REGIONAL SPECIALISATION AND LOCAL ENVIRONMENT

- LEARNING AND COMPETITIVENESS

EDITED BY HEIKKI ESKELINEN
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Ivar Jonsen

Introduction

Since the 1950s Greenlanders have been exposed to a process of planned modernisation ‘from above’. This modernisation process has resulted in the concentration of the population into small fishing villages and the capital, Nuuk, that has approximately 15,000 inhabitants. Greenland was incorporated into the Danish state in 1950 when she became one of Denmark’s counties, having had colonial status before. In 1979 homerule was introduced, since then Greenlanders have taken over most of the administrative functions of the Danish state (Tobiasen 1995). During this period the dominant accumulation strategy has been export orientated and predominantly based on investment in the F-sector (fishing and fish processing).

In the 1950s the emphasis was on infrastructural investment undertaken to facilitate private Danish investment in the economy. As this strategy failed, public investment increased during the 1960s in the economy, both in terms of production, and transport and services. The bulk of the investment was channelled through the state owned company, KGH. As a consequence, the process of modernisation in Greenland has been characterised by the unusually predominant role of the state and an unusually high degree of centralisation. The statist regime in Greenland was strengthened by the Greenlandic homerule government in the 1980s as it placed even greater emphasis on investments in the F-sector.

Following a severe slump in the F-sector in the late 1980s, a new accumulation strategy has emerged. It emphasises the development of tourism and a renewed interest in research related to mining and oil-
production in the future. At the same time, greater interest in a knowledge intensive accumulation strategy has emerged, and the homerule government recently introduced a post in the ministry of education and culture that will deal with the co-ordination of research and development (R&D) in Greenland. Furthermore, the ministry is preparing the establishment of a research council that will co-ordinate R&D activity on a permanent basis (see Jonsson 1995).

It appears that the Greenlandic system of innovation and R&D activity is now in an infant stage and that it will develop quickly over the next few years. The development of this system will, presumably, be influenced by the particular economic and political conditions which exist at that time in Greenland.

Statism and Development

In recent years statist theories of development have gained some influence in development research following the economic success of SE-Asian economies such as Japan, South-Korea, Singapore and Taiwan (Chan & Clark 1992; White 1988). In the statist view, the focus is on domestic conditions unlike, for example, neo-marxist ‘dependency-theories’ that emphasise the limits of external conditions and international trade set development. Statist theorists have more positive views on the role of foreign investment, multinational corporations (MNCs) and terms of external trade. If the state is autonomous enough and has the right kind of state-technocrats, it is able to play on the effects of these factors and direct investment into growth generating sectors according to the statist theories (Cotton 1992; Davis & Ward 1990; Huang 1989). State policies are explained by ‘institutionalist’ factors such as basic political structures of the countries in question and how they react to internal and external factors. There are very different approaches within this general framework of the statist view, at one end the state is viewed valuable if it is able to impose order and stability to facilitate capitalist markets (Huntington 1968; von Mises 1983). At the other end it is argued that only a socialist state which destroys capitalist relations and imposes a command economy can overcome the structural contradictions of dependency (Chase-Dunn 1983). Between these opposing views are very different approaches that emphasise the role of the state in generating growth through Keynesian economic management and countercyclical policies, provision of socio-economic infrastructures, regulation of MNCs, support of private entrepreneurs and by promoting social equity (Chan & Clark 1992, 30).

Greenlandic Statism in Transition

Although the Greenlandic economy is much smaller than the SE-Asian economies and has its particular size-related problems of accumulation as a micro-economy (that is, an economy with less than 1 million inhabitants, see Jonsson 1991, 1992 and 1993), its statism is in many ways comparable to that of the SE-Asian economies. The public sector is relatively large in Greenland with total public expenditure around 90 per cent of GDP, but one has to add around 50 per cent of GDP which Greenland receives from the Danish state in the form of a grant. A large part of the public expenditure is spent on health and education, 14 per cent and 12 per cent of GDP respectively in 1990-93. Administration accounted for 8 per cent and so did transfers. Subsidies for businesses accounted for 5 per cent (Paldam 1995, 102). These figures are much higher than in OECD countries, but in terms of GNP they would be 1/3 smaller.

The size of the public sector in terms of market production of goods and services reflects how important it is for economic development. In the latest available labour market survey from 1987, the number of employed persons in Greenland was 24 789. Of those 6 490 worked in public enterprises and 10 423 in private enterprises. In some sectors the state owned enterprises play a leading role, as for example in fish processing where the state owned Royal Greenland A/S has around 3000 employees, the bulk of which are stationed in Greenland. Royal Greenland A/S is one of Europe’s largest fish processing firms.

Taiwan offers an interesting comparison, where it appears that the state also played a very important part in economic development. In the 1950s state owned firms stood for over 50 per cent of industrial production and manufacturing production. At the same time US aid played an important role in the economy and accounted for around 50 per cent of gross domestic capital formation (GDCF) in the early 1950s. Similar to the case of Greenland, foreign direct investment was minimal in the 1950s, that is, around 1 per cent of GDCF. Since the 1960s foreign investment has been greater, between 4 and 9 per cent. This change of
policy in the 1960s towards foreign investment meant a shift from import substitution policy towards export orientated accumulation in which the emphasis was on the electronics sector. However, the policy towards inward foreign investment was strictly selective and foreign firms were required to buy inputs from local firms and co-operate with them. US consultants played an important role in the early stages in the 1950s. However, the economic development of Taiwan has constantly been dominated by state technocrats that have played the role of state-entrepreneurship. State ownership has never been the aim of Taiwanese development, state firms are sold when they are ripe (Chan & Clark 1992).

As in the case of Taiwan, Greenland has received aid and experts from abroad (Denmark), but unlike Taiwan, local state-technocrats and local state-entrepreneurship have not played any role in the development process. The management levels of the state apparatus and enterprises are still dominated by Danish experts, the majority of which leave the country after a few years of service. This is the case despite the fact that the educational system has been consciously developed for almost half a century as part of the modernisation process. At the same time a dominant class of capitalist entrepreneurs has not developed. This is partly because of the small size of the homemarket and the unusually dispersed population living in villages with enormously long distances between most of them.

The Greenlandic statist regime has been restructured in recent years, such that the state enterprises have now formally become joint-stock companies and are relatively more autonomous and market orientated. Furthermore, a development company was established in 1993 which will provide venture capital. Since 1990 the statist regime has developed from being a directly centralised system under the homerule government to an 'organic centralised' system of relatively autonomous enterprises that are controlled by the homerule government through its ownership of shares and nominations of board members and directors of the companies (see Table 1). Most of these companies have either an oligopoly, or a monopoly position in the economy.

### Table 1: Enterprises of the Homerule in Greenland

<table>
<thead>
<tr>
<th>100% shares owned by the Homerule</th>
<th>Large ownership of shares owned by the Homerule</th>
<th>100% owned by the Homerule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royal Greenland A/S</td>
<td>Royal Arctic Line A/S</td>
<td>Grønlands Værft</td>
</tr>
<tr>
<td>KNI Holding A/S</td>
<td>Granlandfly A/S</td>
<td>Grønlands Værft</td>
</tr>
<tr>
<td>KNI Detail A/S</td>
<td>Nuna Bank A/S</td>
<td>Grønlands Værft</td>
</tr>
<tr>
<td>KNI Service A/S</td>
<td>Nunaoil A/S</td>
<td>Grønlands Værft</td>
</tr>
<tr>
<td>Tele Greenland A/S</td>
<td>Nuuk Imeryq A/S</td>
<td>Grønlands Værft</td>
</tr>
<tr>
<td>Greenland Tourism A/S</td>
<td>Grønlands Rejsebureau A/S</td>
<td>Grønlands Værft</td>
</tr>
<tr>
<td>Grønlands Bæreselskab A/S</td>
<td>Nuna Plast A/S</td>
<td>Grønlands Værft</td>
</tr>
<tr>
<td>A/S Boligelskabet INI</td>
<td>Qaqqortoq Sæbefabrik A/S</td>
<td>Lufthavnsvæsen</td>
</tr>
<tr>
<td>Great Greenland A/S</td>
<td>Santa's Work Shop Nuuk A/S</td>
<td>Q-Data m.fl.</td>
</tr>
<tr>
<td>Grønlands Erhvervsudviklings</td>
<td></td>
<td></td>
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<tr>
<td>Selskab A/S</td>
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</table>

Source: Statistical Bureau of Greenland: Grønland 1994, Kalaallit Nunaat, Statistisk Årbog

### The Greenlandic Innovation System

Since the 1950s the dominant accumulation strategy in Greenland has been characterised by a large emphasis on 'natural comparative advantage', that is exploitation of fish stocks and search for minerals and oil in the 1990s. Innovation activity, as a separate field of policy, has been neglected. As a consequence, the national system of innovation in Greenland has been small compared to other countries. However, recent research indicates that R&D, marketing activity and rate of delivery, that is, diffusion of new technology, are important factors that positively affect economic growth (Fagerberg 1988).

There is no standardised statistics available concerning the level of the R&D activity in Greenland which can be used as an indicator of the level of innovation activity in the economy. However, one can roughly estimate the R&D activity by comparing Greenland to another 'micro-economy', which resembles it, such as Iceland.

The level of R&D activity in Iceland is much lower than in the other Nordic countries, as it tends to be around 1 per cent of GNP. Furthermore, the private sector, that is, enterprises, in Iceland are much less active in R&D than is the case in the other Nordic countries. While 22 per cent of R&D was executed by the private sector in Iceland in 1991,
the figure for, for example, Sweden was 68 per cent and over 54 per cent in the other Nordic countries (Yearbook of Nordic Statistics 1995). This is to be expected in a microeconomy like Iceland, as the enterprises are very small and the economy suffers from unusually large economic fluctuations (Jonsson 1991, 1992 and 1993). There is, therefore, a great need for reducing the risk of investing in R&D. Only the state is capable of taking on this role, due to the small size of the enterprises outside the fishing and fish-processing sectors.

R&D activity in Greenland takes place at the University of Greenland (Ilisimatusarfik), in the health sector, and in the enterprise sector (see Appendix). We presume these sectors to be the ‘national system of innovation’ (NSI) in Greenland, but besides the R&D activity that takes place in this NSI there is some research that is sponsored and executed by foreign sources and scientists. We do not include this activity in our figures (Jonsson 1995).

According to our estimate, the R&D activity in the first mentioned sector amounts to approximately 19 person years, and the second sector accounts for around 26 person years. The enterprise sector may equal around 60 person years, that is, assuming that Greenlandic enterprises are at least as active in terms of R&D as their Icelandic counterparts. As a consequence, the Greenlandic NSI accounts for around 105 person years (Jonsson 1995).

As Table 2 shows, the Greenlandic NSI is very small when compared to the Nordic countries. The table indicates that R&D person years per 1000 inhabitants is only around 1.9 in Greenland, while the figure for Iceland is 4.6 and the figure for Sweden is 6.2.

Table 2: R&D (person years) and Number of Students at Post-college Level in Greenland

<table>
<thead>
<tr>
<th>Students at post college level per 1000 inhabitants (1993)</th>
<th>Denmark*</th>
<th>Finland</th>
<th>Greenland</th>
<th>Iceland</th>
<th>Norway</th>
<th>Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D person years per 1000 inhabitants (1991)</td>
<td>4.4</td>
<td>5.9</td>
<td>1.9</td>
<td>4.6</td>
<td>4.7</td>
<td>6.2</td>
</tr>
</tbody>
</table>


It also appears, from Table 2, that Greenland is far behind in terms of higher education. The number of students per 1000 inhabitants, studying at the post-college level, is much lower in Greenland than in the other Nordic countries. Figure 2 shows how many students there should be if their number were to be comparable to that of Iceland in terms of students at post-college level per 1000 inhabitants. The diagram also indicates how many more R&D person years would be needed if the figures were to be similar to those of Iceland, that is, measured as R&D person years per 1000 inhabitants. We presume the year 2010 to be a realistic goal to increase the number of R&D person years and number of students so that their number would be equal to Iceland.

It is interesting to highlight in which disciplines the Greenlandic students are engaged, as it has been argued that emphasis on engineering is an important indicator for future economic growth (Freeman 1987). As Table 3 indicates, Greenlandic students studying at the
university level are predominantly enrolled in social sciences and humanities in comparison to their counterparts in the other Nordic countries, and their interest in engineering is relatively low. However, one has to keep in mind that the number of students is much lower in Greenland than in the other Nordic countries.

**Greenland’s Challenge**

The statist regime in Greenland and its ‘organic centralisation’ is a solid base for long term policy formation which is strengthened by unusual political stability. However, Greenlanders face policy challenges that are both structurally determined and affected by external factors.

Firstly, being a micro-economy and in its early stages of developing an innovation system, Greenland needs, on the one hand, to select fields of R&D carefully so that resources are not spread into too many areas. On the other hand, Greenlanders need to collaborate with other nations in areas where they are short of skills and know-how. Secondly, the development of the innovation system has to take into account possible future growth industries in Greenland, local know-how which is particular for Greenland, and national interests concerning her cultural heritage and unusual nature.

With scant R&D resources success is most likely in areas related to Arctic conditions and accumulated know-how which is particular to Greenland. These are fields that range from research subjects such as Arctic nature, the particular modernisation process in Greenland, the experience of the Homerule order, the Greenlandic statism and Inuit culture to fisheries and related enterprises.

In relation to international collaboration the Greenlandic innovation system should be oriented towards close collaboration with other fishing nations and participate in research projects organised by inter-
national organisations such as the European Union. Of particular interest in this context is research into flexible production and marketing of seafood in relation to co-ordination, by means of information technology. Furthermore, Greenlanders should seek to participate and initiate searches for new exploitable fish stocks and consumer market niches that would increase the level of value added. Initiatives on the governmental level in this field in the context of the West-Nordic countries (Faroe Islands, Greenland and Iceland) seem to be realistic following the joint ventures of firms that have emerged in recent years and months.

When developing international collaboration in the field of innovation activity, one has to keep in mind that the key to successful innovation activity is a close collaboration between users and producers of products and services (Lundvall 1988; Massey et al. 1992). As a consequence, developing networks of users and producers of products and services is a fundamental element in a successful innovation policy. Furthermore, in recent years global networks of collaboration between firms have quickly developed following globalisation of production and services. At the same time, local governments in Western economies have invested in research facilities and the ‘infrastructure of human capital’, such as education and information technology based communication, in order to attract foreign firms so that they locate their research and high value added activities in their area/state (Jonsson 1994). It appears that investment in research facilities is a very important factor in establishing ‘technological milieus’, innovation networks of firms and research institutes that work on international level. This also applies to Greenlandic innovation policies.

In relation to future growth industries in Greenland one should highlight industries such as tourism, mining and oil production. Furthermore, one should emphasise consultancy related activity both in fisheries and the Greenlanders’ particular know-how related to Arctic conditions. In relation to tourism, attempts to establish innovation networks should not only include transport firms, hotels and restaurants, but also cultural researchers and artists, because the middle class tourists that travel to Greenland are first and foremost looking for natural and cultural experiences. With respect to minerals and oil production, a technological institute and a technical university is needed in Greenland that can provide geological and engineering expertise and that can be part of innovation networks. Such a technical university and institute would also provide a necessary base for organising innovation activity that would develop arctic technology, for example, in relation to the construction industry and vehicle production.

However, the most important innovation activity in Greenland may be social rather than technological. In order to develop a local entrepreneurial class, in the private as well as the public sector, it seems necessary to break up hierarchical management structures, lower qualification requirements and stimulate rotation of the work force in the firms and the administration. This would lead to a situation where local know-how and expertise would accumulate by way of ‘learning by doing’ instead of ‘draining out’ as imported specialists and technical staff moves back home (most often to Denmark), in most cases (79 per cent), after less than three years of service.

Note
1. The figures for Greenland are not strictly comparable to the other figures, but still give a rough idea of the difference between the countries.

Bibliography
Appendix

The Greenlandic Research System

<table>
<thead>
<tr>
<th>Research Sector</th>
<th>The Public/ Administrative Sector</th>
<th>Public and Private Firms</th>
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<tr>
<td></td>
<td></td>
<td>60 R&amp;D person years</td>
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<tr>
<td></td>
<td>19 R&amp;D person years</td>
<td></td>
</tr>
<tr>
<td>ilisimatusarfik</td>
<td>University of Greenland 4.8 R&amp;D person years</td>
<td>Firms of the Homerule</td>
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<tr>
<td>Greenland</td>
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<tr>
<td>Greenland's National museum og Arkiv 3.3 R&amp;D person years</td>
<td>Socialdirektorat</td>
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<tr>
<td>Greenland's Fisheries Research (Naturinstitut) 3.6 R&amp;D person years</td>
<td>Greenland's Statistical Bureau 1.8 R&amp;D person years</td>
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<tr>
<td>Inertisarfik</td>
<td>1.6 R&amp;D person years</td>
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<tr>
<td>Nunatta Atagassoperfia Greenland's Library 0.4 R&amp;D person years</td>
<td>Doctors and dentists 22 R&amp;D person years</td>
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<tr>
<td>Local museums</td>
<td>2 R&amp;D person years</td>
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<tr>
<td>Individual researchers 5 R&amp;D person years</td>
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