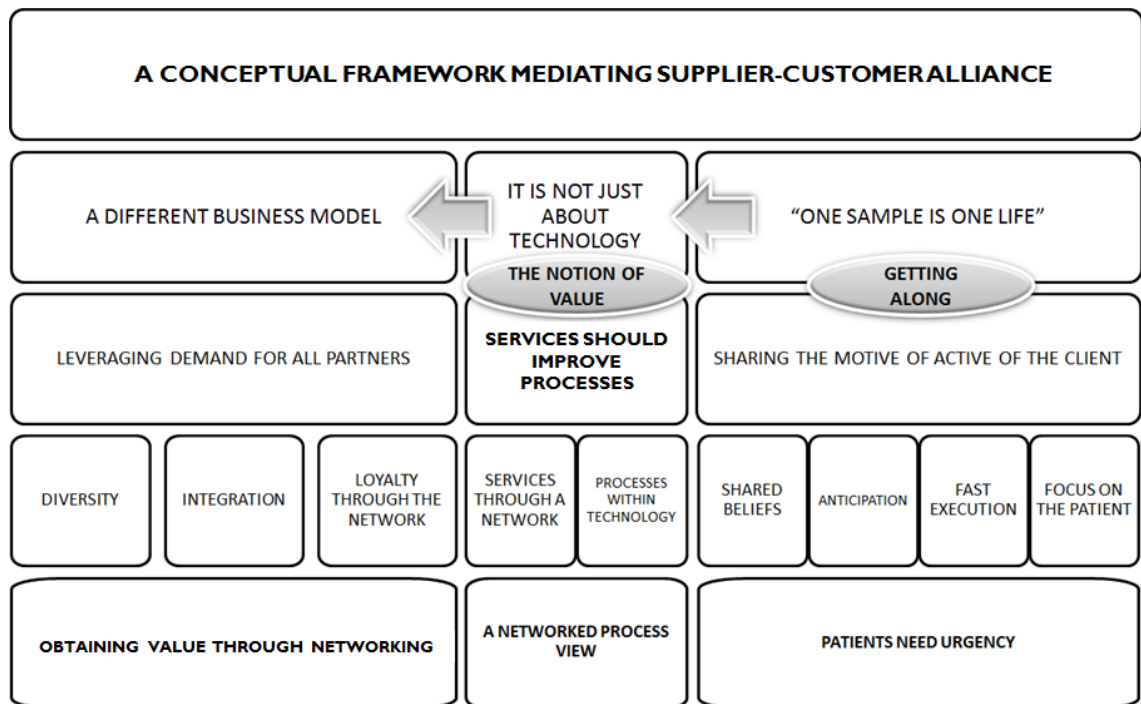
SOFTWARE SUPPLIER OF HGF LABORATORY - FIVER

a. Coding structure

Phenomena	A conceptual framework mediating supplier-customer alliance
Category	A different business model
Category	It is not just about technology
Category	One sample is one life
Sub category	The notions of value
Sub category	Getting along
Concept	Leveraging demand for all partners
Concept	Services should improve processes
Concept	Sharing the motive of activity of the client
Property	Diversity

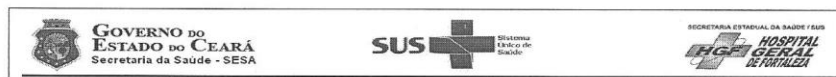
Property	Integration
Property	Loyalty through the network
Property	Services through a network
Property	Processes within technology
Property	Shared beliefs
Property	Anticipation
Property	Fast execution
Property	Focus on the patient
Dimension	Obtaining value through network
Dimension	A networked process view
Dimension	Patient need urgency

b. Depiction of the structure and system of coding



Appendix 3

Research approval from the Research Ethics Committee of HGF:



COMITÊ DE ÉTICA EM PESQUISA – CEP/HGF

Fortaleza, 08 de dezembro 2011.

Ilmo. Sr. Comunicamos-lhe o parecer do CEP

Pesquisador: **Paulo Sérgio Altaman Ferreira**
Projeto Intitulado: **Cocriando valor: aplicando a pesquisa expansiva para o desenvolvimento do conhecimento e aprendizado na prática do marketing**
Área de conhecimento: **Ciências da Saúde / Administração**
Entrada no CEP: **27/10/11**
Protocolo do CEP: **171103/11**

Sumário: O projeto sobre a rede de interações e experiências para o aprendizado da criação de valor. Estudo na área de marketing e tecnologia e terá como coleta de dados entrevista com participantes de interações com clientes a fim de verificar as experiências vividas pelos participantes (gestores e profissionais de marketing e vendas, parceiros, fornecedores, clientes, agencias regulatórias); envolverá também observação da rotina do trabalho em si e as tarefas. Serão gravadas entrevistas com a permissão dos sujeitos.

Parecer: Pesquisa de elevado nível de complexidade por ser tese de doutorado, bem escrito com todas as etapas metodológicas. Foram esclarecidas todas as duvidas em relação aos procedimentos metodológicos e operacionalização da pesquisa. Portanto, Informamos que o Comitê de Ética em pesquisa apreciou o projeto considerando que o mesmo atende as recomendações da Resolução 196/96 do Conselho Nacional de Saúde, CNS, sobre pesquisa com seres humanos e considerando a viabilização da pesquisa o CEP/HGF considerou o **projeto aprovado**.

Lembramos ao pesquisador a entrega do relatório ao final da pesquisa e o cumprimento dos aspectos éticos conforme a Resolução citada.

Atenciosamente,


Dra. Maria Veraci Oliveira Queiroz
Coordenadora do Comitê de Ética em Pesquisa / CEP-HGF

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