

# **INDUSTRIAL DEVELOPMENT IN THE MICROSTATES IN THE NORTH ATLANTIC RIM: Proposed research trip to Cape Breton, Prince Edward Island**

An extended description of the research project  
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The project aims at establishing elements to a comparative analysis of the industrial conditions of marginalized micro-societies around the North Atlantic Rim. It includes a research trip to Prince Edward Island and to Cape Breton and Halifax, Nova Scotia. Central in the study is an investigation of how marginalized micro-societies are coping with the challenge of modernity, since all the societies around the North Atlantic Rim can be seen as originally natural resource-based societies embarking on a complicated journey toward a knowledge-based economy. The analysis attempts to identify strengths and weaknesses in regard to industrial strategies, which the different societies within the North Atlantic Rim are choosing as they are approaching the realities of the new international order. Whether they like it or not, the marginalized areas of the North Atlantic Rim will be forced to change their industrial outlook as the forces of globalization press forward. The question is whether the marginalized societies will utilize the opportunities the new development affords or whether they will become lost in the process.

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The goal of this analysis is to provide insight and a conceptual framework that can benefit the discussion of industrial development in Greenland. Greenland inhabits the North Atlantic Rim and a comparative analysis of this area will provide Greenland with an opportunity to understand its own uniqueness, while at the same time providing a lesson about those problems Greenland shares with other marginalized, coastal societies.

The research trip will take the form of a fact-finding mission in order to link up with educational institutions and other agencies in Cape Breton, Prince Edward Island, and Halifax. The main centre of collaboration will be the University College of Cape Breton, primarily the Institute of Community Development Studies. The key contact there will be the director of the Institute of Community Development Studies, Dr. Gertrude MacIntyre. The Institute of Island Studies (IIS)

at the University of Prince Edward Island will also be an important base for my activities during my research trip. My contact at the IIS is Harry Baglole, the Institute's director. The IIS is the home base of a very important network of scholars, the NAIP (North Atlantic Island Program), an institution that facilitates the distribution and production of knowledge about the North Atlantic Rim.

One key target for this research trip will be Cape Breton, but since Cape Breton is a part of Nova Scotia, the business of the provincial government in Halifax is very important for the political control of the region's economy. This is the reason Halifax and its administrative apparatus will be a part of the area of investigation. Cape Breton is interesting because historically it was probably the most heavily industrialized area within the whole North Atlantic Rim, with coal mining and steel production as the main components. Indeed, the Cape Breton case is the classic story of how it goes when a society embarks on a one-dimensional industrial and economic solution and, hence, ignores the quest for a sufficient structural differentiation of its societal base. The old industrial structure of Cape Breton has now totally collapsed, and the region has, since the late 1960s, been on a slow, traumatic journey out of the old era. This transformation process is still underway and this analysis will highlight the structural obstacles of this process and will try to identify the promising enterprises within the new emerging industrial pattern. In regard to obstacles, the central obstacle to industrial innovation in Cape Breton appears to be cultural and not primarily the result of sheer economic or financial shortcomings. In other words, the main issue is one of "motivation," and related to what some have called "the mining and steel mentality." Indeed, the Cape Breton story lends credence to the assumption that a mode of production is not just a mode of production—it is also a state of mind. Accepting this assumption, it is evident that great importance must be applied to the socio-cultural preconditions for industrial development and general business performance. The discussion of "social capital" is only one aspect of this question. However, the Cape Breton case indicates that "social capital" in and of itself is hardly a sufficient explanation of the "vital principle" of industrial dynamics. Cape Breton has apparently a lot of social capital but it is far from the point where it has mobilized the necessary level of entrepreneurial energies, since the community is still marked by economic depression and very high unemployment rates. Overall, in the period of 1989 to 1995 the Nova Scotian economy experienced the most significant decline in employment in Atlantic Canada. Hence, 46.6% of the total job losses in Atlantic Canada happened in Nova Scotia, and Cape Breton took a lion's share of those losses. Although Cape Breton now has developed a huge service industry, the economy has not yet "clicked" into a more progressive mode. However, computer centres such as Silicon Island in Sydney demonstrate that there is a new generation of IT and Multi Media companies on its way. It shows that a new Cape Breton is in the process of taking shape.

The proposed visit to Prince Edward Island will be another major element of the research trip. The economic base of Prince Edward Island is very different from that of Cape Breton. The main industries in Prince Edward Island are traditionally agriculture and fisheries, with an emphasis on the former. Today, the agricultural structure is strongly dominated by potato farming, but dairy and pig production are important. The farm units have become fewer and more highly specialized based on high investment in capital equipment. Fifty-five per cent of the potato production is now processed into french fries and related products. Before the Second World War rural residents accounted for 75 per cent of the population and endowed the island with the

image of a pastoral order based on family farming. In 1969 a major governmental plan was implemented in order to bring about a full economic exploitation of agriculture and to modernize society. Although the plan succeeded in many of its tasks, it failed to lessen the Island's general dependence on the federal government. Lately, however, federal spending on PEI appears to be in decline but the federal part of PEI's public spending should be still measured at approximately 40 per cent, depending on how one counts it. Savoie has assessed that "when you include everything, something like 75 percent of our economy consists of federal spending." Generally, no matter how one counts it, the province's economy remains highly dependent on the federal government. However, despite its dependency, Prince Edward Island has shown a significant development towards an increased structural differentiation as new industrial parks and new industrial branches have gradually been introduced, including that of a food technology centre, vertically integrated agro-industrial companies, and aerospace companies. Also, since the completion of the Confederation Bridge in 1997, tourism has increased significantly on the Island. Generally, the Island's agrarian tradition is strongly reflected in the Island's research capacity. The Island is very strong within food science. The signals from the Island's economy are mixed but generally with a weight on the positive side. From 1992 to 1997 the Island has shown a higher-than-average growth rate and exports increased by 2½ times. Still, despite recent gains Prince Edward Island is often classified as a "have not" among the Canadian provinces and, indeed, the Island's economy has for a long time been characterized by stagnation.

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In Prince Edward Island, the presence of an aerospace industry has a special history. During the Second World War, an air force base was established near Summerside, the second largest city on Prince Edward Island. For 45 years, the base remained a fundamental part the city's economy, until the federal government shut down the base during the summer of 1989. Overnight, the base closure eliminated 1,200 well-paying jobs and approximately 33% of the total income of the community. Obviously, the closure of the air force base was a disaster for the community. First, the Summerside community tried to put political pressure on Ottawa to get the federal government to reverse its decision. After many negotiations, the federal government agreed to turn over the base and its assets to the community. Out of this process emerged a new entity, the Slemon Park Development Corporation, with an ambitious plan of turning the earlier base into a dynamic industrial park. Slemon Park, ACOA, and provincial government officials met with a number of private firms from Canada and abroad in an effort to attract them to Summerside. In the end an aerospace centre was established, among other industries. It included Atlantic Turbines, a turboprop engine renovator; Allied Signal Aerospace Canada, a specialist in aircraft accessories and control-system refits; Testori American Corporation, a manufacturer of moulded body panels for aircraft and subway systems; and Wiebel Aerospace, a manufacturer of components for, and an overhauler of, aircraft-landing systems. In the end, after having lost its original economical asset, when the redeveloped process was finished the Summerside community came out with a better and more diversified economy. The average income level for working males aged 15 and over jumped from an average of \$17,626 in 1986 to \$25,914 in 1996. Also, at the same time, the total labour force in the area jumped from 3,825 to 5,360. More importantly, however, was that Prince Edward Island, through the Summerside case, became actively engaged in its own high-tech industrial development to a much higher degree than

before. Through the new development, the local community got a higher degree of freedom in regard to the further development of this key industrial pathway. From the strict format of the air force base, with its self-referential pattern of technological regulation, a new set of more relatively autonomous functions sprang up in the new institutional setting of an industrial park with a wider and more open "program" for development opportunities.

The current project is a preliminary investigation within the scope of a more extensive research program, which naturally must advance step-by-step over a longer period of time. The idea is to slowly add more and more societies into a system of comparative analysis. The final aim will be to undertake a systematic analysis of the general industrial structures within the North Atlantic Rim. The main question will be to understand how the forces of globalization and economic development act upon a geographically distinct, marginalized area of the world's social systems and how its various lifeworlds (Lebenswelt) are acting on the challenge. Scientifically, the crucial issue in understanding this process will be to understand the balance between "necessity" and "freedom" within the forces in action. In particular, it will be important to understand how the factor of knowledge, so central in the new type of economy, is institutionalized in various societies and how it becomes a factor in "the game" of production. It is clear that the relentless pursuit of knowledge as measured in the R&D expenditure within the most highly developed countries is a key to their power and dynamism. Indeed, the concentration of R&D expenditure in the world is extremely condensed. One estimate tells us that in 1987, 82 per cent of the world's R&D expenditure and 69 per cent of the world's R&D personnel were located in just five industrialized countries: the United States, Japan, France, the United Kingdom, and Germany. The concept of a knowledge-based economy is not simply a matter of a "new economy," it is rather the name of the key power relations of this world.

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The question of a knowledge-based economy and the meaning of an information society stand central in this investigation. It becomes crucial to understand how knowledge and learning processes are institutionalized within each of the societies in the North Atlantic Rim. This question has a tremendous number of aspects, since it deals with all the issues that link the issue of culture to the institutionalization of societal capacity. An important mechanism in this "linking" is naturally the general process we call socialization. However, within this complex of societal learning, we are particularly interested in those learning patterns relevant for the understanding of industrial development and the meaning of the daily work for the community. Obviously, knowledge is linked to work functions in very specific ways so that people working at a Military Airbase tend to develop certain skills and types of knowledge and people working on a Railway develop other skills and types of knowledge, which are a reflection of their work and the work environment. However, in a highly differentiated society with complex and highly developed means of communication, the societal institution of knowledge tends to move away from any simple reflection of the instrumentalism embodied in the "plain" occupational work function. Still, the work function is very important because it does much more than provide "bread on the table." Within the community, it is most often a central factor in the positional symbolization of "what life is." To be a fisher, a coal-miner, or a railroad worker is more than sheer instrumental activity: it is of paramount importance for identity and orientation in the

world. It is an axis of symbolic identification of the meaning of a community. As such, it manifests the "actual world" of the world.

Work function is by no means the only way knowledge is signified in a society. Still, its role is significant. Generally, it is a crucial "interpreter" of how the common, collective mind organizes the pragmatic implications of situational symbols. And this interpretation is critical for the general societal production of knowledge as a category. Also, because work function has this deep symbolic meaning, it becomes a) the source of emotional identification, and b) a part of the cultural tradition and its implicit mythology; hence, it becomes c) a crucial part of the community's general "Weltanschauung" and its conscious manifestations. Each mode of production or industrial structure establishes the symbolic parameters of a cultural "dictionary" of meaning, signs, information, and narratives, which function as a "code" of social behaviour. In this way, the collapse of the "physical" parameters of traditional work function in the cases of Cape Breton, Summerside, Isle Madame, and Bishop's Falls are always more than the end of particular sites or scenes for the performance of instrumental skills. They represent the collapse of a cultural system, of a symbolic identification, and of the parameter by which positional information about the world had been interpreted and emotionally legitimized.

In the case of Bishop's Falls in Newfoundland, the community has relied highly on the Newfoundland Railway as a source of employment since its pulp mill was sold in 1923. At its peak, the railway had its headquarter in the community and provided highly skilled, well-paying employment to hundreds of its residents. After a gradual downscaling of activities over a very long period of time, the Newfoundland Railway closed operations in 1988. At this time, it employed only 75 people and the Railway was at the time only a segment of what it had been in its earlier days. Still, the closure came as a tremendous shock for the community, which could not envision a future without the Railway. The collapse of the Railway resulted in a complex series of events, including a memorandum of understanding between the governments of Canada and Newfoundland and Labrador that provided the titanic sum of \$800 million to deal with the Railway's closure. This process led eventually to the revitalization and increased strength of the community. The interesting thing in all this is that the reaction to the initializing event stood completely out of proportion with the 75 lost jobs. What one reacted to was not the loss of an objective site of opportunity, but the breakdown of a cultural system and its main object of symbolization. This, then, made the community active and conscious of its "problems" to a degree previously unseen. In retrospect, the function of the Railway was not so much that of a benefit to the community but rather that of a psychological block, a sleeping pill, that functioned to contain the community's potential for self-development. Self-development was first possible when the symbolic spell was removed.

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Another revealing case is that of Isle Madame. Isle Madame is a tiny, peaceful Acadian community situated on an island in the southern part of Cape Breton. In the early 1990s the whole lifeworld of this community was totally uprooted when the groundfishery collapsed. The Richmond Fisheries plant was shut down in 1990, throwing 500 people out of work. It was a local catastrophe. Fishery had been the *raison d'être* for Isle Madame. Fishing had since the

1700s been the mainstay of the Island's economy. It was fish that brought Acadians and Irish settlers to the Island. The collapse of the fishery represented not only the collapse of an economy; it was a collapse of a whole way of life. The story of how this tiny community rebuilt its economic base with considerable creativity and stamina and recovered from the trauma is intriguing and has become a classic in the story of community development in Atlantic Canada. However, one extremely important event on the road to recovery was that the community decided to tear down the fishery plant. Because, as was said at the time, as long as the plant remained as a structure it would continue to symbolize the possible return of the fishery and would, therefore, be only be a constant source of illusory expectations.

We recognize an interesting phenomenon common to all these cases. The same symbolism we find in the Railway station and in the Fish Plant, we also find in the Cape Bretoner's concept of the coal mine and the steel factory or in the Inuit's concept of the fisher and hunter. If one reads the newspapers in Greenland or listened to the public debate, one would be certain that one had ended up in a community of fishers and hunters. The reality, however, reveals that no more than 20 per cent of the population is full-timed employed as a fisher or hunter, and that even that 20 per cent is a steadily declining number. I remember a conversation with my landlady in Sydney, Cape Breton, at the time when they were closing the last steel factory in Cape Breton. While I was drinking my morning coffee and eating my toast, I asked her: "What is the main industry here in Cape Breton?" "Coal and Steel," she said and looked out of the window. In many societies along the North Atlantic Rim, people tend to identify with traditional or archaic systems of production that are no longer the present mode of production. Often it is a non-existent industry or an industry that has declined and is a shadow of itself. But people still identify with it as the industry of their community as if it really was the dominant industry of the day. In this way, the traditional "work function" has taken on a life of its own because history has codified the work function as a symbol of cultural identification. By ignoring the parameters of the "real world," the cultural system attempts to immortalize its own selection of higher values, whose concept of "being" stands in contrast to the world of "becoming."

Of course, the point is not to say that a fixation on traditional cultural symbols is "wrong" or that calling on archaic symbols is an "error." On the contrary, communities with such powerful cultural manifestations are blessed, since the strength of identification signals that powerful cultural energies are embodied within the core of the cultural tradition. Indeed, these elements of "fixation" are manifestations of extremely important processes for building up the community's collective capacity for long-term cultural survival. However, from the point of view of industrial development, these cultural forces need to be adjusted and regulated, since they contain the capacity for paralyzing energy-resources needed for further societal and industrial development.

One way to approach this issue of how a society's knowledge base is configured is to see how the education system in each society is organized. How the modern university system and industry are linked also becomes a natural axis of investigation. This again must be understood in regard to how the R&D structure of the whole society is developed and organized. The "coding" of the institutionalization of this process is important, since different societies show a different "success-rate" in generating the adequate synergy by which a) a society can produce knowledge and b) knowledge can be transferred into efficient industrial and technological outcomes. The clue to the "success-rate" lies in the particular way the cognitive complex hidden within the R&D

structure is configured. Various studies indicate that there exists an increased probability for innovation, profitability, and growth when industrial firms are linked to the research capabilities of universities. Indications from Canada and the US imply that industry sponsorship of university R&D is rising but the numbers are still low (although they are higher for specialized research centres). Most companies who engage in such encounters are already companies with a high profile for their R&D. The role of the government in this dynamic is naturally crucial, particularly in the North Atlantic Rim, where firms tend to have a lower R&D capacity.

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Obviously, education is an important means to improve a depressed, economically broken, and marginalized society and an absolute necessity for its recovery from the vicious circle in which it has been trapped. However, the successful path of an industrial development is a fine-tuned mechanism of mutually reinforcing and intercommunicative factors of which none is "enough" in and of itself. It is only when these factors have a chance to combine in a happy marriage of circumstance that something good happens. Education must likewise be seen as one among several factors. Education is a necessary, but not a sufficient condition, if other factors are lacking. Therefore, as a Cape Breton steelworker once recognized: "Before we were unemployed and stupid; now we're unemployed and educated. We're trained, but the result is the same: there is no job. A bunch of people running around with certification and no jobs." Still, there is no doubt that a vital education system is a backbone in any attempt to get a depressed community on its feet again. Indeed, not only in Cape Breton but everywhere on the planet, the education system will become a key to the future. In the new knowledge economy, linking the educational system and industry is an inherent imperative in the incremental growth of knowledge, that in turn is a key factor in production and the mode of production. Increasingly, industry will be forced to mobilize more and more elements of the total societal knowledge base. The competitive edge in the world will concentrate on those who can control the knowledge advantage. The key mediator will be the educational system.

A central aim of this analysis is to identify realistic pathways within the realm of industrial reconstruction and innovation for the societies of the North Atlantic Rim, and to point to ways to overcome the vicious circle of marginalization. The information society and the knowledge revolution provide these societies with unique opportunities to catch up with the development in the centre, and if not to cancel the effects of marginalization then to relativize them in important ways. Both Norway and Iceland have shown that communities around the North Atlantic Rim neither have to be poor nor lacking significantly in their level of societal differentiation. The key to further societal development lies in these societies' capacities to link up with the rapid development of a knowledge-based economy with its emphasis of service industries, high-tech, and information technologies and its intensified focus on learning and research. However, the opportunities embodied in contemporary globalization must be actively pursued. The comparative high standards of living of the Atlantic societies, when measured on a world-scale, are not an eternal gift; other countries are catching up. Indeed, Singapore's per capita GDP is already approaching that of Atlantic Canada. Of course, transfer money can prolong the issue and create a nice illusion, but it cannot eliminate the inherent factor of structural backwardness.

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Traditionally, the economy around the North Atlantic Rim has been based on natural resource industries, particularly fisheries, but also mining, forestry, and agriculture. This pattern has been a part of the classic centre-periphery approach, wherein the marginalized areas of the globe provide the basic raw materials and the "simple" consumption goods for the more complex industries of the metropolis and the heavy industrialized areas of the centre. Also, since highly qualified jobs and much education generally were placed in the centre, the marginalized areas were most often deprived for "the crown" of the human capital, since the centres would tend to attract and engulf "the best and the brightest" of the youth from the marginalized area. In this way, marginalized areas like those of the North Atlantic Rim suffer for a whole system of structural weaknesses and problems, which tend to place these societies in a more or less manifest position of relative backwardness indicated by weak and often lacking sustainability.

Indeed, the societies of the North Atlantic Rim are most often working on the margin of what the natural resource-system can maintain. It is a plausible assessment, also in regard to agriculture in Prince Edward Island, that the process of rationalization and the wonders of high technology have pressed the most economically viable resources in the region close to (what appears to be) the optimal level of exploitation. The collapse of the Newfoundland fishery is a classic case but most communities around the North Atlantic coast have experienced similar problems that indicate the inherent weakness of their resource base, which is easily exploited to the limit and beyond. Robert Paterson has highlighted with an eye to Chaos theory that many North Atlantic commodity systems have reached a stage of "the critical," where the system becomes very sensitive to the impact of small initiating events. Indeed, Paterson is touching on an extremely important problem. I think I will formulate the problem the following way: in many modern production systems — and also in the case of the peaceful, pastoral Prince Edward Island agricultural system — lies an implicit tendency to self-destruction. This tendency to self-destruction lies implicit in the specialization process, the rationalization process, and the market competitive logic, all of which place an infinite imperative on the category of "productivity." When I say "implicit" it does not mean that rationality as such — or in and of itself — are "self-destructive" but rationality under specific institutional premises can be embodied with a self-destructive tendency. Of course, specialization, rationalization, and increased productivity are good up to a point. But in the history of an industry, a technique, a product, or a branch, there tends to come a point or a threshold where the differentiation-specialization modus of the system becomes more and more dysfunctional either manifestly or potentially. Indeed, cancer is nothing but normal cells that "produce" efficiently, from the point of view of productivity machines. Yet, in their blind performance they have crossed the threshold of organic control and have lost the sense of the signals from the structure of which they are a part. For a while, everything looks good on the outside — all the standard-signs of success and outstanding performance are there — but it is, as Paterson says, "the illusion of success." As Paterson comments: "What, at face value, is a successful system measured by ever-increasing yield and gross price, may be self-defeating. The system crashes when the underlying resource, the fish or the crop, fails due to the pressure put on it by the system. The fish or the crop ultimately fails because such a system reduces the robustness and bio-diversity of the underlying resource. Even a weather event, or disease extended over two to three years could be sufficient to crash the agricultural system as it currently stands." The collapse of the Faroese fishery system is a case in point. It was an accident

waiting to happen. Of course, the overexploitation of the system is not simply an overexploitation of the "natural system;" it is as much a pressure of the social system beyond the threshold of the "organic" coherence of the social system's distribution of various counter-balancing forces. This was perhaps most clearly articulated in the Faroe case, where the part of the problem was that all elements of the social system including the bank-system were working within a system increasingly driven by fictions, where nothing was what it appeared to be.

Another problem for an industry primarily based on natural resource exploitation is the steady decline in world market prices for natural resources, which for decades have shown a clear downward trend. This decline is by no means the artifact of market fluctuations. Rather, it must be seen as part of the inherent logic of modern development, which establishes an incremental intensification of the importance of knowledge as a crystallizing category. In the same way, all over the more highly developed world, employment in the natural resource-based industries is in steady decline. In this way, various factors work together to undermine the societal and financial base for a society that rests its economy primarily on a natural resource industry.

Indeed, very few of the societies around the North Atlantic Rim are economically or societally sustainable when measured by the criteria of their current living standards. Government transfers are the rule rather than the exception and in most cases the governmental transfers are considerable — to the point that the recipients are transformed into an artificial entity. Thus, the economies of Nunavut and Greenland are highly artificial, since transfers amount to 90 per cent and 60 per cent, respectively, of the governmental budget. The indications of general backwardness are many, but standard indications include low income levels, a high unemployment rate, low R&D investment, low-skilled jobs, low growth rates, limited domestic opportunities, few scientists and technicians, and high out-migration of the most highly educated youth. Obviously, all these factors tend to reinforce each other and lock the marginalized society into its own marginalization, in such a way that each negative factor tends to condition the other negative factors.

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The term "marginalized" needs to be correctly understood. To be marginalized is not necessarily to be underdeveloped in a strict sense, by which we think of a severe structural inability where societal capacities are either lacking, rudimentary, or fundamentally disjointed. In general, such a classical definition of marginalization does not apply for most societies in the North Atlantic realm, with Nunavut as an exception and Greenland as an odd borderline case. However, marginality tends to make it difficult to obtain a high level of wealth and is associated with some elements of backwardness by which we think of a structural brake on a more optimal use of actually functional societal capacities. Generally, the effect of marginalization of societies in the North Atlantic Rim tends to be manifest as either industrial one-dimensionality, overspecialization, or an incomplete level of societal differentiation relative to the standards of the grand metropolis. The North Atlantic Rim is characterized by some backwardness but it is not "underdeveloped" in the sense that the Third World is underdeveloped.

Probably the most devastating consequence of marginalization is the high rate of out-migration of educated youth from the local society. This is most clearly manifest in rural communities.

Canadian research reveals that all Atlantic provinces have had net losses of their rural youth in the age group of 15 to 29. The problem was most clearly articulated in Newfoundland. Among young people who were not students, in rural areas in Newfoundland the unemployment rate was a staggering 40 per cent. For the same group in rural areas for all Atlantic provinces, the average was 27 per cent. For New Brunswick and Nova Scotia, the first choice of young individuals of all ages who leave their rural community is to go to an urban area within the province, while the second choice is an urban area outside the Atlantic provinces. In Newfoundland, the order of the two choices is reversed. In the period from 1991 to 1996, all rural areas in Newfoundland experienced net losses of about 25 per cent of their teenage populations, which is twice as high as the net losses experienced at the Canadian level. Generally, however, the decline of the population is not primarily because more youth are leaving the Atlantic provinces than other places, but because these provinces failed to attract a sufficiently high proportion of individuals into their communities. Of all the individuals who out-migrate, at most 25 per cent return to their communities ten years later. However, the possibility of return varies from place to place. Among individuals aged 20 to 24 who left their rural communities between 1987 and 1992, the chances they would be back in 1997 was 8 per cent in South Coast-Burin Peninsula in Newfoundland, 9 per cent in Cape Breton, and 14 per cent in Prince Edward Island and Nova Scotia's Annapolis Valley. This shows that the communities cannot manage their demographic politics by counting on return migration. The Canadian research also confirms that youth who move out of the rural areas generally experience higher earning growth than their counterparts who stay. The research also shows that youth in rural areas generally are less educated than youth living in urban areas. Of all young persons (ages 15 to 29) living in rural areas in the Atlantic provinces, only 17 per cent have some post-secondary education, compared to 26 per cent for those living in urban areas. However, here Cape Breton represents an interesting exception, which stands in contrast to most other place in Canada, because in Cape Breton, individuals aged 20 to 24 living in rural areas had a post-secondary education more often (32 per cent) than those living in urban areas (27 per cent). Also, areas such as North Shore (Nova Scotia), Annapolis Valley (Nova Scotia), and Campbellton-Miramichi (New Brunswick) showed a less pronounced difference between rural and urban levels in regard to the educational factor. Annapolis Valley was also exceptional because in contrast to most other places in Atlantic Canada, it had a very high inflow rate of youth aged 25 to 29. In general, only Nova Scotia showed a capacity to attract new residents aged 25 to 34 mainly from urban areas outside the Atlantic provinces. However, in Nova Scotia, net flow varies markedly across economic regions.

One reason for the lower level of education of rural youth is that the types of jobs available in rural areas generally require lower skills than jobs in urban areas. This is a pattern that is persistent in all Canadian provinces. In other words, a low educational job environment tends to reinforce a low educational achievement level. In this way, one might speak about a self-referential system-function. A general socialization factor is also at play here, since less educated youth most often have less educated parents. In addition, post-secondary institutions are generally absent from rural areas and individuals who want to take post-secondary education are forced to leave their natural environment. The research also confirms that university graduates are more likely to leave than high school graduates are. Also, individuals employed in agriculture, fishing, or trapping are much less likely to leave than those employed in business services. This holds for all provinces. However, out-migration is by no means a simple, clear-cut thing. On the contrary, it contains many puzzles and striking details. Hence, young persons in

Saskatchewan, Alberta, and British Columbia leave their rural communities in much greater proportion than their counterparts in the Atlantic provinces. This is remarkable, since labour market conditions in the Atlantic provinces are generally worse than those in the Western provinces. This at least shows that a simple "materialistic" deprivation theory is hardly able to explain the whole picture — and, indeed, in reality it might explain very little. Certainly, the out-migration phenomenon is by no means a simple phenomenon.

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It is difficult to overestimate the devastating consequences of massive out-migration for a local community. Although Cape Breton has not experienced out-migration of the catastrophic proportion of Newfoundland, its out-migration has still been severe and a constant drain over time. It is most often the better-educated and young "aggressive" people who leave the community, and even if their numbers can appear small, their numbers are significant. It takes out the cream and the surplus of the community's resource base. As the more "aggressive" and higher-educated people leave, they leave an absence of role models behind. Indeed, what really is leaving is a vital part of the "entrepreneurship" of the community. It leaves a black hole, where the centre of the community's combined resources was supposed to be. In marginalized communities which by natural circumstances are "handicapped" already on a whole variety of factors and which are working in the margin of possibilities, the out-migration of the cream of its youth is the final blow. The fact that these communities become depressed, weak, slow, and vulnerable is no surprise. In-migration might compensate for this drain but it does not really repair the damage done by out-migration because the out-migration destroys the kinship embedded in the social system and therefore destroys the institutionalization of the cultural "memory" in its long-term social format. The demographic development of Cape Breton (and we speak of the whole Island and not only the county) tells the story of the damaging impact of out-migration on a troubled community. One reason why people in Cape Breton get so severely tied to the past is because too many of those individuals who had the capacity to break the symbolic spell have left, and they are now Cape Breton's "competitors" in Ottawa, Toronto, and other dynamic metropolises. The marginalized community, at its worst, becomes a hollow structure populated by old people, young children, and masses of unemployed. In the community left behind with a devastated economy and nicely sucked in government transfer payments, there is a prevailing sense of powerlessness, and the spirit of the community clicks into a general mode of social hibernation, where the only thing that happens is that nothing really happens.

Since the end of the Second World War, the pattern of relative backwardness has been in a process of transformation. This transformation has been linked to the shift in the general industrial matrix that characterizes the world economy in the era of globalization. This change in the world industrial order has not only challenged the sustainability of societies based heavily on a natural resource-oriented economy, it has also changed the general rules of how the game of world competition is played. "The new economy" with its basis of IT and knowledge-based services, might provide peripheral regions the option of "leapfrogging" the industrial age and arriving "directly" in the information-society economy from their natural-based economy. Generally, the forces of globalization challenge marginalized areas and establish a strong pressure for social change. This challenges not only the industries but also the cultural value-system of the North Atlantic areas. It forces these communities increasingly to think in global

terms and to find ways their distinct cultural traditions and folkways can be turned to competitive advantages in an international economy. Still, the resistance of the old structure is often notable; even in Iceland where the process of diversification has progressed the most, the dominance of the fishing industry is still significant and accounts for about 50 per cent of export earnings. In this way, most marginalized societies "progress" by developing new clusters of industry around the old established industrial traditions rather than jumping directly into the "unknown." This can also be seen in Prince Edward Island where the new research capacities are developed primarily around the agricultural sector. This was also the case with the software industry in Iceland. This way of clustering is undoubtedly an international phenomenon linked to the generative logic of cultural systems, but in marginalized societies this development is generally more tight and less able to allow the society to embark on an autonomous path of differentiation. The possibility, which prevails in Cape Breton is particularly interesting because the island's original structure has collapsed, so there is really nothing to develop around. This might perhaps prove to be a great advantage for the future development of the community.

Norway appears to some extent to represent a break from the above pattern that obviously tells us something about the level of societal differentiation, which has developed there. Although the fishery is still an important source of income along Norway's Atlantic coast, it represented only 7 per cent of the total export-earnings in 1991 and this despite the fact that 90 per cent of the harvest was exported. The Norwegian industrial structure was originally dominated by three major pillars: shipping, forestry (and related industries), and fishery. At the turn of the 19th century these three industries represented 40, 23, and 16 per cent of Norway's export earnings, respectively. Today, besides the legendary oil and gas industry, the industries that have been the main growth axes have been services, manufacturing, and chemical products. The tradition for chemical products originated long before the oil and gas industry and already showed from the end of the Second World War an expanding growth-rate; however, the industry took off when the oil and gas industry took off. A historical landmark in the history of the Norwegian chemical industry goes back to 1865, when the Nitrolyserin Companiet started producing dynamite based on a scientific invention by Alfred Nobel the year before. Generally, Norway (which in this analysis is represented by its Atlantic Communities) is undoubtedly that area of the North Atlantic Rim where the general level of societal differentiation has progressed to the highest degree. The Norwegian Atlantic coastline is divided into 8 "fylke" or municipalities. The main cities are Stavanger, Bergen, and Trondheim, but Tromsø in the North is also of some importance if not for any other reason then because it is a dynamic university city. Also, the Norwegian Polar research centre located in Tromsø. Stavanger, the capital of the Rogaland fylke, is the hub of the oil-industrial complex and Statoil has its main headquarter there. Generally, development in Norway shows that it is easier for a society with a high level of societal differentiation to integrate a booming oil industry in a way where the new industry gets reasonably integrated within the organic structure as a whole without strangling and prohibiting other branches of development.

One important analytical parameter for this investigation is the role of tradition within the transformation process of modernity. As already indicated, for many societies in the North Atlantic Rim, the passage from the old to the new era of industrialization has not resulted in a radical break with the old structure of industrialization but rather in a complex differentiation of related, congenial, and kindred institutional forms. These forms become more than pathways

away from the original matrix; they can rather be seen as a way in which "the matrix" gets access to the future. Each pathway functions in this way as a "translation" of the cultural code system embodied in the original matrix. These forms have at least two dimensions, which we might call "horizontal" and "vertical." On the "horizontal" dimension, the differentiation process takes the form of new industrial actors, so that the lobster fishery might "lead to" the chitin production from lobster and crab shells. This is in some way an adaptation of the function and meaning of lobsters within the realm of industrial activities, in that a new "technical" meaning of a natural resource can be institutionalized, and most often the new "technical" meaning implies a more complicated and more technically advanced level of production, so that the range of organizational roles has been increased in the process. On the "vertical" dimension, the differentiation takes the form of an adaptive upgrading of the cognitive meaning of the traditional industrial activity, so that the knowledge component of the activity is separated in relative terms from the activity itself. In the case of Prince Edward Island, this happens when the accumulated experience from centuries of agricultural praxis is turned into various forms of food science and facilitated with a system of specialized institutions such as the Agri-Food Canada Research Centre, the Food Technology Centre and the Atlantic Veterinary College.

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Another important feature of the North Atlantic Rim, which is important for a comprehensive understanding, is that almost all its local communities are micro-societies (that is, communities under a million inhabitants). There is no huge metropolitan centre (the largest city centres are Halifax, Bergen, Trondheim, and Reykjavik) and this raises special demands and structural restrictions for the strategic choices available for these societies in their process of industrial reconstruction. Small societies and micro-societies, particularly those in remote areas, tend to be faced with a certain pattern of disadvantages linked to limited resources, a high import ratio, a limited scope of diversification, and limited options to explore economies of scale. All this places great demand on the capacity of these societies to exploit and refine a more narrow scope of industrial options and more aggressively to turn their industries into innovative export-machines. The good news for micro-societies is that the knowledge-based economy tends to make small firms more economically feasible. The importance of the export imperative for micro-societies cannot be underestimated. It is imperative that the societies in the North Atlantic Rim enter the international market and orient their production towards exporting. These steps will have a positive effect on the employment rate in the area, as various studies show that there exists a positive link between exports and job-creation. It is important to emphasize that the promise of the new knowledge economy, the factor of innovation, and the challenge of export-orientation are strongly connected. A recent study shows that innovative capacities are strong determinants of export performance. But it also shows that successful export firms tend to be agents of a higher R&D factor and knowledge intensity. It suggests that there is a correlation between international market orientation and the degree to which a firm is knowledge-based. The two factors tend to be mutually reinforcing.

Important export patterns are beginning to emerge across the North Atlantic Rim. Once again, Iceland has shown its capacity to become a central bridge-builder in the process. Although numbers are still comparatively small, they are significant as indicators of the emerging process. Hence, in the year 2000, Newfoundland exported more than \$900,000 in goods and services to

Iceland. New Brunswick's export was \$2.2 million. Also, Nova Scotia is in the process of building up a major export volume to Iceland. In 1999, Nova Scotia's export to Iceland was over \$3.5 million in commodities and it imported for \$18.6 million. Much of the imported material from Iceland is in the form of raw fish, which is processed and value added. However, Iceland is in strong competition with Norway for market shares.

One further possible scenario — which might lock the societies around the North Atlantic Rim into a natural resource matrix — is the oil and gas option. Of course, there is the possibility of other options such as diamonds, gold, and other rare raw materials, but the most plausible possibility appears to be oil, mostly offshore oil. Hence, for the Shetlands, Orkneys, Newfoundland, and Norway, the "miracle" has become real and the income from oil is an extremely significant part of these societies' incomes. For example, Norway had always been the lowest income country of Denmark, Sweden, and Norway but now it has become the most affluent, and the Oslo area is today one of the richest area in all of Europe. Also, in Nova Scotia and Cape Breton, the oil and gas future has begun or is on its way. In the same way, Greenlandic politicians are dreaming sweet dreams of an oil future although the much anticipated drilling in the summer of 2000 gave a negative result. But hope is kept alive. Also, the Faroe Islands are warming up for their oil adventure, which is a soon-to-come-event. Hence, the question emerges whether the North Atlantic Rim of tomorrow will become an oil and gas community — marginalized but rich. This is by no means an impossible scenario. This issue raises many crucial questions, particularly, in regard to the societal consequences of a huge, single source of income, which functions almost as when a poor man wins the lottery. It looks like a "free meal" and in some sense it is, of course. The question is whether there still might be some hidden costs to this freedom. Of course, income from oil and gas might look good on the national budget. However, the question remains whether the dominance of an oil and gas industry, with all the social energies it will attract and institutionalize, in reality will function to side-track and to subtract from a healthy societal development rather than to solve the problem of sustainability. Obviously, this is not a simple question and it might not have a simple answer. Still, the question remains whether the oil adventure will function as a brake and a "perversion" of the process of societal differentiation or whether it will become a tool to help and promote it. Certainly, the emergence of an oil and gas paradigm does not exclude the journey toward a knowledge-based economy but it will shape the journey in a very particular way. Also, whether there is oil and gas is one thing, whether local communities can control such income sources is quite another. In Atlantic Canada, the provincial governments enjoy some substantial power over the development of resources within the province, but they are not ensured rights to offshore lands. This was made clear by a landmark legal decision in 1979 regarding Newfoundland offshore oil and gas. However, Newfoundland succeeded in reasserting this issue by negotiating the so-called Atlantic Accord in 1985, where Newfoundland struck a political deal with Ottawa and was guaranteed a resource rent of its "own" offshore oil and gas resources.

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What is true about the oil industry "miracle" is generally also true about the great dream of tourism, which in many places becomes the "opportunity of last resort," when the economy gets sloppy or goes downhill and one does not know what else to do. However, the tendency of using

tourism as a "quick fix" will rarely develop a serious tourist industry or become a real benefit for the development of society. Indeed, in a balanced social system, tourism should only become a limited element within a quite diversified structure, since the differentiation of higher knowledge-based functions and a corresponding sophisticated technical role within tourism generally are restricted. When the small banana-empires of the Caribbean collapsed, many found a surviving strategy by turning themselves into mono-industrial tourist-paradises. So now the unskilled worker of the banana field became the semi-skilled bartender at the local Hilton. In reality, of course, one unskilled and one-dimensional social system was exchanged with another, and Caribbean society just moved from one industrial trap to the next. For many societies in the North Atlantic Rim, tourism can easily become a detraction from the real hard work of developing the core of the societal base. Still, for the small, marginalized societies shattered in a tremendous, huge space of the globe with its picturesque, coastal charm and compelling landscapes, the option for a tourist industry is a quite natural one. Also, the place is full of historical connotations; indeed, almost all the societies around the Rim claim the Viking connection. Also because of the marginality, the specificity of cultural traits is often kept in a "pure" and more "original" form within the societies of the realm; the relatively undisturbed genetic base of the Icelandic people illustrates this. Hence, the three main cultures in the North Atlantic Rim, the Nordic, the Celtic, and the Inuit can offer a symbolization of heritage and a sense of an "archaic" adventure, which might be difficult to reproduce elsewhere. Not surprisingly, many of the societies at the North Atlantic Rim attempt to exploit and develop the option which tourism can give. Although tourism on the surface might look like an "easy business," it proves in reality to be a very delicate and difficult one. Experience from tourism on the Faroe Island shows that even if the tourists are very satisfied with their holiday, it doesn't mean that they intend to return. The attempt to establish a tourist industry in Greenland is another example on how difficult it is to establish an efficient tourist industry as an institution, despite the fact that Greenland as a country should embody all the principal options for a successful tourist industry. But in the attempt to establish tourism in Greenland every variable has seemed to be wrong. Once again, Iceland appears to show the way. Iceland has proven that it is possible to have successful mass-tourism even to a very high cost level. Also, in Atlantic Canada, tourism has increasingly been regarded as an option and has in some places become a large industry. In Cape Breton, for example, 5,500 people tied their income to a \$180 million tourist business in 1997. The option for mass tourism in the North Atlantic Rim and for great financial gains for the region on this account is clearly present. The tourist industry in the world is a constantly expanding universe and there is little evidence that the steadily increasing volume of tourists on a global scale will stagnate in any near future. It is, in principle, an industry of tremendous options, but also one with an increasing number of new players worldwide. One important spill-over effect of tourism is the life it can give to an entertainment industry and to the emergence of a modern multimedia industry, which is an inherent part of the development of a modern type of high-tech and service-oriented industrial complex. So far, the Americans have almost monopolized the world's entertainment industry — but no one says that this necessarily has to be the case in the future.

A recent study from Industry Canada (January 2000) reveals that the regional multimedia industry in Atlantic Canada does not lack in dynamism. The multimedia industry in the region is mainly located in the provincial capitals: St. John's, Newfoundland; Fredericton, New Brunswick; Halifax, Nova Scotia; and Charlottetown, Prince Edward Island. In Halifax,

multimedia firms such as "MathResources," "EOA Scientific Systems Inc.," "Collideascope Digital Productions" and "Salter New Media" have demonstrated their ingenuity and dynamism in designing products and services. "MathResources" although located in Halifax has its main customers in the US, primarily facilitating educational institutions in Connecticut, Vermont, Maine and Massachusetts. The firm produces educational CD-ROMs such as the Harper Collins Dictionary of Mathematics and MathProbe. In the year 2002, more than 5 million children in India will be using one of the company's products. In Newfoundland, one finds the booming company "X-Wave Solutions," which not only holds most of the multimedia market in Newfoundland but has also sent a team of managers to Ireland to search for new investment opportunities. Another dynamic Multimedia Company in Newfoundland, "MediaTouch," operates in close connection with the petroleum industry, and in the aerospace and public education sector. Its key clients are the Canadian Space Agency, the Hibernia project, and the Department of Education of Newfoundland and Labrador. As in the case of "Media Touch," the multimedia industry is developing on the periphery of local industries. Hence, petroleum and maritime industries are calling on multimedia companies to energize and revitalize their advertising, marketing, and training. But the large tourist industry in the region has also contributed significantly to the development of multimedia products. For example, the multimedia firm "SilverOrange" located in Charlottetown has recently developed an integrated tourist reservation system for Prince Edward Island. However, as we have seen in the case of "MathResources," a major target for the multimedia industry in Atlantic Canada is the huge American market. The American multimedia markets are booming with an annual growth of 35 per cent and the total market sale reached US\$22 billion in 2002. Currently, it has been a market dominated by the general public sector, but private companies are expected to increase their use of multimedia and add further growth to the market. The key city for multimedia dynamics is New York, and out of the foreign companies operating there, 13.8 per cent are Canadian. Also, Canada holds third place among the largest foreign investors in New York's rapid growing multimedia business.

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Multimedia is, of course, only one of the new knowledge-based industries and only one element of the complex environment of the knowledge-based economy. Yet it is an industry that is indicative of the dynamism of modern industrial development. It is expected to radically change the economic and social activities in other sectors of the economy. Multimedia emerged from the conversion to digital of the whole range of modern societal information and communication patterns. The conversion to digital is not a simple "neutral" change of the technique of information exchange; rather, it changes the nature of the exchange itself. Historically, the process took off in the 1980s with the optical videodisc but CD-ROMs changed this technique after 1985. The advancing multimedia industry is linked to the worldwide expansion of the Internet as the main highway of universal communication. The expansion of the Internet has been close to a miracle. In 1983 there were only 500 computers linked up to the world's first Internet, in 1998 there were more than 30 million computers and the number of Internet users was estimated at 100 million. Currently, the Internet-based economy represents a US\$507 billion business and employs 2.3 million people worldwide. As a matter of fact, the Internet economy has now surpassed the telecommunications and aviation sectors in terms of its contribution to

global GDP. The Internet economy is even catching up with the health care business that is a US\$1 trillion business. Based on one estimate, the global software market supporting E-commerce was around \$869 million in 1999 and the market was predicated to leap to \$4.2 billion US by 2002. Although E-commerce has suffered from some market fluctuations lately, the long-term picture is a safe one. The world market of tomorrow will increasingly be an E-commerce market. In the battle of the control of the E-commerce market the US is leading the game though the operation of firms like Amazon.com, DELL, and Microsoft. According to some observers, the US will probably command 42 per cent of the market in 2002 while Europe will have 26 per cent and the rest of the world 32 per cent. Whatever the case may be, it is absolutely imperative for the societies of the North Atlantic Rim to link up to this development. They must become active players rather than adaptive followers within this crucial pathway to the emergence of the full implications of a knowledge-based economy.

One important point in understanding the fate of the various systems around the North Atlantic Rim is to understand the combined effect of the internationalization trend. The question is: will these societies, in the process of globalization, become a more integral unit? Or will they rather become a loosely connected cross-juncture between the two neighbouring world centres? This leads to another interesting question. The societies of the North Atlantic Rim lie exactly at the crossroads and in the intermediary zone between the world's two most powerful trade systems. Hence, the North Atlantic Rim is situated in the middle, with the NAFTA system on the one side, and the EU system on the other side. What will this "bridge" position mean for the societies in the North Atlantic Rim? Will this situation have generally favourable and integrative implications? Or will the societies in the North Atlantic Rim become divided in the middle of a titanic trade war between the world's two most powerful trading blocks? It is clear that since the industrial power of the world is concentrated within the control of a very few centres, then the future of the societies of the North Atlantic Rim will in some way be determined by how they link up with the main power centres. The industrial specialization of societies of the North Atlantic Rim will be shaped profoundly by the logic of those forces. One way to measure the hierarchy of the world is to determine which trade blocks and which political centres control technological clusters in the world. There are approximately 200 major technological clusters in the world, most of them in the United States, 26 in Japan, three in Canada, and so on. The industrial future of the societies within the North Atlantic Rim will depend very much upon which technological clusters they will be linked up to. The capacity of each society to choose among various options and modifications within this industrial pattern will be the function of their relative degree of societal differentiation and the vitality by which such structures are alive. The industry that each society chooses (to the degree that it has any choice) will determine its place in the hierarchy of the future world order. Of course, in the advancing development of the world's industrial capacities, there will be many options, many doors, and even a couple of "miracles". However, since the societal differentiation of any society is nothing but the combined crystallization of its evolutionary history, then it is clear that each step of the journey will have a meaning and that each step of the journey will have its consequences.

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In this way, the North Atlantic societies and their industries generally are embarking on a journey in which they are transforming themselves from a traditional resource economy to a

knowledge-based economy. At the current historical juncture, various societies around the North Atlantic Rim are situated in various developmental positions within the parameters of that journey. The scientifically interesting question is that of understanding the system of forces that control this process of transformation and, hence, to understand why the distribution of the empirical system takes a particular form. In other words, why have some societies in the North Atlantic Rim been more successful in their effort to develop their industries in the direction of a more modern, knowledge-based type of economy? Such development is often crudely indicated in the differences of income-levels. Hence, why has Nova Scotia been able (in 1996) to reach a per capita level on 20,221 Canadian dollars and Prince Edward Island one of 19,470, while Iceland has been able to reach an income level of 28,355? What happened in Iceland that did not happen in Nova Scotia or in Prince Edward Island? The task is to identify the logic that can explain the historical distribution of the industrial positions of the communities of the North Atlantic Rim.

Although there are different pathways towards a knowledge-based economy, all pathways are faced with essentially the same structural problems linked to the nature of societal development. We might assume that some logical phase-movements exist, so that all actors within whatever pathway they choose have to overcome certain developmental thresholds, of which the "successful" passage corresponds to a set of stage-specific growth points within the cybernetic logic of societal differentiation, which again corresponds to a particular logic in the hierarchical structures of "industry." For example, it seems to be clear that a society with a matrix of low-skilled and one-dimensional resource-based industries will not be able to develop beyond a certain threshold. And that the passage of such a threshold can only be achieved by the addition of a special combination of higher order industrial elements, which have a particular stage-specific growth effect.

Nine basic questions arise out of the central theme of the investigation:

- 1) How can one characterize and classify the particular pathway which each society of the North Atlantic Rim has "chosen" as a path to modernity? To what extent can this development be seen as the outcome of
  - a) The geographical-material conditions of the specific society, including "natural resources."
  - b) Various external pressures, including the pressure of the world market and the forces of globalization, including those embodied in the imperatives of technical advantages.
  - c) The institutional pattern, including the "social capital" factor, by which learning processes have been developed.
  - d) Societal behaviour linked to the cultural value-system of the particular lifeworld within those pathways, which we call traditions.
- 2) What kind of general structural problems and sequential reactions characterize the industrial developmental effort of all the involved societies? And to what extent are these problems linked to marginalization? Or to the structural problems of microstates?
- 3) How do the variations and the relative success by which the various societies have developed solutions (or lack of such solutions) relate to the general structural problems (indicated in question 2)?

- 4) To what extent is the solution (indicated in 3) one that challenges the matrix of marginalization?
- 5) In particular, to what extent have societies in the North Atlantic Rim been able to embark on a road that is linking the society up with worldwide developments towards a knowledge-based economy?
- 6) To what extent has the development (indicated in 5) resulted in a general enhancement of the society's societal capacities, in particular those of the general education system and its R&D capacities?
- 7) To what extent have the societies in the North Atlantic Rim been able to develop their export capacities and been able to find some important niches within the international market?
- 8) To what extent has linking up with the knowledge-based economy and the activity within the international market contributed to the general level of societal and economical sustainability?
- 9) To what extent does the developmental trend, which lies implicit in globalization forces, result in a process where the North Atlantic Rim slowly becomes a more and more organically correlated system?

The research trip is expected to facilitate the following two articles:

- 1) Industrial development in the Micro-societies in Atlantic Canada.
- 2) Culture and Industry in Cape Breton: The Promises of an Industrial Collapse.

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