

Capital Interconvertibility in complex organizations
By Jan Taug and Hanno Roberts

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Abstract

Identifying various capital species in use and understanding how to convert them into more tradable forms of capital is a complex task. In this paper, we discuss how unique knowledge and relational skills have facilitated capital conversion to nurture innovation and growth in a Scandinavian telecommunication corporation. The core of our discussion is to explore the parts and the process that drives the transformation of capital species, and to show how one organization made sense of their historical knowledge based value creation processes to develop a new integrated business model based on intangible capital forms.

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1. Introduction

It is clear in most research, that we know more about the parts than the interaction between the parts. That is true for DNA research, physics and chemistry, and it is true for knowledge based value creation in organizations and communities. In this paper we want to investigate the knowledge based value creation phenomenon from a flow perspective, looking at the connections between and across capital forms and indicators. The goal of this paper is to discuss how intangible capital species convert into new (appropriable) forms of capital. This phenomenon will be described as “capital interconvertibility”¹, and the underlying research question is: *What drives knowledge-based value creation in complex organizations?* We argue that it is the process of capital interconvertibility that everybody is struggling with to release the true value of intellectual capital. A renewed focus on capital species has emerged through the work on intangibles and intellectual capital the last 5 years. The discussion has often been locked up in one field, such as accounting, economics or sociology, but the intellectual capital discussion has moved the discussions across fields. Since we, the authors, have economic backgrounds (economy, finance and accounting) we have decided to integrate concepts and language from sociology to investigate new inputs to the discussions on knowledge based value creation, intangibles and the notion of the transparent organization.

This paper will introduce the theoretical framework of the French sociologist Pierre Bourdieu, notably his categorization of capital species (Bourdieu, 1983), seen through organizational lenses, and relate these to concepts and recent work on social capital (Adler and Kwon, 2002) and intellectual capital. We have today very limited knowledge on how intangibles are created and developed, and how they contribute to innovation, growth and wealth creation, and how they are used and destroyed. This is mainly due to the lack of available data on intangible investments by public and private organizations. In our view the only way to get such data is to investigate one organization in detail over a long period of time. The case presentation is based on a retrospective case study and a participatory action research project on knowledge based value creation in a Scandinavian telecommunication corporation. Before entering into the case we discuss different capital forms, and how they convert from one form to another. Building on the theoretical constructs from the first part, the notion of capital conversion will be illustrated through case stories centered on value creating periods or moments. This section is concluded with a presentation of the intellectual capital model that developed in the organization. Before the conclusions, we discuss relational capital, capital interconvertibility and value drivers using constructs from the case and literature.

2. Capital species and conversion

The French sociologist Pierre Bourdieu comes close to capturing the complexity embedded in knowledge based value creation since he recognizes multiple species of capital. He recognizes processes in which they develop, and discuss how they convert from one form to another. Elaborating and extending the idea of the social and relational aspects of capital rooted in Marxian historical materialism, Bourdieu argues that there are species of capital beyond material or economic capital that are of equal, if not greater, significance because they are misrecognized for what they are.

¹ This paper is based on the ongoing Ph.D. research of Jan Taug while Hanno Roberts is a joint participant in performing the field work.

2.1 Capital Species

Depending on the field in which it functions, and at the cost of the more or less expensive transformations which are the precondition for its efficacy in the field in question, Bourdieu holds that capital can present itself in three fundamental guises:

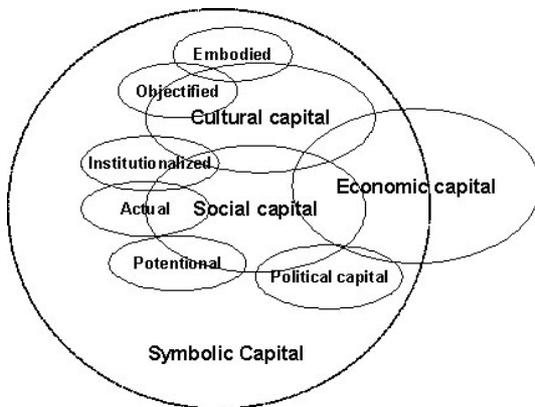


Figure 1: Bourdieu and capital species

- 1) Economic capital, which is immediately and directly convertible into money and it may be institutionalized in the form of for example property rights;
 - 2) Cultural capital, which is convertible, on certain conditions, into economic capital and it may be institutionalized in the form of for example educational qualifications; and
 - 3) Social capital, made up of social obligations ("connections"), which is convertible, in certain conditions, into economic capital and it may be institutionalized in the form of for example a title of nobility.
- 4) Bourdieu's symbolic capital is in a sense his

equivalent to intellectual capital. Symbolic capital is capital in whatever form insofar as it is represented, apprehended symbolically, in a relationship of knowledge i.e., unrecognized as capital and recognized as valuable legitimate knowledge resources.

Figure 1 visualizes Bourdieu's different forms of capital and their different states. The terms used by Bourdieu to describe fields and their properties such as 'market', 'capital', 'profit', etc. are terms borrowed from the language of economics, but they are adapted for the analysis of fields which are not 'economic' in the narrow sense. This is a point on which Bourdieu can be easily misunderstood. One may get the impression that, when Bourdieu uses these terms to analyze forms of interaction which are not strictly economic transactions, he is treating these forms of interactions as if they were economic transactions and nothing more. Similarly, one may get the impression that Bourdieu's approach involves a kind of economic reductionism. We understand his view as that the practices we describe today as 'economic' in the narrow sense (e.g. buying and selling commodities) are a sub-category of practices pertaining to a specific field or cluster of fields which have emerged historically, such as the 'knowledge economy', and which displays certain distinctive properties. But there are other sub-categories of practices which pertain to other fields of literature, art, politics and religion; and these other fields are characterized by their own distinctive properties, by distinctive forms of capital, profit, etc. (Bourdieu, 1983) Bourdieu does not wish to reduce all social fields to the economy in the narrow sense, nor to treat all types of practice as strictly economic transactions. On the contrary, he advocates treating the economy in the narrow sense as one field (or cluster of fields) among a plurality of fields which are not reducible to one another. The different forms of capital included in Bourdieu's work is closely related to similar concepts in knowledge management and intellectual capital fields, but it is in many ways more open and including. Where we traditionally have talked about knowledge management and governance systems to gain control over knowledge resources Bourdieu is focused on knowledge sharing and circulation of intangible resources, but at the same time he also holds that non-economical capital forms should be reducible to economical capital.

2.2 Cultural capital and conversion

In Bourdieu's work the notion of cultural capital is presented as a theoretical hypothesis which makes it possible to explain the unequal scholastic achievement of children originating from different social classes by relating academic success. In his differing scholastic achievement

example Bourdieu (1983) accuses economists to neglect to relate scholastic investment strategies to the whole set of educational strategies and to the system of production strategies. They let slip of the best hidden and socially most determinant educational investment, namely, the domestic transmission of cultural capital. The (economic) studies of the relationship between academic ability and academic investment show that they are unaware that ability or talent is itself the product of an investment of time and cultural capital (Becker 1964a, p. 63-66). Not surprisingly, when evaluating the profits of scholastic investment, economists can only consider the profitability of educational expenditure for society as a whole, the "social rate of return," or the "social gain of education as measured by its effects on national productivity" (Becker 1964b, pp. 121, 155).² This suggests that "cultural capital investments" have an aggregate and bundled return and cannot be disaggregated into identifiable and itemized returns on every part that make up the investment. To development an understanding one has to identify the parts, but at the same time be aware of how the parts interact and often "operate" in bundles. Cultural capital is in itself a complex bundle of capital features, and according to Bourdieu (1983) cultural capital can exist in three states:

- 1) The *embodied* state in the form of long-lasting dispositions of the mind and body. Most of the properties of cultural capital can be deduced from the fact that, in its fundamental state, it is linked to the body and presupposes embodiment.
- 2) The *objectified* state in the form of cultural goods such as pictures, paintings, monuments, books, dictionaries, instruments, machines, etc. It has a number of properties which are defined in the relationship with cultural capital in its embodied form. The cultural capital objectified in material objects and media is transmissible in its materiality.
- 3) The *institutionalized* state, a form of objectification which must be set apart because it confers entirely original properties on the cultural capital which it is presumed to guarantee. It can for example be seen in the case of educational qualifications.

The conversion of cultural capital establishes only the value, in terms of cultural capital, of the holder of a given qualification relative to other qualification holders. The accumulation of cultural capital in the embodied state, presupposes a process of embodiment or incorporation. It implies a labor of time which must be invested personally by the investor. Like the training of a muscular physique or to work up a suntan, it cannot be done at second hand.

Cultural capital might be exchanged into monetary value in the labor market, and the uncertainty tied to cultural capital forms and its value depends also on its scarcity. The investments made, in time and effort, may turn out to be less profitable than was anticipated when they were made.

One could argue that there has been a de facto change in the conversion rate between institutionalized cultural capital (e.g. academic qualifications) and economic capital. Academic investments have no meaning unless a minimum degree of reversibility of the conversion it implies is objectively guaranteed. The strategies for converting economic capital into cultural capital, which are among the short-term factors of the schooling explosion and the inflation of qualifications, are governed by changes in the structure of different types of capital. (Bourdieu, 1983)

The initial exchange is related to exploring boundaries, and whether the organization can provide free time to explore is a precondition for capital conversion. The link between economic and cultural capital is established through mediation of relations and the time needed to

² Gary S. Becker was one of the first to take explicit account of the types of capital that are usually ignored. We seldom consider anything other than monetary costs and profits, forgetting the non-monetary investments and the material and symbolic profits that for example education provides in an indirect way. Such as the added value which the dispositions produced or reinforced by schooling (bodily or verbal manners, tastes, etc.) or the relationships established with fellow students can yield in the matrimonial market (Becker 1964a).

understand and capitalize on the differences. Differences in cultural capital possessed by an organization imply differences already from the start-up phase where the work of transmission and accumulation begins. The social conditions for cultural capital conversion are more disguised than those of economic capital. The structure of the relations, the scarcity of non-economic capital and unequal distribution is the source of the specific effects of different capital forms. In a sense, the intangible capital investors are competing for the scarce goods and through it value is generated. Identifying and communicating non-economical forms might not have any value unless the organization can objectify some degree of conversion among the capital forms.

2.3 Social capital and conversion

Social capital is the aggregate of the actual or potential resources which are linked to possession of durable network of more or less institutionalized relationships of mutual acquaintance and recognition. (Bourdieu, 1985) In other words, a membership in a group provide each of its members with the backing of a collectivity-owned capital form, a "credential" which entitle them to credit, in the various senses of the word. According to Adler and Kwon (2002) social capital is the resource available to actors as a function of their location in the structure of their social relations. *Is relationships or social resources a capital form?* It is important to note that social relations usually involve several states and forms. Adler and Kwon (2002) distinguish among three dimensions on social structure rooted in different types of relations. Market relations, including product and service exchange for money or barter deals, hierarchical relations in which obedience to authority is exchanged for material and spiritual security, and social relations where favors and gifts are exchanged.

Memberships or social relations may be socially instituted and guaranteed by the application of a common name like the name of a school, a group, a community, an organization, etc. Capital investments made outside organizational boundaries are therefore often underestimated, and the return of such investments is also riskier. Relational webs are the product of essential moments and endless efforts to produce and reproduce lasting, useful relationships that can be converted into new forms of capital. The network of relationships is the product of investment strategies, individual or collective, consciously or unconsciously aimed at establishing or reproducing social relationships that are directly usable in the short or long term.

Like all other forms of capital, social capital is a long lived asset into which other assets can be invested, with the expectation of a future return on investment. Social capital can yield negative effects and benefits for the investor and for others, and it is convertible. (Bourdieu, 1985) Recent research literature on social capital emphasizes its positive consequences, but on the negative side investments in social capital has disutilities, such as possibilities of exclude outsiders, free-rider problems, excess claims on group members, or restricted individual freedom.

The most important competencies in the economy of social exchange is the knowledge of building relationships, understanding and respecting the real connections and have the skill to use them. Social capital can be converted to other forms of capital, for example to economical capital, through the social capital investments made by an actor and the position and advantages these investments create in a given network. Social capital is located between the members and in the relations with other groups. Trust among the members and among the groups is a major driver for moving the value of social capital up or down. Economical capital can also create social capital as it gives the investor an opportunity to create activities where the actors come together.

2.4 Economic capital and conversion

Economic capital is, in Bourdieu's work and in most intellectual capital work, at the root of all the other forms of capital. These transformed disguised forms of economic capital are never

entirely reducible to an economic capital definition. They produce their most specific effects only to the extent that they conceal (not least from their possessors) the fact that economic capital is at their root, but at the root of their effects. (Bourdieu, 1983)

The economic view is fundamental on the grounds that every type of capital is reducible, in the last analysis, to economic capital, but only economic lenses ignore what makes the specific efficacy of intangible forms of capital. The view of sociology reduces social exchanges to phenomena of communication and ignores the brutal fact of universal reducibility to economics. The different forms of capital can be derived from economic capital, but only at the cost of a more or less great effort of transformation. There are some goods and services to which economic capital gives immediate access without secondary costs while others can be obtained only by virtue of a social capital of relationships (or social obligations). These cannot act instantaneously or in the appropriate moment unless they have been established and maintained for a long time. When looking at the resource concept from an accounting perspective, the tangible versus intangible classification is largely followed. It is in the intangible category, however, that resource viewpoints are diverging. From an accounting perspective, client/customer loyalty and customer base are conventionally addressed under the heading of Goodwill and expressed by either capitalizing or expensing the related monetary value. Typically, Goodwill value tends to become visible only on moments of ownership transfer, where the acquiring organization tends to pay a negotiated amount over the book value of the acquired firm. (Roberts, 2002) In the conventional accounting taxonomy of intangible assets, the method of acquisition (ownership transfer) of intangible assets is one of two key criteria used. The first is the method of acquisition, and whether it is internally or externally developed. The other criterion is related to the specificity of the assets and whether it is both identifiable and separable. (Haskins et al., 1993, p. 455)

In accounting, items visualizing uniqueness and competitive advantage tend to be under-represented and only limitedly captured. Unique non-economical capital forms and their conversion processes are created in organizations and built over time. The value driving factors come in bundles or portfolios instead of discrete packages that can be accounted for. The bundled and time-dependent accumulation of these intangible assets is equally unique; there is no common denominator or standard against which to compare them or to aggregate them by. This places the criterion of identification as the most problematic criterion in establishing a resource definition that is acceptable to both accountants and strategists. (Roberts, 2003) If one cannot identify uniqueness because there is no standard for uniqueness, it does not make sense to engage in a subsequent effort of separation because it is unclear what needs to be separated from what. Similarly, the development of uniqueness needs an accumulation basis against which to assess increases or decreases in the development effort. Again, from an accounting perspective, uniqueness and the development of uniqueness by means of internally generated intangible capital, is unmanageable because of inadequate identification. Recent developments in the area of performance measurement, however, are indicating that non-financial criteria categorized according to competitive dimensions might be an outcome here. Among the several forms of capital identified by Bourdieu, economic capital is most liquid; it is readily convertible into human, cultural, and social capital. As we move into intellectual capital and capital conversion in organizations we will use the term 'financial capital' instead of 'economical capital'. Many researchers and practitioners have worked with ways to identify capital species using economic and accounting related language, and in Scandinavia several organizations have attempted to identify and communicate intangible capital forms in intellectual capital systems and reports.

2.5 Intellectual capital

Even if intellectual capital refers to 'capital,' as in Bourdieu's work, it is not a conventional accounting term. Perhaps the idea of intellectual capital is easiest visualized by using a metaphor, as explained by Edvinsson & Malone (1998, p. 21, translation added):

If we imagine a firm as a living organism, for example a tree, one can say organizational plans, annual and quarterly reports, firm brochures, and other documents is the trunk, branches and leaves. An investor might examine the tree to determine if she/he can harvest ripe fruit, but to assume that he has now seen the whole tree, because he has seen what's visible, is a grave mistake. Much of the tree is invisible, below the surface, being nurtured through its roots. The taste of the fruits and the color of the leaves make a good presentation of the present health of the tree, but it is much more effective to look at what goes on in the roots if one wants to form an opinion about the health of the tree for the coming years. There may be damages below the surface, which, as time goes by, may kill the tree. This is what makes intellectual capital investigation, the roots of an organization's value, into measurement of dynamic factors.

This presentation talks about intellectual capital in action. It tells a story about the relationship between the past and the future, and it dramatizes the need to look after the roots. Using this metaphor intellectual capital becomes a story of interlinked activities that happen all over the tree at any moment in time.

In Scandinavia there have been attempts to communicate intangible value, where organizations have tried to institutionalize non-economic capital forms in intellectual capital statements as a mechanism to show their real value (Stewart 1997; Sveiby 1997; Edvinsson & Malone 1997; Brooking 1997, Roos et al. 1997). The context of this reporting was typically the huge market-to-book ratios found in some industries during the 1990s and early 2000 which were presented as showing the value of the organization beyond the investments made in physical or tangible assets. The first prototypes of intellectual capital processes and statements were concerned about reporting on 'assets' related to employee knowledge and expertise, customer confidence in the company and its products, company infrastructure, and the sophistication of information technology. Being a little harsh, these early prototypes seem to fall into three categories: those that list their knowledge resources or assets; those that try to visualize knowledge activities, but end up talking about resources; and those that try to visualize knowledge activities but end up talking about resources or output.

As depicted in figure 2, the intellectual capital concepts that were developed in 1996-97 were

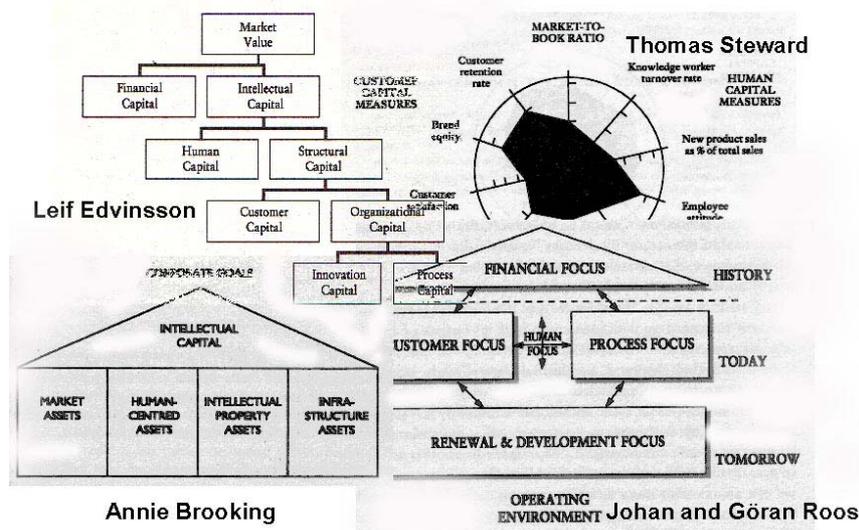


Figure 2 – Intellectual capital models collage

very similar in structure and the language overlapping. The capital species that emerged in intangible capital investigations in organizations in the last half of the 1990s has become the fundamental capital forms in intellectual capital research and practice. These capital forms are intellectual capital and financial capital presented as the two forms making up market

value. The non-financials, or intellectual capital, is in turn defined into human capital, customer capital and structural capital. Innovation and Process perspectives have also appeared as capital forms.

According to Stewart (1997) human capital is that which thinks: money talks, but it does not think; machines perform, often better than any human being can, but do not invent. The primary purpose of human capital is innovation - whether of new products and services, or of improving in business processes'. Structural capital is explained as "knowledge" that doesn't go home at night, and that it belongs to the organization as a whole. It can be reproduced and shared such as technologies, inventions, data, and publications. Strategy and culture, structures and systems, organizational routines and procedures is also viewed as structural capital. Like human capital, the organization cannot own customer capital. Yet, it is crucial because it is 'the value of its franchise, its ongoing relationships with the people or organizations to which it sells [like] market share, customer retention and defection rates, and per customer profitability' (Stewart, 1997 p.75).

Within the field of strategic resource definitions the internally developed and non-identifiable and non-separable items are the ones addressed. The focus is on the organization's unique competences and capabilities and not on their comparative similarity. This is what intellectual capital is about. Intellectual capital should not be used to compare organizations, but rather help them discover their uniquenesses and differences and communicate them to compete in the financial market, the talent market, or in the idea market. In effect, an intellectual capital process is not there to explain the market to book ratio - it is there to change it.

2.6 Capital conversion

The logic of the functioning of intangible (non-economic) capital forms is in the conversions from one type to another, and the law of conversion which governs them cannot be understood unless two or more opposing but equally partial views are integrated. It might be impossible to account for the structure and functioning of organizational systems unless one use capital in all its forms and not solely in the one form recognized by economic theory. Economic theory has through a definition of the economy of practices and the historical invention of capitalism; reduced the universe of exchanges and capital species to mercantile exchange oriented toward the maximization of profit. This focus has implicitly defined other forms of capital exchange as non-economic, and disinterested the importance of the process that creates profit. In a sense, we have disinterested those forms of capital exchange that drives the conversion of non-economical capital forms to more tradable forms and visa versa. Intellectual capital research has identified some forms of capital, and brought into the arena knowledge based resources and outputs related to value creation. We have not succeeded in explaining what's in between, the activities or processes that turn resources into results or output/results into resources. It is these movements capital conversion is about.

The capital form depends on its distribution and the relationship of transformation between the bearer and the knowledge resources objectively available. The value they produce is mediated by the relationship between the worker(s) and the objectified capital forms available. Intellectual capital investigations are of value only if it allows new insights to be produced that would change the value of the organization. Returning to the tree metaphor, conversion describes the movement of the parts and the forces that change the nature of interlinked activities and transform them into new states that in turn nurture other facets of a given (knowledge) ecosystem. Intellectual capital is making the intangible more tangible, while capital conversion is explaining interdependence and transformation of different parts and capital forms. Maybe we can better make sense of this through a case study.

3. Capital conversion in a telecommunication corporation

The research is based on a retrospective case study, a historical study of a company's attempt to convert knowledge into value. Conducting a case study in one organization, rather than several, captures the complexity of human actions in institutional and societal settings. The theoretical goal is linked to understanding the process of capital interconvertibility, and how intangibles develop into value. A retrospective and reflective method is therefore selected to provide in-depth insight within one organization in order to unravel the fine details and the complexities involved.

The case presented below shows how an organization can take a good look at knowledge-based organizational activities that have driven value in the past, and use these historical critical moments to develop a system that identifies and develops the drivers that create value for the organization. The word 'drivers' refer to knowledge and value drivers representing the parts that make up capital forms. Value drivers are bundles of knowledge drivers, and value drivers connect knowledge drivers across capital forms or organizational boundaries. We have identified several critical historical events that visualize driving forces and how knowledge was used to create value. These value creating periods or moments are difficult to express only in financial terms nor do these moments intuitively fall into a single and straightforward category of explanation. Rather it is the historical alignment of these incidents that provides the accumulation of insight within the organization that allowed them to develop a value driver system. The system has an archeology and the below critical events are as many layers in that reconstruction of our present findings on capital interconvertibility.

3.1 Description of Organization to Be Studied

The organization, a Scandinavian telecommunication corporation, is selected due to its complex operating environments and its attempts to understand knowledge-based value creation. The Telegraph Administration was established January 1. 1855 when the first telegraph line was opened in Norway. Twenty years later, the telephone was invented and the first telecommunications systems were installed in Oslo, Norway in 1880, just four years after the invention of the telephone. Communication has always been important in Norway with all its fjords and mountains and geographically distributed communities. The organization has historically played an important political role in the socialization of Norway. Based on historical events and political goals, the organization has developed in a culture that had to consider several forms of development, with only one the economic development being related to financial capital. In a sense, the organization navigated their business based upon a variety of non-financial goals (forms of capital) since its very inception.

The case describes a complex a deep historical context that allows national and organizational cultural issues to surface. The case focuses on the many aspects of this organization's struggle to transform and develop its intangible resources into tradable forms of capital. The case data originate from a three-year participatory action research project, initiated early Spring 2000, in order to study knowledge-based value creation and from a retrospective case study. From this organization's own sense-making process a business model that explicitly considers intangible capital forms emerged. The case shows how unique knowledge and expertise, and the relational skills surrounding it have been important factors to transform itself from a governmental agency to a publicly listed corporation on the Oslo and New York stock exchanges. In the remaining part of the paper, we will refer to the organization as *Tele-adco*. Today the corporation consists of approximately 22.000 employees organized in four business areas that have been changing

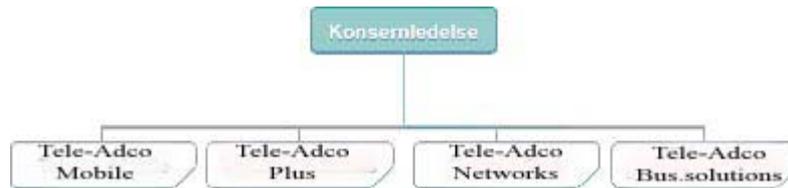


Figure 3 - Organizational Chart

over the years, but they have always been organized around wireless networks (satellite, mobile), fixed networks (now fiber optic) and Internet.

The organization differs from many other telecom corporations abroad in that it held on to an integrated business structure, while other telecom businesses segmented and focused on one single area, such as mobile or Internet. We have looked into the history of *Tele-adco* with our (research) question in mind and have selected several critical incidents that visualize the connection of different forms of capital; during this moment of connection, we can observe how intangible capital forms were converted and used to drive value creation in the organization. *Tele-adco* was incorporated in 1994 and it started the process of capitalizing on knowledge and relations created in the past, in order to take a position outside Scandinavia. From *Tele-adco*'s Annual Reports between 1994 and 2001, we observe a marked increase in the minority interests and participations the organization takes in other firms. Already in 1995, the organization held minority ownership interests in 25 companies in 9 countries (including Scandinavia) while 10 of these companies were located outside Scandinavia. By 2001, *Tele-adco* had increased its minority interests to 80 companies in 25 countries (also including Scandinavia) with 50 of these companies being located outside Scandinavia. These output measures indicate that the organization has connected knowledge and relations and that the connections have impacted value.

In the case of *Tele-adco*, the value creating moments emerged as stories – as transportable bundles of meanings and interpretations that has been passed on within the organization or captured in memos and books. We had to extract these stories and use them as magnifying glasses to visualize the complexity and multitude of events and drivers that were dancing together to create value for the organization. We have tried to organize these incidents in a chronological order and will conclude this section by showing how the organization brought all these stories and incidentally learned lessons together in an integrated business model that now mediate intangible capital forms and financial capital in a holistic model.

3.2 Value creating moments

We have included five of these stories that show value creation periods and moments in the past. The first stories describe the start-up phase of *Tele-adco* and how intangible capital forms were created from the very beginning. Following Bourdieu's perspective on capital species, it is considered important to have an early understanding of non-financial values and the time needed to develop them. The last stories are related to more recent events where intangible capital forms have played an important role.

Story 1. Cod and wireless – early non-economical investments in the beginning of 1900's

Collaboration across the different technology platforms emerged early as the landscape in Norway forced both technology and business developers to work across organizational systems. One example of cross development and experimenting dates back to 1859 when the director of the post office in Lofoten in the Northern part of Norway wrote a report to the Norwegian Parliament stating that the fishing industry would increase their revenue by more than 25% if they could make the telegraph available in fishing villages in Lofoten. Fishing was and is an

important industry in Norway, and every winter fish worth millions were traded in Lofoten. In 1891 the telegraph administration made a 170 kilometers undersea cable, combined with the land line, outside the main network to nine fishing villages in Lofoten. In 1902, Hermod Petersen, an engineer and a director of the board, visited the area and he was convinced that wireless connections would help the industry grow even further. He initiated the work and a team of technicians took on the challenges. They had to experiment with ways to combine fixed lines and radio technology, and several sectors in the organization were involved. May 1. 1906 the wireless link between Sørvågen and Røst in Lofoten was officially opened, one of the first connections between a fixed and wireless network in the world. They made for example contact with German Kaiser Wilhelm's ship "Hohenzollern" July 15. 1906 on his journey south. Sørvågen Radio and Telegraph Company was opened for contact with ships at sea July 1. 1908 making it the first of its kind in Norway.

Reflections

Many of the experiments embedded in the operations described above created knowledge that later is believed to be important to the position the company later could take in the shipping and oil industry. Engineers saw also early the advantage of equipping people in transportation and medical doctors in remote areas with wireless communication units. The offshore industries became soon important allies in developing wireless (radio and satellite) communication in Norway. Norway, as a nation, developed a strong position in shipping and the oil exploration industry and communication played an important role. *Tele-adco* increased their involvement with radio stations and the government decided that they should operate the Coast Radio Service and the Aviation Navigation service. (Telenor, 1975: 40) This created yet another project that brought all this excellent engineers together. In a sense social responsibility blended with integration across sectors, exciting projects and talents (human capital) increased innovation and created both community and organizational value.

Story 2. The phone venture – another take on the early phone developments

Sørvågen Radio and Telegraph station became also the first of a series of small private phone companies that were established all over the country over a period of 20 years. When the first phone service was established in Norway in 1880, the Telegraph Administration (*Tele-adco*) did not believe in the phone. It took them 20 years to discover the beauty of the phone, and in 1899 the Telegraph Act was passed granting *Tele-adco* the exclusive right to run all telephone services, and the government authorized it to take over the private telephone companies. This took many years because of employment issues in sparse populated areas, and in 1974 the last private telephone company in Norway, 'Andebu Telefonforening', was taken over by the state owned *Tele-adco*.

Reflections

They picked strategic phone companies at first and facilitated relationships and knowledge exchange between key people in the small companies with their own key people. In particular connecting people with good relations in US and UK telecommunication research environments to technicians experimenting with connecting wireless and fixed phone systems in Norway. (Bastiansen, 2001) As *tele-adco* took over private phone companies, the economical capital invested was mainly converted into human capital. The value of the human capital available could only be used through facilitating a knowledge exchange. The human capital was partly converted into relational capital using the structural or organizational capital previously developed in the Telegraph operations. At the same time challenging projects brought the bright minds together. Economical and structural capital and a portion of political capital (power) were converted into human and relational capital, creating important value for the Norwegian telegraph operations that was hopelessly behind in the phone industry.

Story 3. TV and oil – the beginning of the Satellite ventures

The organization was operating on multiple technology platforms and saw early possibilities on the satellite arena. The state owned Norwegian Broadcasting Company had been working with the *Tele-Adco* to distribute television, and *Tele-Adco* saw satellite as an important technology for television in the future. The political administration was involved in the satellite vision and investment strategies were put on the agenda. From previous ventures the Norwegian shipping and oil industry were important allies in development and use of the services. The North Sea oil platforms were for example in need of reliable communication technologies. At the time an English organization had decided to sell their satellite. Several nations were interested, but it was the Swedish and the Norwegian Tele-Administrations that had the most interesting purchase strategies.

“I knew that we could pay a higher price than the Swedes. We had more business areas that could utilize the technology and the shipping and oil industry was already working with us on satellite technology projects. When presenting our solution we could show that we had long experience with wireless technology and we could visualize several business units where satellite could play an important role in the future. The check on 250 million was already signed to show a strong willingness to act, and manifest that we were ready to start capitalizing on the technology immediately. And we knew that the Swedes had a reputation of having slow payments routines.” (Interview with the CEO and President, 2002)

Reflections

Base stations for satellite transmission were established at three oil-platforms in the North Sea in 1980, and an on-shore station was placed at Svalbard in addition to Eik in Rogaland. Twenty-five Norwegian ships had in 1980 license for maritime satellite communication.

The economical capital was undoubtedly important in this transaction, but it was operating together with other forms of capital to win the contract. And they had both projects and relations with big user-groups like oil and shipping companies. In addition to the financial payment *Tele-Adco* could also visualize to the seller how they played a role in helping developing other forms of capital. *Tele-Adco* had also a clear picture of how the economical capital invested could materialize better and faster because of the intangible capital forms embedded in their operations.

Story 4. Social functions – the non-economical capital focus was not always driving innovation

The telephone automation came later to Norway than in other countries. In 1920 the first automated exchange was put into operation in Skien, and the last automated exchange was completed 65 years later in Balsfjord. Governmental and company records show that the automation was delayed for reasons of employment and regional developments. It is partly explained by the fact that telephone operators in sparsely populated areas of Norway performed an important social function in their local area. In addition, the thousands of employees in the manual exchanges were to large extent women. The telephone automation caused a reduction in the number of jobs for *Tele-Adco*'s employees in areas where job prospects were already scarce.

Reflections

This show that the organization was managed on different capital forms. It also indicates that social responsibilities not always drive capital conversion. In this specific period non-financial goals was slowing down innovation.

Story 5. Knowledge exchange – relations to other environments was important

Connecting 1: In 1965 the management of the military research institute (FFI) and the Tele-Administration agreed to establish a committee to elucidate the possibility of establishing a research and development center for telecommunication close to the military research institute at Kjeller, just outside Oslo, with the intention to further research radio technology. FFI and an

electronics company, Simonsen AS, cooperated at the time in developing mobile telephone terminals (Collett et al., 1993: 31).

Connecting 2: A key project that would motivate research came in a meeting in Kabelvåg in Norway 24-27 June 1969, where the governmental representatives from Island, Denmark, Finland, Sweden and Norway participated. From this meeting a proposition to create a Nordic effort in developing the Nordic Mobile Telephone (NMT) emerged.

Reflections

A combination of collaboration and experimentation lead to several generations of mobile systems. The nations involved were used to collaboration and opened up their respective research centers to share ideas. Relations among the national tele-administrations were maintained and as a result *tele-adco* was included in developing national and global standards. This was a huge achievement that mainly can be related to their unique knowledge and relations with other significant players. Manual mobile systems lasted more than 20 years, and the first generation automatic analog system, NMT, was launched in 1981. The digital GSM system was introduced in the 1990s, the GPRS system at the turn of the century, and now *Tele-Adco* prepares for launching the third generation UMTS system.

Story 6. Norway in the digital future – competing for recognition

Maybe the lessons from the slow adoption of automated phone exchanges, see story 4, created organizational value after all. A lesson was learned and they would not be a follower. Parallel to the emergence of the wireless (mobile and satellite) services a strategy to automate and digitalize the manual switch boards throughout Norway was initiated. By taking on the task of digitalizing the Norwegian network, *Tele-adco* started the largest technological effort in Norway since the development of the gas and oil industry. In the 1985 annual report the CEO and President stated that: “1986 is the start of a new era; it is when we start using the digital switchboards. Within the next 10 years we (*Tele-adco*) will make Norway one of the first countries in Europe to apply this technology to all our services.” (*Tele-Adco* Annual Report, 1985 – My translation). In 1986 this goal was turned into the following vision: “Norway shall become one of the foremost telecom countries in the world by 1995” (*Tele-Adco* Annual Report, 1986: 9). *Tele-Adco* received the first digital phone exchanges in 1986 from Alcatel STK, who was one of the main supplier of digital exchanges, chosen in tough competition with others. In 1990 Ericsson became the second supplier of digital exchanges, and *Tele-Adco* developed a good relationship with the two main suppliers of digital exchanges. The new digital system allowed for example the market-side to be more efficient in establishing new subscriptions. The negative side of the high level of knowledge developed in Norway at the time was the decision to develop standards unique to Norway. *Tele-adco* was digitalizing the network faster than the rest of Europe and more than ¼ of the subscribers were in 1988 connected to digital exchanges. By 1992 the rate of digitalization reached 50% and the digitalization program for the Norwegian telecommunications network was completed by December 1. 1997.

Reflections

When asking about driving factors behind the digitalizing process, in an interview with the former CEO, the response was human capital. The former CEO put one charismatic engineer as a main driver in this value creating period. “Looking back we can see that we saved billions digitalizing Norway, a very profitable investment,” says the engineer himself. When asking about non economical capital forms he recalls that the Norwegian digitalization program was soon well known internationally and delegations from other nations came to study the Norwegian solution, creating important relations internationally. And the suppliers were lining up to deliver equipment. Norway became a display case for new telecommunication technologies, and it was a quality seal to be accepted as a supplier to the Norwegian telecom organization. This gave very low prices internationally and made the digitalization even more

profitable. December 1. 1997 the digitalization work in Norway was completed as the first country in the world. The digitalization story show how human capital and unique knowledge created in relations in a given project creates both economic and relational capital.

Story7. Mobile phones for free – knowledge, integration and structural issues

The vice president of *Tele-Adco Mobile* from 1991 to 1995, describes the value creating moment: “When we launched GSM in 1993, we formulated the goal of having 70% of the market, and decided that having a good distribution network would be important to achieve this goal. Our move was to master the distribution network by providing advantages to independent retailers. We knew that it would not be possible to launch GSM before it was a trustworthy alternative for the retailers so we let our competitor, Tele-Com, owe the GSM market the first 8 months. These moves were a big problem within *Tele-Adco* and especially for the corporate headquarter. We had long experience and unique knowledge within the Tele-adco group to operate networks, and we analyzed Tele-Com’s operations to understand their structure and network, and estimated when they would reach capacity and when they would have to restructure their network. We started building extra capacity into our network in Oslo, and we introduced ‘call as much as you want without paying during the weekends’. Calling for free during the weekends was a good sales argument, and our retailers found it easy to sell mobile phones with a subscription from *Tele-Adco Mobil*. We continued with this offer for 1½ year. We knew that Tele-Com could not follow this move because the traffic volume would cause a breakdown in their network. Every week we analyzed how much net capacity we utilized and how much capacity we had at disposal. Based on these analyses we decided at which exchange to increase capacity.

Customers quickly learned to use the ‘call for free’ service. We made some investments in exchanges earlier than we otherwise would have done to ensure enough capacity. However, this was only a capital cost caused by investing some months earlier. Every time we did something, Tele-Com counteracted with increasing commissions used to subsidize the mobile terminals. We were the first operator to introduce services such as Privat-200. Engineers tend to investigate the busiest hour during the day and accordingly dimension the network with capacity. A business person sees that the unutilized capacity during other times of the day can be used to offer other services at marginal pricing. That was the background for creating Privat-200. When we launched Privat-200, Tele-Com responded by such high commissions that the mobile terminals were sold for NOK 1,-. We met this move, and the summer 1995 was therefore special with an extreme increase in new subscribers. Fall 1995 we could conclude that we had come through this extreme situation in the best manner, and we had a better organization to handle such extreme situations. This caused the retailers to trust us and we had succeeded in locking in 70% of the distribution network.” (Interview of the vice president of *Tele-Adco Mobile* by Frank Elter)

Reflections

The Privat-200service was cheap to have but expensive to use, and it had “discounted” prices at times during the day with low utilization of the network. These way investments were utilized better. Analysis of the network also revealed that only 30% of the total traffic went from the mobile network to the fixed network, and 70% of the traffic went from the fixed network to the mobile network.

“We did quite a few things with voice-mail. If you terminate phone calls in the voicemail, you do not strain the radio network, but we still get the higher mobile charges. To develop products and services such as these presuppose a combined good understanding of technology and business. We used knowledge about the operating network combining technology, fixed stations, traffic and stress analysis, pricing and marketing of the service. We integrated our

experiences across the organization. Many do not have this insight and do not have the will to gather such knowledge.” (The vice president of *Tele-Adco Mobile*)

The Mobile phone ventures and business movements described above started a rapid growth period for the organization, and at the same time it was putting the nation, Norway, on the map. The company was for example establishing a mobile network and developing the mobile organization in Greece, and *Tele-Adco Mobile* was selected solely because of their unique knowledge. (From interview with the former CEO, 2002) The battle with the competitors resulted in a huge increase in the number of subscribers, and measured in terms of mobile phones per capita Norway was the world leader. The story illustrates also that management teams need to combine knowledge about technology and business, and that knowledge created across the organization might give competitive solutions. It also shows that local knowledge and strategy decisions are closely related.

Story 8. Wireless in Bangladesh – capitalizing on social responsibilities

The feel for working with different capital form has also opened for new business models. A more recent story visualizes also how organizational, social and economic capital forms were interacting in their telecom work in Bangladesh. In 1998 Grameen Phone, a 50/50 venture between the Norwegian Telecom and a local bank, was established. Five years later the company is by far the largest mobile operator in Bangladesh, with more than 500,000 customers and a market share of more than 70%. During its five years of existence the customer base grew by 100% per year, making it the fastest growing mobile telephone company in southern Asia. The company now serves large parts of the country, which has more than 120 million inhabitants. The bank provides small loans to the poor, mainly to women so they can invest in business activities, such as a plot of farm land, a chicken farm or a small fish-farming plant, including mobile telephone for use in business activities. The partnership between Grameen Bank and Grameen Phone is known as the "Village Phone". Women in more than 10,000 villages have been given loans enabling them to become the village's "living call box". As the fixed network in Bangladesh is poorly developed, several million people now have access to telephone services for the first time.

Reflections

The Village Phone attracts international interest, and studies show that the Village Phone has a significant economic and social impact. The villages gain new means of contact with each other and the outside world, and the women owning the mobile phone earns income and status in the village. At the same time, Grameen Phone is earning profit (economic capital) and international recognition (symbolic capital). The Norwegian telecom's involvement in Grameen Phone shows that their skills to work with different capital forms can open new markets, create organizational value and lead to considerable social improvements.

3.3 The knowledge venture – creating a new business management model

Based on a history of creating unique and valuable knowledge, the organization decided to start a sense-making process based on their history of capitalizing on knowledge and relations – what could be learned and used from all this? A participatory action research project was started when the merger with a Swedish telecom organization broke down in January 2000. An internal group of researchers were organized into a task force, tied to a steering committee, and they have been involved in numerous activities. Having a strong history in research, the task force decided to link up to external researchers rather than to consultants. Given practices of working across the organization, the task force consisted of members from the accounting department, the human resources department, and the strategy department. This cross-functional character of the task force became one of the major reasons for the continuous innovation and development of the holistic steering model that emerged. Talking about intangibles in the language-of-practice of

business and management control was crucial for top management commitment and approval. As business unit managers entered the process, they claimed the right to adhere to only one management system. This forced staff from finance, strategy and human resources to coordinate different endeavours and align their thinking in order to come up with a flexible system that could accommodate all claims for adherence. The holistic steering model is called the Integrated Management System (IMS) and there are two integrated parts in the model that emerged. Following the specific names that emerged inside the organization, we have labelled the two parts as “The (knowledge based) strategy wheel” and “The House of Drivers”. Both parts are listed side by side in figure 4 below.

The “strategy wheel” has its inspiration from the Business Excellence model of the European Foundation of Quality Management (the EFQM model). The strategy wheel is not only about strategy formation as it ties value drivers and performance agreements together into a strategy process. Subsequently, the strategy process is linked to an implementation process of projects and activities, and measured and followed up in business reviews that are part of the Follow-Up process.

The implementation process is located at business area level and decentralized in nature. It is where the projects and activities are located, and it is the knowledge space where the initial relational capital is emerging. The IMS model is sensitive to distributed relational capital and linkages to value drivers and performance agreements are meant to motivate business units and project leaders to make relations and knowledge created visible for others and make it visible to other business areas. A project exchange is developed to strengthen the sharing and visibility of projects even further. The process of value driving system is facilitated by means of value drivers made visible in the “House of Drivers”

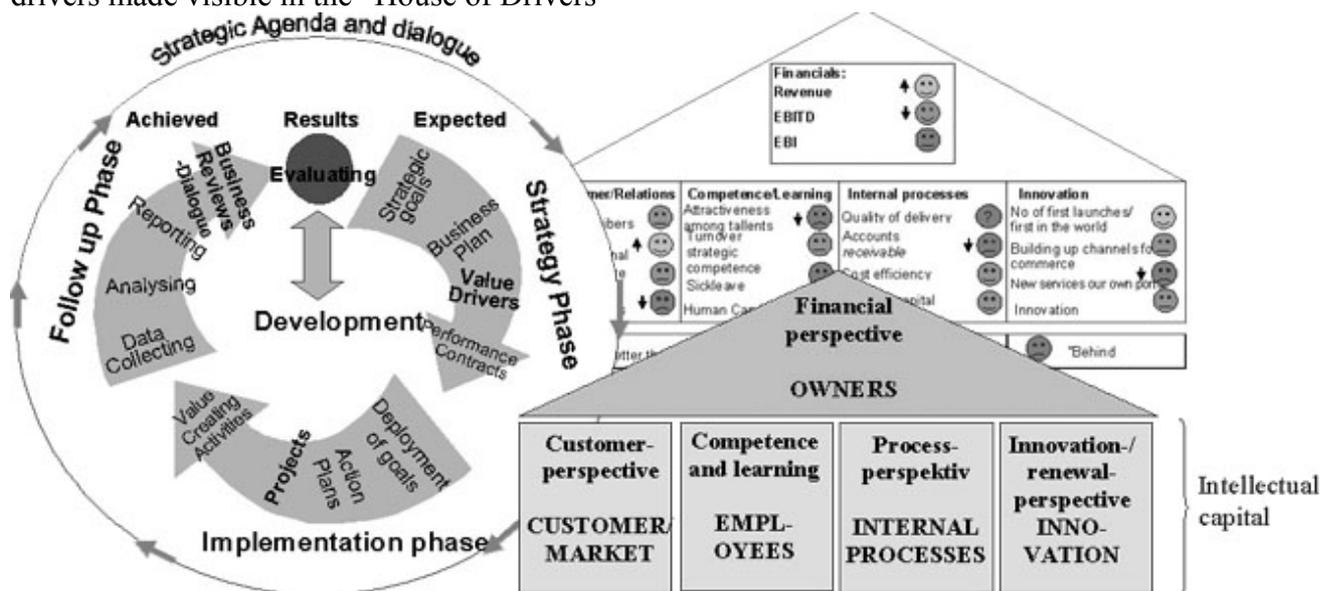


Figure 4: The (knowledge based) Strategy Wheel The House of Drivers

The three elements in the ‘strategy wheel’ derive most of their functional benefit from the fact that they are continuous and brought together into a pattern of action and dialogue. The circle around the strategy wheel shows an ongoing knowledge based strategy process. An intelligent process for developing sound value drivers are developed as a part of the strategy process. The company are well aware of the importance of value drivers as it represent strategy, it is linked to performance agreements, to projects and it is the main point on all business reviews. The business reviews is the arena where the corporate management and business area managers, sometimes accompanied by business unit leaders, come together in a investor/entrepreneur relationship to discuss new investments and status on different capital forms. The value drivers

represent how successful the company has been in converting project ideas into organizational value.

The parts in the steering wheel are interrelated, also across the circle creating a multidimensional system of managerial and organizational behavior that facilitate knowledge based strategy and operational processes. Various process elements, such as the business reviews and the performance agreements, can be labeled structural capital. The inputs are usually knowledge resources, i.e. human capital is invested, and the knowledge exchange, the relational capital, is located in the different business areas' projects and activities. The projects and activities tend to be decentralized, located in business areas and units. Knowing the importance of cross functional work, integration and sharing, the organization decided to link a Project Exchange to the implementation phase in their 'strategy wheel'. In the Project Exchange projects are being listed across the whole organization and organizational members are bidding on projects with their human capital (availability, competence and experience). The Project Exchange highlights the value of integrated learning practices (job-rotation or on-the-job-training) through the challenges offered in projects. It is in itself a value driver. A division manager in *Tele-adco* offered the following observation: "There is good knowhow around in our company, but very few people know where to go to get it."

The House of Drivers serves two functions in the IMS model. It includes the non-economical and economic capital forms represented as knowledge or value drivers in the overall management control system, and it is setting the agenda for corporate business reviews. It also facilitates the process of finding value drivers in business areas and units. The unique needs in business areas resulted in one versions of the 'house of drivers' for each of them. Through the 'house of drivers' movements are monitored and visualizing overall performance and development within each of the four business areas. In the development of systems and models to increase knowledge based value creation the organization is experiencing how important the value drivers are for success. The process of finding the right value drivers are extremely important and they are the fuel of the IMS engine.

4. Discussion

The fundamental assumption made in this study is that knowledge and capital are positively related. We also assume that all capital forms have its roots in economical capital and that they have to be convertible with economical capital to be defined as a capital category. In order to

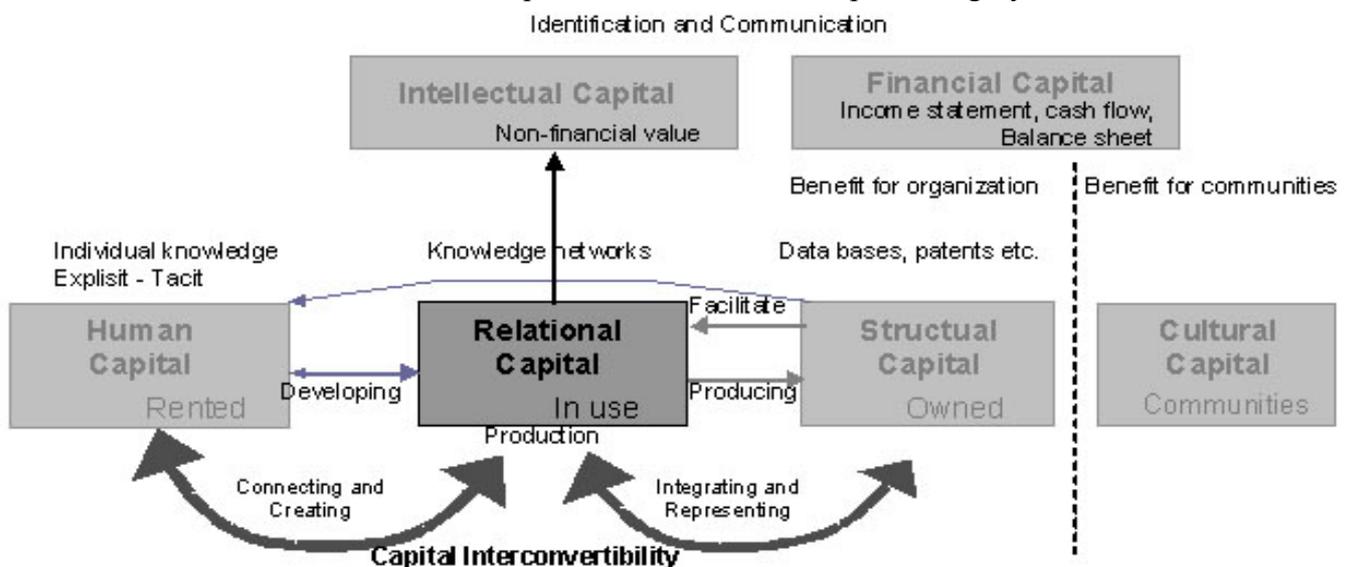


Figure 5: Capital conversion in the MERITUM model. Social capital as benefits for communities added.

operationalize and locate conversion processes we adhere to a slightly modified version of earlier intellectual capital models. The main capital species are split into human capital, relational capital, and structural capital (Bontis, 1998; MERITUM, 2002). As before, the human capital form consists of the combined skills, experiences, insights and education of the organizational members. Structural capital, sometimes also referred to as organizational capital, is the procedures, norms, routines and rules that make up the organizational system. The relational capital form - sometimes also called social capital, customer capital or external capital - is the web of relations between people and groups of people associated with the organization.

It is made visible through personalized interaction and it is the exchange arena for human capital and its constituting skills, experiences, education and abilities. In contrast to human capital, parts of the relational capital can be collectively owned. The aggregate exercising of individual skills and competences results into a reputation that is of collective value for the group or organization (Roberts, 2002).

4.1 Relational Capital

Relational capital can be considered the combinatory opportunity that makes interconversion possible where the relations provide the roads on which knowledge drivers can drive. Picture the dynamics present when drivers are approaching a four way intersection in a queue with meeting traffic. The drivers select their direction, get interchanged with new drivers and the dynamics is changed. It is our implicit assumption that the relational capital, placed in the center of the production process, plays an important role in converting intangible capital forms by means of its 'roadmap' characteristic – it provides connectivity. The use of that connectivity; that in organizations originate from measures and routines such as incentive systems, project organizations, performance measurement systems, internal reporting and communication and other structural capital items. It is structural capital that put the knowledge drivers (human capital) on the roads of relational capital – no structural capital means no drivers and therefore no movement, just opportunity.

4.2 Capital Interconvertibility

The figure shows how value creating moments, visualized in the figure as the arrows between relational capital and human capital and between relational capital and structural capital, can move capital forms toward economic capital and at the same time there are movements in the opposite direction. The movement between the boxes, represented in the arrows, is the value creating moments, the very moment where a capital form, or part of it, is transforming into a new form - the conversion process. The conversion between human and relational capital is labeled 'creating', it is where people, and people and projects are connected in a knowledge exchange and sense making process. The relational capital is the production arena, and organizations will try to facilitate the creation into structural capital. The knowledge created has to be represented or codified to strengthen the innovation process and deliver economical output. Through their structural capital organizations can facilitate human and relational capital conversion. Capital interconvertibility is explaining movements in both directions, different dimensions among multiple capital forms. Interconvertibility refers to a non-linear and non-equilibrium state. In other words, a conversion process can play out in multiple directions, between two or multiple forms of capital.

Recollecting as the *Tele-Adco* took over private phone companies; their economical capital was mainly converted into human capital. The value of the human capital available was turned into relational capital through the structural or organizational capital previously developed in the organization. The relational capital created in turn financial capital/output that was higher than anyone could expect. One can argue that the lead in wireless phone technology came as a result

of non financial transactions. This simple example shows how different capital forms can convert from one form into another and that the process might work both ways.

The notion of interconvertibility dates back to the emergence of the theories for thermodynamics. In 1829 James Prescott Joule claimed that there was a relationship between mechanical motion and heat and he later said they were interconverted. William Thomson first heard Joule's theory about the interconvertibility of heat and motion at a meeting of the British Association for the Advancement of Science in 1847. Joule's theory went counter to the accepted knowledge of the time, which was that heat was an imponderable substance (caloric) and could not be, as Joule claimed, a form of motion. Thomson bridged later the theories on interconvertibility over in the telecommunication industry as he got involved in research and development of the first transatlantic fixed phone line. In accordance with a principle which is the equivalent of the principle of the conservation of energy, the knowledge conversion process could be presented as the conservation of social energy. Capital interconvertibility should take into account the time accumulated to create intangible forms of capital and the time needed to transform these from one type into another. The work on capital interconvertibility in organizations aims to establish adequate knowledge both of the space of objective relations between the different capital forms and of the necessary relations to convert them. Understand the movement between the parts occupied within a capital form and how these play a part in the reality and the emergence of new capital.

The holders of different capital species have great interest in exploiting the convertibility of the forms of capital, and to create production strategies capable of ensuring more efficient conversion. Like physical capital, which typically is used for different purposes, relational capital is appropriable in the sense that an actor's network of, say, friendship ties can be used for other purposes, such as information gathering or advice. Relational capital can be "converted" to other kinds of capital; like the advantages conferred by one's position in a social network can be converted to economic or other advantage. The "convertibility rate" of relational capital into economic capital is lower, since it is less liquid and more sticky" (Adler, 2002) The convertibility rate of intangible capital forms into economical capital is lower since the rate of return is uncertain both in time and size.

4.3 Relational Capital and interconvertibility

Relational capital can also be described in terms of interdependency and reciprocal relationships. Casual determinations are defined by non-linear relations, but domination in a relational web increases the closer the relations get to economic production. Some relations can be separated out in social spaces or areas, for example for statistical analysis, but the question is if they exist as real groups or if they just explain the probability of individuals constituting themselves as practical groups. The knowledge of an organization lives in a constellation of collectives each taking care of a specific aspect of the competence that the organization needs. However, the very characteristics that make the relational capital form a good fit for stewarding knowledge and innovation are also characteristics that make it a challenge for traditional hierarchical organizations. The relational arena that exist in our mind is a space of relationships that is as real as a geographical space, in which movements are paid for in work, in efforts and above all, in time. Movements in this space or web of relations mean sharing to acquire new knowledge in interaction with others. Distances within the web can also be measured in time, for example, time taken to rise or to convert capital forms. It is what could be called relational economy of time. One could argue that in the probability of mobilization into organized movements will be an inverse ratio to distance in this economy of time. The probability of assembling a group of members rises when they are closer in space and that is important as one get closer to financial production. Production of other forms of capital is easier between those

more distant to each other, but an alliance between those distant to each other is never impossible.

4.4 Value drivers and interconvertibility

An important factor in capital conversion is the portfolio of knowledge and value drivers and how it is used to drive knowledge based value creation in both directions. In many ways value drivers are the forces that operate between capital forms and facilitate the conversion process. Focusing on value drivers and intangible capital forms that convert into economic capital, without consider how interconvertibility might limit the potential non-economical return and creation of capital forms the organizational system can benefit from in the future. Looking at the value moments from the case one we have selected two important value drivers. ‘Integration through job rotation’, how to learn and work together better, rather than work more efficiently? and ‘international attractiveness’, how to gain international reputation and business? For the sake of the paper we have included a few reflections on the last one.

International attractiveness as a value driver

We know from the case that the home market is a country where it is challenging to build communication services, and it shows how early movements have displayed the company for the rest of the world. This is surfacing in the digitalization process (story 3) and in the mobile ventures (story 1, 4 and 5). While operating on the leading edge the company had at the same time a sound development in output measures such as the increase in minority interests, the company managed to hold low prices and they deliver satisfying economical results. A CEO in the *Tele-adco Mobile* was asked to reflect on the importance of international attractiveness as a value driver: “If I were to say something about value drivers representing the value of international attractiveness it would have to be to:

1) Compare our skills to come in position and to negotiate good economical terms for investments in international companies to what other telecommunication companies would have to pay for the same or similar ventures.

2) Look at the real use of Norwegian competencies in the companies we have taken a position in. Especially for our people that know how to dimension and build network, but also people that know business development and launches of new products and services.

As a small telecommunication corporation on the edge of Europe we have to ask if we can afford to loose this attractivity. (Interview CEO *Tele-adco Mobile*, 2001)

After this interview we went back did a small experiment. We looked at value drivers developed for the whole organization for 2001 and asked ‘what are driving international attractiveness?’ We discovered how the knowledge drivers under each of the capital forms in the House of Value were linked across different capital forms and even across business areas within the organization. This little experiment is indicating that we have to consider the parts in multiple capital forms located across the organization to understand capital conversion and the activities that drive knowledge based value creation. It is movements on multiple levels.

5. In conclusion

All together - the awareness and identification, the non-financial steering, and the supporting processes - capital interconvertibility are the movements in a landscape of managerial measures and actions. A landscape of interventions that guides the flow of knowledge from the high lands of expertise to the lowlands of application, making up the hills, river beds, pools and obstacles that create turbulence and resistance to ensure that critical knowledge flows are feeding the creation processes in ways that money can be made from. And, while flowing, it is allowing the

organisational landscape to learn from itself. We have now (some of) the terminology and a first indication on how to create financial capital from other capital forms, and it is in the multidimensional landscape of structural interventions and their integrated visualization that the answer to the how-question can be found.

When the Tele administration took over private phone companies, their acquired financial capital was mainly converted back into human capital. The value of the human capital available was turned into relational capital through the structural or organizational capital previously developed by the *Tele-adco*. This simple example indicates how different capital forms can convert from one form into another and that the process might work both ways. A value creating moment emerges when connectivity is established between two capital species, and the more or less random chain reaction that this movement creates is the process of capital interconvertibility.

The capital conversion among capital species in organizations is facilitated by the relational capital and its uniqueness and interrelation to other capital forms. Relational capital systematizes the flow (of content) and not the content itself, thus guiding the meaning and interpretation schemes used by people. Knowledge and value drivers, emerging capital forms and the process of capital interconvertibility should help organizations use intellectual capital models to visualize differences and uniqueness. The intellectual capital systems are not there to assist stakeholders or organizations to compare organizations to one another. Instead, starting to recognize what sets organizations apart from each other and subsequently managing and investing in that capital differential, starts a new cycle of capital interconvertibility – from the financial back into the non-financial capital species. Focusing on their differences would help organizations to innovate and grow and to attract financial capital, talents, or ideas. A focus on uniqueness rather than similarities, and put it to work in diverse webs of relations would benefit communities and nations in their needs to perform in the global market place.

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