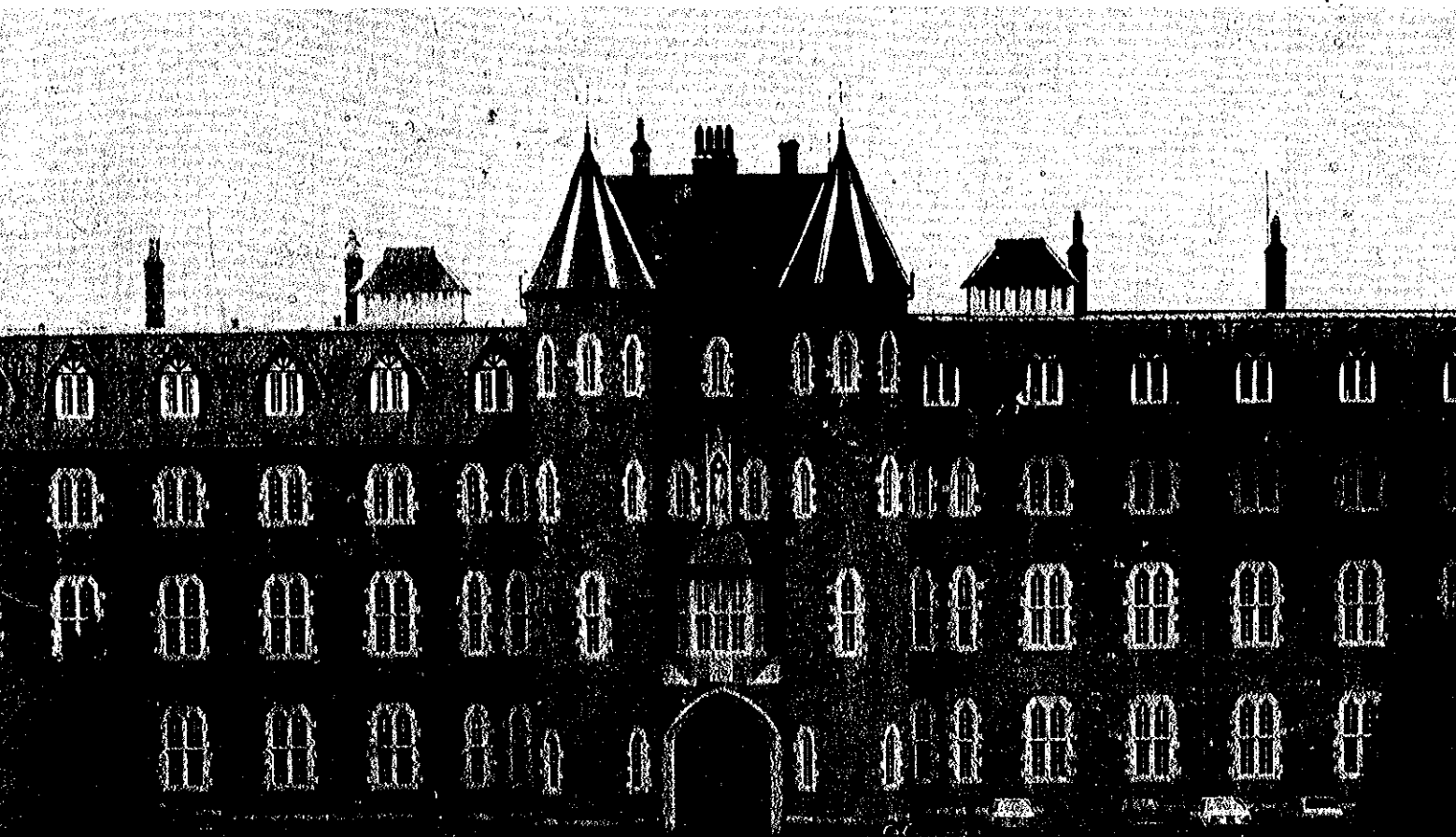


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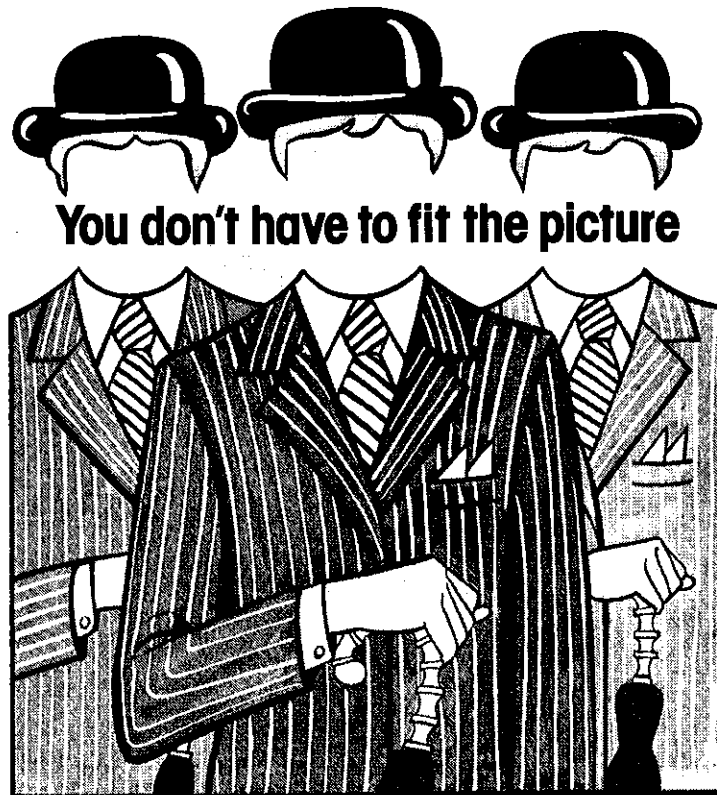
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**CONTENTS**

Foreword ..... 1  
 Editorial ..... 2  
 Geography Society Report ..... 3  
 Gerard Toal: The Relevance Of Central Place Theory To Modern Urban Geography ..... 5  
 \* Amauche Alfa Aakpunwa : The Future Of The Islands Of The Rosses ..... 7  
 \* Brendan Fox : The Relevance of Biomass As A Potential Energy Source For Ireland ..... 9  
 Michael Ryan: The Spatial Structure Of Electronic Society ..... 12  
 Brendan Fleming: The Ambiguities Of Irish Pleistocene Interglacial Activity ..... 14  
 Alexander Von Dumboldt: Apocalypse Soon, Or How To Fail The B.A. In One Easy Lesson ..... 16  
 Brendan Reilly: Irish Small Towns ..... 18  
 B.A. Dissertation Titles 1980 ..... 20

\* Extracts from papers presented to Geography Students' Congress, Carysfort, 1980.

**FOREWORD**

The 1980 edition of Millieu maintains a tradition of publishing and research among undergraduates in this department. It is especially gratifying to note that two of the essays (Fox and Aakpunwa) grew out of papers presented at the congress of third level geography students. Maynooth the winners, of the Fahy trophy in 1979, were represented by these papers at the Carysfort Conference.

The enthusiasm and commitment reflected in the production of Millieu and participation in the student congress is especially gratifying at a time when employment opportunities for Arts students are limited and when, indeed, the whole University system faces cut-backs and financial stringency. Employment prospects for Geography students have always been somewhat better than for most Arts students in that the applied nature of the subject has facilitated entry into careers such as urban planning as well as into the more traditional arena of secondary school teaching. The public sector remains the overwhelming goal of most geography students but it is to be hoped that private sector developments will absorb more geographers in the future. Already in North America private sector employment in the form of local heritage preservation ventures, environmental impact monitoring schemes, and consultancy firms advising on the location of consumer and service facilities are employing a growing percentage of Geography graduates.

In Ireland growth in the private sector as well as an expansion of opportunities within the public sector has been anticipated by the establishment of an interdisciplinary M. Sc. course in Environmental Science in T.C.D. It is to be hoped that when the expected growth materializes the potential of a geographical training will be recognized.

W.J. Smyth  
Professor, Dept. of Geography



## EDITORIAL

Another year of geography in Maynooth has passed since the last edition of "Milieu" appeared. For many this has been their first taste of geography at University level — perhaps, even their first taste of geography! For others, it was another stage of a relationship which began at National School level. If a person from either of the former groups were to ask a member of the later what exactly the subject was about, what would be the reaction?

The subject of geography encompasses a vast area of study, both in spatial and disciplinary terms. So why then is there a need for geography as a separate discipline when there are already Historians, Biologists, Meteorologists, Economists, Sociologists, Archaeologists, and others who are studying these various areas? Within this diversity lies the strength and, perhaps, the future of geography. This depends on the ability of Geographers to analyse information from the various disciplines and, where necessary, to couple this with their own first hand findings. From there, the Geographer may gain and present an overall perspective of the various "Milieux", thus maintaining his/her concern for the spatial aspects of our world and, perhaps in the future, other worlds as well. The next step may even take geography into the realm of outer space. In fifty years time, theses may be based on topics such as the "Geopolitics of the Moon", "Geomorphological formations of Venus", or "(Human) Settlement patterns on Mars." This however, will depend on the ability of geography to change and adapt to the demands of the contemporary society.

In keeping with these trends, we have tried this year to present a variety of topics among our articles. These include one from the area of physical geography, which seems to have been omitted in recent past issues. Two of our articles are extracts from papers presented at the Students' Geography Congress in Carysfort this year. These proved to be well up to the general standard although, again because of the wide range of topics, this was difficult to judge. Both of them are related to potential developments for the country in the near future. Our third contribution from the B.A. class is concerned with more general aspects of future society, dealing with spatial structure. A welcome contribution from the first year class deals less futuristically with the model of Central Place Theory, which has been used to explain spatial aspects of our society. I am sure that most of our readers will find something of interest in the article on small towns. For the reader who finds all of these slightly heavy, I am sure that the article from our distinguished contributor Alexander Von Humboldt will prove more rewarding. Hopefully this great diversity to content will act as an incentive to those who are not studying geography to invest in a copy of "Milieu '80". Perhaps they may, also, inspire others to take pen to paper for next year's issue, or even a regular Geographical Newsletter within the College!

Finally I would like to thank all those who have contributed articles and those who have helped put the magazine together. Thanks also to Carol Davenport and Claire O'Brien (typing), Mick Melvin and the "Kairos" office for their invaluable help. Most of all, thanks to YOU, the reader.

Anthony Leavy  
Editor

Produced and sold by the Geography Society Committee

ONCE AGAIN it is our pleasure to report that the year under review has been one of increased membership, showing the ever-growing interest of Maynooth students in the Society's various activities.

The year began with the "Fresher's Social." This venture was a great success, a real winner as indeed it was last year. Our thanks to all the Committee members who brought cakes and refreshments.

On 15th October, the Society took its place at the Societies' Fair, held this year in the Aula Maxima. Our colourful stand displaying maps, photographs from previous field-trips, rocks and magazines attracted many new members, including we are happy to say, many non-geography students.

Dr. Barry Rafferty from U.C.D. lectured on "Aspects of the Irish Iron Age" on 22nd October. It was a very informative and interesting lecture.

Dr. Stuart Daulty caused quite a "whirlwind" when he addressed the Society on "Hurricanes" on November. He even personally illustrated how a hurricane moves, and a very enlivening and informal evening was had by all.

"Regional Disparities in Industrial Areas" was the title of the lecture given by Justin Wallace in November. This proved to be a popular talk and a great insight was given by him into these questions.

Our first lecture of the New Year was delivered by Dr. Edward Culleton from "An Foras Taluntas". He spoke about "Soils and

(Wo)men in Ireland". He showed how soil is man's foothold on the earth, and how important the interaction is between men and the soil. This lecture was one of the best attended lectures of the year.

During the weekend of the 22-24 February, Carysfort College of Education, Blackrock, hosted the Geography Students' Congress. A delegation from Maynooth went there, and the College was very well represented by the papers read by Brendan Fox on "Biomass Potential in Ireland" and Alfa Amauche Aakpunwa's paper, "The Future of the Islands of the Rosses". The Congress included a field trip to Wicklow and the weekend was a great success both socially and academically.

In conjunction with the Geography Societies of T.C.D., U.C.D., and the Geography Society of Ireland, Professor Peter Odell, the Director of the Economic Geography Institute in Erasmus University, Rotterdam, delivered the Geographical Societies' Joint Lecture on "Oil, Gas and the Geography of Western Europe" on 28 February, in U.C.D.

Our Inaugural lecture was held on 12 March in Theatre 2. This event has always attracted a large number of people interested in the wide spectrum of geography, and 1980 has been no exception. Dr. Joe Doherty from Saint Andrew's University, Scotland, addressed the Society on "Tanzania — A Model for third World Development". It was a very well illustrated lecture. During the course of the discourse, Dr. Doherty discussed

"The Arusha Declaration" and "The Arusha Declaration Ten Years After", both written by President Julius Nyerere, and he also showed how Tanzania could lead the way in development for all Third World countries. Our lecture was followed by an enjoyable wine reception.

Our A.G.M. will be held at the end of April. It is hoped that it will result in many new ideas being put forward, thus giving us an additional bonus, which will make all our combined efforts well worth while.

Finally, on behalf of the Society, I would like to thank everybody who made our functions both possible and successful during 1979-80. Our special thanks to Fran Walsh who was our liaison officer between Society and Department. Many thanks to Professor Smith, Colm Regan, Denis Pringle and John Sweeney for attending our lectures and especially thanks to you, the students, for your unfailing interest in the Society and for attending our lectures and eating our cakes and biscuits!

Claire O'Brien (P.R.O.)

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## THE RELEVANCE OF CENTRAL PLACE THEORY TO MODERN URBAN GEOGRAPHY

CENTRAL PLACE THEORY was first proposed by Walter Christaller, a German geographer in 1933. The main aim of the theory was to explain the spacial organization of settlements and hinterlands, with reference to their relative location and size. Since 1966, when Christaller's work was first translated, it has become standard teaching material in English speaking universities and schools. Embraced by the scientific "revolution" in geography in the 1960s, Christaller's model along with other similar models came to be regarded as geography's solution to its lack of precision as a science. Models such as Christaller's placed greater emphasis on spacial order and location than the traditional location or site factors used to explain the spacial distribution of settlements. However, with increasing use of models in geography, many have begun to ask fundamental questions about their use and relevance in the modern world. What I hope to do in this essay is to examine the relevance of Christaller's Central Place theory as a model in modern urban geography. To do so, I will examine the theory under three areas:

- (i) Its realism as a model
- (ii) Its merits as a model
- (iii) Its use and contribution to modern geography and modern urban planning.

In this way, I hope to show that Christaller's theory, although not the panacea to spacial organization in the world, is, however, very relevant to modern urban geography.

All good models are a balance between simplicity and reality. Often it is the case that the more one modifies the original assumptions of the model, the more complex it becomes. Christaller's model is based on three sets of assumptions that simplify reality. The "isotropic plain" principle assumes even population, equal purchasing power and transport costs proportional to distance. Clearly, this is not the case in reality. However, in places where almost ideal conditions existed (Mid-West America in 1850) Christaller's pattern was seen to be substantiated, thus proving that his settlement pattern can be regarded as an ideal beginning after which the geographer can begin to consider "modifying" factors. Other principles which underlie the model are the principles of perfect competition and economic rationality. Again, compromise between simplicity and reality sacrificed the model's direct applicability to modern society. However, Christaller never meant his model to be the sole explanation for spacial organization of central

place. He recognizes certain deficiencies in his system and qualifies them whenever he deems necessary. In his book, "Central Places in Southern Germany", he writes

"the scheme only approximates reality; therefore we should study the factors under whose influence it undergoes change..."

In an attempt to show how other factors influence and modify his system, Christaller proposed two variants on his original K3 or "marketing principle" model. The first is the K4 or transport system model constructed on the principle of the least travel distance between centres. His second variant is the K7 or administration principle in which he saw the primary function of the central place as administrative. These two variants not only illustrate Christaller's view of the models use, but also, serve to show that deductive models are relevant only as approximates to reality, and in this role can be very relevant.

In assessing the relative advantages and disadvantages of Christaller's model, it is useful to remember that no model can be totally accurate or can attempt to

explain everything scientifically. In discussing the merits of any model, it is best to examine it under two headings; firstly, does the model fit the facts?, and secondly, are its assumptions incomplete or unrealistic?

Christaller's model, when applied to the general world, is found to suffer from two main disabilities. Firstly, most towns are more than service towns; for instance, Manchester owes its location mainly to the fact that industry needed the coal for its developing industries and was thus located next to the Staffordshire coalmines. A second factor modifying Christaller's organization of central places can be collectively termed historical factors. Trim, for instance, derives its present day status from original settlers who established it as a defensive site guarding invasions up the Boyne river. However, it must be remembered that Christaller based his model on the principles relating to market location and not on defensive principles. A point in favour of Christaller's theory is that present evidence seems to suggest that the more centrally placed a town is the more likely it is to develop in modern society. Thus Drogheda's growth can be explained

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more in terms of its place within the complete urban network than the traditional approach of explaining its growth with reference to its site as the lowest bridging point on the river Boyne. In this way, Christaller's model has as much merit to it as the traditional approach.

The task of trying to improve Christaller's model by altering the basic assumptions without affecting its simplicity was unsuccessfully tackled by Losch (1939). Although his theory claims to be much more complete (it is composed of over 150 "K" systems superimposed on each other), the simplicity of the model is lost. However, his work is a valuable extension of central place theory. Losch's model is perhaps better suited to manufacturing industry while Christaller's is more applicable to service retailing. Both are relevant as they provide an idealistic pattern of spacial organization. Christaller's model is especially applicable to non-industrial or rural regions while Losch's central place theory is more likely to be observed in industrial areas because it takes account of specialist functions.

The contribution of central place theory to modern geography can never be assessed fully. Since the Second World War when

Governments leaned heavily on university Geographical Departments to reconstruct a shattered Europe, a scientific understanding and approach has been available to all planners, multinational corporations and advertising agencies. Their use (to fit their own needs) and understanding of the Geographical models helped put Europe back on its feet. Amongst this the models of Von Thunen, Christaller and Weber were used in the designing of hierarchies of shopping and service centres (even in locating a new capital city for countries). Increasing use nowadays is being made of Christaller's hierarchical concepts in the design of key service sectors like hospital systems and government headquarters. Thus in a very practical sense Central Place theory is relevant and useful.

From a geographical viewpoint, like high ideals of utopian existence, the theory is relevant because reality can be compared with them; where theory and reality diverge, an area of research can be pinpointed to discover the reason for the divergence. The main contribution of Central Place Theory to settlement geography has been its identification of order (in what often appears chaos) in the integrated system of central places and market places. Before Losch

and Christaller's work, the town and its hinterland were usually treated as separate entities. They were regarded as isolated from other towns and hinterlands. Certainly the hierarchical spacial organization of marketing had not been observed. However, with the new awareness of a town's place in the complete urban hierarchy coupled with geography's previous awareness of unique, individual factors influencing a town's location, one is able to get a more complete picture of the geography of settlement. Central Place theory has become a core part of geographical study. Its greatest relevance and greatest use is helping one understand the world around us. As a new angle of perspective, it is invaluable to modern urban geography.

Gerard Toal — First Arts

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## THE FUTURE OF THE ISLANDS OF THE ROSSES

IN THIS ARTICLE I am going to discuss some of the problems facing these isolated island communities, and suggest what I think should be done to make the islands a future haven. I am able to do this because of my stay in the islands towards the end of last winter. One characteristic feature of economic development within a developing economy is that there is increase in disparity between the less endowed and the advantageous sector. As economic development progresses from agricultural economy to industrial economy, the low income group in agriculture find it more difficult to catch up. Again commercial agriculture is concentrated in favourable environments while those at unfavourable environments practice subsistence low income farming. With the growth in industrial employment and the growth of urban population the gap between the low agricultural productive areas and the rest of the country also widens.

In Ireland, the problem of the declining west has attracted the attention of the Government, voluntary agencies and recently the E.E.C. agricultural commission. But a visit to this region will show that there is need for a more adequate solution in some parts of this area. The problem in the west is well known to be as a result of harsh physical environment, coupled with economic social and historical factors. The island communities share a greater proportion of the problems due to the fact that communication with the mainland is not easy.

The Rosses is the name given to the rocky fringes of the North West Donegal sea coast. At this beautifully cliffed coast are thirteen small islands known as the Islands of the Rosses. They are Arranmore, Tory, Rutland, Iniscare, Inishal, Eighter, Inishfree Upper, Eddernish free, Inishmore, Lahan, Rinvaavy, Owen and Inishceo.

It is not surprising that there is decline in the population of Donegal County as a whole as it is a part of the problem area, as defined by the Social and Economic Research Institute. What is surprising is that the islands are losing their population at an alarming rate and that if care is not taken all the islands may be abandoned completely. This will be a big loss to the country as a whole. There is extreme poverty in the islands due to lack of employment opportunities, depopulation and apathy, together with the related problems caused by inadequate community care services and loneliness.

In short the limiting environment factors in these islands are high altitude, high rainfall, severe winds, frosty weather and restricted growing season plus lack of adequate communication with the rest of the country. The result of this lamentable situation is

that there has been an accelerated rate of out-migration and a high dependency ratio.

Why did some of the programmes aimed at the low agricultural income problem not succeed to check the rate of population decline in the islands of the Rosses while they seemed to work in other parts of the country? From my discussions with some of the people who inhabited the islands it was clear that many factors contributed to the near failure of the programme aimed at agricultural improvement.

The topography of the islands suited only subsistence farming since productivity is low and the high mountains could only be used for sheep grazing as has been the traditional practice. The main source of income on some of the islands is on seasonal tourist visits to the islands. One woman confessed that money made during the tourist season was enough to keep the house for the rest of the year. This shows the future prospect of tourism in the island if well developed. Certainly tourism will thrive more than agriculture if developed.

Young people no longer take an interest in agriculture as a means of livelihood on the islands. This is not unusual in an industrial and manufacturing economy as in Ireland. The only alternative was to seek employment in the new industries, attracted by the Industrial Development Authority (IDA).

There are no commercial or urban centres close to the islands to offer supplementary income.

The great work done by the Congested District Board and taken over by the Land Commission cannot be under-rated. For one thing the problem of landlordism which was common throughout the West was solved. The islands benefitted from the commission's settling some of the land problems and resolving the difficulties presented, by land tenure.

In an attempt to help solve the low income problems in the West and other parts of the country, the ministry for Social Welfare in 1974 set up a National Committee on Pilot Scheme to combat poverty. Two of the islands of the Rosses benefitted from the knitting industry. Knitting is a well known enterprise in all the households in the islands but this is far from being developed. It serves as a past time employer based on local labour force.

The most important industry that needs development in the islands is the cottage guest industry. In almost all the islands of the Rosses a tourist tradition has developed. Urbanites come to the unspoilt natural environment every summer and sometimes in spring. The high scenic resource of these islands, should be developed. It can hardly be doubted that with the

increase in urbanisation and modern trend for more holidays and shorter working week that tourism will be very important in the future.

Ireland is blessed as one of the best tourist areas in the world. The West Coast in Ireland does not suffer pollution as other coasts in Europe. With her many connections in the United States and United Kingdom, Ireland has a great tradition of tourism. This should be developed. The tourist potentials of Ireland have been taken care of by the tourist board but lack of development has diverted the much needed foreign income from tourist to Spain and other parts of the world. Of all the islands of the Rosses, Arranmore and Tory are best known by tourists. The problem with tourism in the islands is that some of the houses in the islands do not meet the standard set by the tourist board, with the result that many tourists are turned back every year. Such things as adequate toilet facilities and general good condition of housing are lacking in most of the houses in the islands. Only few houses qualify as guest houses in Arranmore, Owey, Tory and Rutland. Others have no good houses for tourists.

I suggest that in order to retain more people in the islands that they should be developed into cottage guest house centres. There is abundant natural resources in the form of beautiful beaches, cliffs, unspoilt mountain scenery and the beautiful coast of the Atlantic ocean. Facilities for recreation such as boats, for fishing and sailing will add to the attraction of the islands. People who love skiing and mountaineering will not visit the island without coming back. The people of the islands are very friendly and treat visitors with great hospitality. Cottage self catering would be the best idea as this would reduce the cost of staying in the island for holiday makers. It would also provide service employment for the island community for most of the year. With the increase in the cost of travelling and holidays abroad more people will prefer to stay at home if they find such a place enjoyable. This will reduce the outflow of money from the country.

The project of developing the islands for tourist attraction can be embarked upon with the co-operative efforts of the islanders. Such co-operative organizations already exist in some of the islands. In Arranmore the co-operative organisation there has set up a £15,000 stone crushing project with the help of Combat Poverty who obtained the grant from the E.E.C. The project has employed ten people and was producing over 500 bricks a day until it was made



redundant due to lack of market for the bricks. This co-operative organization can be encouraged to get loans from the Industrial Development Agency to embark on a building programme with the local supply of bricks and to employ more people for the building.

The housing units could then be assigned to families for use as self catering guest houses. Arrangements could be made for gradual repayment from the families if possible during the tourist season. This will attract and accommodate more tourists to the islands and at the same time attract other amenities such as shopping centres of which there is none at present in any of the islands. With about three ferry cars all the islands could be easily linked in the tourist project. Some tourists may prefer to spend a few days on one of the islands and then move to another.

The improvement in housing will attract back not only people who emigrated from the island but also those who are interested in catering. The tourist board could organise crash programmes with the help of manpower boards for the people of the islands. This would give basic skills to many people in the islands who have only primary education due to the lack of any secondary schools. This arrangement will reduce the cost of social security in the islands in the long run. Tourism will provide the service jobs to supplement the income from the land. This will help to check emigration of the youths and adults.

It is appropriate to realise that modern taste has changed the value system of these isolated communities and in order to keep them in their locality, modern amenities must be provided. Through the mass media and tourists, urban culture which is materialistic has gradually changed the traditional values of the people who live in isolated rural areas. In order to enjoy the projected heaven in the cities, out-migration is the only answer. In some of the islands there are very few people between the ages 15-40 years. Old people over the age of 50 and those who came back on retirement plus young children form the majority of the population in the inhabited islands. In other islands everybody has left showing that emigration is only selective when conditions are not very acute. Dependency ratio in the inhabited islands has risen to over 80% as young adults leave for better opportunities in industrial urban areas. There is a disproportionate number of young male adults with only a few girls. This makes marriage in the island very difficult since most girls do not like to marry the low income farmers. There are a lot of single people of over marriageable age in the islands.

It is sad to note that there is no vocational school in all the thirteen islands. If isolated communities should share in the national cake I think that for social and economic reasons vocational schools should be located in such rural areas with the aim of training people for jobs within their locality. Such skills as bricklaying, knitting and catering are highly needed in the islands. Providing skills in brick-

laying will give employment to many people as housing is one of the major problems.

Again local people should be consulted in the islands before any development programme is planned as some programmes may not suit local needs and taste. The very fact that decisions are made in urban centres where the needs of these islands are not understood make some projects unviable. There is no reason why the national economy should be heavily concentrated in the urban areas while the basic needs of the island communities should not be taken care of. It is not enough to place all the people in the islands on social security payment. Action is needed to provide permanent employment.

The recent programme by the I.D.A. in attracting foreign firms to locate in some areas helped to accelerate the rate of emigration in the islands. As none of the companies located near the islands because of inadequate infrastructure people of the island leave the islands in great numbers to get employment in the new industries. It is estimated that from 1952 to 1979 that the I.D.A. has spent over £80 million on attracting foreign firms from USA and UK in order to create jobs in depressed areas.

The advantage of a tourist industry over these foreign industries is that almost all the employment by the tourist industry will be home-based while most of the employment by the foreign companies are foreign-oriented. Most of the raw materials are imported and therefore serve foreign labour markets. Again gains from these foreign companies go mostly to their home countries. Firms only locate where they are sure to gain.

With the entry of Ireland into E.E.C. industrial goods have become more competitive among the member nations. This means that the less developed will suffer. What is more a common agricultural policy is very restrictive to countries with mainly agricultural economy. On the other hand the tourist industry has the advantage of not being regulated by the E.E.C. Free movement from one E.E.C. country to another makes tourism a very lucrative venture. Therefore it will be worthwhile to develop not only the islands of the Rosses but the whole of the North West sea board for increased earning of foreign exchange which cannot be guaranteed in the foreign companies guided by foreign interest.

In order to promote Irish culture the islands are the best bet since both Irish language and folk traditions are still intact in the islands. There are language schools in some of the islands during the summer. This is one of the main sources of income for the people of the islands. The self catering cottage industry can be linked to the small knitting and folk gift industries. These will provide ample employment for the people of the islands.

It may be argued that tourist industry will rob the islands of their natural environmental quality. With a good conservationist policy this cannot be a great problem than the present economic and social decay. Can we only preserve the island as an historical relic only to be visited for amusement? If the cities have economies of scale for attracting more industries the islands of the Rosses have high scenic resources that can regenerate themselves every season since the tourist boom is only seasonal.

The changing nature of what is a resource should make us look at the scenic beauty of the islands as a resource to be tapped by intensive advertising and improvement in the quality of the life in the islands rather than embarking on a series of agricultural improvements that do not suit the environmental factors.

With the recent intensification of oil prospecting by Arran Oil companies there may be overnight change in the resource value of the west sea board and everybody will benefit. The future of the islands looks bright as the rate of urbanisation increases and more people search for idyllic places of unspoilt environment.

The development of these islands as a cottage tourist industry is not easy because much capital will be needed as well as the goodwill of the people. But the reward will be great both to the national economy and to the island communities concerned. This calls for more attention to isolated rural communities for development rather than the urban areas which are becoming so over developed that life in the city is seen as unnatural. The recent outlook that to be natural is the best way to avoid some of the modern problems should be realised in good management of the unspoilt isolated areas. The islands of the Rosses may be the idyllic dream for future honeymoons and holiday.

Amauche Alfa Aakpunwa  
— Third Arts

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## THE RELEVANCE OF BIOMASS AS A POTENTIAL ENERGY SOURCE FOR IRELAND

A REVIEW of the previous decade would probably find the terms 'inflation' and 'Energy' as the most dreaded and commonly used terms. The two are obviously linked, mainly because of the industrial world's dependence on cheap imported oil.

The Arab-Israeli war of '73/'74 and subsequent oil embargo finally brought home to the affluent nations that the days of cheap, reliable sources of energy were fading into the past. In an age of plenty there was little stimulus for research and development of alternative energy sources. The crisis therefore necessitated efforts to develop new reliable sources of energy and to examine existing practises in relation to consumption of existing supplies.

As imported oil now accounts for over 70% of our energy requirements, it is therefore essential to identify and promote now the energy sources which have the greatest social, environmental and economic significance for Ireland in the coming decades. The advantage of having an indigenous source of renewable energy to offset the impending nightmare of a depleted oil supply hardly needs explanation. Much research is being conducted at the moment into the feasibility of wind, wave, nuclear power and solar energy for commercial exploitation. The tapping of solar energy can take varying forms from the use of solar panels to photoelectric cells. It is however, the biological substance known as biomass which is of specific interest to us here.

Biomass is the name given to agricultural forestry or animal wastes, marine plants, algae and 'energy crops' grown specifically for fuel which can be converted to useful energy. The significance of Biomass from a national point of view consists of the growing of trees in large commercial quantities over a short time span (four to five years) and the conversion of chemical energy by means of combustion into electrical energy which can then be fed into the national grid.

From a geographical point of view the potential for Biomass as a source of energy tends to depend heavily on location i.e. it is site sensitive, since not only are climatic variables such as temperatures, rainfall and length of growing season of vital importance but also such considerations as land available, infrastructure and location relative to conversion sites.

In the wake of the oil crisis of 1975 the E.E.C. initiated a wide ranging energy programme in which solar energy was to be one of its main subjects for research. Previous research carried out by, and the general competence of, An Foras Taluntais ensure that they receive

a grant for energy research and development in conjunction with the forest and wildlife service, under the auspices of the National Board of Science and Technology. The E.E.C. voted 42 M.U.A. (Million Units of Account) for solar energy in Ireland of which 17 was given to Biomass Research.

In co-operation with the State Forest Service, An Foras Taluntais have conducted a series of trials using a number of different species at a few centres throughout the country, on sandstone soil near Mitchelstown, Co. Cork, high bog at Tyrells Pass, Co. Westmeath, blanket bog in Connemara and on wet heavy (drumilus gleys) in Co. Cavan. In a feasibility study 3,500 species of plants were grown on these sites. Because of pressures on agricultural land it is essential that for commercial exploitation, species must have high yields on inferior quality soils and also produce a dry rather than a wet biomass for ease of transportation and combustion.

For the commercial production of energy trees which have a growing period of 35-50 years have an obvious disadvantage. The paper industry in the U.S.A. provided the instigation for research in growing short rotation trees. Tests in 1965 in Georgia showed that 6.0 tons/acre per year of dry matter could be obtained with the sycamore species over a period of 4 years. From a biological as well as a commercial point of view A.F.T. concluded that the best prospects lay in short rotation forestry. With this system, species are harvested after four to five years. Giving average yields of 6.5 tons/acre of dry matter per year. After harvesting, stumps will sprout again and the cycle continues for another five years. Because of the frequency of harvesting the economic returns on invested capital is much more immediate than with conventional forestry. In addition the sprouting (coppicing) of the stumps ensures that re-planting takes place only after eight or nine harvests (approx. 28-32 years) further reducing costs. The species are chosen for their ability to coppice and their tolerance on particular types of soil. In general the species surviving are lodgepole pine, sitka spruce, alder, birch and eucalyptus.

The present total forest area in Ireland is approx. 330,000 hectares or something less than 5% of our total land area. The lowest percentage in Europe.

	% of country under forest
Germany	29%
France	28%
Sweden	50%
Denmark	11%
Ireland	5%

Ireland has a total land area of 6.6 m. hectares of which 44.8% or 3.0 m.ha is classified as marginal agricultural land consisting of wet lowland and blanket bog 11.1%, mountain and hill 22%, and low-level peatland 11.7%.

Possibly as much as 20% of this area could be devoted to biomass production i.e. 10% from low-level peatland and 10% from remainder, depending on geographical location and size of particular site as remoteness from power stations transport networks etc. are all critical determining factors. It is dangerous, however, at the moment to speculate about the delicate subject of land availability as numerous factors would have to be taken into consideration before a national programme could be implemented. At the moment, I think, it is best to use the conservative figure of less than 25% or marginal agricultural land or 10% of total land area as a reasonable proportion of the country which could be devoted to biomass. This would be approximately an area of 0.60 m. ha.

Yields of dry matter content of species in Ireland have varied from 8 t/ha/yr in Cavan to 27 t/ha/yr in Co. Leitrim. However, yields of between 10-12 t/ha/yr are closer to the norm. Taking an average of 10 t/ha/yr of dry matter from 10% of land area (0.6m.ha) over a 20 year rotation cycle, the area of forest due for harvesting annually would be 600,000ha ÷ 20 years = 30,000ha.

Therefore the amount of dry matter available annually = 30,000 x 200 tonnes/ha = 6.0 m.t. t/yr which is the equivalent to 3.0 million tonnes of oil equivalent (MTOE) which is 50% of total primary imports in 1977.

One of the main arguments used against a biomass programme by a number of government departmental officials was that as Ireland's energy demands increased at a phenomenal rate the proportional contribution from biomass would decrease accordingly. However, it is now widely accepted by government ministers and by various experts in energy research that demand is now easing off and that former estimates will have to be projected downwards.

It is obvious that biomass could make an even greater contribution towards our energy needs if, through stringent conservation measures we were more frugal with what we use at the moment. An increase in energy consumption does not automatically suggest a growth in G.N.P. or an increase in standards of living, it may in fact be due to unmitigated wastage.

In 1978, 38% of Ireland's primary energy consumption or 2.85 MTOE was used for space heating and process heating. This is the quantity of energy from peat, coal and oil which could



theoretically be replaced by direct combustion of wood fuel chips from biomass. A scarce and non-renewable resource such as oil could therefore be redirected into the vital demand-increasing transport sector.

The advantages of Biomass are many and varied. It is a clean, renewable form of energy. It has low environmental impact, being completely free from sulphur dioxide. It would increase wild-life reserves as well as being aesthetic value. But most important, it is an indigenous source of energy, possibly replacing peat as a significant contributor towards our energy requirements.

It can be said that peat is our only major native energy source at present and may remain so for some time. Production will be on the decline, however, after another decade and within fifty years this resource will have been used up. Bord na Mona cut away bog is the most suitable area of land in Ireland for the implementation of a biomass programme not least because its ownership is in state hands, but also such a programme would harness the experience of a large labour force gained in the exploitation of a similar type resource. The suitability of the bogs for development, apart from the social and economic desirability of maintaining employment is further enhanced when one considers all existing power stations are in close proximity to the cut-away bogs which have a complete network of roads and railways. Decentralisation of energy supply would be another advantage of this programme. i.e. it would lead to greater geographical distribution of raw material and labour intensive small-scale energy conversion facilities. This is in contrast to nuclear power which is capital rather than labour intensive and would lead to the centralisation and concentration of industry and technology.

In addition, another factor in favour of Biomass is the availability of conversion technologies. Conversion of biomass to liquid and gaseous fuels such as ethenol, methenol and methane has been practised in Ireland and is now part of a large-scale programme of petrol substitution in Brazil. The procedure used is the fermentation of biomass to alcohol for use in transport with substantial savings.

The main disadvantage of forest biomass is its bulky nature and therefore its high cost of transportation. In the midlands, however this would be offset by having the source of energy near the power stations and utilizing the communications networks already available. Timber generally has a high moisture content in relation to its calorific value. A number of processes have been developed to overcome this problem namely milling, drying and compressing the timber into pellets or briquettes. Such densified forms of biomass greatly reduces the cost of transport and makes the commercial

exploitation of remote poor soil much more feasible.

The suitability of a land area for biomass production would depend on its quality, quantity and geographical location in relation to conversion mechanism. Outside factors would undoubtedly influence the ultimate decision, not least among those being world food supplies. Land is becoming an increasingly precious resource. It is vital for agriculture, fuel, recreation and building purposes — It seems certain that there will be mounting pressure on the limited area available from all these sources in the future.

The major area earmarked by an Foras Taluntais for biomass development is of course the cutaway bogs of the midlands. The absence of land tenure constraint is an obvious advantage, plus the availability of a large experienced labour force. Its flatish topography in large tracts also enhances its suitability. 600 hectares of cut-away bog in Co. Offaly are being utilised at the moment for various tests and research work and experts claim that with proper reclamation, this land has at least 80% of the potential of good mineral soil for livestock, cereal and biomass production.

It seems logical, then that the eventual utilization of these areas will depend on two critical factors:

1. Whether the national priority should be food or fuel.
2. The outcome of an intense regional interest battle.

The first is self-explanatory (but still not removed from the political arena). It is evident that many decisions made today are not necessarily the result of painstaking objective consideration but instead of how one pressure group is better able to wield political clout than the next. Farming organisations in the midlands are interested in having the reclaimed cutaway bogs divided among local farmers. The idea of large state-owned farms, with its socialist connotations not being at all acceptable. On the other hand, on account of the fact that forestation would guarantee more jobs than agriculture, Trade Union pressure is being mobilized to ensure the maintenance of employment in the midlands.

If the state-owned land area discussed above will not feature in any government energy programme for the future, then energy contribution from inferior-type land in private ownership would be so negligible as to place Biomass very low down on the Government's priority list. The Manshott Plan for disadvantaged areas within the E.E.C. foresaw the abandonment of land which did not sufficiently remunerate the cultivator so that he could survive without subsidies. The 'pushing effect' from the land, however, is not so great now as it was ten years ago. Entry into the E.E.C. and the subsequent boom in

agriculture plus the availability of farmers' dole and various grant schemes is evidence that Manshott has recanted somewhat and that the E.E.C. does not envisage a massive flight from the more disadvantaged areas in the next few years at least. Should the Government decide to purchase large tracts of land for forestry development it will have to be proven to the indigenous population that their interests would be better served by forestry than by agriculture. It has been said that an Irishman's religion is the land, his second love is what is on the land and where he goes at eleven o'clock on a Sunday morning comes a poor third. If this is true, then it might be stretching the imagination a little to think that he would have the same romantic attachment to short-rotation forestry as he had towards his livestock.

Research conducted by the Department of Forestry and Fisheries in Leitrim in 1975 showed that, if sufficient capital was offered and with a good chance of stable off-farm employment younger farmworkers in particular would be inclined to sell at least some of their land to the Department for forestry development.

The flexibility of biomass ensures that it can be utilized by individual farmers for private use in domestic boilers but also the implementation of a communal district heating programme, using a small biomass scheme, by community groups in conjunction with local authority agencies would ensure the self-sufficiency of an area as regards space heating at least. Such a project, using peat, is planned for Lanesbrough, Co. Longford under the auspices of Bord na Mona and Longford Co. Council.

Ultimately the quality and quantity of land assigned to a particular use will depend on the relative demands of energy versus food. Currently agricultural usage has priority where land can be developed for this purpose. Pressure on the relevant authorities to embark on another form of energy programme, plus the interest of various sectional interest groups will ensure that the ultimate decision may be a political rather than an economic, social or environmental one.

#### Conclusion

There seems to be two alternative approaches to meeting future energy requirements. One, which is designed to maintain current standards of living and the present international economic system, favours the implementation of conservation measures and increased use of coal and nuclear power. This is the approach favoured by most developed western countries. The logic of which nuclear power is based is the assumption that in order to obtain higher standards of living we need more energy and more

consumption. This approach erroneously confuses economic growth with the quality of life. The second approach involves a reversal of the long term trend towards a complex interrelated society heavily dependent on technology and energy. It proposes the decentralisation of energy supply, much greater reliance on renewable energy sources and small scale energy conversion facilities.

The opportunities for policy makers in this country are, perhaps greater than elsewhere in Europe at the moment, since Ireland is not yet committed to a nuclear programme and there is considerable potential for renewable energy sources of which Biomass would be a major part. However, one must not allow optimism to over-ride reality and unless sufficient land becomes available for biomass production then the work of researchers and scientists could well be frustrated.

The Government now has a unique opportunity to capitalize on the experience gained in agriculture and to augment the programmes initiated by its various Departments and Research Institutions. The development of Biomass as an alternative to nuclear power could have a major impact on the formulation, of goals and objectives for future social, economic and regional policies.

Brendan Fox — Third Arts

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# THE SPATIAL STRUCTURE OF ELECTRONIC SOCIETY

IT IS QUITE impossible to live in today's world without observing our rapid degree of adaptation to the world of electronics, computers, automatic gadgets and minute devices such as the recent silicon chip. Modern man has initiated and produced all of these devices, so the utilization of them also depends on man's desires and aspirations. In relation to the term 'Electronic Society' many would claim that it is not an issue in today's world as yet, that man is still the boss. When one considers latter day trends of electronic locomotives however, this notion may be naive. A visit to the modern manufacturing plant with its typical assembly line will cause doubts as to who dictates to whom. However, the assembly line is man's own creation, he must therefore bear the consequences. The only discrepancy being, that he who is so ingenious as to invent the "assembly line syndrome" is rarely the person whom it adversely affects. The creator is akin to a spider, except that a spider seldom snares his own species in the web.

Many futurologists would claim that the degree of electronic society we are familiar with at present is slight compared with what is to come. For example the terms 'time space convergence' and 'human extensibility' are considered fundamental to electronic society. 'Time space convergence' being that which measures the rate at which places are moving closer together in travel time or communication time.

The rate of convergence depends upon advance in communication technologies. Currently such features as supersonic transport and earth satellites are rapidly decreasing time distances between two global points. Futurists claim that developments in tele-communications will enable one to establish contact with someone, via telephone several thousand miles away, the time necessary for such contact being no greater than a telephone call next door. One may be able to see their person of contact through the aid of video. Following this development a team of soccer players from Ireland will be able to play "push button soccer" with a team in Australia without either party moving outside his video sports centre. The future looks bleak for the Olympic games (even without political interference). Other predictions for electronic society are: For the student; school, college, institute and the like may be non-existent. He or she could sit down in their sitting rooms and literally plug into professor X's terminal and receive the quota of lectures for the day. If the lesson is boring the student at his discretion could switch channel in the hope of something more exciting.

The housewife can look forward to doing her shopping through computer. She may punch in her

list of desirable goods in the computer which will transfer the message to the local shopping centre terminal. Seconds later she will receive her goods and cheque receipt through the linkage in her own house. All goods will be standardized and uniformly packaged. The housewife will then type her cheque receipt on the computer. The shopping centre will have deducted her account by the appropriate amount. Office managers will rely on telephone messages rather than letters to get their work done. Now that closed circuit television is commonplace, remote terminal tele-type linkages with computers are widespread and two way video telephones will enable the office staff to actually site their work at home, except where equipment is so expensive that it will have to be centralized in the office. Many employees will enjoy the work surroundings in their homes. Baby sitters will no longer be required and travelling expenses to and from work will be minimized. While husbands and wives sit side by side at their operation terminals in Ireland their daughter may be learning French by contact with her Parisian friend through close circuit television. All of these features outlined are based on the theory of communicating as opposed to commuting. Communications therefore being as powerful a detriment of human spatial behaviour and organisation as transportation was in the last century. This electronic society will therefore be characterized by flows of electronic messages rather than flows of material. This factor is fundamentally related to the "human extensibility" aspect earlier outlined. This condition will be the end result of complete "time space convergence" because if this is achieved the human being will extend himself via electronics to all global areas. If he can extend himself this automatically means he will be able to receive contact from all other global areas also. Thus the notion of "human extensibility" will be relaxed.

If "time space convergence" reaches a complete state, the question automatically follows — what relevance will the spatial aspect have? — especially if distance is eliminated as a meaningful variable. Because the shift away from flows of material toward flows of electronic messages induces a loosening of actual spatial structure of our cities and spatial reorganization. Inherent in this idea is that, while cities may lose their highly concentrated nature in future years, the world may in fact become one great city, with a lesser degree of distinction between urban and rural than we are currently familiar with. This new world city is called "Ecumenopolis". However true this notion reveals itself to be, one cannot ignore the fact that stark physical features of the

world, such a great mountain regions, water expanses, and the like will remain as spatial entities, and will therefore continue to distinguish one area on the globe from another.

Features such as international highways will become the streets of our new world city. These highways or streets may prove less significant than one thinks if communication technologies by electronics become developed to such a degree that man will no longer depend on transportation routes to fulfil his desires. However it seem certain that one will have to consider the idea of access to the electronic world. It is doubtful if there will not be a large spatial distinction between who can avail of the electronics and who cannot. Here one must ask the question — will certain societies of the already developed world be the first to adopt and equip themselves for this new global city? What about the powerless entities who are daily concerned with searching for subsistence, and therefore know no world, beyond that of survival? It seems doubtful that these people will ever reach such 'high order' areas of living. Hence the disparity between developed and underdeveloped may be further polarized.

There are futurologists who predict an era when ninety percent of the world's population will be urbanized. This will be due to an ever increasing change from agriculture and industry to service sector employment. Urbanism in the form of "Hedonopolis" is predicted i.e. an urban society in which there is high investment in elaborate and complex personal services. A society in which the marginal utility of investment in goods production is dropping rapidly, while the marginal utility of investment in services is rising as new service functions are articulated.

Hedonopolis is composed of the coalescence of "fat cities" which are urban centres where land uses reflect societies new found hedonism and its technical efficiency. If such structures prevail then there will be a stark distinction between urban and rural life. However, it seems more probable that there will be greater convergence between the two. Because trends of electronic society are bound to facilitate location of various services at any point of

choice, therefore actual location variables may lose their importance. Thus urban and rural may become a sprawl type landscape. One must also comprehend the notion that the more vulnerable sectors of society may however be forced to agglomerate in the intensely urban areas. Low income groups and declining city services may see an ironic position in the city where stark poverty and violence of the city centres remaining inhabitants

contrasts grotesquely with the brightly lit shops, theatres, and bars etc. that service — leisure — pleasure seekers from the less intensely urbanized areas of the Ecumenopolis frequent.

One may also envisage a spatial shift in employment with growing concentration of service functions in the urban centres, and heavy industry may site itself in the lesser intensely populated areas that the Ecumenopolis offers. Some highly generative industrial activities may be increasingly found in the "mobile parasitopoli" which are impermanent urban centres that exist by exploiting the earth's source material. Such centres switch to manufacturing as exploitation service circuits become established. Mobile parasitopoli may be found anywhere economic source materials are located e.g. Japanese fishing fleets which move factory from place to place in relation to movement of resources. The idea of fixity in space is losing significance. Degrees of convergence, divergence and extensibility seem certain to condition such economic features as world trade, tourism and international conflicts.

The effect of electronic society on its people is one of major concern. Many claim that alienation will prove the greatest problem. Despite major communication developments, very few are at a face to face level. The tradition of meeting people in social surroundings may disappear. In fact communications may fail to communicate in a vital manner, that is personal discussion, conversation and expression. Such communications facilitate differentiation of the parts from the whole. This in turn increases individual alienation and is bound to produce higher stress levels in affected areas. As more business is carried out in the home and as a great amount of recreation is also experienced there the threat of what 'Philbrick' calls 'physic encapsulation' becomes more serious. People may become entirely involved in a press button fantasy world, waking up just in time to shut off the late evening news before 'their world' is destroyed. Here the relationship and consciousness of the better off towards the poverty stricken will recede because the man living in this dream world will switch off psychologically by turning off unpleasant stimuli instead of confronting them.

The world's record of providing clean air, clean water, and esthetically pleasing landscapes has suffered while we have experienced our greatest technological advance. Considering the further technological advance expected, will there not be even greater environmental risks involved? What about energy supplies? Many of these predictions are based on a theory of 'nuclear fusion'. Presently one is dismayed at the regularity of leakages from some of the worlds nuclear power stations. Thus one must ask, can man control the powers he has created?

Some futurists envisage such developments in security systems, that all houses will be fitted with bug devices. Such things can also strip people of their unique qualities and traits. The idea expressed in George Orwell's book "Nineteen Eighty Four" of the "Big Brother" image is the essence of this. Big brother being that device that will monitor all one's actions. If life becomes this inhumane, the resident of electronic society will not live, he will merely exist. He may actually be afraid to live.

On the broader level, communications are powerful, social, cultural and political forces. It is wishful to think that they will not cause great local regional, national and international tensions. Rampantly increasing choices, so beneficial in many ways, can also bewilder the mind, push man to a point of overstress and create a tyranny of freedom in which creativity is stifled by confusion. Such apparent choices do not reveal themselves in the physical structure of today's electronic society. Human extensibility seems to promote sameness everywhere. "The Mac Donnell syndrome" is radically imposing itself on our world landscape. Shopping centres, office complexes and food chain restaurants, all of similar design continue to physically relate many world landscapes. One wonders if surprise will fast diminish as an esthetically pleasing element in man's visual world.

In one considers North America as an example of society where rural and neighbourhood goals have been consolidated into fewer units of larger size, family farms aggregated into huge economic concerns, independent stores changing to chain organisations and small workshops progressively amalgamated into factories, industrial conglomerates and multinational corporations, one can appreciate the trend of quantifying for economic reasons, at the expense of a personal touch. Thus the progression of the machine dictator world. But he that said "Man was the most adaptable of all animals" was indeed wise, for history has proven that man creates his own world, lives in it, and when much is lost begins to question his creation. The ability of people to plan for man's essential needs rather than his created wants will be of paramount importance for the future. The Geographer must equip himself to fulfill his role as planner rather than as an assessor of past failures. Population distribution being the basic spatial parameter in human affairs, it should receive priority for geographical futurists. The spatial aspect of geography may prove more important than ever, given the importance of space to human beings, and the extent to which it determines their humanity.

A look at the "Mid-town Manhattan Study" (1962) will show that 25% of those people surveyed were mentally disturbed, only one in five people considered

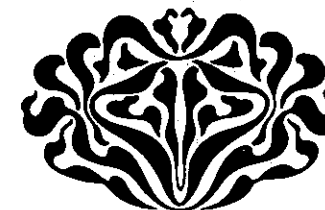
mentally sound. The futurist geographer must prevent another Manhattan. 'Maximum allowable density' (M.A.D.) figures must be carefully prepared. The inability to do this could produce a society that will be M.A.D. without the punctuation. The letters M.A.D. have also been interpreted as meaning "mutually assured destruction" so geographers as planners will play a vital role in preventing this, by recognizing accurately what mans needs are. The continuous change to an electronic society may cause serious societal dislocation, such as spatially moving the disadvantaged and weaker elements of society to the lesser attractive environments. The futurologist must address himself to ensuring that justice is done, to all groups. The present day physical geographer may have to put more emphasis on the urban landscape, seeing the skyscrapers as undesirable mountain peaks, the bulldozer as an agent of erosion, and some entrepreneurs as depositors of undesirable features such as mass produced office blocks, and housing estates, all of which condone jungles of our time.

E.F. Schumacher in his book "Small is beautiful" had the following to say.

"In his urgent attempt to obtain reliable knowledge about his essentially indeterminate future, the modern man of action may surround himself by evergrowing armies of forecasters, by evergrowing armies of factual data to be digested by evermore wonderful mechanical contrivances. I fear that the result is little more than a huge game of make-believe. The best decisions will still be based on the judgements of mature non-electronic brains possessed by men who have looked steadily at the situation and seen it whole" (from chapter 15 — "A Machine to Tell the future")

Hopefully Schumacher's assertion is not a naive one.

Michael Ryan — 3rd Arts





# AMBIGUITIES OF IRISH PLEISTOCENE INTERGLACIAL ACTIVITY

The purpose of this article is to highlight (hopefully!) some of the ambiguities and inconsistencies of currently held views of the geographer-geologist; this includes various techniques deployed in actual research viz 14C dating, soil classification and stratigraphical analysis relating to inter-glacial activity as well as to the precise classification of inter-glacial deposits themselves.

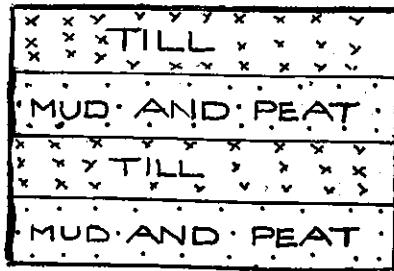
This makes it all the more difficult for the student to grasp an adequate understanding of Irish Pleistocene glacial activity.

In attempting to evaluate the events surrounding the Irish Pleistocene concrete research work and "substantiated" evidence is rather scanty. In fact it was not until 1950 that proper investigations got underway. The early pioneers being Charlesworth and Farrington both of whom established that ice sheets had covered the greater part of the island on at least two separate occasions. The older of these glacial periods termed Munsterian, the younger Midlandian. The primary reason why knowledge concerning glacial and interglacial deposits is far from satisfactory is perhaps best explained by Herries Davies and Stephens (1) who refers to various "correlations of glacial events at different periods across the country" which they describe as "still tentative and only generalised relationships of ice movement are known." This being especially true for the Munsterian. They also add that any information relating to the latter part of the Midlandian glaciation is based on intensive use of pollen analysis and 14 C dating techniques which render possible a more detailed understanding of the many stages of glaciation and deglaciation.

In addition to this another important source of information relates to soil classification. Thus analyses of Irish soils is of immense significance in aiding the Geographer, geologist and pedologist in an understanding of pleistocene glacial activity. For it is a generally held view that Irish soils originated principally from glacial drifts. Consequently analysis of Irish soils with modern pedological techniques has begun by Gallagher and Walsh. (2)

Finally another level of analysis concerning the extent and nature of glacial and interglacial episodes can be gained by means of an examination of stratigraphical succession of drifts in natural sections and boreholes as well as through discovery and analysis of organic deposits found within drifts. A typical or complete stratigraphical profile is composed of the following materials. An overlies of till, underlain by thin veins of freshwater mud plus pollen. In turn this proceeds on layers of till which once again

overlies strata of thick freshwater muds and peats. (See diagram).



## STRATIGRAPHICAL INTERGLACIAL PROFILE

Further knowledge of glacial stratigraphy is aided by relationships which exist between parent drifts and soils produced on them. In this respect the greater degree of weathering and cryturbation of Munsterian drifts have also been used in attempts to separate older from younger tills.

However, it can be argued that these methods are subjective; yet considerable differences can undoubtedly be observed between drift sheets on either side of a great terminal moraine which swings round the northern end of the Wicklow mountains and across Ireland through Tipperary to the mouth of the Shannon. The great terminal moraine being the Ballylanders Moraine. Thus there is a contrast in the freshness of glacial material to the north of the line which is largely unweathered and that to the south which is heavily eroded with the exception of the Cork/Kerry ice. However, despite the importance of the levels of analysis already mentioned it is worth bearing in mind that the possible complexities relating to the extent and dating of younger drift deposits (especially those of the Midlandian glaciation) stems from the fact that the maximum limits of glaciation were not everywhere contemporaneous although as yet absolute dating of each stage has not been achieved according to Harries-Davies and Stephens (3).

Added to this is a significant development in the interpretation of the stages of the last glaciation limit; mitigated by F.M. Synge (4) at the International Geographical Congress 1964 (Excursion E17 Irish Pleistocene).

### Interglacial Deposits

The spacial extent of inter-glacial sites is known. However the distribution of these sites conveys nothing of the controversy surrounding both the Gortian and Ipswichian deposits. The former preceding the oldest known glaciation namely Munsterian. The

latter following the later period, Midlandian.

Thus interglacial deposits are classified into two categories "Gortian" and "Ipswichian". Concerning the last Ipswichian interglacial there is no real satisfactory type site and so according to Harries-Davies and Stephens "for the present the estuarine sand from Shortalstown Co. Wexford must serve as sole representative."

### Gortian Interglacial Deposits

This type of deposit named after the site (Gort, Co. Galway) where it was first discovered is composed of the following materials. It consists of temperate mud, peat or plant bed sealed below glacial till or tills, by outwash of gravels by head deposits or by a combination of all three. Deposits of this type tend to be located to the south of the Southern Ireland (viz Ballylanders end moraine) Terminal Moraine. These deposits have been examined principally by

Jessen et al (1959) Watts (1959, 1964 and 1967) and Mitchell (1970 and 1976).

The temperate constituents of these deposits are regarded as predating older drifts on a stratigraphical basis. But Watts, 1970 and Mitchell 1970, put forward the suggestion that these widely separated temperate deposits may belong to the same general group (termed Gortian) and also that they could reasonably be correlated with the British Hoxnian. However this is purely speculative and doubts are cast on the possible Gortian-Hoxnian correlation due to the lack of known Irish sites of the Ipswichian age.

Nevertheless out of this scope for thought has arisen the following premise that (5) if there is a handful of deeply buried Gortian sites known, then why is there not at least an equally number of Ipswichian sites known? "The latter wouldn't necessarily be so deeply buried and in any case there are many good deep sections available for examination in drifts assigned to the Midlandian glaciation."

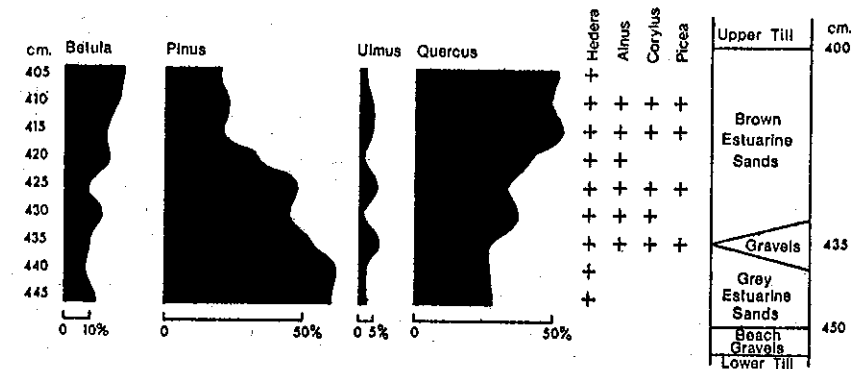
In addition to this it is also argued that if during the last interglacial the Irish Midlands could have sustained peat growth to a degree comparable to that to today's, then most recent till sheets should cover and consist of copious quantities of organic materials. Alas this is not the case

The Shortalstown deposit comprises an Interglacial estuarine sand with associated beach gravels interbedded between layers of upper and lower shelly tills according to examination conducted by Calhoun and Mitchell 1971.

In point of fact the actual site lies approximately 1½ kms inside

the revised southern limit of Midlandian ice outside which Munsterian till is deeply (7) upset by frost heaving, the process of solifluction as well as by the formation of pingos. Mitchell 1971.

The Shortalstown find is itself only a representation and it is difficult to be emphatic as to whether it must be Ipswichian and not Gortian, yet a pollen-diagram was prepared for the sand. (See Diagram)



A pollen-diagram from warm stage deposit, possibly of Ipswichian age, at Shortalstown, Co. Wexford.

The following results were obtained. There was substantial evidence to suggest a climax phase of deciduous woodland with abundant pollen of Quercus (50%). There is every indication to suggest that this climax — phase is similar to that of the English type site at Bobbitshole, Ipswich. (8)

Despite all the uncertainty the essential difference between the Shortalstown diagram and a Gortian one at a similar phase is the amount of Ulmus pollen present, even though the quantity is relatively meagre, yet pollen of ulmus is almost unknown from Gortian deposits. No Gortian

diagram shows such amounts of ulmus pollen as are seen at Shortalstown. Besides pollen grains Shortalstown yielded macrofossils chiefly of plants and of marine molluscs

Most important of all the discovery produced a seed of a plant now extinct in Europe but still growing in Central United States, "Decadon" the water willow a member of the loosestrife family. It formerly grew in Europe and its

evidence to suggest that two separate interglacials may have possibly occurred. Extending this premise further it also suggests that existing interglacial deposits belong to the same period (last one?).

Furthermore in relation to existing deposits below "Munsterian" till, could these "Munsterian" deposits be synonymous with those of "Early Midlandian". If such holds true then the South Ireland End Moraine would not mark the Midlandian glaciation limit but a Readvance Moraine or standstill phase? This has been disputed by Synge (9).

Finally, in this essay I have attempted to make the reader more aware of the actual complexities and problems of interpretation surrounding the subject matter. I wish to stress that each of the points outlined is purely speculative. Thus beginning with ambiguities I close with ambiguities — I leave the final word with you, the reader, to draw your own conclusions.

### REFERENCES

- (1) Herries-Davies and Stephens Ireland Pp 15-16
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- (3) Herries-Davies and Stephens Op Cit P. 120
- (4) Synge F.M. Op Cit.
- (5) Herries-Davies and Stephens Op Cit P 123.
- (6) " " P 124
- (7) " " P 124
- (8) Mitchell F.M. The Irish Landscape P 55
- (9) Synge F.M. Op. Cit. P 40

### NOTES

- (i) Munsterian Glaciation (175,000 — 75,000 yrs B.P.)
- Midlandian Glaciation (70,000 — 10,000 yrs B.P.)

Brendan Fleming — Second Arts



## APOCALYPSE SOON, OR HOW TO FAIL

### THE B.A. IN ONE EASY LESSON

EVERY JUNE, close on 100 Maynooth geography students sit down to the B.A. degree examination. It is a numbing thought that only six hours are available to reveal the accumulated wisdom of two year's hard work. The frantic desire to demonstrate as much of this wisdom as possible leads to permutations of the English language which neither God nor man ever envisaged. Meanwhile, the dissolute waster who has spent two years commuting between the Roost and the billiard room remains as cool as a cucumber: having learned nothing, he has nothing to forget; indeed, he may derive some comfort from the possibility that nothing, written coherently, may create a better impression than loads of gibberish. He is unlikely to present the following answer paper, compiled from genuine offerings presented in recent years.

#### The Industrial Revolution

The Industrial Revolution began in England. England first began to break out of the Dark Ages with the voyages of Marko Kolo, and by the eighteenth century her navy was the best in the world, second only to France. Before the Industrial Revolution factories were all at mouths of rivers and so they could send the materials down the river to the ports. However, the Industrial Revolution brought marked changes, one of the most notable being the change from the ploughman to the nuclear station operator. Of particular importance was technology, which brought a new dimension to industry, especially the spinning jenny of 1700, preceded by the flying shuttlecock in 1773. However, pride of place must go to the new raw material, coal. Raw materials of any industry are useful only when there is a use for them. Coal is composed of a number of materials such as limestone and iron ore. Thus factories moved in and sited themselves on the coalfields themselves. However, very often some baby industries were located in the peripheries. These factories made large prophets which were reinfested in industry.

However, technological change was to greatly affect all this. A technological change is a change brought about by new advancements in the research of technology. The industrial location patterns are patterns made up of the situations of an industry. It is clear therefore that technological change can affect the industrial location patterns. Technological change means the new standard of know-how that has long since changed anyway the factors which before had led to industrial location before this. Technological change can completely change the location of a given, area. Thus, whole

industrial areas moved to new locations. For example, many of the coalfields were moved down from the valleys.

Transport was very important in the Industrial Revolution. Transport first took on a new significance with the revolution of the wheel. Nowadays, many new modes of transport have been introduced. These are, respectfully the big trunks known, as "jugonants" the concordat, the tankard. In recent years, intercity freight in the USA by truck has doubled by 500%

#### Central Place Theory

Central Place Theory was introduced by Walter Xthaller. It in only a model, and to have a good model one must first of all specify the crucible variable, which in this case is excessability. Central Place Theory is part of the tertiary sector, which has resulted from the remains of the primary and secondary sectors. In particular, it deals with retailing, which involves the supplication of the shopkeeper. In this theory the threshold area should cater for huge shops and other heavier articles; for example, the publican requires a minimum number of publicans to keep him in existence.

Christaller said that towns were equally distributed but had a tendency to agglomerate. In his theory he suggested that the hegazonal service should be used, and not the circled one; indeed, he knew that he had to use hegazonals to get his idea to work. In this hierarchy, the deserted village will just sell newspapers, cigarettes, and milk. Larger centres will only sell luxury goods, which are really essential. It is because of affluence that the demand for bananas and other luxuries are made.

#### Mineral Resources.

Ireland has important mineral resources. The Tina mines are the largest single producer of zinc in Europe while the Tara Mines are the greatest producer of zinc in the world. We also have bartrys, a material used by oil companies for artificial drilling wood, while Bord na Mona gives us turf for domestic use and then pete which has many uses. Oil has been allocated off the south coast; there are prospects of locating oil refineries in Dublin Bay and more off the Cork coast, and there are arguments nowadays for the building of an oil smelter.

The world as a whole is rich in oceans. President Truman first set the example of taking part of the sea under his wing. There was much heated controversy between the Russian and Australian governments in 1975 since they accused the Russians of carrying out nuclear experiments off the Coast of Trinidad. At the beginning of this

year a conference to determine the laws of the seas took place in Caracas. Ireland sent delegates from RTE and other important officials. She has forbidden any tanker over 110 feet in length to fish in her waters.

#### The Fathers of Modern Geography.

Geography can be traced back to the ancient Greeks and Romans, Such as Ptolemy, a famous geometer, who divided the circle into 360 degrees. However, geography first made great strides with the "Age of Cartography". The major contributory elements of the "Age of Cartography" may be attributed to the discoveries made as a result of exploring and the knowledge of the unknown. Of particular importance here was Columbanus, who founded the New World. The leading figure in the "Age of Cartography" as Mercator. It was not until his advent that the world is spherical came into being. On his world map, even though there is equal exaggeration at all points, there tends to be over-exaggeration towards the poles.

Important geographers since then have included Immunal Kant, Carl O'Sauer, Viva de la Blanche (who believed that man is a pissive agent), and Alec von Humbolt, a naturalist, who was one of the great field researchers and found things as they were. An important influence on geography was Darwin, who in turn was influenced by Haeckel and Goethe, two ecologists, and who wrote the famous "Origin of Species". He introduced the idea of ego-systems. The ecological problem was taken up on the 1930's by American sociologists who were only interested in how men reacted with other men.. Another important geographer was Hartshorne, who tried to amalgamate the duality as regards the idea of the duality of the study of the physical and biotic environment as opposed to the physical and biotic.

#### Agriculture

Agriculture can be traced back to the neolithic age of economic development, that is the era since the time of the industrial revolution. From the very beginning of time, man had always needed some tool; in the earlier stages of development this tool helped him to come to grips with his environment. Prior to this, pastoral nomadism was practised. Pastors moved from place to place with their animals in search of water. Pastoral nomadism still takes place in parts of Africa — in the area above the Rio Grande where there are deserts and steppes. In such an area, subsistence agriculture thrives at a very low standard.

Today it is possible to distinguish between peasant farming and commercial farming. In peasant farming, people produce what they need and swap the remainder of what they produce. Here reciprocal exchange may take place where the tribe leader is bound by tradition to do a certain deed, in order to maintain his status. As society produces a surplus it is able to afford such luxuries as priests, etc. Large scale commercial farming

is not usually found on a farm under 20 acres. The principal dairy farming regions of the world are found in the North East half of North America and in an associated zone which extends from Southern Finland to Northern Australia.

The farm size in Ireland can generally be described as small, medium, and large.

#### Offices.

The growth of the office sector is due to the strong tendency for government officials to increase at all levels. It is in the office sector that we find the collar jobbers. Most office location is in the city centre as are the central business districts. Consequently you have a great feminist movement into the cities in the capacity of typists.

Alexander Von Dumbdolt,  
B.A. (Failed).

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## IRISH SMALL TOWNS

Irish small towns have always fascinated me, not least, because I happen to live in one.

The history of most Irish small towns is interwoven with the history of the plantations, most can trace their origins back to the Tudor and Stuart eras of Irish history.

Some of our larger towns are mediaeval in character as is evidenced by the narrow streets, however, the average Irish small town has the wide streets which are evidence of the planners at work.

Many northern towns are characterised by a single long wide main street usually dominated by the local Church of Ireland which is almost invariably built in neo-gothic style. As we move into the midlands however, this pattern often gives way to a Radial design with a fair green or a square at the centre, both the squares and fair greens, together with the wide streets, indicate the emphasis on trade and marketing, which are the life-blood of the small towns.

Small town dwellers today are very much as they have always been, a cross-section of small businessmen, professional people and tradesmen with a number of unskilled workers and labourers who find work locally, for the most part. Most of those who live in small towns have their roots here or in the surrounding locality and a strong sense of community is engendered by this tradition. However nothing is so damaging to both community and tradition as affluence, in an age of affluence the community spirit declines a little, as people become part of the greater community of the country and of the world. Ultimately this should not pose too many problems for Irish people as they have always had links far and wide, through the emigrants who have left these small towns over the years to work in England and America, in that age which is not so long passed in rural Ireland of economic stagnation.

The typical planned Irish town with its wide streets and noted features such as public buildings which dominate the scene are to be much admired. Great care, thought and consideration went into the layout of these streets and roads to make towns which were at once serviceable and convenient for living. Much of the building had been completed on these towns by the mid nineteenth century, consequently, there followed changes in the economic fortunes of the country, the houses, many of which had belonged to the landlord of the locality who often was responsible for the existence of the town in the first place, were sold off to the tenants who inhabited them. Subsequent economic depression led to an end to the building of new houses and likewise property values remained static. Until the early 1960's

development in small town Ireland was almost non-existent, with the exception of the building of Local Authority houses and some public buildings. The 1960's saw an economic boomtime as many people began to build houses — many of those who were involved in this building programme would otherwise have emigrated but for the economic growth in Ireland at the time enabled them to find employment and live at home. One of the unfortunate spinoffs of this is the growth of ribbon development, along major roads which lead into these small towns. The planners have made distinct efforts in recent years to enact legislation to prevent the further spread of this ribbon development.

Distinct efforts on the part of the Government and local entrepreneurs have successfully attracted many small industries to the Irish Small town. While most have been successful some have failed leaving the gaunt spectre of deserted buildings behind them as a blot on the landscape. While a lot of work has gone into planning for the future Irish small towns, much is still needed, over a long period of time, to ensure that the future development is successful for all those involved.

Architecture in the average small Irish town is, or rather was, relatively plain and uniform and decorated in the usual local style, lending a sense of character which is being swiftly eroded in the name of progress. Most small towns, are a mixture of private dwellings and business premises with residential sections. Many of the facades are Georgian with white painted sash windows and large pannelled hall-doors with semi-circular fanlights. The traditional shopfronts consist of the wooden sign board with the proprietors name and the traditional double doors, however, these features are becoming a rare sight in our small towns now. Age brings decay and in these affluent times, shop keepers are anxious to improve their premises in the hope of extra trade and in order to keep up with their competitors, the traditional shop fronts are hauled down and replaced by aluminium windows and neon signs, while they add a short-term glamour they tend to despoil the traditional air of the place.

While many conservationists are opposed to this change, very often the proprietors are left with no choice, considering the condition of many of these old premises.

Consideration of other factors has largely served to paint the economic picture of small town Ireland. However, a closer look at the economic base of the small town is crucial to understand the reasons for its survival. The small town is interwoven economically with the local rural area. Traders in small towns rely almost exclusively on the local

agricultural hinterland for their trade base and financial survival.

Resultantly, trends towards centralization which have encouraged farmers to trade in bigger more central stores where prices are lower, have served to damage the economy of small towns. In some respects, this is countered in practical terms by the greater amount of money which is in circulation due to increased prices for agricultural products, hence small towns still have a major role to play in the overall economic pattern of rural Ireland.

The traditional pattern is adopting to the modern era, with the advent of many factories, a new second tier of employment is being introduced into the small town where people previously involved in business and agriculture have found a new source of employment. Hence a new era of prosperity has dawned for small town dwellers.

The small town will, it seems, continue as a focal point in the lives of the people who live in it and its hinterland. The services of a social and economic nature which it offers are invaluable to the inhabitants and all those who live locally.

A strong sense of community is still felt by the small town dweller in spite of the fact that he is becoming part of the greater national and international community. It is hoped that planners and developers operating in the future in small towns shall at once serve the needs of the small town and work for the conservation of that which is already there in a small towns' architectural heritage.

Small towns seem to be prospering economically due in no small measure to the way in which the agricultural market has been developed to the benefit of the farmers who capacity to purchase is the life blood of any small town. While industry is only secondary one must appreciate the growing importance of the development of industry in small towns as it is currently taking place.

So all in all there are certainly many benefits attached to small town living.

Brendan Reilly —

Second Arts



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