

**Taking Leadership from the Periphery:
The Role of a Subsidiary in Changing Identities and Forms of Governance
in a MNC**

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Introduction

The increasing growth and importance of multinational companies has evoked a renewed interest in economic cross-border activities. For some time the controversies have concerned what factors structure the behaviour and strategies of MNCs: markets or institutions. On the one hand, MNCs have been seen as global agents of change due to their transnational engagement. This inspired the strong globalization thesis: MNCs were to be drivers in a process in which Anglo-American business practices would prevail (Bartlett and Ghosal 1989, Ohmae 1990). On the other hand, institutionalist studies have strongly rejected the convergence perspective. Studies inspired by the national business system tradition have emphasized the continuing importance of MNCs' domestic institutions in the way they coordinate economic activities (Ruigrok and van Tulder 1995, Whitley 2001, Harzing and Sorge 2003). While acknowledging divergence other institutionalist studies have criticized the NBS tradition for lack of sophistication in both explaining internationalization processes and the way MNCs are actually developing.

Particularly the questioning of the hierarchical nature of MNCs has given new insights as to how cross-border economic activities are controlled and coordinated. The discovery that subsidiaries are not mere tools in headquarters' (HQ) strategies, but can take on strategic roles, has inspired the studies of subsidiaries in their own right. The revelation of new relational patterns has demonstrated the emergence and existence of polycentric organizational structures, and issues concern how to understand these organizations: the nature of HQ-subsidiary relations, the distribution of roles between different sub-units, the nature of subsidiary power, and how subsidiaries can achieve relative autonomous development. The opening up of 'the black box' of MNCs has led these critical studies to take into account not only an institutional perspective but also individual actors' and actor groups' strategies and behaviour (Kristensen and Zeitlin 2005, Dörrenbächer and Geppert 2006). At the same time the conceptualization of these structures has disclosed a more multifaceted picture of globalization than the stereotype one in which big players dominate the game, shop around and ripe the benefits of different taxation regimes and low cost countries. A striking feature of both inward and outward flows of FDI in the Nordic countries is that comparatively small local players can play a dominant role: small- and medium-sized firms invest abroad, and local subsidiaries are capable of gaining strong mandates within their wider transnational settings (Kristensen et al. 2007).

The case presented in this paper is a case-in-point in the new subsidiary-centred literature. The main objective is to explore how a small subsidiary, specialized in subsea services and equipment to the oil and gas industry and relatively peripheral located in Norway, gained a key strategic role in a US based MNC and triggered a radical change of the entire MNC: its business logics, its mode of governance and operation. At the same time this is also a success story about the MNC gaining global leadership – in the business area of the Norwegian subsidiary. Objectively it is a success in terms of market dominance and financial results. Subjectively it is a success in terms of technological excellence. This achievement is pertinent as to the subsidiary's strategic position. Thus, while considering the subsidiary's position in

¹ The present paper is part of a EU-funded project, Translearn.

the light of the resource thesis, the paper will at the same time go beyond the narrow MNC-subsubsidiary nexus and explore mechanisms and processes underlying the subsidiary's technological excellence. What capabilities have enabled the subsidiary to become a technological leader? The present case is untypical as to our expectations based on national stereotypes. The liberal market economy typology used to characterize the economy of the USA prescribes a propensity for radical innovations in high tech sectors. The Norwegian economy, on the other hand, characterized as a coordinated market economy is seen to have a propensity for incremental innovations. In this case these roles were reversed. This goes for the entire subsea business as well: the Norwegians are forerunners. In an institutionalist perspective this implies that the subsidiary has transcended dominant patterns of innovation. Given the broad national engagement in this business it is pertinent to ask what role firm specific factors and national institutional arrangements respectively play in trailing a new path.

To account for this unexpected outcome, the paper will focus on the subsidiary's behaviour and strategies, but also bring other actor groups at the national level into the analysis. It will pay particularly attention to strategies for improvements and innovation. The paper will argue that the subsidiary's way of organizing work lies at the bottom of its success: interaction between multilevel actors in complex processes. This way of coordination has several implications: 1. it creates a blurred line between improvements and innovation; 2. complex multilevel interaction allows for the formation of links between different types of knowledge; 3. innovation is built into everyday activities, and leads to a successive dismantling of the dichotomy between planning and innovation; and 4. because it is less possible to plan ahead it leads to a blurred line between tasks and actors' role suggesting that roles and routines are constantly changed. This more open way of processing innovation is found to constitute a new pattern in the globalized economy, and presupposes a high degree of work autonomy and participation at all levels in an organization and in a value chain. In the Norwegian context this form of work organization has long been advanced. Work autonomy, participation, and the upgrading of skills have been on the top of the agenda of the trade union for long period of time. In a way it represents the continuation of the experiment tradition introduced in Norwegian working life in the 1960s (Gustavsen et al. 2001). It suggests that general working life conditions in Norway constitutes a facilitating factor in an emergent pattern of innovation in the globalized economy. The link between firm and institutional environment should therefore be considered as co-evolutionary processes rather than outcomes of fixed structures.

The paper will use a contrasting case, a MNC failure, as a point of reference. Kristensen and Zeitlin (2005) have strongly evidenced that constructing a MNC is not a matter of course. The next section will give a brief outline of the problems in building transnational organizations and take on board concepts that can substantiate the interaction/coordination thesis. The third section will analyze the relationship between the HQ and the Norwegian subsidiary. The fourth section will investigate mechanisms and processes underlying the subsidiary's positional standing, and the fifth section will in relation to this consider its structural and institutional environment.

Multinationals, subsidiaries, and institutionalist studies

After Bartlett and Ghosal's (1989) influential work on MNCs that heralded the advance of a universal rationale guiding business operations, our understanding of the nature of MNCs has changed radically. For one thing, institutionalist studies have rejected the convergence thesis.

The argument that a single best practice, derived from market pressure, would lead to a harmonization of companies' behaviour has found little support in empirical studies. Institutionalists have on the contrary stressed that the specific social and institutional environment of an MNC is the dominant source of normative pressure that shapes the behaviour of a MNC (Ruigrok and Tulder 1995). Several studies support the view that managerial decisions are strongly influenced by the institutions of the home country of the MNC. The reorganization of a subsidiary after it is acquired shows the transfer of the MNC's country-of-origin specific systems of control and coordination and work systems (Geppert et al. 2003, Harzing and Sorge 2003). More recently institutionalist students have pointed to the fact that also host countries can exert influence on MNCs' behaviour. This has among others been shown in a comparative study of highly institutionally embedded German subsidiaries with less institutionally embedded British subsidiaries. Host country institutions such as the educational system, the system of industrial relations, and the national government's industrial policy can influence MNCs' forms of control (Geppert et al. 2003). However, this perspective has been a contested field. For example Whitley (2001) takes that it is rather unlikely that host country as well as foreign subsidiary's influences will provoke a fundamental organizational change throughout the whole MNC, since MNCs continue to coordinate their economic activities in the established ways of their home countries. Even when MNCs deliberately undertake major FDI to gain knowledge and learn from other practices, 'it seems that this encourages organizational differentiation rather than significant restructuring and innovation in domestic routines' (Whitley 2001:61).

For another thing, evolutionary studies inspired by organizational theories have disclosed that a large variety of factors are influencing MNCs' development. The effect of benchmarking, the exchange of technology and managerial practices within MNCs, and the 'trajectory of a company' are among factors pointed to. Subsequently, the claim is made that national institutions alone cannot explain corporate internationalization, and neither home nor host institutions as sources of influence can explain radical change in MNCs (Boyer and Freyssenet 1995, Dörrenbächer 2000, Dörrenbächer and Geppert 2005). But more interesting is the fact that these studies have shown that MNCs in the global economy do not necessarily have traditional hierarchical structure. The increasing pressure of globalized markets and new technologies have challenged traditional authority relations, and it is taken that the hierarchical structures of MNCs based on formal authority relations will be replaced by more de-centralized structures. The nature of relationships in the new power structures is expected to be more ambiguous and have more complex interdependencies with new power games and new power players. From an organizational resource perspective it is argued that the diversity of power players and subsidiaries' strategies can matter more than those of the HQ depending on resources they control (Doz and Prahalad 1993). This perspective has in turn directed the focus towards subsidiaries and the resources they can draw on and control. Subsidiaries can be assigned a strategic role, not only for their own company but for the MNC as a whole, and foreign subsidiaries can be important strategic parts of MNCs due to their specific organizational assets (Birkinshaw and Hood 1998).

Only recently have institutionalist researchers started to address the issue of power and politics in MNCs while at the same time considering the impact of national institutions (Dörrenbächer and Geppert 2006, Kristensen and Zeitlin 2005). Researchers interested in the political nature of economic organizations have accepted that HQs power can be limited as a result of increased competition and globalization, but Dörrenbächer and Geppert (2006) maintain that the study of micro-politics - power, politics and conflicts - still lacks systematic and in-depth research. In their definition organizational micro-politics is understood as an

attempt to exert a formative influence on social structures and human relations. Securing options, realizing interests and achieving success takes place in a contested terrain, and main 'political brokers' in their analytical framework so far include executives from both the HQ and subsidiaries. Arguably their orientations and strategies can shape the development of entire MNCs. Individual actors and managers with personal career ambitions can set off power games within the MNCs and change it. They therefore argue for the need of taking on board theories that give 'face' to actors, while at the same time stressing the importance of institutions (Dörrenbächer and Geppert 2006:256-7).

Until now Kristensen and Zeitlin (2005) have made the most in-depth inquiry into the nature of contemporary MNCs by studying all the subunits of a MNC, various actor groups within the different subunits as well as these subunits' external actors. The opening up of the MNC in their case showed that these giants are not necessarily well-structured hierarchical entities under full command from headquarters. Nor were the foreign subsidiaries merely distant tools of corporate management. All in all they found a 'world of chaos' spurred by opposing interests between the various subunits: between the HQ and the subsidiaries, and between the subsidiaries, a social phenomenon referred to as warring fiefdoms. Conflicts arose from mandate and investment decisions, the subsidiaries struggles for position within the MNC, and the pursuing of parochial interests. HQ and subsidiaries were all playing their local games with different rules that were not understood by the others. The HQ that had poorly developed mechanisms of communicative interaction with 'others' in the subsidiaries ignored this fact, and, therefore, when introducing strategies to solve differences rather exacerbated them (Kristensen and Zeitlin 2005:189ff).

These issues reflect managerial problems of globalization and are linked with the debate of how MNCs should be managed. Intensified competition and global restructuring are seen to challenge the traditional forms of managing MNCs. A critical factor in the New Economy is considered to be the organizing of worldwide flows of local learning and innovation. Kristensen and Zeitlin (2005:211) suggest that the transnational coordination of activities has become particularly problematic as a result of the M-division heritage that is perceived to create the separation between strategic and operational decision-making. This problem is also referred to as the knowledge-power dilemma. This dilemma is seen to arise from the combination of global marketing and local resource/capability development. To be successful the resource and market sides have to be connected. Since HQ's executive officers are seen to be ill-equipped in understanding the unique resources and capabilities of subsidiaries, and subsidiary managers don't have the power to fulfil the marketing role, this combination is difficult to obtain. This is also seen to be one of the main challenges MNCs currently are struggling with (Kristensen and Zeitlin 2005:19).

Based on the study of a large number of others' and their own studies Kristensen and Zeitlin (2005:244, 254) do not see any solution to the managerial dilemmas in pure structural dimensions, but suggest instead to 'focus on underlying processes of information flow, influence, and power that determine how the tradeoffs among multiple stake-holders and multiple perspectives are made'. To remedy the current coordination problems they suggest processes of 'pragmatic collaboration'. The conceptualization of this sort of interaction involves actors – as teams - with a high degree of autonomy, free to alter internal change routines in order to achieve goals mutually agreed upon with their collaborators. 'Pragmatic' is understood as participants routinely having to question the suitability of their current routines and continuously readjust their ends and means to one another in light of the results

of such questioning. This coordination method can only be achieved when the participants mutually recognize each other.

Bringing in interactive dimensions and pragmatic action at the same time presupposes actors' reflexivity. Reflexivity is basically understood as interactive processes, and consequently roles and practices can only be changed through interaction and negotiation with others. In the American pragmatic school of social science it is taken as a part of human beings' nature to 'take on the role of others' when constituting one's own role and oneself as an object, and 'I' becomes 'me'. In this way the formation of one's own role (me) takes place in interaction with other members of the group. These processes make it possible for human beings to reflect over oneself and subsequently to carry out self-corrections and reinvent themselves (Mead 1967, Kristensen et al. 2007). Given this perspective of social change Kristensen et al. (2007) are currently asking whether the formation of reflexive communities constitute a key element in certain forms of learning organizations. Such organizations are characterized by continuous experimentation; work autonomy is fostered; innovation and improvements are co-designed processes; and the organization is open for unlikely innovation and the 'unexpected to happen and gain organizational space' (Kristensen et al. 2007). A relevant question is then how self-reflexion is created in groups and at the level of firm? How is the readiness to construct larger and more complex 'wes' brought about? How can a unit become a 'we' that can become an object for itself and being self-reflexive and accordingly get the best out of teams and individuals' capabilities and potentials?

The recreation of a MNC²

The US based MNC in question used to be an industrial conglomerate comprising as diverse products as food processing technologies, chemicals, and wellheads to the oil and gas industry. During the 1990s it changed radically. To use its own wordings: 'We have transformed our businesses from low technology product-oriented enterprises to high technology systems leaders in their respective industries. Our technology is second to none'. It uses the slogan 'From exploring to delivery' (Annual Report 2001). Its present structure originated in 2000 when the conglomerate was split into two independent public traded companies, listed on the NYSE, one taking care of the machinery business and the other the chemical business. The reason given for the split was to create more focused enterprises in order to better communicate with investors and other parts of the finance system (Annual Report 2001). The 'machinery company' comprises systems for the energy, food processing, and air transportation industries, and it is presenting itself as a global leader providing mission-critical solutions, based on innovative, industry-leading technologies. After the split the 'machinery company' has met the expectations of the finance markets. In the five years period since the incorporation in 2001 the company has doubled its total turnover, and in 2006 its return on investment was some 20 per cent. Twice, in 2005 and 2006, it was by Fortune Magazine named the most admired oil and gas equipment and service company.

The MNC's transformation process started in 1993 when the then industrial conglomerate acquired a Norwegian subsidiary specializing in subsea systems. Today this business constitutes the biggest segment within the 'machinery company's' energy business. Altogether the energy business accounted for more than three quarters of total revenues in

² Data about the MNC and the subsidiary is collected from annual reports, secondary literature and interviews.

2006, and within the energy systems the subsea segment accounted for as much of 59 per cent of total revenues (Annual Report 2006). Since the split in 2000/01 the energy business and in particular the subsea part has driven the growth of the entire MNC. In other words, the Norwegian subsidiary has played a dominant role in the growth and development of the US based MNC. Its impact on the MNC started already during the acquisition negotiations. For the MNC the resultant outcome was an unintended consequence of its growth strategies. Initially it acquired the Norwegian subsidiary to get access to the North Sea market. Unintentionally it acquired local knowledge.

The clash over mandate

The change process was triggered by a conflict between the HQ and the subsidiary during contract preparations. During negotiations it turned out that the HQ wanted to restrict the subsidiary's market access only to the North Sea. Restricting their mandate to its home market was the direct opposite of the subsidiary's aspiration to become the leading supplier of subsea systems worldwide. The fight for its own interests took place at several levels, and it was the employees' representatives that spearheaded its interests at different occasions. The struggle was fought at the company level, and at the national political level. According to the then regulatory regime foreign buyers needed the acceptance of the Minister of Industry for acquiring businesses and industrial activities in Norway.³ In principle the Minister had the power to set the conditions for the acquisition, but since at the same time Norwegian corporate law made the board responsible of a firm, its policies could not be changed without the board of directors' approval. For the subsidiary's employees it was thus vital to have a policy for international activities approved before the case was taken to the Ministry. In the board of directors the representative of the employees left no doubts about their intentions⁴, and before the case was dealt with in the Ministry, the employees also intervened. A letter to the Minister was followed up with a telephone call 'so that the authorities should have no doubt about what our letter meant. We put our souls into it!'. The employees' interests won through. First, the concession terms specified that subsea engineering and production should take place in Norway and that the subsidiary should keep its intellectual property rights, expertise and patents. Secondly, the subsidiary was given the responsibility for supplying subsea systems world-wide apart from North America, which was awarded to the mother company. Thirdly, the MNC obliged itself to develop the subsidiary internationally: its marketing organization should assist the subsidiary in its internationalization projects. In addition the subsidiary was denominated a Centre of Excellence by the HQ.

According to the course of events the success of the subsidiary can be understood as a result of political power. The reality was more complex. It is true that the Minister had the authority to set conditions, but it was not given that he should advantage the national firm. At the time Norway was applying for membership in the EU, and had to downplay a nationalistic oriented policy. There were also considerations as to the further development of the North Sea. Structural changes in the oil industry had prompted a deregulation of the national oil sector. In

³ As part of the EEA agreement, and other international agreements in which Norway commits herself to treat foreign citizens and companies equally with Norwegian ones, this concession law was abolished in 1994, and replaced by a law that treats Norwegians and foreigners equally.

⁴ In the subsidiary's own history book it is told that during one of the debates about the conditions, the representative of the employees on the board pounded his fist on the table in such a way that it was echoed over the Atlantic.

the new setting discrimination of foreigners was to be avoided in order to attract more players and investments to the North Sea. But the outcome can also be linked to a contingency. Shortly before the acquisition a well-known Norwegian company had been disfavoured after being acquired by a foreign MNC. This incident provoked a strong public reaction, and it created sentiments against foreign intrusion into Norwegian business. The prospect of having more work places closed down after a foreign acquisition was a scenario to be considered. For a Minister of Industry representing the Labour Party, that had a historic strong commitment to protect labour, this scenario involved a political risk particularly since unemployment at the time was rising.

A reflexive learning process

The point to be made is that the HQ after all accepted the Norwegian rules of the game. Its given reason for acquiring the subsidiary was to get access to the North Sea, but the outcome of the concession terms indicate that the American HQ through its executive officers carrying out the negotiations in Norway changed their expectations for acquiring the Norwegian subsidiary. Rather than releasing a pure power game, the conflict obviously came to function as an intervening mechanism for reflexive learning. Coming to Norway represented an encounter with different logics, norms and values. Typically, the HQ's representatives shared many of their compatriots' view on employee representation in the board of directors when observing this phenomenon: 'what do they do here?'. There were also other examples of observations of 'Norwegian idiosyncrasies'. However, the officers' discovery and understanding of the subsidiary's business logics and operating mode were fundamental for the ensuing process. As mentioned, the US-based MNC used to be a traditional manufacturing company, a product-oriented company. In its inherent logic assets were tangible. Being on the very site of the subsidiary the HQ executive officers had the opportunity to observe a different world and a different logic. Instead of tools they saw that 'the main value went out of the door at four o'clock in the afternoon'. The fact that the HQ executive officer was responsible for the oil and gas in the MNC enabled him to link what was taking place within the subsidiary with its reputational status. The subsidiary was considered the jewel of the crown in the North Sea subsea technology. Since, in fact, the MNC had been the subsidiary's largest sub-supplier for a long period of time it also knew it was able to deliver. Moreover, the Americans were not the forerunners in this field of technology. This state of affairs was known to the American bidder.

By focusing on the subsidiary's technological excellence the acquisition can be interpreted as a strategic-asset-seeking FDI. But if the HQ had perceived the situation in the sense of only getting access to a local innovation system and knowledge, we should have expected a different outcome. In such cases the literature assumes that the consequence can be mutual alienation between HQ and subsidiary, and an increased gap between the two parties as a resultant outcome. This is because subsidiaries engaged in technological innovation will rather communicate with external actors in their local context than other parts of the MNC, and in this way gain temporarily independence. Fragmentation is thus considered a more likely outcome than a construction of a global web of localized innovation clusters (Kristensen and Zeitlin 2005). This is not the outcome in 'our' case. On the contrary, the present situation indicates the creation of a virtuous circle to the mutual benefit of both parties. There are several factors that combined can explain the 'happy marriage'. First, there are interdependencies stemming from technological complementarities. Both parties realized they were 'a good fit' because they had complementary technologies and product portfolios.

Within the MNC only the Norwegian subsidiary can deliver complementary technologies and products. The subsidiary did not represent a challenge to other subunits of the MNC. There were thus low risks for the outbreak of 'warring fiefdoms'. Together the MNC and the subsidiary would be able to deliver total subsea system solutions in addition to on- and offshore services. Secondly, by adopting the Norwegian subsidiary's business logics, the HQ reinvented the entire MNC that in turn induced an alternation as to its modes of governance and operation, and coordination. To quote the representative of the HQ 'the subsidiary has helped us to see the big picture in subsea systems, with the emphasis on *systems*' (Moen 2007).

In the make-over process from a low-tech product-oriented enterprise to a high-tech systems supplier the HQ adopted two structural elements from the Norwegian subsidiary: the centrality of knowledge and innovation, and the mode of coordinating assigned projects, which will be elaborated in the next section. By acknowledging 'brainpower' as a key organizational resource and the fact that this resource is locally embedded, the HQ consequently accepted the decentralization of technological excellence. Previously, all kinds of excellence had been concentrated in Houston. Thus, by making the Norwegian subsidiary a Centre of Excellence and using it as a benchmark entailed a change of the entire MNC's governance structure. Subsidiaries and geographical units were delegated responsibility for their respective business areas. As part of the 'brainpower' logics the HQ also copied the Norwegian subsidiary's educational programme and made use of it in other subunits. Over the years the MNC's career programme has expanded in pace with its upgrading. It includes initiatives such as job rotation, trainee schemes, buddy/mentor schemes, further education support, scholarship schemes and performance appraisals (webpage). Part of the educational programme is also open to their customers.

Over the years the logic of technology excellence and decentralization has persisted. The split in 2001 to streamline the organization in accordance with the shareholder value principle did not lead to a re-centralization of authority or a change of its business logics. A clear indication of persistence is top managers' career pattern. A remarkable feature of HQ officers is their long-term career in the company and its predecessor. The present CEO, who acted as the HQ's representatives when acquiring the Norwegian subsidiary, has been with the company for more than 36 years. This is not a unique example. Of the 11 HQ officers, six have been with the company for more than 30 years, three for more than 20 years, and one for 'only' 14 years. In contrast with the fast turnover of MNCs' officers today, this stability is extraordinary (Kristensen ?). At the same time the subsidiary is satisfied with the role and the development strategies assigned to it by the HQ. Its aspiration of becoming the global subsea system supplier has been reached. Already after five years with the US-based owner it had tripled its total number of employees, and had sales increased fivefold.

For the subsidiary the US-based MNC's acquisition of it was not accidental. When it became clear that Siemens, its previous owner, would develop a stronger focus on core areas and consequently divest the subsea activities, management and employees engaged themselves actively in finding a new owner. The US-based MNC was the preferred one. As mentioned, one reason was product and technological complementarities, a second reason was the fact that the American company possessed a global marketing organization that was needed for the subsidiary to become a global player that was stated as a goal already in the late 1980s (Annual Report 1993). In this way it represented a supplement to resources and capabilities at the local level. Equally important was the fact that the US-based MNC had promised to keep the subsea division as an independent organization. Two Norwegian companies that also bid

for the subsea division were not willing to do this. The US-based MNC was thus strategically used to sidestep centripetal forces embedded in the traditional way of controlling and coordinating economic resources at the national level.

In general Norwegian businesses have been latecomers in internationalisation. To a large extent this circumstance is connected to business system characteristics. Traditional characteristic features are the dominance of self-reliant firms, institutional differentiation, and pluralism. As a consequence of this mode of controlling and coordination business activities, Norwegian companies have restricted their operations to a single stage of the value chain to a large extent. Autonomous units have demonstrated an unwillingness to accept external capital, to merge and to establish cooperation with others. Hence, the system developed few mechanisms of risk- and authority sharing. These gaps in inter-organizational relation impacted on firms' growth and internationalization strategies. Unlike the Danish small and medium-sized firms the Norwegian ones lacked the capability to enter into supplier networks that could have represented a gateway to international games (cf. Kristensen et al. 2007, Moen and Lilja 2001). Becoming part of a foreign MNC was an alternative gateway to transnational arenas.

Thus, the successful construction of this MNC cannot be understood without the existence of mutual recognition between the two partners. The 'Norwegian' visibility has also increased within the MNC in pace with its increased contribution in generating revenues. The HQ is continuously recognizing the Norwegian subsidiary's achievements. During the incorporation in 2000 a former CEO of a Norwegian oil company was co-opted to its board of directors. He was later joined by the vice chairman of the board of directors of a Norway based MNC, Det Norske Veritas, an American citizen. In 2004 the subsidiary's manager was in addition to his local position, appointed to vice president for energy systems of the whole MNC. This year he was promoted to senior vice president with global responsibility of subsea production systems, and particularly of the so-called eastern hemisphere for energy systems. For the subsea business this is the market considered to have the strongest future growth potential. This move can be seen as a strategy to cope with the so-called knowledge-power dilemma described above. However, Kristensen and Zeitlin (2005:243-4) point to a large number of problems connected with the strategy of promoting local managers: strike a balance with external capital markets, selective relations with his own subsidiary, and partial and outdated knowledge. To what extent the present strategy will work remains to be seen. In order to bridge one of these gaps the Norwegian officer is sharing his time between the HQ and his local subsidiary (14 days in Norway and 14 days in Houston). Being a driving force in the subsidiary's various innovation processes, he has during his 27 years' long career in the subsidiary maintained a hands-on experience with technological and organizational competences.

The making of an innovative firm

The subsidiary's position within the MNC is a result of its technological excellence and commercial success. To explain its strategic position is thus a question of how it has been able to set the technological standard of the subsea industry. A key characteristic is that it has demonstrated a remarkable capability for continuously carrying out improvements and innovation. In fact, the subsidiary has been a technological trend-setter in its business for about twenty years, and the foundation for its present position was made in the 1990s when it revolutionized the subsea business. The revolutionary change was kicked off in a contingent

situation, and the situational solution found has since been refined and transformed through a continuous series of innovations that have been carried out at an accelerating speed. Moreover, at the same time as it revolutionized the technology the subsidiary succeeded in reinventing itself from being part of a protected and loss-ridden state company to becoming a commercial player. This process was linked to changes in customer – supplier relations in the oil industry. To explain its transformative capacity two factors are important: 1) the nature of the state-owned company the subsidiary originated from, and 2) the business model the firm developed after the state period.

The legacy of the state-owned company

In postwar modernization policies the state-owned company was to function as a technological spearhead, and to develop practical applications from publicly initiated research projects. A peak achievement within this political set-up was the development of the Numerical Control system (NC), later titled Computer Numerical Control (CNC). It was the resultant outcome of the largest R&D investment in the 1960s. In fact, the project formed part of a large NC technology programme that ran from the mid-1950s until the beginning of the 1980s. The programme was geared towards industrial application, and combined product innovation with productivity development, and it was the largest technology programme targeted at Norwegian industry. The NC project represented a comprehensive effort for modernizing Norwegian engineering industry. In addition to major Norwegian companies it involved national key research institutes such as NTH (Norway's Institute of Technology), SINTEF (The Foundation for Scientific and Industrial Research), and SI (Central Institute for Industrial Research in Oslo) (Sødahl and Brataas 2005).

The state company's mission within this modernization programme was to industrialize and market products based on R&D carried out by the research institutes. A strong cooperative relation emerged between the state company and certain research institutes. A resultant outcome of this cooperative project work was NC drawing and tool machines. In developing these products the state company combined its competence in cannon technology, cybernetics and computing. Developing these products at the same time raised the state company's level of knowledge and competence to an international one (Velvin et al 2002:40). In 1969 it was the first to introduce these machines on the European market. The NC project brought the state company to the technological front, but for different reasons the company failed to capitalize on its technological achievement. In the 1980s the NC development project came to an end, and in 1987 the state company was dissolved due to lack of a profitable running and a regime shift in economic policies. Its various divisions were split and sold out separately.

The postwar state company was a political construction and its main achievement was the technological excellence it developed in various fields such as data, electronics and mechanics. This technological excellence combine with a strong orientation of finding practical application of new technologies provided an important basis for the later development of the successor firms. For example the NC technology was made use of in the subsea electronic control system that 'our' subsidiary developed. However, the technological competence was also a result of a distinct subculture that evolved within the state company. A highly competent work force was created in which the group of engineers dominated. The state company was known to attract the most talented people. One reason for its attractiveness was interesting development projects. Through its owner the company was assigned a large number of development projects in relation with bi-lateral industry agreements and so-called

goodwill contracts launched in connection with the development of the Norwegian continental shelf. These projects spanned over countless diverse products and technologies. As the successor firms later phrased it: 'there is nothing we cannot solve from the moon to the deep ocean'. This sort of spirit reflects the company culture that evolved and that represented another reason why it became an attractive place of work. The culture was open and encouraging to experimenting and searching. Management's response to challenging projects and even 'wild' ideas was 'go ahead'. For engineers looking for jobs with more than procedural routines, the state company was a big opportunity.

When the state company in the early 1970s decided to become a player in the oil sector, it was far from clear what sort of activities it should concentrate on, what sort of supplier it should be. The fact that it at the time was owned by the state restricted which fields it could enter. The political climate 'forbade' the state company to enter fields occupied by private companies. This meant that the state company had to discover a new field. This led the search group to focus on opportunities underwater, an area few paid attention to at the beginning of the North Sea period. This also meant that they had to start from scratch. The state company did not possess any knowledge or competence in subsea technology. People in the oil division (the origin of the subsea subsidiary) went to this task with 'a pioneering spirit and enthusiasm'. They started with studies, pre-project planning and general engineering for a variety of oil companies. This search period lasted for about ten years. The work on a breakthrough project in the North Sea in 1984-87 is said to be the period 'in which what was dimmed, was clarified'. The project comprised the first diverless subsea solution that covered even unforeseen underwater difficulties, and it was during this project the division developed its future aspirations, 'what they would be when growing up': a leading subsea supplier globally.

Thus, a distinct feature of the state company was its orientation towards exploring and experimenting. A second feature was an orientation towards practical application. A third distinct feature was that work was carried out in teams. Moreover, projects normally involved the cooperation across boundaries within the company and with external actor groups in other companies and in research institutes nationally and internationally. 'At the time there were open doors throughout the whole company, so we could simply walk into any workshop and get a problem solved. The foreigners couldn't believe their eyes'. This characterization of the then work culture indicates an organization with a low degree of bounded roles and routines, and a high degree of work autonomy. The state company's special political mission, to be a technological spearhead, and the space for experimenting the countless projects provided, induced this form of cross-boundary interaction. This type of cross-boundary interaction was also facilitated by the traditional informal way of social interacting in Norway with a typical short distance between actors and actor groups.

Finally, the search and experimenting processes induced an understanding that industrial development is a protracted process. This business logic remains unchanged in the successor firms. Traditionally, firms in Norway have had a short-term perspective on business development, to a large degree preoccupied with the processing of raw materials and semi-finished production cost reduction has been the main competitive strategy. Experimenting formed a striking contrast to the rationality dominating in the Norwegian business system. Its special mission and its business logic thus triggered a sense of 'we' different from others. The fact that other parts of Norwegian business perceived the state company to enjoy a privileged position contributed to create a demarcation line between the state company and the surrounding business community. The shock employees experienced of possibly losing their

place or work when the state company was dissolved provided an opportunity to exercise a qualified reflection of their own role and potentials. As this short review has shown, the employees acquired distinct orientations and behavioural patterns that have been further cultivated and elaborated when reinventing themselves within their new organizational boundaries. As will be outlined below their collaborative interaction forms a key element in the development of 'our' subsidiary.

A dynamic business model: multilevel pragmatic collaboration

Key elements in the business model the subsidiary developed after the dissolution of the state company are two different strategies for technological development. It is a project based kind of firm and its core competences are planning, designing (engineering), and assembling. Manufacturing is largely outsourced and has always been. What can be termed the short-term innovation strategy takes place in assigned projects. Improvements and innovation in these circumstances are carried out in a temporary system for accomplishing specific goals. Sources of improvements and innovation can either derive from the problem solving of a specific situation or from ongoing experimental processes within the subsidiary. What can be termed a long-term innovation strategy takes place within the framework of development projects that allow experimenting. These are organized as joint development projects with customers, and the aim is to further develop inventions and technological solutions for perceived future challenges such increasing greater sea depths, extreme climatic conditions, environmental challenges etc. The innovation strategies are supplemented by the comprehensive training and education programmes for continuously upgrading employees' competences.

The key coordinating mechanism is teams. Problems are solved collectively through interaction and negotiation. The teams typically enjoy a high degree of autonomy and they form an important mechanism in constituting the subsidiary as a collective actor. The sense of all-for-one and one-for-all is deliberately cherished. To support the collectivist orientation the principle of risk sharing is strongly emphasized. The teams are made collectively responsible for their work, meaning that nobody is hanged in case of failure. Norwegian workers discovered the advantages of risk sharing when encountering American work culture in the North Sea. 'The Americans, and particularly the Texans, were obviously prisoners of their own system'. The personal consequences involved with failure induced a behaviour that was basically preoccupied with protecting themselves and their jobs, in other words defending established practices. The resultant outcome was, in the eyes of the Norwegians, an archconservative approach to innovation. Risk sharing is at the same time functioning as an incitement for search and experimenting. In this sense it is a vehicle for promoting pragmatic collaboration. Employees routinely have to question current routines and continuously readjust them and their ends. The manager is constantly telling himself and his employees: 'don't think we are sitting here in the possession of eternal truths', 'we can always be better'. An overarching objective is to keep up an organization of 'creative tension'.

Team building thus facilitate the co-designing of improvements and innovation. This coordination mode has over time been extended to include both customers and sub-suppliers, and the rest of the MNC. In 1994 the subsidiary began working in integrated teams with customers. This means that the subsidiary's engineers work alongside with the customers' employees both in the plants of the MNCs and on the customers' rigs. These types of

working relationships increase learning opportunities that can be made use of in other projects. They also provide the subsidiary's work force with an in-depth understanding of customers' most critical needs 'that leads to innovations that are applicable throughout the industry'. In their own wordings: 'In all of our businesses we have been successful in forming alliances, frame agreements, and other types of partnerships that have enabled us to develop some of the industry's most innovative technologies (Annual Report 2005). This type of collaborative interaction has also been extended to include a part of its sub-suppliers. Over the years the subsidiary has built up a large network of contract manufacturers in Norway. For the time being it has about 185 qualified suppliers in Norway as well as about 90 internationally. Some of these contract manufacturers have become partners, and a part of the partnership agreement is that the manufacturer cooperates with the subsidiary at an early stage to improve products and reduce costs. A partner describes the collaboration in this way: 'We solve rather than create problems. Often we have done what we thought was impossible'. 'We have also spent a lot on optimising the production methodology, like making jigs that provide for consistency and minimal chance for error'. Besides co-designing production and product processes the local network of sub-suppliers constitute an important source of flexibility for the subsidiary. It is an efficient way of meeting varying demands. This mode of coordinating business activities has simultaneously open a window of opportunity for small and medium-sized engineering companies at the national level and induced strong local inter-firm ties.

Multilevel pragmatic collaboration thus implies solving a variety of coordination challenges. Problems are solved 'on the spot' in practical situations and in collaboration with individuals with different professional background. In this way the linking between different types of knowledge is facilitated. At the same time as this way of organizing reduces installation and product cycle time, it also facilitates improvements and innovative change through co-designed processes. As indicated above change in roles and routines presupposes social interaction and accordingly the higher the level of collaborative interaction, the higher the capability to overcome challenges. The MNC itself indicates close working relationships with customers as a cornerstone of its strategy, and it assumes that it has been able to form more types of these cooperative arrangements than any other player in its market sector (Annual Report 2004).

A critical event

An essential part of this business model can be traced back to a critical even in the early 1990s. In the early 1990s the subsidiary was a comparatively small organization, employing less than 100 people. Due to its small size a problem arose when it was offered two projects simultaneously, one for Statoil and one for Shell. Typically, both oil companies required quite different technology (Annual Report 1991). The subsidiary employees' first thought was, we have to choose one of them. The next was, why don't we develop a common technology base that both can use? They did. And they managed to persuade both companies to accept their suggestion, without either of them knowing about the other.

Making this proposal implied two things. First, the subsidiary as a supplier took over the responsibility of designing the project on their own. Secondly, their design involved a standardized solution to some extent. Standardization represented something totally new in the offshore industry, and the companies in question expressed doubts. However, an accidental situation helped persuading Statoil about the standardization ideas. Some time after the subsidiary submitted its offer, Statoil experienced that one of its platforms,

Sleipner, disintegrated and sank on 23rd of August 1991. Statoil got a dilemma since they already had sold the gas from Sleipner. They needed to solve the problem instantly. Normally it would have taken two years to replace the installations, two so-called subsea templates. The subsidiary delivered both within nine months after they got the job. To quote from the subsidiary's annual report 'That gave Statoil a good taste of the advantages of standardization' (Annual Report 1992).

This contingent situation represented the start of a technology development and innovation process that revolutionized the subsea business. Standardization or modularization allowed increased flexibility, reduced costs, and shorter installation and project cycle time. Standardization in subsea systems implies modules that can be configured to suit every application in use on subsea oil fields. It also implies the redeployment of tools, technical, and management resources. The effects were visible right from the start. The learning curve of the dual project surpassed expectations. One of the offers the subsidiary submitted was estimated to cost around 480 million NOK. This figure was some 300 million lower than the second lowest offer. It was considered craziness. However, between 1991 and 1997 the subsidiary managed to half costs twice.

The modular approach laid the foundation for a continuous and systematic development of the whole system concept. At an earlier point of time the subsidiary had lost an important contract due to opposing interests and strained relations with a partner. This experience taught them a lesson about the importance of owning and controlling the technology. In their own words they started methodically to amassing knowledge about 'how things work', product group after product group. It also relates to risk. Being able to control the design and construction of integrated systems⁵ has reduced uncertainty in the relationship with customers. Subsea projects involve a large amount of money. For example the cost of developing a single deepwater field in the US Gulf of Mexico has been estimated to exceed \$ 1 billion. It goes without saying that failure in such circumstances has tremendous consequences. The point to be made is that the subsidiary's long-term development strategy was made possible through the introduction of long-term technology development agreements with customers. The first Technology Development Agreement was made with Statoil in 1994. Mobil, Elf and Shell joined this agreement a year later. This was the first of a series of long-term development agreements

Thus, this sort of flexible specialization proved to be ideal for meeting the oil industry's requirement of cost reduction at the same time as it took care of the customer's special requirements. Since every oil field differs from each other, subsea systems can never be turned into fully decomposable systems and carried out with arm's length coordination. The subsidiary's stroke of genius can therefore be described as taylorized solutions for standard prices. Generally, due to low standardization assigned projects tend to be idiosyncratic and cross-project learning consequently low (cf. Whitley 2004). By being able to redeploy tools, technical and management resources the subsidiary at the same time managed to reduce coordination costs, which are considered to be high in this sort of project based firms. Simultaneously standardization opened up for a new way of organizing work. To start with teams were organized around projects. Standardization allowed teams to be organized around products instead projects, and the new organization mode made it possible for teams to work with several projects at the same time. One effect was that planning and work

⁵ Subsea systems comprise subsea wells for the production of oil (the extraction) and the further processing of it, including oil, gas and water separation. This takes place in so-called subsea trees and manifolds. The inner part of the physical outfit is filled with complicated electronic control systems.

methods improved because they could utilize previous experience in a more efficient way. Another effect was lower planning and administration costs. The subsidiary itself describes this organizational change to have had a ‘startling’ effect on productivity.

Through experimenting the subsidiary has developed a dynamic business model that sustains continuous innovation and at the same time is highly cost effective. The dynamic dimension is linked to the fact that it can offset risks inherent in both long-term and short-term strategies. The lack of high-powered incentives often connected with long-term development strategies is balanced by the project type of business. At the same time long-term technology projects prevent expertise to remain project specific. Its business model is linked with its distinct expertise that induced both cost reduction and learning. Standardization in itself is cost effective, but at the same time it opens up for further cost reduction through the redeployment of resources, and through a new way of organizing work. Modularization facilitates cross-project learning and at the same time permits a higher learning effect, and the codifying and storing of knowledge allow a functional way of organizing work instead of a project based organizing.

Simultaneously, the dynamic business model is a way to internally create mechanisms for inciting innovation and improvements. In the Norwegian business environment there used to be few if any mechanisms that could drive innovation as for instance is the case with venture capitalists in Silicon Valley or flexible labour markets in Denmark. However, as indicated, its experimenting depends on collaborative interaction with external actors, first and foremost Norwegian oil companies. The emergence of this kind of relationship was in turn a result of co-constructive processes within the national oil sector, and in took place during a regime shift in national oil politics.

Co-constructing an ‘experimentalist laboratory’

In the early 1990s the oil and gas sector was marked by a period of slow and modest technological development. After the oil price collapse in 1986, an atmosphere of risk aversion swept the industry and restricted oil exploration worldwide. As a result of constrained investment plans, R&D activities and the development of new technologies slowed down (Maugeri 2006:229). At the same time as the oil and gas sector experienced a technological standstill, structural changes in the North Sea and in other areas worldwide required new technological solutions. The changing nature of oil fields in the North Sea required both more flexible technology and cost effective solutions. The technology that dominated on the Norwegian shelf consisted of concrete platforms that over time had assumed monstrous proportions. They proved to be less manageable in smaller oil fields that constituted an increasing part of the activities (Moen 2004). The smaller fields required a higher degree of flexibility as to various types of installations, control, production etc. Additionally, there was an emergent need of internationalisation for compensating for the lack of new discoveries in the North Sea. The situation became particularly pertinent when the cold war ended and new areas became accessible for the international oil industry.

The first step to remedy the situation was to liberalize oil politics and create a playing level field on the Norwegian shelf. Next, in 1991 the Minister of Oil and Energy launched a programme to frame the new regime: to draw a strategy for preparing the Norwegian oil sector for ‘the international markets of tomorrow’; and to coordinate on-going restructuring processes. The cooperative project was called NORSOK (The competitiveness of the

Norwegian shelf). NORSOK came into being because there was a shared understanding about the situation. Various groups and stakeholders within the oil sector accepted that something had to be done to secure the future of the Norwegian oil sector.

The aim of the NORSOK programme was to encourage search for technical and organizational solutions that could attain acceptance for all relevant groups, and to develop interaction patterns that induced efficient and mutually beneficial routines and procedures. In practice the programme aimed at removing technological conservatism attached to the Norwegian style, and to change the interorganizational relations between the oil companies and the supplier group. The technological conservatism had become a problem in its own right because as one observed 'this country' was of the opinion – politicians, the government and the oil companies and the suppliers – that we were the best in the world. 'That we did it at a price that was 50 per cent too high or 100 per cent too high did not worry people early enough – before the pressure appeared'.

When the Norwegian oil sector emerged in the 1970s, its structure, routines, and patterns of interaction were largely politically shaped. In line with the planning tradition of the postwar period, the ambitions for controlling the development of the Norwegian shelf were strong. The authorities did not confine themselves only to property rights management and tax collection; they wanted to play an active role. Since international oil companies at the time were conceived to constitute a threat, consensus about a national project for developing the North Sea was achieved (Olsen 1989:34). A main objective of the national project was to develop national competences for exploring and exploiting Norwegian resources. Statoil, a Labour Party construction, was to be the state's tool to achieve this goal. However, at the same time it was decided to use petroleum as an instrument for regional development, and to transfer competence into other business sectors, research institutes, and universities. This objective should be achieved by encouraging oil companies to engage Norwegian suppliers (Oljemeldingen, St.meld. nr. 25, 1973-74).

The clause about using Norwegian suppliers and developing regions had unintended consequences. It triggered various actor groups to participate in redistribution games that over time came to induce a reciprocal game between coalition partners. Oil companies, supplier industry firms, local trade unions, and local politicians in coastal regions formed ad hoc or more long-lasting coalitions to have their bits of the oil cake. By using arguments about job creation and the like, these interest coalitions became a strong lobby group in the Norwegian polity. The reciprocal game made actor groups focusing on negotiating 'baits' rather than focusing on organizational and technological challenges.

The NORSOK programme targeted three main areas for changing the technology and reducing costs: 1) simplifying and standardizing procedures 2) reducing documentation and bureaucratic procedures, and 3) involving the suppliers earlier in the development projects (Moen 2007, Engen, 2002). Apparently the NORSOK initiative failed. Developing technical standards that everybody could agree on proved to be a futile project. As an actor phrased it 'it was a blue eyed attempt'. One important reason was that technology formed an important part of oil companies' reputation building. Developing one's own technology – do it our way – was closely linked to the oil company's identity, and consequently they were not readily prepared to change this state of affairs. This was the situational context when 'our' subsidiary intervened and launched its standardization proposal. As shown above, an accidental event and the fact that the standardization system worked were important for its

acceptance. However, the communicative interaction that took place within the framework of the NORSOK programme played a decisive role in the long-term perspective.

The members of the programme were oil companies, supplier and services firms, industrial federations, employers' and employees' organizations, and Norwegian oil authorities. It had the structure of a tripartite corporatist arrangement, but in contrast to the traditional one it replaced, the constellation of actors developed different rules of the game. A more open culture was created, and through continuous interaction to solve common problems actors' mind-set changed. The attitude of 'we are the best in the world' was done away with as was the reciprocal game. Instead the focus was directed towards innovation. To the Norwegian oil authorities that assumed a general responsibility for the future development of the national oil sector, technological development became a key strategy. Since the Norwegian oil companies enjoy considerable prerogatives, they are sensitive to the authorities' objectives. They were thus willing to enter on protracted joint development projects with the supplier industry, as shown above. Through these arrangements the foundation for continuous innovation and technological development was made. In fact, these arrangements, in which the Norwegian state, the oil companies and the supplier industry share risks, turned the Norwegian shelf into a sort of experimental laboratory.

The communicative interaction impacted on inter-firm relationships in general. A revelation was that they had common interests, and that they were all part of a 'we'. Due to traditional sectoral divides in the Norwegian business system, inter-firm relationships could be rather marked by distance and partly by distrust. More specifically, the relationship between oil companies and suppliers was fundamentally transformed. Within the framework of the NORSOK programme it was taken that assigning main suppliers more independence, and thus a larger share of costs and risks would create an incentive for more efficient technological solutions. When the oil companies were in charge of specifying assigned projects, this implied a communication of extremely detailed technical information between the oil company and the suppliers. For a middle-sized project the flow of documents could amount to 30 to 40 000 only in the engineering phase. It is estimated that costs linked to administration and organizational routines were about three times higher than in the Gulf of Mexico (Lerøen 2002, Ryggvik 2000:263). A more liberate contractual relation was to lead to a win-win situation for both parties. However, to start with this situation did not proceed as planned and later reports criticized the new inter-organizational relations for having created a win-loser situation for the supplier industry. It is alleged that the main suppliers lacked sufficient organizational capability and experience to be network entrepreneurs with the responsibility of maintaining national and regional competence. So-called capacity suppliers, that were standardised producers and that possessed few technical and organizational capabilities, were more negatively affected than the system suppliers in a race-to-the-bottom initiated by oil companies (Engen, 2002).

For 'our' subsidiary the new contractual relationship represented, on the contrary, an opportunity to increase its strategic role in the offshore industry. It was able to profit from this new form in the first standardization project, the so-called dual project.⁶ The subsidiary became the main contractor for both projects and had then the responsibility for both carrying out and finalizing them. The new contract forms are either called EPC (Engineering,

⁶ A first shift in the contract form on the Norwegian shelf took place in 1989 when Siemens together with KOS, as system suppliers, assumed the main responsibility for a platform delivery. Traditionally, ship-builders had had this role (Dahling and Erlandsen 1999:147)

Procurement, Construction), or EPCI (Engineering, Procurement, Construction and Installation). These types of contracts are characterized as efficient incentive contracts. They are also known as relational contracts because they contain elements, so-called functional requirements, which are difficult to treat legally. For a third party it is difficult to assess an engineering service. Its nature is therefore seen to be self-enforcing and reputational motivation an integral part. Mutual trust facilitates these kinds of contracts and partnerships, and they will consequently contain a high degree of 'soft governance'. For the emerging collaborative interaction on the Norwegian shelf, the new forms suited well. For cost reduction and improving quality they are considered indispensable (Kvaløy 2006:51). Furthermore, for players who have a good understanding of how the total system is functioning and of operational requirements, as 'our' subsidiary, this sort of contractual relationship opens a space for manoeuvring and increasing their share of the profits. Better insight and knowledge ensures success. These contractual forms provide an opportunity to better control 'insecurity zones'. Also standardization in relation to functional requirements can imply increasing returns to the supplier. The resultant outcome of this institutional change was that the oil industry changed from being buyer-driven to becoming supplier-driven.

To sum up, through institutional change the Norwegian shelf has become a node in the global offshore industry's innovation system. Norwegian companies and subsidiaries of foreign MNCs are pioneering new technology, and it is taken that 3 out of 4 leading offshore firms are Norwegian. For the time being it is estimated that the Norwegian oil and gas sector comprises some 2000 Norwegian firms. This sector represents a new export growth industry, the first one to be based on high tech products and services. After the dismantling of NORSOK in the late 1990s, several organizations and institutions joined forces to establish new bodies to support the oil and gas sector. A key instrument in the new institutional set up is KonKraft that is headed by a so-called top leader forum. Members are the Minister of Oil and Energy, several representatives from the Ministry of Oil as well as from other Ministries' bureaucracy, the CEO of the Oil Directorate and other state agencies linked with the oil sector, representatives of the Federation of Norwegian Industries, the Federation for the Oil Industry, the Norwegian Shipowners' Association, the Trade Union centrally and other relevant trade unions, the Research Council of Norway, research institutes as well as CEOs from oil companies and supplier and service firms. Through regular meetings, seminars, conferences both at the national and international level representatives from these organizations and institutions keep up a strong and dense communicative activity.

Important tasks for this communicative corporatist arrangement are to improve framework conditions, procedural routines, such as the reduction of red tape, and to support innovation. To support technological development at an early stage in the innovation process the government through the Research Council runs a programme targeted at pilot and demonstration projects. It is based on a model in which risks are shared between the government, the oil companies, and the supplier firms. An important goal is to increase the visibility of Norwegian firms and technological solutions abroad. To assist internationalization a new organization, Intsok, was created in 1997. It is a partnership between the oil authorities, industrial federations, oil companies and supplier firms. To external observers the Norwegian oil and gas sector stands out for being a community that collaborates well. It should be emphasized though that the nature of interaction is characterized by both collaboration and competition. The balance and check mechanism is found in the system of joint property rights between oil companies. This system provides an

opportunity for monitoring activities. No publicly listed partner will or can accept the lack of efficiency with reduced profits as outcome.

The political stability the country enjoys in comparison with other countries and regions where important oil fields are located, constitutes a competitive advantage for experimental processes. Technology developed and tested out in this market provides a platform for exporting it to other more risky areas around the world. The two large Norwegian oil companies, Statoil and Hydro, are known internationally 'to think along new lines' (Datamonitor 2006, The Oil Industry), and 'our' subsidiary, through the MNC's brand, is worldwide recognized for its technological excellence. The emerging decline of this oil field represents a challenge to key players. How to compensate for this comparative advantage?

Conclusion

In this paper we started by asking how a peripheral subsidiary in Norway gained a strategic position in a US-based MNC to the extent that the MNC changed its business logics, mode of governance and operation. The paper used the MNC-subsidary literature as a point of departure for tracking down critical elements in managing MNCs in the globalized economy, and what factors impact on MNC-subsidary relationships. First, research reveals that MNC-subsidary relationships are far from unequivocal. They are found to be highly ambiguous and have complex interdependencies. In managing a wide range of transnational activities ambiguity and interdependencies constitute a tremendous challenge, and has been found to cause havocs in MNCs. The strategic position of the Norwegian subsidiary is bottom-line found to be rooted in the way it coordinates key activities. Its way of coordinating activities has been characterized as pragmatic collaboration. A decisive factor was that the representatives of the MNC recognized this fact and subsequently adopted the subsidiary's business logics and operating mode. Another decisive factor was that the change process took place as an interactive learning process and not through a fixed menu of best practices universally taken to be so. Through these processes the MNC has been able to meet continuous challenges from customers and the finance communities.

By investigating underlying mechanisms and institutional arrangements enabling the subsidiary to be a technological leader at the same time revealed that it was a change agent in the national oil and gas sector. Due to both external and internal structural changes the Norwegian oil and gas sector was in a search process for developing a new regime. Failing to find solutions through formal procedures, the subsidiary's bottom-up initiative represented a first step in developing more flexible and cost effective solutions in the production and processing of oil and gas resources. Through co-constructive interaction the national oil authorities, oil companies, and supplier companies turned the Norwegian continental shelf into an experimental laboratory for offshore-technology. This experimental laboratory has formed the basis for the development of a new industry sector at the national level as well as its strategic position internationally. In this perspective the national and transnational level complement each other in the creation of a new path. This development can also be seen as an institutionalization process in which new rules of the game evolved. The traditional redistribution game in the oil and gas sector is replaced by inter-firm interaction characterized by both collaboration and competition. However, the process of institutionalization cannot be understood without taking transnationalization into account (cf. Djelic and Quack 2007)

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