

Organisational Learning And Multinational Strategy

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Abstract	Increasingly, it has been recognised that in their process of internationalisation multinationals may learn. They may take a strategy not only of exploitation, to leverage existing assets, competencies and products, built up in their home countries, but also, and perhaps even primarily, of exploration, to profit from diversity of host countries to develop new products and competencies. The question is how they can manage and integrate resulting diversity. This article analyses that issue, using a theory of organisational learning. It employs a 'cycle of discovery' that seeks to resolve the problem of combining exploitation and exploration. That problem arises more widely, apart from internationalisation, and solutions to it may yield solutions for problems of internationalisation.	
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ORGANISATIONAL LEARNING AND MULTINATIONAL STRATEGY

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Increasingly, it has been recognised that in their process of internationalisation multinationals may learn. They may take a strategy not only of exploitation, to leverage existing assets, competencies and products, built up in their home countries, but also, and perhaps even primarily, of exploration, to profit from diversity of host countries to develop new products and competencies. The question is how they can manage and integrate resulting diversity. This article analyses that issue, using a theory of organisational learning. It employs a 'cycle of discovery' that seeks to resolve the problem of combining exploitation and exploration. That problem arises more widely, apart from internationalisation, and solutions to it may yield solutions for problems of internationalisation.

Key words: globalization, international business, multinational corporations, organizational learning, innovation.

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INTRODUCTION

In processes of internationalisation, there are differences between organisations as well as differences between national institutional systems. The literature on business systems has highlighted the importance of national institutional systems for the functioning and the performance of businesses (e.g. Whitley 1998, 1999, Hollingsworth & Boyer 1997, Lane 1997, Hollingsworth, Schmitter & Streeck 1994). In MNC operations, we encounter on the one hand the effect of home country institutions and practices that have contributed to the shaping of MNC routines (the 'home country effect'), and on the other hand the effect of host country institutions on the functioning of subsidiaries (the 'host country effect') (Lane 1997). A challenge is to find out how home country and host country effects are combined. In one extreme, an MNC is able to impose its institutional arrangements on the host country, and thereby either circumvent obstacles from host country institutions, or transform those institutions in order to eliminate obstacles ('imposition'). In another extreme, a subsidiary adapts its routines to fit host country institutions ('adaptation'). In practice there will mostly be some combination of imposition and adaptation. Where the emphasis lies, on imposition or adaptation, depends, among other things, on the power or the 'clout' that the MNC has, in terms of what it can offer to the host country, and its access to local political power. The value of its offer to the host country may lie in the size of direct investment, employment, technological capability, managerial and organisational capability, and access to global markets in marketing, through brand name and distribution systems (Child 1998). At first sight, it may seem the most advantageous for the MNC to follow a strategy of imposition as much as it can, given its clout.

However, on the basis of a theory of discovery (Nooteboom 2000), it is argued in this article that in the longer run a deliberate policy of adaptation may be more advantageous, along a path of learning and discovery. Adaptation has implications for the way in which the subsidiary employs local resources of labour, skills, knowledge, organisation, education, culture, consumer tastes and practices, infrastructure, in other words forms of intellectual, political and social capital. In particular, it has implications for whether the MNC sets up its own establishments ('greenfield investment'), takes over local companies ('brownfield investment'), or, on the contrary, engages in more or less balanced alliances (such as, for example, joint ventures) with local organisations. Often, for learning the latter is the best, since it taps into variety of local conditions as a source of innovation. In a study of joint ventures between foreign and Chinese companies in China, Child (1998) found the contrasting strategies of imposition and local adaptation, and recognised that in the long run the latter might be more productive.

In a survey of literature on learning in multinationals, Macharzina et. al. (2001: 643) proposed that there are two basic modes of internationalisation. One is a 'center-oriented' mode of 'global rationalisation', where 'Subsidiaries are linked to each other on an operational level, but core competencies and the specialised knowledge for managing the entire system remain concentrated at the headquarters'. This is contrasted with 'network-oriented modes', which employ a 'heterarchy' of 'many centers that are coordinated in various ways', designed to 'promote opportunities for acquiring knowledge provided by an established network of subsidiaries' (op. cit. p. 644-645). The idea that there may be advantages of learning in international operations was already recognised by Vernon (1979). The question is how this is to be realised. Bartlett & Ghoshal (1989: 62) proposed that an organisation is needed that is neither centralised nor dispersed, where 'In some markets, national subsidiaries adopt standard global products, and their role is limited to effective and efficient implementation of central decisions. Other subsidiaries are encouraged to differentiate. ... In such cases headquarters relinquishes its lead role to the subsidiary'. However, a central problem then is how to 'cope with the conflicting challenges of maintaining internal

efficiency and allowing for organisational responsiveness to diverse local conditions' (Bartlett 1986, quoted in Macharzina et. al. 2001: 644). Bartlett & Ghoshal (1989: 67) proposed that the management task is to provide 'legitimation of diverse perspectives and capabilities' (for the sake of global competitiveness) with 'building a shared vision and individual commitment' (called 'co-option', for the sake of integrated, worldwide learning). Here, '.. each individual must understand and share the company's purposes and values, must identify with the broader goals and objectives, and must accept and internalise its key strategies' (op. cit. p. 70). It is far from clear how this is to be done. How do the 'broader goals and objectives' and 'key strategies' come about? Are we back at the 'center-oriented mode'? If not, how would the variety generated in subsidiaries lead to a reconstruction of goals, objectives and strategies? Macharzina et. al. ended their survey with the comment that the 'sub disciplines of international management that deal with organisational learning and knowledge have contributed an immense number of descriptive statements but only a small number of explanatory ones (which are) isolated from each other', and 'the most important research task ahead is to develop an integrative theoretical framework'. That challenge is taken up in this article.

There is a more general problem of combining efficient exploitation of existing resources (including competencies) with exploration, in the development of new resources, which is known, in the organisational literature, as the problem of combining exploitation and exploration (March 1991).¹ The working hypothesis of this article is that insights in how to combine exploitation and exploration may yield solutions for the organisational problem of MNC's.

This article proceeds as follows. First, it makes some introductory observations on institutions and organisations. Second, it summarises the theory of knowledge used, and the implications for a 'cognitive theory of the firm'. Third, it summarises the theory of learning and discovery used, in a 'heuristic of discovery'. Fourth, it develops an argument of how this may yield a learning strategy for MNC's, to yield organisational learning by adaptation to host country institutions.

INSTITUTIONS AND ORGANISATIONS

Some scholars (e.g. Williamson) maintain that organisations are institutions, while others (e.g. North 1990) maintain that organisations are players in a field of institutions. North and Thomas (1973) proposed a distinction between the 'institutional environment' and the 'institutional arrangements' of organisations within it. Rather than giving an ontological definition of institutions, in a universally applicable list of institutional entities, here we use a functional one, on the basis of what institutions do. Building on the work of many others, we characterise institutions as follows: Institutions both constrain and enable action (1), they are the (cumulative) result of earlier actions (2), are relatively stable, compared to the actions they enable (3) and are more or less binding, i.e. it is difficult to dodge or violate them without losing legitimation and acceptance. Here, we make use of Archer's (1995) criticism of Giddens' (1984) structuration theory, which neglects the effect of time. Structure develops as a resultant of actions, but those are mostly past actions, and in the present they cannot instantly be dodged or changed.

An organisation is subject to institutional influences outside it, and it is also itself an institution regarding the actions within the organisation. Within the firm, a team or 'community of

¹ The notion of exploitation and exploration goes back to Holland (1975), who identified it in the context of cognitive science.

practice' (Brown & Duguid 1996) is subject to organisational institutions and is itself an institutional arrangement for the workers in the team. As we go 'down' from more general to more specific institutions, there is increasing specialisation. While organisations are subject to the same wider institutions, they differ among each other, in their institutional arrangements. On different levels, institutions apply to different ranges of action. For national institutions it is the country, for industry institutions the industry (which increasingly crosses national boundaries), for organisational institutions it is the actions within it. Those ranges overlap. For example, a firm is faced with both national and industry institutions. An important point now is that the larger the range of an institution the more it will be subject to conservatism or 'inertia'. When a local practice requires a change of an institution, this will have more repercussions to the extent that change would affect other activities, and force them to adapt to institutional change. Thus, higher-level institutions will change more slowly than lower level ones. Such resistance to change yields an incentive to disintegrate, uncouple or unbundle systems, to yield more allowance for local variety, with different institutional arrangements. That yields one argument why economic systems need to be cut up into different organisations.

How do higher level institutions change, in their interaction, or 'co-evolution', with the lower level activities that fall in their range?² Does change come 'from above'? Structure forms the basis for agency, but also changes under the impact of agency. How does this work? There is still a bias, in the business literature, that change is designed from above, by top management, at a head office. This is reflected, in the earlier discussion, in the suggestion by Bartlett & Ghoshal (1989) that 'overarching goals, objectives and strategies' are somehow given, and that everyone has to conform to them. How would top management know what they should be? How would management know what can be done, if insights into possibilities arise from experience 'below', at interfaces with customers, suppliers, and competitors? This question has become more pressing under current conditions of rapid change, in technology and markets, increased complexity and depth of knowledge, and the professionalisation of work, which make it more difficult for management to monitor and absorb what goes on and how that may be changed. Perhaps, especially under these conditions, we should see change as primarily coming from below, in 'self-organisation'. Change of lower level institutions induces change of higher level ones, when success of lower level change forces higher level institutions to accommodate their structure to enable emerging success to realise its full potential. At the higher level, the task is not so much the design of structure as the allowance and enabling of structural development to take place. Perhaps the task is not the specification of 'overarching goals, objectives and strategies' but the cultivation of basic cultural values and perceptions concerning processes of change and conflict resolution that enable and constrain the adaptation of strategies and objectives.

In institutional economics, notably in the work of North (1990), a distinction is made between formal and informal institutions. Our interpretation of formal institutions is that they are (1) codified and (2) backed up by explicit sanctions. Rules are subject to interpretation. This raises questions of cognition. In more recent work (e.g. the work of North) institutions are seen to have a not only a regulative (constraining, enabling) but also a cognitive aspect. To deal with issues of

² It seems that the fashionable term 'co-evolution' has expanded to cover any parallel change of entities that mutually influence each other. Then, everything becomes co-evolution. Then one would, for example, co-evolve with one's pet dog. The term co-evolution comes from evolutionary theory, where it denotes the change of a selection environment as a result of activities selected by it. In terms of the 'structure-agency' problem, it denotes structuration, i.e. how agency affects the structure (institutional set-up) that constrains and enables it.

cognition in general, and with the relation between regulative and cognitive institutions in particular, we need a theory of knowledge.

A COGNITIVE THEORY OF INSTITUTIONS

For knowledge, this article employs a social constructivist, interactionist view, inspired by the symbolic interactionism of Mead (1934), and by a stream of cognitive science that is coming to be known as ‘embodied cognition’ (Damasio 1995, Edelman 1987, 1992, Lakoff & Johnson 1999). A similar move was proposed by Macharzina et. al. (2001: 649). The term ‘knowledge’ here is a broad one, including perception, understanding, value judgements, and even emotions. People perceive, interpret and evaluate the world according to mental categories (or frames or mental models) that they develop in interaction with their physical, social/institutional environment. This entails that perception, interpretation and evaluation are contingent upon the institutional environment. Thus, people are influenced in their thinking by prevailing norms. The constructivist, interactionist view also implies that to some extent knowledge, in the broad sense, is path-dependent and idiosyncratic. Different people see the world differently to the extent that they have developed in different social and physical surroundings and have not interacted with each other. In other words, environment and past experience determine ‘absorptive capacity’ (Cohen & Levinthal 1990). Understanding of codified knowledge requires a requisite substrate of tacit knowledge to assimilate the codified knowledge. In this assimilation, receivers are not just receivers but also producers of knowledge. Therefore, any boundary between learning and knowledge transfer is problematic. Who can absorb the knowledge depends on the extent and the way in which it is codified. Thus, codification is always to a greater or lesser extent exclusionary: it excludes those who do not have the requisite absorptive capacity. As a result, there is not only power in knowledge in the sense that it gives advantage to those who have it. There is power also in establishing the extent and the way, i.e. the code, by which knowledge is codified, because that determines who can absorb it.

As proposed by Nooteboom (1992), an implication of this view of knowledge for the theory of the firm is that in order to achieve a specific joint goal the categories of thought of the people involved must be aligned to some extent. Different people have a greater or lesser ‘cognitive distance’ between them. In view of this, organisations need to reduce cognitive distance, i.e. achieve a sufficient alignment of mental frames, to understand each other, utilise complementary capabilities, achieve a common goal and have trust. This yields the notion of organisation as a ‘focusing device’, to reduce cognitive distance, to achieve a sufficient alignment of mental categories, to understand each other, utilise complementary capabilities and achieve a common goal. To achieve this, organisations develop their own specialised semiotic systems, in language, symbols, metaphors, myths, and rituals. This is what we call organisational culture. This differs between organisations to the extent that they carry different imprints from early entrepreneurs, and have accumulated different experiences, in different industries, technologies and markets. This view of a firm is not new. It connects with the idea, in the organisation literature, that the crux of an organisation is to serve as a ‘sensemaking system’ (Weick 1979, 1995), a ‘system of shared meaning’ (Smircich 1983) or ‘interpretation system’ (Choo 1998). This yields a more fundamental reason for firms to exist than the reduction of transaction costs, although transaction costs are also part of the story.

Note that alignment of cognitive frames in the firm need not entail full identity. As discussed in Nooteboom (1999) there is a trade-off between cognitive distance, needed for variety and novelty of cognition, and cognitive proximity, needed for mutual understanding. In fact, different people in a firm will to a greater or lesser extent introduce elements of novelty from their

outside lives and experience, and this is a source of both innovation and error, of both learning and conflict.

Organisational focus needs to be tight, in the sense of allowing for little ambiguity and variety of meanings and standards, if the productive system of a firm, for the sake of exploitation, is 'systemic', as opposed to 'stand-alone' (Langlois & Robertson, 1995). Exploitation is systemic when there is a complex division of labor, with many elements and a dense structure of relations between them, with tight constraints on their interfaces. An example is an oil refinery. In more stand-alone systems, elements of the system are connected with few other elements, and connections are loose, allowing for some ambiguity and deviation from standards on interfaces. An example is a consultancy firm. An intermediate system, between systemic and stand-alone, is a modular system. Here, there are also multiple, connected elements, as in the systemic case, but the standards on interfaces allow for variety, where different modules can be plugged into the system.

Schein (1985) proposed that in organisational culture there are several levels. There is a surface structure of routines, rituals, symbols, myths, and the like, an intermediate structure of norms and values, and a deep structure of fundamental, underlying 'assumptions' or mental categories. The latter relate to questions such as the following. Is knowledge objective or subjective (socially constructed), do people stand alone or are they socially embedded, does one control one's environment or is one controlled by it ('locus of control'), are people basically good or evil, prone to collaboration or competition, oriented towards a common good or self-interest, and the like. These basic perspectives are embedded in language and metaphors (Lakoff & Johnson 1980), and constructed and reconstructed in communicative action (Habermas 1982, 1984).

Likewise, wider institutional environments, in business systems, also differ not only in 'surface' institutions, such as regulatory, legal, financial and educational systems, professional bodies, employers' organisations, unions, and the like, but also, and more fundamentally, in underlying cultural categories and tacit views and assumptions concerning the world, people, collaboration, and the like. To the extent that firms have developed in a distinctive, shared national institutional environment, they will share its cognitive imprint. Here, one can think of well-known cultural categories as proposed by (Hofstede 1991): individualism versus collectivism, uncertainty avoidance, femininity vs. masculinity, and power distance.

We suspect that, whatever the merit of these categories, there is at least one other, concerning the nature of rules, laws and regulations. Those vary in scope, i.e. the range of activities they intend to cover, and depth, i.e. the detail in which they are specified. More fundamentally, they vary in their claim of universality and closure or completeness. Do they claim to cover all contingencies, or do they recognise that specific contexts are so rich, unpredictable and variable that canonical rules can never cover them completely, and that there is an irreducible ambiguity of context. The latter condition is recognised in the literature on 'communities of practice' (Brown & Duguid 1996, Lave & Wenger 1991, Wenger & Snyder 2000). Canonical rules cannot deal with the complexity and variability of situated action, in specific action contexts. This is related to a deep problem in the theory of meaning. Since definitions can seldom offer necessary and sufficient conditions for categorisation, and meaning is context-dependent and open-ended, allowing for variation and change, we need prototypes (Rosch 1978). Prototypes are salient exemplars of a class that guide categorisation by assessing similarity to the prototype. This, we suggest, goes back to Aristotle's notion of 'mimesis'. From this follows the role, in organisation, of leaders setting exemplars or prototypes of conduct, embodied in myths and stories of 'heroes' that do not specify conduct and yet guide it. This issue is also reflected in legal systems. Do they pretend to explicitly cover all that is forbidden, or is conduct also assessed in terms of reasonableness in the light of established practice, in jurisdiction on the basis of cases that serve as prototypes. Are rules interpreted loosely, with regard for exceptions according to specific conditions, or are they applied strictly and

rigorously? There seems to be a difference here between, for example, the US, where ethics and rules carry a more universal pretension, and are applied strictly, and the Netherlands, where there is more tolerance of deviance, and rules are applied more loosely.

Organisational focus, based on organisational culture, carries the imprint of national culture, but can deviate from it, to a greater or lesser extent, to allow for foreign influence.

For an elaboration of the content of organisational focus, on the surface level, use can be made of Mintzberg's (1983) distinction between five forms of coordination in organisations: Direct supervision, standardisation of processes, outputs or skills, and mutual adaptation. Later, Mintzberg added coordination by values/norms, for 'missionary organisations' (such as a church). The focus can be directed at one or more of these forms of coordination. When processes are standardized, as in an assembly line, workers need to understand instructions, but may not need to be able to talk to each other. In professional organisations, where processes and outputs are difficult to standardize and monitor, one often resorts to standardisation of skills. When that is problematic, or insufficient, one may have to resort to mutual adjustment. Here, people need to share certain values and norms for doing that. In the development of economies that are more service oriented and more based on professional work, there has been a shift towards coordination by standardisation of skills, mutual adaptation and 'missionary' goals, values and norms. One interpretation of entrepreneurship, which links with Schumpeter's (and Weber's) notion of the entrepreneur as a charismatic figure, is that it is his central task to achieve this: to align perceptions, understandings and motives. This connects with the earlier discussion of the task of management in goal setting. This perspective may be useful to further 'fill in' Bartlett & Ghoshal's proposal that there may be mixed modes of coordination in relations between a multinational's head-office and subsidiaries.

When there are technical opportunities and competitive pressures to utilise economy of scale by division of labour, one may need to coordinate by standardisation of tasks and skills. This may typically be the case in manufacturing activities. When the system of exploiting current resources is highly systemic, one may need to coordinate by standardisation of outputs, to preserve systemic integrity, and when the system is more stand-alone one may relax such standards. The former may apply more to manufacturing and the latter to consultancy, for example. In professional organisations (such as consultancy) one may resort only to some standardisation of skills. When there are opportunities for learning, and competitive pressures for innovation, in the development of new production technologies, products and skills, one may need to relax all standards and resort to a more missionary type of organisation, where one only specifies basic, underlying values and cultural perspectives, not in the forms of specified rules of conduct, but in the form of exemplary, prototypical conduct, to be emulated by mimesis, as indicated before. In a mix of activities, one may, in principle, employ a mix of coordination mechanisms, but that may so dilute and expand organisational scope as to yield a loss of organisational identity. Then, the question is whether it would not be better to disintegrate, and to seek flexible configurations of autonomous organisational units with different scopes. In other words, one should seek a cognitive division of labour.

COGNITIVE DIVISION OF LABOUR

A second implication of the theory of knowledge for the theory of the firm is that as a result of the need to achieve a focus there is a risk of myopia: relevant threats and opportunities to the firm are not perceived. To compensate for this, people, and firms, need complementary sources of outside intelligence, to utilise 'external economy of cognitive scope' (Nooteboom 1992). Here again the trade-off arises between cognitive distance, for the sake of novelty, and cognitive proximity, for the sake of understanding. A large cognitive distance has the merit of novelty but the problem of incomprehensibility. Effectiveness of learning by interaction can be construed as the product of the

two, which yields an inverted U-shaped relationship, with an optimal cognitive distance. However, one can increase absorptive and communicative capacity to deal with larger cognitive distance.

For a direct test of the hypothesis of optimal cognitive distance one would need data that include both a measure of cognitive distance and a measure of radical innovative output. Wuyts et. al. (2003) conducted two more indirect tests. The first test was conducted on a combination of the basic hypothesis of optimal cognitive distance with a second hypothesis that cognitive distance decreases with increased frequency and duration of interaction. This yields the derived hypothesis of an inverted U-shaped relation between radical technological innovation and the extent to which firms ally with the same partners over time. That hypothesis was tested on data on vertical alliances between biotech and pharma companies, and was supported. The second test was conducted on a combination of the basic hypothesis of optimal cognitive distance with a second hypothesis that the likelihood of a collaborative alliance increases with the expected performance of collaborative innovation. This yielded the derived hypothesis that the likelihood of an alliance for innovation has an inverted U-shaped relation with cognitive distance. That hypothesis was tested on data on alliances in ICT industries. Cognitive distance was measured by differences in degrees of specialization in different dimensions of technology, inferred from patent data. Partial support was found.

The argument of optimal cognitive distance has implications for the choice between integration by mergers/acquisitions (MA) and inter-firm alliances (Nooteboom 1999). First, the notion of organisational focus, with its deep structure of underlying cognitive categories, accentuates the problems involved in integration. The problems involved in aligning systems of rewards, careers, organisational structure, reporting procedures, decision making procedures, etc. are large enough, but the far more difficult problem lies in aligning the underlying values and perspectives indicated by Schein. Those are part of the nexus of personal and organisational identity that are highly tacit, and thereby taken for granted, emotion-laden and embedded in absorptive capacity. Second, the notion of cognitive distance and cognitive division of labour indicates that such distance has value and needs to be preserved by keeping some distance, and keeping sources of complementary cognition fresh, on the basis of experience in different markets and technologies. Integration would not only reduce flexibility of configuration, but would also lead to a reduction of the cognitive distance that is the source of learning.

A tenaciously held assumption in the literature on internationalisation is that cognitive distance is a problem to be overcome, and is not seen also as an opportunity to be taken. When learning is discussed, in the literature on international business, it is mostly discussed as learning to cope with transnational differences, by accumulating experience in cross-border collaboration (e.g. Barkema et. al. 1997), rather than taking those differences as a potential source of learning to change home country products or practices. The possible *positive* effect of some cultural difference has not, to my knowledge, been included in studies of international management. According to the logic set out above, cross-cultural enterprise harbours both an opportunity to learn and a problem of lack of understanding. Here also, one might expect an inverted-U relationship between innovative performance and cultural distance, depending on ability to understand and empathise with foreign cultures, which in turn depends on cross-cultural experience. Here, the aim is not to reduce cognitive distance but to preserve it and to learn how to cross it.

Johanson & Vahlne (1977, 1990) employed the notion of 'psychological distance', which is seen as having an adverse effect on cross-cultural communication. In an empirical study of foreign acquisitions in the UK, Child et. al. (2001) found that large cultural difference has a negative effect on success. Fey & Beamish (2001) found a similar negative effect on the performance of international joint ventures in Russia. However, in both studies no allowance was made for a quadratic, inverted U-shaped effect, and performance measurement was not focused on innovative

performance. In contrast, in a study of effects of cultural diversity on performance in Sino-Japanese and Sino-West joint ventures, Li et. al. (2002) allowed for a quadratic effect, and found a significant negative coefficient for the quadratic term, confirming an inverted U-shaped effect, for both sales per employee and ROA as measures of performance.

A related assumption, in the literature on international business, is that the longer a relation lasts, the better it will perform. For example, in an empirical study of foreign-Chinese international joint ventures (IJV's) in China, Child & Yan (2001: 7) posited the hypothesis that 'The longer the time that an IJV has been in operation, the higher will be its level of performance'. In contrast, the implication of the present analysis is that there will be diminishing returns, followed by a negative effect of IJV duration on innovative performance.

Of course, in cross-border collaboration there are not only problems of cultural difference, but also of differences in institutional and economic infrastructure that condition the success or failure of collaboration, in particular collaboration between companies from developed and under-developed nations. This includes legal and regulatory regimes, capital markets, educational systems, physical infrastructure of transport and communication, and the like. The greater such differences, the more adaptation needs to take place, from the host country to home country practices, or vice versa. Such effects have to be controlled for, and here it is useful, again, to employ the distinction between differences in institutional environment and firm-level differences (institutional arrangements). The greater differences are in institutional environment, the more one needs local partners that are familiar with local conditions and are able to cope with them, and the more urgent it is to utilise such cognitive complementarity.

INNOVATION

For a further understanding of innovation and learning in processes of internationalisation, we need an understanding of innovation processes. In the organisational and economic literatures there is a stream of thought that suggests that innovation proceeds according to a 'cycle' with two stages. An initial stage of volatility, with the creation of Schumpeterian 'novel combinations', and a later stage of consolidation, with 'dominant designs' (Abernathy 1978, Abernathy & Utterback 1978, Abernathy & Clark 1985) and efficient production systems that employ economies of scale and experience. The cycle is generally held to imply a shift from product to process innovations, as product forms settle down and competitive pressure shifts to efficient production. The life cycle theory of innovation has been complemented with the product life cycle theory of internationalisation (Vernon 1966). According to this theory, the consolidated innovation, which originated in countries with advanced technology and demand, is 'generalised', i.e. carried to less developed countries with lower wages, in order to further extend the market and fight the competition by a further decrease of costs.

The life cycle theory of innovation suggests that the first, volatile stage of novel combinations requires decentralised, disintegrated organisational forms such as industrial districts of small, independent firms (Piore & Sabel 1983), or firms with a decentralised 'organic' structure, while the stage of consolidation requires a more integrated, bureaucratic structure. In other words: the degree of organisational integration depends on the stage in the innovation cycle. This connects with a long tradition in the organisational literature to propose that stable, predictable environments require integrated, 'mechanistic', bureaucratic forms of organisation, while volatile, varied and unpredictable environments require disintegrated, 'organic' forms of organisation (e.g. Burns & Stalker 1961, Chandler 1962, Emery & Trist 1965, Thompson 1967, Lawrence & Lorsch 1967). The cycle theory of innovation has met with empirical contradictions. Among other things, often process innovation precedes rather than follows product innovation. But a more fundamental

objection is that this cycle is not really a cycle. A genuine cycle leads back to the beginning. However, the origins of novelty remain a mystery, and that is precisely what we would like to understand. How does the discovery process work?

A distinction has been made between ‘competency enhancing’ versus ‘competency destroying’ innovations (Abernathy & Clark 1985). Tushman and Anderson (1986) presented evidence of ‘technological discontinuities’ in the US cement, airline and minicomputer industries. This has led to the notion of ‘punctuated equilibria’, with relatively fast breakthroughs after long periods of relative stability (Gersick 1991). Technology is presented as subject to ‘technology cycles’, with technological discontinuities that yield an ‘era of ferment’, in which novel designs are developed and existing practices are replaced, which leads to a dominant design, followed by an ‘era of incremental change’ with an ‘elaboration of the dominant design’, which then leads on again to technological discontinuity. The first part is in accordance with the earlier ‘innovation cycle’. The second part is new, but no explanation is given of how incremental change leads up to technological discontinuity. An attempt to give such explanation was made by Nooteboom (2000), in a ‘heuristic of discovery’.

A HEURISTIC OF DISCOVERY

Nooteboom (2000) proposed that like crime discovery requires motive, opportunity and means. One needs an accumulation of unsatisfactory performance to generate motive, to overcome one’s own inertia or that of others, in an organisation or wider institutional setting. One needs opportunity to deviate from the sway of existing institutions. And one needs means in the form of insights into where and in what directions to look for change, what novel elements to obtain from what source, and how to incorporate them in present competency. One can obtain such conditions mostly by moving one’s present competencies across a variety of contexts (‘generalisation’), subjecting them to new challenges, adapting them to local conditions (‘differentiation’), interacting with others in the novel context, adopting elements of novelty from them (‘reciprocation’ or hybridisation). That is how we obtain motive, opportunity and means for change.

One may need to escape to an outside niche, in ‘generalisation’, because one is, justly, not allowed to destroy the systemic integrity of established practice. That would yield pervasive repercussions of change, without insight in whether that would be feasible and worthwhile. Next to this economic argument for the protection of systemic structures, there are pressures of a social-psychological nature. After innovation has settled down into a ‘dominant design’, there are strong pressures to conform to it. There are psychological pressures to be an insider in dominant groups, and social pressures to acquire legitimation. DiMaggio & Powell (1983) argued that apart from effects of evolutionary selection of the most successful practice, there are pressures towards ‘organisational isomorphism’, by mimesis of established practice and conformance to norms, established by professional organisations, suppliers, customers, competitors, and regulatory agencies, in an ‘organisational field’. An example of such herd behaviour, or bandwagon effect, is the drive to engage in mergers and acquisitions, in spite of the fact that it is well known that they fail more often than they succeed. From the perspective of the present article one might add that to the extent that the economic system is closed to new entry, and the pace of innovation subsides, ongoing interaction between firms yields reduced cognitive distance: firms start to think alike. Such organisational isomorphism contributes to the permanence of distinctive features of business systems.

To escape from all these forces of conformism one may need to take refuge in an outside niche, where there is less threat to the integrity of existing systems, to gain opportunity to be different. This is consonant with the fact, in the history of technology, that initially innovations are

developed not in areas where they could achieve their full potential, but in areas where they could be tolerated. A familiar manifestation of this is the 'spin-off' of entrepreneurial ventures from long established firms. Another, so we propose in this article, is the move into a foreign country.

In the novel context (application, market, institutional environment), one runs into limitations of existing practices (processes, products). This generates motive for change, which at first is sought in proximate change, with minor adaptations, in 'differentiation', to maintain exploitation as much as possible. Next, if this does not suffice, the motive arises for more drastic change. Meanwhile, one has gained insight into similar or related processes or practices in the novel niche, which are seen to perform better in respects in which one's established practice seems to fail. This leads to 'reciprocation', where one builds in elements from such local practice into one's own, or tries to adopt local practice while maintaining elements from one's own. A famous example of reciprocation is how Henry Ford's idea of an assembly line in car manufacturing was inspired by the procedure, at a mail-order company, in which boxes on a conveyor belt passes successive stations, to be filled according to order slips.

Syncretic add-ons of outside elements, in reciprocation, labor under one or more of the following problems. Complexity of ad-hoc add-ons increases architectural complexity ('spaghetti'), which yields problems of co-ordination and decreasing returns from further add-ons. Duplication of parts in different places of the architecture foregoes opportunities for economy of scale. More important, for the next step in the process, is the condition that the potential of novel elements is constrained by the architecture of the system in which they need to fit. Such structure may be the architecture of the practice itself, or structures of use, or super ordinate structures of distribution channels, legal acceptance, vested interests etc. Thereby, as success of novelty emerges in the niche, pressures arise for more radical architectural innovation (Henderson & Clark 1990), to allow the novelty to fully realise its potential. Such architectural change is not random: one indication for it is to design architecture such that novel elements that were proven useful in the preceding stage of reciprocation can better realise their potential. Here the niche that served for the incubation of novelty is expanded, and novelty creates its own new selection environment and corresponding institutions. Such more radical architectural innovation, on different levels of structure, creates confusion, creative destruction and a great deal of uncertainty. Here we are back at the beginning of the cycle: a process of consolidation is needed. Completion of the cycle explains, among other things, that while process innovation may follow product innovation, the reverse can equally be the case.

This cycle of discovery yields an elaboration of the process of change 'from below', indicated earlier. It is related to the learning cycle of Kolb (1984), in an 'activity theory' of learning: learning (exploration) emerges from practice (exploitation). On a deeper level of analysis, this is consistent with the emerging stream of 'embodied cognition', mentioned before. In Kolb's cycle, learning comes about from 'concrete experience', 'reflective observation', 'abstract conceptualization and 'active experimentation'. The present cycle of discovery gives more detail of what stages of development entail, and how they lead on to each other. The present cycle is also similar, up to a point, to the 'technology cycles' proposed by Tushman, Romanelli and Gersick, discussed before. In particular, it shares the basic principle that the discovery process arises from an alternation of variety of form and variety of context: variety of form is reduced (in dominant designs) and replaced with variety of context (outside niches) that generates novel variety of form (innovation). The added value of the present heuristic of discovery is that it specifies by what process and steps 'discontinuity' and punctuated equilibria come about.

Interestingly, the idea of 'escape' to an outside niche, in generalisation, links with the notion of 'allopatric speciation' in evolutionary theory, as an explanation of punctuated equilibria in biology (Eldredge & Gould 1972). New species often arise outside, or at the periphery, of the parent

niche. After a lengthy process of outside experimentation, a breakthrough, including invasion into the parent niche, can occur relatively fast, yielding ‘punctuated equilibria’. In business systems, the relative slowness of prior development can be understood from the need to go through the developmental stages of generalisation, differentiation and reciprocation, discussed above.

Note that the cycle is proposed as a heuristic, i.e. a rule that generally tends to contribute to the goal of maintaining exploitation as much as possible while conducting exploration. It is not proposed as an inexorable march of logic that is necessary, uniform and universal. It is not necessary: innovation can occur on the basis of purely random trial and error, as suggested in evolutionary theories of change, by analogy to biological evolution. That, however, would be associated with excessive waste and failure. The cycle is not inexorable: development may get stalled. In particular, after consolidation development may get stuck in inertia. People and organisations may be unable to unlearn and to surrender the routines and skills they have developed and which are demonstrably efficient. In markets, however, such inertia is vulnerable to new entry of entrepreneurs, provided that such entry is allowed. Firms may decline due to inertia or may be jolted out of inertia by threats of competition. In the stage of radical innovation, novel combinations may get lost in a chaos of competing systems that fail to lead to any dominant design.

The process of discovery is often not intentional. Generalisation is generally not driven by the will to learn. Psychologists tell us that there is a well-known, instinctive drive of ‘over-confidence’ to generalize existing competencies to new contexts. This is exhibited, for example, in child’s play. In economics it takes the form of an expansionist drive to obtain profit or power from applying successful practice to wider contexts. From the perspective of evolutionary psychology one might even surmise that we have this instinctive drive because it leads to learning. However, the heuristic may be used more intentionally as a learning strategy. That, we suggest, is what we now see in the literature on international business.

The account of generalisation suggested that it entails a voluntary escape from existing dominant practice, in an active strategy of expansion. However, the crux is a change in the context of application, and this may also arise in different ways. Often, existing firms are more passive, and are then confronted with the invasion of novelty. In other words, they do not actively seek a novel context of application, but are confronted by the replacement of their familiar context of application by a new one. In fact, this contributes to the phenomenon of punctuated equilibrium. While novelty was explored ‘outside’ by more entrepreneurial firms, when it breaks through, other firms are forced to adapt, which accelerates the break-through.

An example from recent empirical research (Gilsing 2003) is the development of multi-media, to realise opportunities to mix media, which were technically enabled by digitalisation and were commercially interesting as a result of the Internet. Entrepreneurs, often younger employees, within those companies, saw novel opportunities but could not have their ideas accepted, and ‘spun off’ into independent entrepreneurial ventures. When the potential of Internet became clearer, publishers were forced to start going along, on the pain of losing out.

Note that the cycle appears to solve the problem of exploitation and exploration at least in part. By applying current competencies in novel contexts we preserve exploitation, needed to survive during the process of discovery, while at the same time contributing to exploration: the accumulation of motives, opportunities and means for change. A criterion for search is to look for novel contexts that are sufficiently close to maintain exploitation and sufficiently distant to offer significant novelty. This connects with the trade-off between cognitive distance and proximity discussed before. Learning to conduct international collaboration increases absorptive capacity and ability to cross cognitive distance, which increases optimal cognitive distance and raises the level of innovative performance.

The analysis indicates how multinationals may tackle the problem of integration and multinational differentiation, seen as a special case of the problem of exploitation and exploration. The move of internationalisation here corresponds with the move of generalisation. By carrying existing products or processes into host countries, MNC's can develop new insights into limits of feasibility and profitability, in the novel context, which builds up the motivation for change, and provides insights where changes may be needed and what elements from the novel context may help by being incorporated into existing practice. The resulting hybrids are often not efficient, but they give room for finding out what novelty might yield a new perspective and what elements, in the structure of existing practice, limit the full utilisation of their full potential. This then yields a motive and directions for more fundamental change in the architecture of practices imported from the home country, as a basis for changing those. For companies in host countries, the importation of practices from the multinational provides a new niche for them to adapt to.

This opportunity and challenge for reciprocal adaptation is blocked by a multinational strategy of imposition. On the other hand, deviation from home country practices entails an initial lack of efficiency and coherence. As indicated before, this is problematic to the extent that economies of scale and the need to preserve systemic integrity of exploitation would entail a large sacrifice. What organisational forms are there for combining exploitation and exploration?

INTEGRATION AND DISINTEGRATION

As in the classical innovation cycle, the extended cycle is associated with integration and disintegration of organisational forms, i.e. with the strengthening and loosening of linkages of co-ordination. Generally, exploitation requires fixity, clarity and non-ambiguity of standards (whether they be standards for tasks, output or skills), while exploration requires that they be allowed to become ambiguous and loose. Generally, after a movement of integration in the process of consolidation and generalisation, there is a movement of disintegration, first gradual and later more radical, in the stages of differentiation and reciprocation. This is needed to deal with variety of information, in the generalisation to different contexts (cf. Chandler 1962, Stinchcombe 1990), and to allow for flexibility of differentiation and novel combinations. Disintegration can take several forms: decentralisation within the integrated firm, increased autonomy for subsidiaries, outsourcing, management buy-outs, spin-offs, sell-offs, external corporate venturing, novel entry of independent firms and the formation of industrial networks.

In the stage of consolidation, with the search for a dominant design, it is important that misfits are efficiently weeded out. As the dominant design emerges, there is a drive for efficient exploitation. Competition has shifted from novelty to price. Tacit, procedural knowledge has been developed into more declarative, documented knowledge, which allows for wider diffusion. Standards allow for disintegration while maintaining fit across interfaces in chains of production. Increase of scale is enabled by growth of demand and penetration into extended markets, and is necessary to reduce costs due to increasing competition, as patents wear out and imitation increases. This favors larger production units, integrated distribution channels, spreading of risks, access to finance and the umbrella of a brand name. This favors a larger, more international and more integrated firm.

Next, as generalisation turns into differentiation and reciprocation, comparative advantage shifts again to greater variety, in more autonomous divisions, subsidiaries or independent firms, to give room for the generation of variety by reciprocation, in preparation of the next round of more fundamental innovation. Differentiation of products and processes also contributes to an escape from pure price competition between identical products that developed from generalisation. Small firms, or independent units within large firms, are better at product differentiation in niche markets, where they

do not run into disadvantages of small scale and can benefit from flexibility and proximity to customers.

How, then, can firms combine integration for the sake of exploitation and disintegration for the sake of exploration? The part of the organisation that is oriented towards exploitation is oriented towards division of labor, co-ordination, standards, stability, preservation of boundaries, efficiency. The part that is oriented towards exploration is oriented towards process, autonomy, breaking standards, change, crossing boundaries, and novelty. The one sees the other as bureaucratic and non-entrepreneurial, and is itself seen as erratic, wasteful, disorganised, and inefficient.

As discussed before, the problem is more serious when the exploitation system is highly systemic, with many elements that are densely connected, with narrow tolerances on their interfaces, and is much more easily solved when elements in the system are stand-alone. As a result, there is no single way to go about it.

An example of a highly stand-alone system is a consultancy company. Here, professionals have a large scope for autonomy, and exploitation already entails tailor-made advice that cannot be standardised. Efficiency, in standardisation, lies more in the 'back-office support' in administration, information provision, and training. However, beyond that, even here attempts are made to safeguard professional standards and quality. For example, this is needed to ensure consistent quality across different locations of a multi-national customer. A problem arises for exploitation. Measures must be taken that different consultants make use of each other's experience in order not to re-invent wheels all the time. In some cases (as in the now defunct consultancy firm Arthur Andersen, cf. Nooteboom 2000), consultants are encouraged to contribute their experience to a common pool, and to work together. This requires incentive systems for consultants to volunteer their experience to the common pool. That requires that they be judged and promoted at least in part on the basis of such contributions, weighted by their usefulness, measured by the extent that colleagues make successful use of them. The common pool would require a certain minimal amount of standardisation of concepts and procedures, in a thesaurus. The problem then is that such fixity of meanings and categories hampers exploration. Thus, it was necessary to have a committee that collected problems in fitting new ideas into the system, and periodically revised the semantic system. That still entails a problem of delay, so that radically new ideas could not be diffused quickly. Thus, even in this case the problem of exploitation and exploration reared its head.

When it is difficult to combine exploration and exploitation in time and place, they need to be separated in time or place. With separation in time, exploitation occurs at one time, and exploration at another. This yields the 'oscillating' (Burns & Stalker 1961), or 'ambidexterous' (Duncan 1976) or 'two-state' (Shepard 1967) mode, with a to-and-fro between disintegrated, loose and open to integrated, tight and homogeneous, and back again. The question is how people can be so flexible as to cope with the resulting uncertainty and instability. In terms of organisational culture, one would need regular cultural revolutions.

With separation in place, one part of an organisation engages in exploitation, another in exploration. There can be horizontal or vertical separation. In horizontal separation one division or department, typically R&D, preferably in collaboration with marketing, engages in exploration, and another, typically production, engages in exploitation. The problem here is of course how to govern the interface. There is the perennial frustration of marketing people that production people are 'not willing' or 'blind' to deliver what market opportunities call for, and the equally perennial frustration of production people that marketing people are too dense to appreciate what is technically feasible and cost-effective. Vertical separation can go two ways. In one, management yields scope for exploration to take place 'below', where people interact with the market and with sources of technology, labour, inputs, to utilise the opportunities they meet, and management tries to maintain sufficient coherence to prevent waste of duplication and mismatch. Alternatively, management lays claim to choices of

direction and content, and co-ordinates staff in the execution of their vision. Junior staff is trained in exploitation, subject to strict standards of efficient production, and may proceed to more autonomous, varied, exploratory work after they prove their ability and mastery of standard work and accumulate experience as a basis for it. The disadvantage of this is that senior people may have become too committed or entrenched in past or existing concepts, standards and procedures. Another type of separation is based on a dual internal labour market. Routinised exploitation is relegated to temporary staff, which is hived off when their skills have become redundant or obsolete, if they are unable to adjust. An example is massive 'back-office' clerical work in administration or simple programming, which is typically located in low-wage countries with little job security. Highly skilled 'core' workers conduct exploration in an ongoing fashion. Similar in logic, though not in structure, is March's (1991) analysis, on the basis of a simulation model, of a dual internal labour market where for any task some staff are geared (selected, trained) to conform fast to established practice, and others (the mavericks) are selected to maintain and try to impose their own ideas. The problem here lies in the double organisational focus involved, for different classes of people, who may then be unable to understand and sympathise with each other, yielding lack of trust, whereby exploitation and exploration become disconnected.

A radical form of separation in place is to drop the ambition of combining exploitation and exploration in one firm, and to specialise in one or the other, and seek outside partners with a complementary focus. Exploratory firms would need to pass on activities that have reached the stage of consolidation to firms specialised in exploitation. The classic example of this is the distribution of labour between often small-scale biotechnology firms who conduct exploration, and pharmaceutical firms, who conduct exploitation, in the lengthy and scale-intensive procedure of gaining regulatory approval of new drugs, spreading risks of failure, producing drugs efficiently, and distributing them widely under the umbrella of a brand name.

Many organisational scholars have dealt with this theme (e.g. Thompson 1967). In economics it was discussed by Aoki (1986), who made a distinction between a horizontal and a vertical 'information structure'. In the vertical structure management co-ordinates workshops but is incapable of adequate monitoring of emerging events in markets and technologies. In the horizontal structure production decisions are co-ordinated among semi-autonomous shops, which can better respond on the spot to emerging events. The former is typically American (the 'A firm'), Aoki proposes, and the latter typically Japanese (the 'J firm'). In the A firm there are clear job specifications, and standard operating procedures. Problem solving is relegated to supervisors, repairmen, and engineers. In the J firm, duties are not specified in detail, workers rotate across jobs so that they become familiar with a wide range of activities, as a basis for horizontal co-ordination. Decentralisation is also carried across the boundaries of the firm to suppliers, who are given more scope for initiative.

Large, integrated firms can survive or indeed create the discontinuities of novel combinations by means of decentralization of highly autonomous divisions or even individual 'intrapreneurs'. But there are limits to the variety that can be created and sustained in a large firm. How can one foresee the kinds of variety that might become relevant? In the extreme case, to create that variety the large firm would have to engage in practically everything, allowing for any combinations, and what then remains of the notion of an organisation? It seems necessary to also maintain a readiness to mop up successful small innovators, in order to tap into a variety of independent firms that would be hard to reproduce within the firm. This is reflected in the finding of Barkema & Vermeulen (1998) that firms alternate between internal development and external development by acquiring innovative firms.

Another inventive combination is the practice at the 'Central Book House', in the Netherlands (Nooteboom 2000). It buys and supplies books for the book trade. It has three core divisions, which need to be tightly integrated:

1. the assortment of books, which must offer a high degree of differentiation to customers, in terms of composition and size of packages.
2. logistics for efficient and fast delivery
3. Information technology to enable 2 and to collect and provide strategically vital information as to what books are read by whom, where at what price, for 1 and for customers (both publishers and shop keepers).

Clearly, efficient exploitation is crucial here. But so is exploration, to keep up with developments in reading habits, technologies of information processing and dissemination, and changes in publishing. Due to the systemic coherence of the three divisions, innovation must occur in step between them. To achieve this while maintaining efficient exploitation, the following solution was found. The organisation is basically exploitation oriented. For exploration there is a permanent R&D team of ten people, recruited at different moments (two new people every half year), from the three different departments, and moving out after two years, not going back to their own division of origin but one of the others. Moving out from exploration, back into exploitation they carry responsibility for implementing innovations they helped to develop. One can see the advantages. One is that exploration is based on experience in exploitation, and is conducted with a view to the expected responsibility for implementation to be taken on later. The different divisions each contribute both to exploration and its implementation, to protect systemic coherence. There is turnover in the team to maintain variety and ongoing influx of experience from exploitation. This is a case of combining exploitation and exploration by spatial separation with both horizontal and vertical co-ordination. Are there problems? It seems that the assumption in the system is that the cycle of innovation is two years. If it turns out to be longer a person moving out of the R&D team has nothing new to implement in the division he joins, at least not an innovation to which he contributed. Is this an incentive or a disincentive to see to it that something new comes out within the two years? What if people are valuable but do not want to move out of exploration and back into exploitation, and if their competencies support that preference? What guarantees that one will always find people who have the skills and interest in both exploitation and exploration? What guarantees are there that rivalries between the divisions will not be carried into the development process? Is this really prevented by the prospect of having to move into another division after the two years in exploration?

One might try to escape the problem by not engaging in production in any way, but to act as an orchestrator of productive activities of others. ICT increasingly yields the opportunities for this. Quinn (1992) gives the example of a company that offers custom-made ASICs (Application Specific Integrated Circuits). They interface with clients directly by means of ICT, to determine functional specifications. They then employ their own specialised software to convert this into photo masks, which are sent by ICT to a company in Japan for etching, next to a company in Korea for dicing and mounting, next to Malaysia for assembly, from where the chip is flown directly to the customer. A similar example in sports shoes is Nike. Another example is Benetton: it also performs the task of orchestration, by means of ICT, of a decentralised network of individual producers and retailers. However, rather than refuting the cycle of innovation, these examples show how the orchestrator conducts exploration by flexibly exploiting the productive competencies of different companies, in shifting configurations, and thereby tries to escape the need and the dangers of inertia. The risk of inertia due to standardized, more or less fixed systems for efficient production is hived off to other players. But even here, the focal, orchestrating firm must be careful to both maintain and develop his core competency of orchestration.

In the present context of international business, the main point here is that the problem of how to reconcile (multinational) diversity with the need for some integration is not a new problem. The problem is known more widely as the problem of exploitation and exploration, firms have to deal

with it regardless of internationalisation, and there are insights in options for organisational structures to deal with the problem. The forms of organisations discussed here may be applied or modified to deal with the problem of multinational diversity. If in order to profit from learning opportunities emerging from the host country context a subsidiary enters into conflict with the order of global exploitation, it might be set aside, at least in part of its activities, in a similar way that one may set aside a development group in the home country. One may also hive off a subsidiary, in an alliance relationship, where it is given the role of exploration outside of the order of exploitation, in a similar way that in the home country one might engage in such a relationship with an outside specialised supplier or developer.

CONCLUSIONS

This article analyses the problem of how to combine multinational diversity with integration for the sake of efficiency as a special case of the general problem of how to combine exploitation and exploration, and develops several hypotheses for further empirical testing.

In its theoretical analysis, the article offers the following insights:

- It gives additional arguments for the permanence of distinctive features of business systems.
- However, it also develops an argument how multinational diversity may yield radical innovation from outside, which may shift home country institutional arrangements and perhaps also the wider institutional environment. For this, it employs a 'heuristic' or 'cycle' of discovery, in which the process of internationalisation is seen as a process of generalisation, which, via differentiation and reciprocation, in a process of 'allopatric speciation', yields 'punctuated equilibria'.

The different conditions of host countries may serve to find limitations to home country products and practices, which leads to differentiation, and to discover potential new elements of products and practices, in experimentation with novel, hybrid combinations of home and host country elements, in exploration. When this yields insight in promising new avenues, it may also yield insight into where existing home country principles block the full utilisation of novelty. This, then, yields a rational basis for changing them, in enabling the management of a subsidiary to demonstrate proven potential that would make pervasive change across the multinational worthwhile, beyond the boundaries of the host country where the insights were developed.

- While such discovery is often an unintended by-product of internationalisation, MNC's may adopt it as a deliberate learning strategy.
- The familiar phenomenon, in the alliance literature, that often collaboration starts with a joint venture, which later is taken over by one of the partners may be explained as follows. If a partnership sets out for exploration, this requires a disintegrated structure, as in a joint venture, and when outcomes reach the stage of exploitation there is need for integration.

The article offers the following insights for the management of MNC's:

- The notion of organisational 'focus', in connection with Mintzberg's forms of coordination, may contribute to answering the question how to coordinate international activities, taking into account their implications for the scope for local adaptations, in a learning strategy.

This is likely to require a longer-term strategic orientation, in which some home countries (Japan, Germany) have an advantage over others (US, UK). Such home country differences may lead to different styles of multinationalisation, which may perpetuate home country differences. If globalisation of capital markets imposes a short-term perspective, this is likely to be counterproductive for a learning strategy, and this gives a good reason to try and prevent such development, or to extricate oneself from it.

- There is considerable insight into alternative forms of organisation to deal with the problem of combining integration and disintegration that may result from the problem of exploitation and exploration, and these may inform modes of international management.

To the extent that the exploitation system is stand-alone, it is not too difficult to combine exploration and exploitation. This article used the example of a consultancy firm, where the very activity of exploitation (highly autonomous consultants giving tailor-made advice) is already highly exploratory. Here, one may need to stimulate exploitation by sharing new practices and methods, by use of technical IT-based systems for sharing, with requisite incentives, or by rotating personnel across teams, countries or fields of consultancy. When the exploitation system is highly systemic, and deviations from it, in experimentation, would jeopardise systemic integrity, as for example in an oil company, one would need to allow for separate niches for experimentation with novel combinations to take place. Which is the case depends on the nature of the product and corresponding technology and organisation. Some activities of a multinational may be more systemic and others more stand-alone, so that one may need to resort to a mixed mode of organisation. Thus, there is no single, universal best way to run a multinational.

When the exploitation system is highly systemic, one may try to make it more decomposable by modularisation, or by developing a more flexible technology. When that is not feasible, one may resort to spin-outs, where experimentation is set aside in a separate niche within the organisation, or spin-offs into independent ventures, in 'external corporate venturing', possibly in the form of joint ventures with local partners, with the option of 'spinning in' again when success is manifested and re-integration appears to be worth while, for exploitation.

One may consider other ways of separating exploitation and exploration in place or time, indicated in this article. One might see subsidiaries as laboratories for exploration, with the central task of head-office to collect the results into feasible configurations of exploitation. If subsidiaries are highly focused on exploitation, one might consider a solution analogous to the solution found by the 'Central Book House', discussed in this article, with a permanent development group with rotating membership from a variety of host countries, to conduct exploration, with participants moving back into subsidiaries, but not the same they came from. In analogy to the dual structure of exploration and exploitation in biotechnology and pharmaceuticals, one might go for specialisation in one activity, and engage in alliances with firms that specialise in the other. One might go for 'orchestration', discussed in this article, where a multinational does not engage in any production, and focuses on exploration, in an ongoing re-configuration of activities of design and production across a range of countries.

The article offers the following hypotheses for further empirical testing:

- Cultural distance may yield not only a problem but also an opportunity, in an inverted-U shaped relation between such distance and innovative performance.
- The usefulness of longevity of international collaboration is limited, with an inverted-U shaped relation between longevity and innovative performance.
- Different styles of internationalisation, as a result of home-country effects, may be interpreted as different approaches to the issue of exploitation and exploration.

Child et. al. (2001) noted that in some cases (US and Japanese parent companies) home country styles of management were carried forward into FDI by acquisitions in the UK. US companies tended to take a short-term profit perspective, and to engage in high levels of integration of companies acquired in the UK, with a high degree of 'imposition' of both strategic and operational control. Japanese parent companies took a more long-term growth perspective, engaged in less integration, and allowed for more local autonomy, limited strategic control, and involvement in operational matters on an advisory basis. According to the present analysis, the latter, Japanese approach would allow for more innovation from absorption of local practices (differentiation and

reciprocation) than the former. Child et. al. analyzed effects on performance only in terms of profit and sales growth. For our present purpose, we would need to look at innovative performance. The conduct with respect to UK acquisitions of French and German parent companies was not so clearly consonant with their home-country styles of management. In fact, in their UK acquisitions, French parent companies did not hold on to their home country inclination towards deep hierarchies, and within boundaries of strong high-level strategic control, they allowed for considerable local autonomy, and hardly engaged in operational control. German companies engaged only in little integration, as well as little strategic and operational control. They were much less formal in procedures of planning and control than in their home country. As one possible explanation, Child et. al. hypothesized that with lesser experience one is less self-confident and hence less inclined towards a strategy of imposition. However, from the present analysis one might expect that if the hypothesis of innovation by internationalization is valid, more experienced companies, having caught on to the principle, would go for *lesser* imposition. Did the French and German companies perhaps loosen their home country style for this reason? A follow-up question would be whether from their experience with foreign acquisitions MNC's have changed their home-country styles of management. This type of analysis, as conducted by Child et.al., is complicated by a number of factors. As noted above, exploration requires looser, more decentralized organisational structures, while exploitation requires more integrated structures. If one takes a short-term profit perspective, this suggests a focus on exploitation, and for that a strategy of imposition, to achieve economies of scale and standardisation, would in general be the preferred mode. Child et. al. did find that the US parents, with their more short term profit motive, engaging in a strategy of imposition, did achieve higher profits. The Japanese parents, with their longer-term growth motive, engaging more in a strategy of local adaptation, did achieve higher growth. Again, we would need to test whether the US strategy yielded less radical innovation, and the Japanese strategy more, as the present analysis would predict.

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